and 3, and it can be hinged upwards while the pump and mounting are attached to the rear of the Fire Engine.

Take the 2½"x1½"Flanged Plate and bolt it between the side plates of the body as shown in Fig 3. To make up for the slightly narrow overall width of this small Flanged Plate, single spacing Washers are used between the flange and the side plates on all four bolt shanks.

An economy of Nuts and Bolts has to be observed if the model is to be kept within the confines of the No5 Set, and only one Bolt is used to secure the 2" Pulley to the small Flanged Plate where it also traps a 2½"Curved Strip in place.

Mount a Multi-Purpose Gear on a 1" Rod and secure this in the boss of the 2" Pulley to form the turbo pump.

Use a ¾"Bolt to secure the ½"Pulley with Boss to the upper left hand hole of the small Flanged Plate, placing a Spring Clip behind the Pulley as a stand-off spacer. The two lower Bolts holding the 2½"x1½"Flanged Plate also hold ½" Reversed Angle Brackets acting as hose and tackle rests at the sides of the Fire Engine. Two Set Screws are fixed in the ½"Pulley boss to simulate the hydrant hose union.

Now hinge down the cover plates of the water tank and fit a 2½"Strip across its rear end, with an Obtuse Angle Bracket at the left hand end of the Strip. Attach a square-headed white plastic carton-stud (taken from the outfit carton), to the Obtuse Angle Bracket with two Nuts to form the control valve. Standard Meccano Nuts will quite happily thread on to the shank of these plastic studs. All the construction just mentioned is clearly shown in Fig 3.

THE REAR MUDGUARDS

Rear mudguards may now be fitted, and these are formed from a pair of 5½"x1½" Flexible Plates. In the model illustrated, the first ½" of the Plates was set between a pair of Angle Girders so that a sharp right angle bend could be set on the end which is then trapped underneath the rear end of the 5½"x2½"Flexible Plates already forming the chassis floor.

The D A Strips below then receive their second Nuts & Bolts to hold the forward end of the rear mudguards in place.

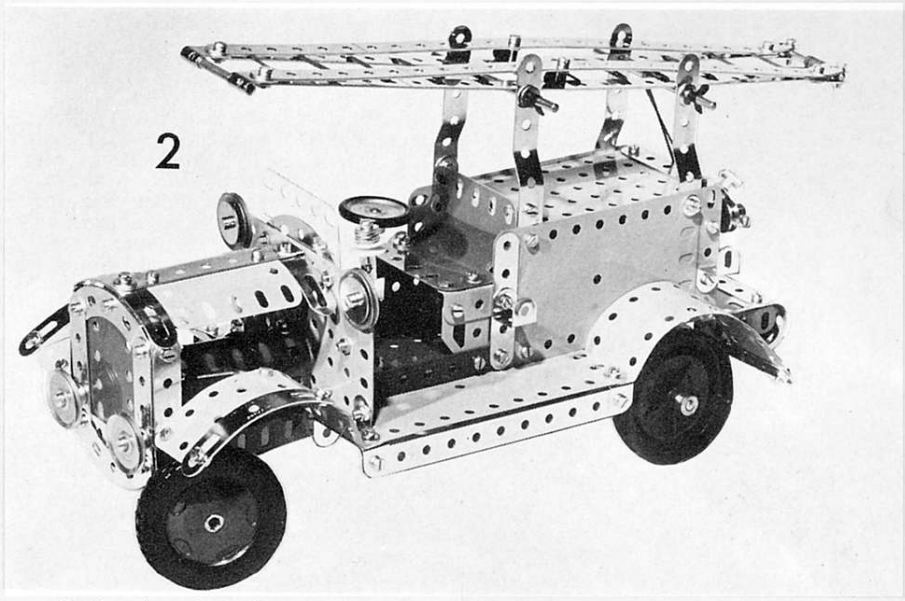
Experienced constructors retain Flexible Plates, in which they have set bends, for use in other models but, for the younger modeller who does not wish to make sharp bends in Flexible Plates, the forwards ends of the rear mudguards may simply be pushed just below the rear edge of 5½"x2½"Flexible Plates and attached thereto by ordinary ½"Brackets.

A smooth and gentle curve is set into the 5½"x1½"Flexible Plates to complete the contours of the rear mudguards, the tail ends of which are sandwiched by a pair of 5½"Strips holding an Obtuse Angle Bracket in their centre which is, in turn, bolted to the centre edge of the underpart of the 'U'-shaped Flexible Plate. Figs 3 and 4 make the construction quite clear.

THE 'CAB'

A pair of Flat Trunnions make vertical supports for the driver's seat, and Bent Trunnions form the ends of the bench as seen in Fig 6. One Transparent and one Blue 2½"□Plastic Plate form the 'upholstery' of the bench seat, being fixed with two Nuts & Bolts only, their rearwards and upper curvature giving a rigid form to the seat.

On the leading edges of the water tank side plates, 2½"Strips add reinforcement and support for the rear holes of the Bent Trunnions, at the same time holding ½" x ½"Double Brackets as the forward hose and tackle supports.



Further view of complete model showing steering lock and fittings around the bonnet

Fig 6 shows some of the details in the driving compartment where the dashboard bulkhead is the second 4½"x 2½"Flat Plate bolted centrally to the forward flange of the large Flanged Plate with one Bolt at the right, and located at the left by the Crank Handle forming the exhaust pipe as it passes rearwards from the engine compartment.

A 3½"Strip is mounted as shown by Obtuse Angle Brackets to form the foot pedal board, and two more plastic carton-studs do duty as clutch and foot brake pedal, each being stood off with a Spring Clip as spacer, and locked from below by a single Nut.

A transparent Plastic 2½"x1½"Plate forms the wind shield, and is supported by the overlaid 2½"Curved Strip. ¾" Washers and 9.5mm Bolts hold 1"Loose Pulleys to the corners of the bulkhead as side lamps, one Fishplate being used as a driving mirror on the offside.

Various illustrations show firebell, a ½" Plastic Pulley with three Washers mounted on a ¾"Bolt passing into a Rod & Strip Connector on the nearside corner of the bulkhead.

THE STEERING GEAR

Steering gear can now be given attention, a Bush Wheel being bolted to the last 2½" D A Strip. The second Bush Wheel is bolted to the upper side of the front Sector Plate with its centre three holes back from the front edge. It should be noted that the Meccano Bush Wheel will not bed down flat on a Plate etc, because of the ridge on its boss. Advanced constructors use Meccano Electrical thin Brass Washers [Part 561] to pack out this difference, but younger modellers can do the same thing by making paper washers to take up the slight gaps (about postcard thickness will do).

By studying Fig 7, the position of the Bush Wheel can be clearly seen, and at the same time as this is fixed, the 1"x½" Double Bracket is mounted under the leading edge of the Sector Plate as shown. This will form part of the bonnet mounting.

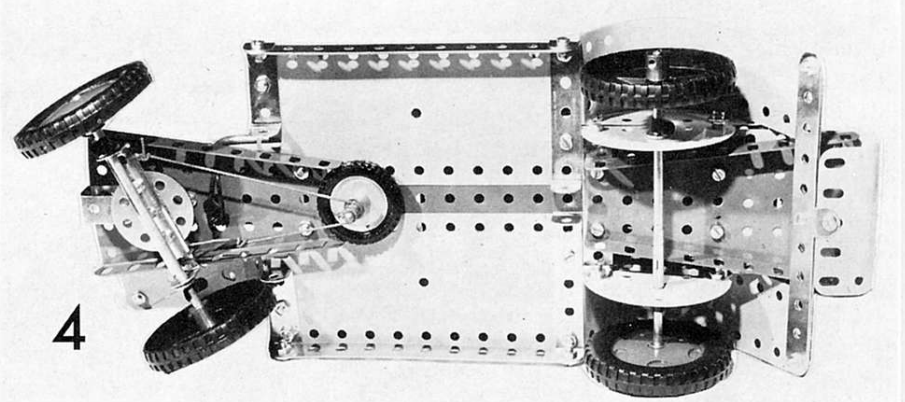
Fix a 1½"Rod into the lower Bush Wheel carrying the D A Strip, add a Spring Clip as a spacer, and then a Washer, and pass the Rod up through the Bush Wheel on the Sector Plate and put on a Spring Clip to hold the Rod in the right position for a free (but not sloppy) swivel.

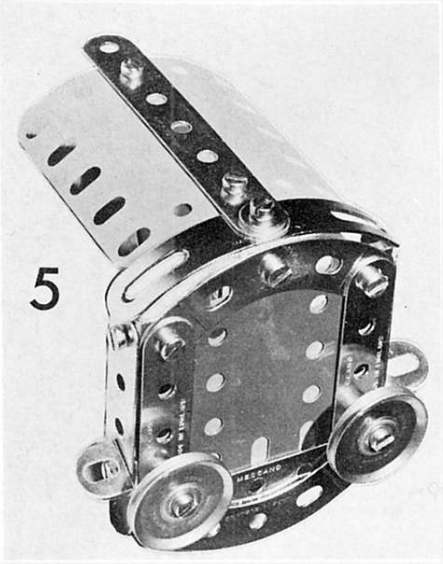
THE ENGINE

Now the 'engine block' can be made from one 2½"□, and one 1½"x2½"Blue Plastic Plate curved gently into a 'U' shape as shown in Fig 7 and then laced with a short length of Meccano Cord to retain its shape. The second Plastic Gear Wheel is attached to the top hole front of the 'block' by a Bolt and Washer, screwing directly into the tapped hole of the boss.

Now tuck the loop of a Spring Clip through the second slotted hole of the plastic plate close up to the 'fan', slide the cranked portion of the Crank Handle firmly into the Spring Clip. Take the 6" Driving Band and pass it round the 'block', through the Sector Plate holes →

Underside view of the model with front mudguards and bonnet removed.





Above, bonnet and radiator sub-assembly. Below, details of driver's compartment (top) and close-up of simulated engine (bottom)

as shown, and secure it below by looping its ends through and over the bow of a Spring Clip.

THE BONNET

Fig 5 shows the full details of the bonnet, which is made up as a separate sub-assembly. The radiator is backed by a 2½"□Flexible Plate which sandwiches a 2½"x1½"Blue Plastic Plate against the upper 2½"Curved Strip and the 2½" straight Strip at the bottom.

Headlamps consisting of 1"fixed Pulleys are bolted on by ½"Bolts two holes up the side 2½"Strips, and are backed by ½"Angle Brackets. Two more ½"Angle Brackets are fixed outside at the same level as attachment points for the front mudguards.

A 2½"□Curved Plate forms the bonnet and is held in place by a 3½"Strip attached to a ½"Angle Bracket at the top of the radiator, a Formed Slotted Strip being secured by the same Bolt as shown. Fig 1 shows how the bonnet is secured to the driving compartment bulkhead by a ½"Bracket set over the top of the 3½" Strip, and a second Formed Slotted Strip.

Finally the radiator is secured to the 1"x½"Double Bracket under the Sector Plate by a Bolt passing through the centre hole of the 2½"Strip running across the bottom of the radiator just behind the lower Curved Strip.

THE FRONT MUDGUARDS

To make two front mudguards, two 2½"x1½"Flexible Plates are given a right-angle bend and bolted under the leading edges of the chassis floor. The underview of Fig 4 shows two 1½"D A Strips bolted on below, and these support the bent rear edge of the mudguards. Again, if constructors do not wish to bend their Flexible Plates so sharply, the rear ends may be passed below the chassis floor level and secured by Angle Brackets or 1½"Angle Girders.

To complete the curvature of the front mudguards, 2½"x1½"Trianglular Flexible Plates are lapped on each other to form rectangular extensions, and are reinforced by Formed Slotted Strips set slightly forward to give the 'period' look to the mudguards.

WHEELS AND STEERING

Wheels and steering may now be fitted. For the rear axle, a 4½"Rod is extended by a 2"Rod as shown in the underneath view of Fig 4, and the wheel faces are reversed to give the 'veteran' look. Washers and Spring Clips set the wheels to a suitable spacing.

Another 4"Rod forms the front axle, spacing again being set by Washers and Spring Clips.

A 3½"Rod forms the steering column, topped by a 1"fixed Pulley with Flexible Ring. Double Spring Clips and a Washer locate the column above the large Flanged Plate in the centre line three holes back. Underneath the chassis, a 1" fixed Pulley with Motor Tyre makes a perfectly satisfactory lower bearing for the steering column, being left to lie snugly against the chassis floor with no real fixing other than the Washer and Cord Anchoring Spring seen in Fig 4.

A short length of Meccano Cord is tied to one outer hole of the D A Strip of the steering gear, wrapped three turns round the lower end of the steering column, knotted through the eye of the Spring, and then secured via the 2½"Rubber Driving Band to the other side of the D A Strip. This keeps a permanent tension on the steering cord giving very positive steering.

COMPLETION OF THE CHASSIS

Final strengthening of the chassis is made by bolting the lower corners of the driving compartment bulkhead plate to the rear end of the front mudguards by ½"Angle Brackets, and by adding a 5½"Strip at each side of the Fire Engine to reinforce the 'running boards' at chassis floor level. Extensive use is made of mutual bracing between components, resulting in a very rigidly-constructed model for such a modest outfit.

THE LADDER

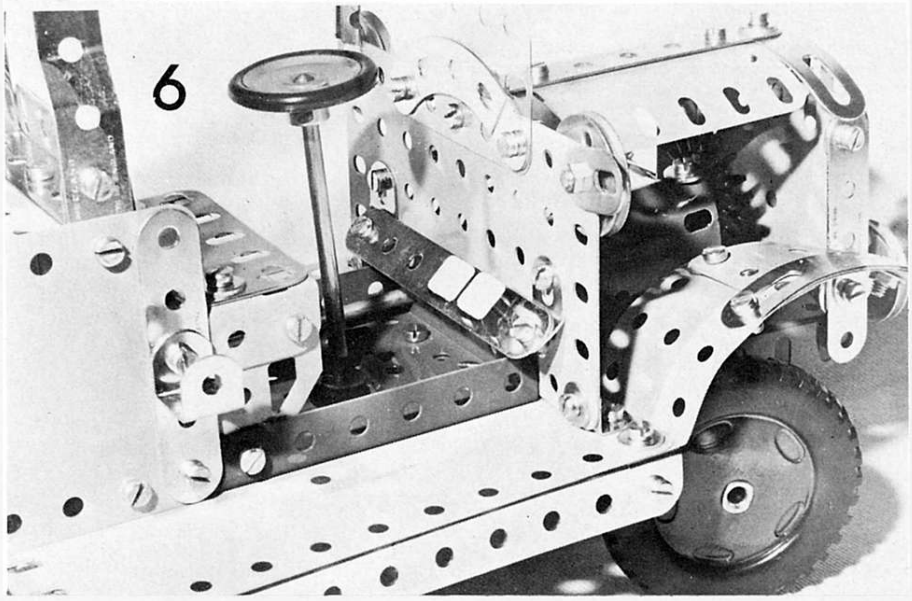
It only remains now to make the ladder, a very simple but neat-looking job, which requires a little patience and very few parts to assemble.

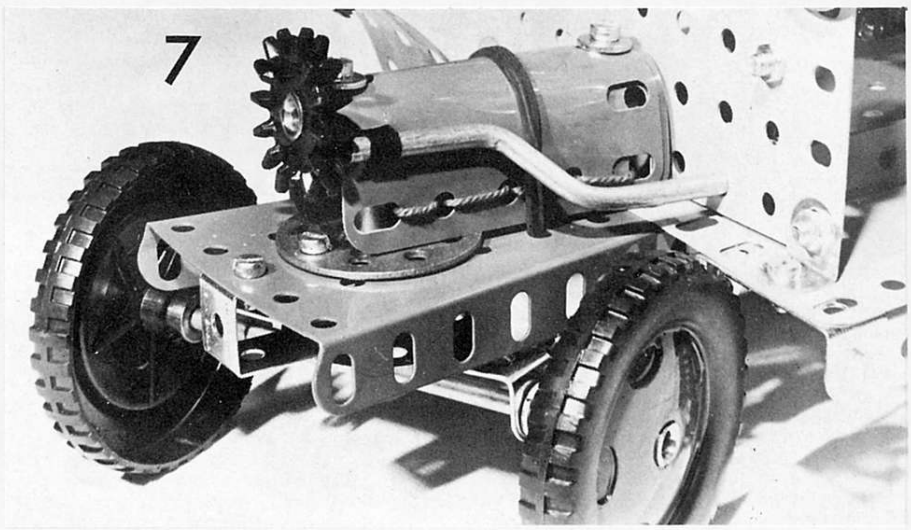
Start by taking a pair of 12½"Strips and the remains of the Hank of Meccano Cord. Lay the strips about 1½" apart, and then — with a doubled loop of Cord — thread the rungs of the ladder through each second pair of holes in the two Strips, taking guidance from Figs 1, 2 and 3.

Now attach a second pair of 12½" Strips, joining them at the top of the ladder by Bolts passing through Right Angle Rod & Strip Connectors sandwiched between the Strips. The loop in the end of the doubled Meccano Cord is trapped under the Strip by one of the Bolts.

Fit a 1½"Axle Rod into the Rod Connectors, making sure that a good grip is maintained (if necessary by squeezing the tubular section with a pair of pliers). If the Connector already has a tightly curved section, use a Bush Wheel on your short Axle Rod to push it into the Connector. It needs to go in only 3 or 4 mm to obtain the correct ladder spacing.

The cantilever effect at the centre of the ladder is achieved by using Spring Clip spacers which simply cling to the shanks of 9.5mm Bolts, clearly shown in Figs 1 and 2. At the lower end of the ladder, standard Nuts & Bolts are used to fix Fishplates by their round holes to the end of the 12½"





Strips, leaving the Nuts slightly slack. A 2" Rod is then trapped between the slotted ends of the Fishplates by 9.5mm Bolts, all Nuts being tightened in sequence.

Before the final tension is put on these nuts, 'square off' the ladder and draw the Cord, rung by rung, from top to bottom of the ladder until all rungs are under equal tension. Then tighten up the end of the Cord under one of the Fishplate pairs and wrap a few turns round the lower Rod as shown in Fig 3, to centralize the Cord on the bottom rung.

At this stage, the modeller has the choice of leaving the 5½"Strips supporting the ladder in an unbent state, although the illustrations in this article show a cranked bend set into them for the sake of appearance. Taking the last two 3½"Rods in the No5 Set, these are placed through the ladder supports and located by Spring Clips and Washers. If the end of the Cord is then knotted, it can be passed over the rear Rod of the ladder supports and over the Plastic Gear on the turbo pump to hold the ladder in its travelling or stowed position. The arrangement should be clear from Fig 3.

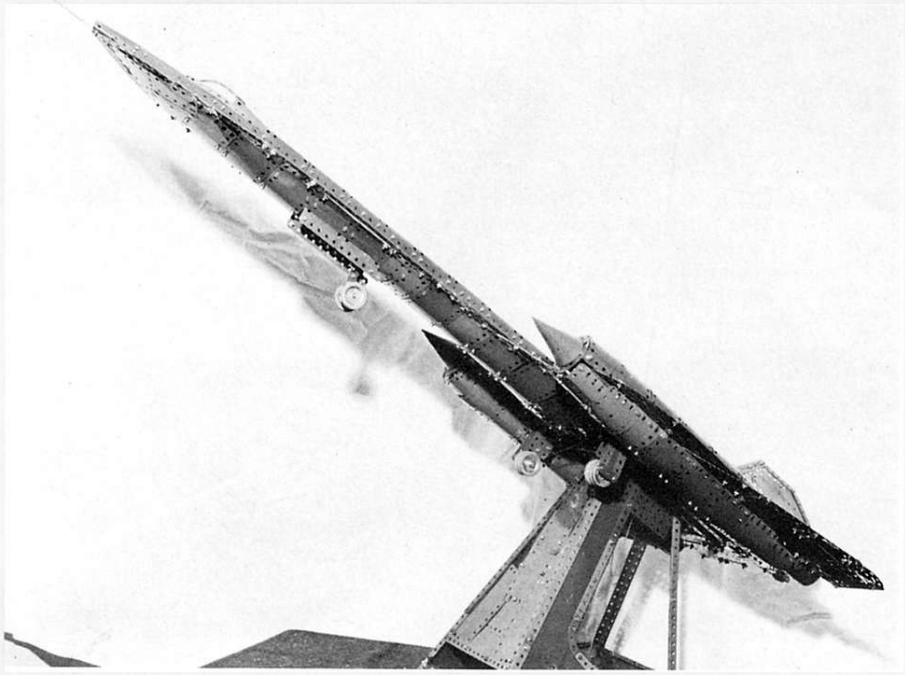
IMPROVEMENTS

Because this model has 'solid' front and rear axles, steering is not as efficient as it might be. If the front axle is replaced with a Rod which is ½" longer, one Road Wheel may be fixed to the Rod and the other left free to revolve on the axle, held in place by Washers and Spring Clips or Collars. This will give an immediate ease to the steering.

Again, if the composite rear axle is replaced by a 6"Rod and one wheel is also left free, steering will be further improved.

Modellers with a few extra parts can fit various fire fighting gear, extinguishers, hydrant hoses in the side brackets etc. There is still a pair of 3"Pulleys left in the No5 Set, and as the Dennis Fire Engine was supplied either as a straight-ladder or wheeled-escape type, this second version might be made from the contents.

Right: the author's SR 71 'Blackbird' mentioned in the text.



THAT NEXT MODEL

by Frank Beadle

There must be few Meccanomen who are at a loss as to what to build next, indeed most of us have several ideas stored at the back of our minds, having seen some mechanism of interest or an appealing Super Model of the past.

In fact, it is more probable that one is usually in a situation of interesting perplexity, in deciding 'which' and not 'what' to build next, from the ideas and thoughts which accumulate from time to time, even when one is engaged in the construction of a particular model and something is seen that will form the basis of a project in the future.

Models however, generally fall into three categories either from their origin or from the particular idea, and these can be grouped as follows:

EXISTING OR PREVIOUS MODELS

Many builders prefer to work from Supermodel Leaflets, or from a feature in the Meccano Magazine, which illustrates or describes, and has construction details together with a list of parts. Whilst not decrying this type of building, there are other approaches to Meccano modelling, yet the Blocksetter Supermodel of 1923, even if followed step by step, still can offer the most interesting problems when dealing with the tolerances of the cab mechanism gearing, or the cording of the working parts in general.

It is not just a matter of assembly in a repetitive, bit by bit fashion, as the 'proof of the pudding' as it were, lies in the final completion and the operation of the model in a sewing machine quietness and efficiency.

If one tackles an Andreas Konkoly model, it is not long before one is beset with the fine clearances and tolerences which that wizard always seems to incorporate. So, working from the existing literature of models built and tried still offers some stimulating thought, and forms an important part of one area of model selection.

FREELANCE EXISTING PROTOTYPES

This type of building falls into the second category of representing actual things in the everyday world, or beyond, such as the 'Star Trek' *USS Enterprise* model, recently featured by Meccano Ltd on the pre-Christmas Television Commercial shown in some parts of England, or an Oil Rig, or perhaps the SR 71 Lockheed *Blackbird*, or a recent modern lorry-mounted crane.

The item is nearly always of topical interest to the general public at exhibitions, and has the added value of letting the public at large know that Meccano is up-to-date and not confined to the 'steam age' model of the past — fascinating as these are with their more exposed framework than the streamlined appearance of things seen in the industrial and scientific world of today.

Anyone who has not tried this type of model, is advised to have a go and experience the thrill of designing at its very best, taxing the dexterity of thought to the utmost in representing some section with such Parts as Flexible Plates, which really come into their own to form the compound curves of some part of a modern piece of machinery.

Many modellers prefer, as I do, to work from makers drawings. Firms are only too glad to supply general layout details or drawings of their products, providing the courtesy of complimentary photographs of the finished achievement are sent to them when the model is completed. Scaling-down from the actual is an interesting job in itself, and can provide much pre-building thought when one has to work out on paper beforehand a scale from which to start. It could be 10mm to a foot, or more common on the Meccano modular system is one hole to 1 foot.

Conversly, the entire structure may be governed by the turntable for the rotating superstructure, or more likely, a particular wheel size, which will be a positive start to the scale of the project.

Freelance interpretation of existing items is certainly an exciting way to approach model building, and is very satisfying in its outcome.

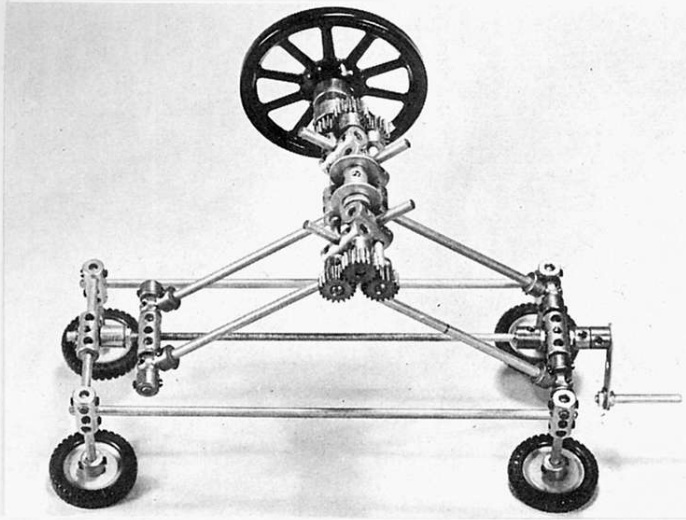
BUILDING FROM AN IDEA

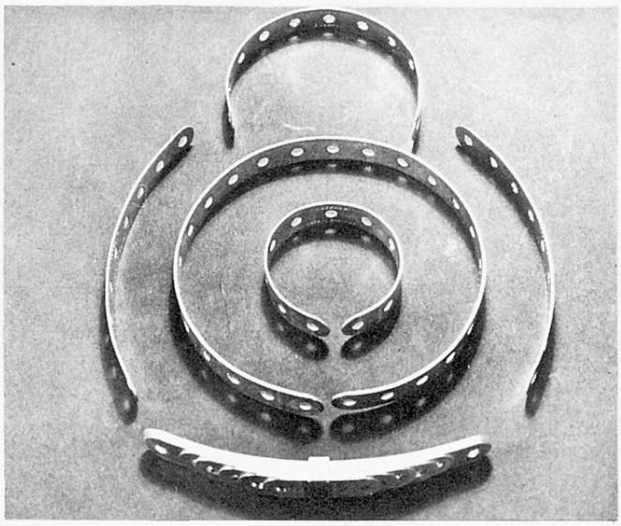
This offers perhaps the most interesting angle of model building, combining freelance — with its complications and trial and error of design — with a complete exploitation of Meccano parts.

Examples such as the Fence-Building-Machine recently built by Bill Roberts, or the French-Knitting Machine, devised last year by Bryan Reay of the North Eastern Meccano Society, offer the intricasies of an 'idea' which is virtually constructed from the 'inside' focal point of the model, to the frame work structure which is designed as the model progresses with no particular idea of eventual appearance.

If one has the patience to delve into the realms of the unknown to solve a particular problem, or be faced with limitations of space, contriving how to arrive at a solution that will bring the desired model to its final conclusion and satisfactory operation, this category of building does offer the ultimate in Meccano Modelling.

There is no doubt that Meccano is as versitile as us; its limitations are only governed by our own limitations, and its areas of design are boundless. Perhaps the three approaches outlined above may spur some of us to branch out into one or other, or better still all three.





STRIP-ROLLING MACHINE

A practical unit designed by "MECCANOMAN"

In Meccano modelling, it is at times required to curve Strips to an even radius. When this is attempted by hand, uneven results stem from the tendency for the Strip to bend in a series of kinks at each hole. It is also very difficult to maintain the curve smoothly to the extreme ends of the Strip.

The Strip Rolling Machine described here has been designed to have its rollers mounted as close as practicable so as to ensure smooth curving of the Strip between its holes. The choice of ½" centres allows all three rollers to be driven together through a chain of ½" Pinions which ensure smooth passage of a Strip through the rollers with the minimum of slip; it will even be found that painted Strips can be curved to quite an extent with minimul damage to the paint. However, in all cases where sharp radii are required, the Strip concerned should be curved in a succession of operations of gradually increasing severity.

The machine is also equally efficient in straightening the Strips after they have fullfilled their function. In addition, mutilated Strips can very often be restored by curving them gently first one way and then the other, thus gradually reducing the damage until straightness is achieved once more.

CONSTRUCTION

THE ROLLERS

Construction is commenced with the top roller assembly which consists of a 3½" Rod with a centrally-mounted Short Coupling, on either side of which are placed, in order: a 3/4"Washer, a 3/8"Washer, two Couplings by their end transverse holes; then a further 3/8" Washer, and finally a ½"Pinion, boss inwards.

The lead-in roller assembly is formed of a further 3½"Rod which passes through the other end transverse bores of the inner pair of Couplings mentioned above. This also carries a centrally-mounted Short Coupling, and ½"Pinions, boss inwards on both ends.

The feed-out roller assembly is a 4" Rod, this time through the end transverse holes of the outer pair of Couplings, with a central Short Coupling as before. On one end is a ½"Pinion, boss inwards, with one spacing Washer. On the other end, the additional ½" length allows the relevant end ½"Pinion to be mounted boss outwards. The boss of this ½"Pinion is then inserted into one recess of a Socket Coupling, whose other recess carries the boss of a Spoked Wheel, which acts as actuating handwheel. *All* tapped holes in both Pinions and Short Couplings are fitted with Grub Screws, those in the Short Couplings must be 3mm [69c] to ensure an unobstructed rolling surface.

THE OPERATING LEVERS

The four operating levers are formed of 3½"Crank Handles, which must be carefully selected to be identical in length, and in the profile of their bends. The use of these Crank Handles ensures that a full range of roller positions can be achieved without fouling the 3½"Rods.

The lower ends of the outer Crank Handles are mounted in the bases of Handrail Couplings whose transverse bores rotate freely on 1½"Rods which form part of the base frame assembly. These Rods are connected by Couplings at their inner ends, and carry vertical Couplings at their outer ends to act as leg supports. Collars are fitted against the inner faces of the Handrail Couplings for location purposes.

THE BASE

The other end of the base frame assembly is similar, but carries no Handrail Couplings or Collars. The sides of the frame are 8"Rods located in the central tranverse bores of the vertical Couplings. The legs themselves are 1½"Axle Rods, which carry 1"Pulleys and Tyres as feet.

ADJUSTMENT

The setting of the roller angle is determined by a special assembly mounted on an 8"Screwed Rod, which consists of a Coupling mounted by its central transverse threaded bore. This has 1"Rods protruding from its ends which carry the eyes of two Handrail Couplings, which in turn are retained by Collars. These Handrail Couplings are of course mounted on the lower ends of the inner pair of Crank Handles. Turning of the 8" Screwed Rod thus allows a fine adjustment of the roller angles. This Threaded Rod carries a lock-nutted Adaptor for Screwed Rod whose pin turns freely in the central transverse bore of the horizontal Coupling at one end of the base.

At the other end of the base, the Screwed Rod itself turns in the equivalent bore of the Coupling at that end. The operating handle is a Threaded Crank fitted with a long Threaded Pin as shown, and is lock-nutted to the end of the Screwed Rod. Endplay is controlled to close limits with a Threaded Boss, which is also locknutted.

A few examples of work done by the machine are shown. It will be seen that various lengths of Strips can readily be rolled into complete circles. The laminated spring, produced with the aid of the machine, is interesting, as it seems to have acquired additional resilience in the process; it will return to the camber shown even after being deflected until 'flat'. In passing, I should mention that its buckle is a Short Circuit Piece [Electrical Part 554]; the various leaves are kept in alignment by a long Grub Screw through the centre holes of the leaves, which is retained in place by the buckle.

PARTS REQUIRED

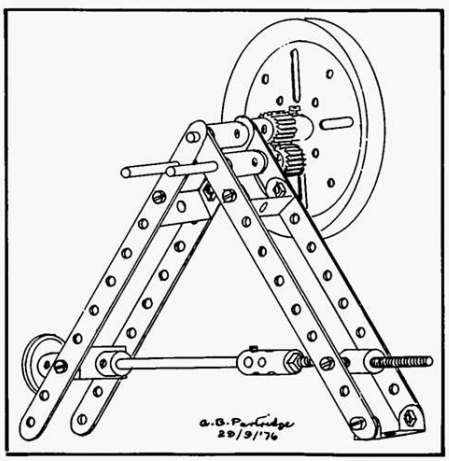
2 — 13a	6 — 26	1 — 64
1 — 15b	3 — 37c	1 — 69c
2 — 16	5 — 38	1 — 79
8 — 18a	2 — 38d	1 — 115a
2 — 18b	4 — 59	4 — 136a
1 — 19a	1 — 62a	4 — 142c
4 — 19s	11 — 63	1 — 171
4 — 22	3 — 63d	1 — 173a

AN 'ECONOMY VERSION'

by ALAN PARTRIDGE

This device is closely based on the foregoing machine which I have found so useful. My version contains the minimum of expensive brass parts, but is not so robust as 'Meccanoman"s.

The construction should be clear from the diagram after reading the description of the 'Rolls-Royce' version.



AMONG THE MODEL-BUILDERS

with 'Spanner'

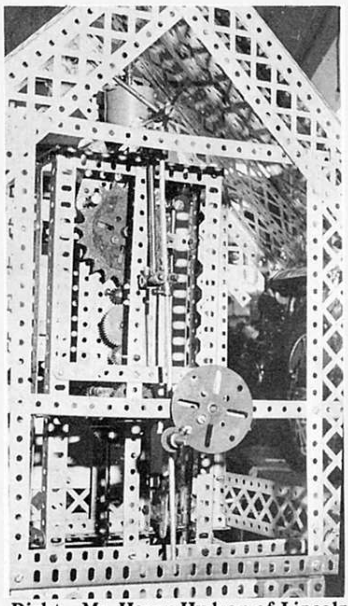
ADJUSTABLE DIGGER ARM

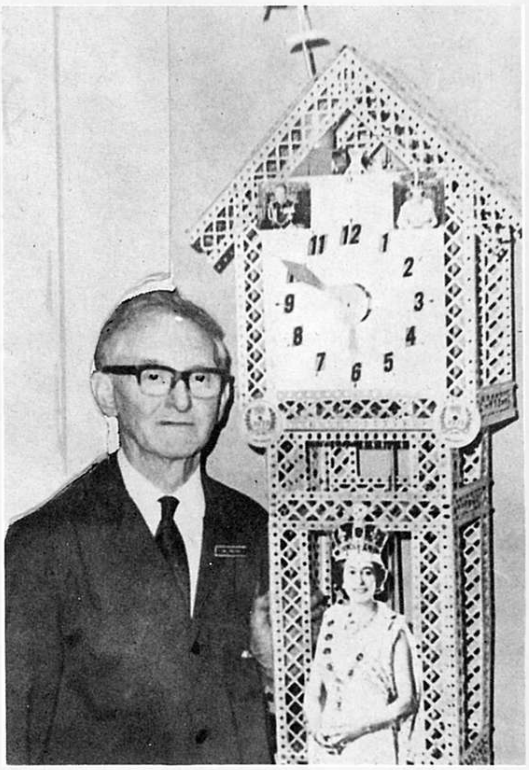
Mr. D. Penney of New Whittington, Chesterfield, recently supplied details of an Adjustable Digger Arm (see enclosed diagrams), accompanied by a very short note asking simply "Is this the material that the magazine is looking for?" I am now delighted to reply to this in the most positive way – by using the material! (I think this indicates that the answer to Mr. Penney's question is "Yes"!)

"The centre pillar for the adjustable arm", writes Mr. Penney, "is made from four 12½" Angle Girders bolted together to form a square section. Two 1½" x 1½" Flat Plates 74 are fastened around the Girders by three 1" Screwed Rods held by Nuts, the Nuts being adjusted so that the Plates slide up and down the Angle Girders. Two Cranks 62 are fastened to the Plates by the top Screwed Rod (fig A) and an Axle Rod 16b is passed through the Cranks to form a pivot for the arm.

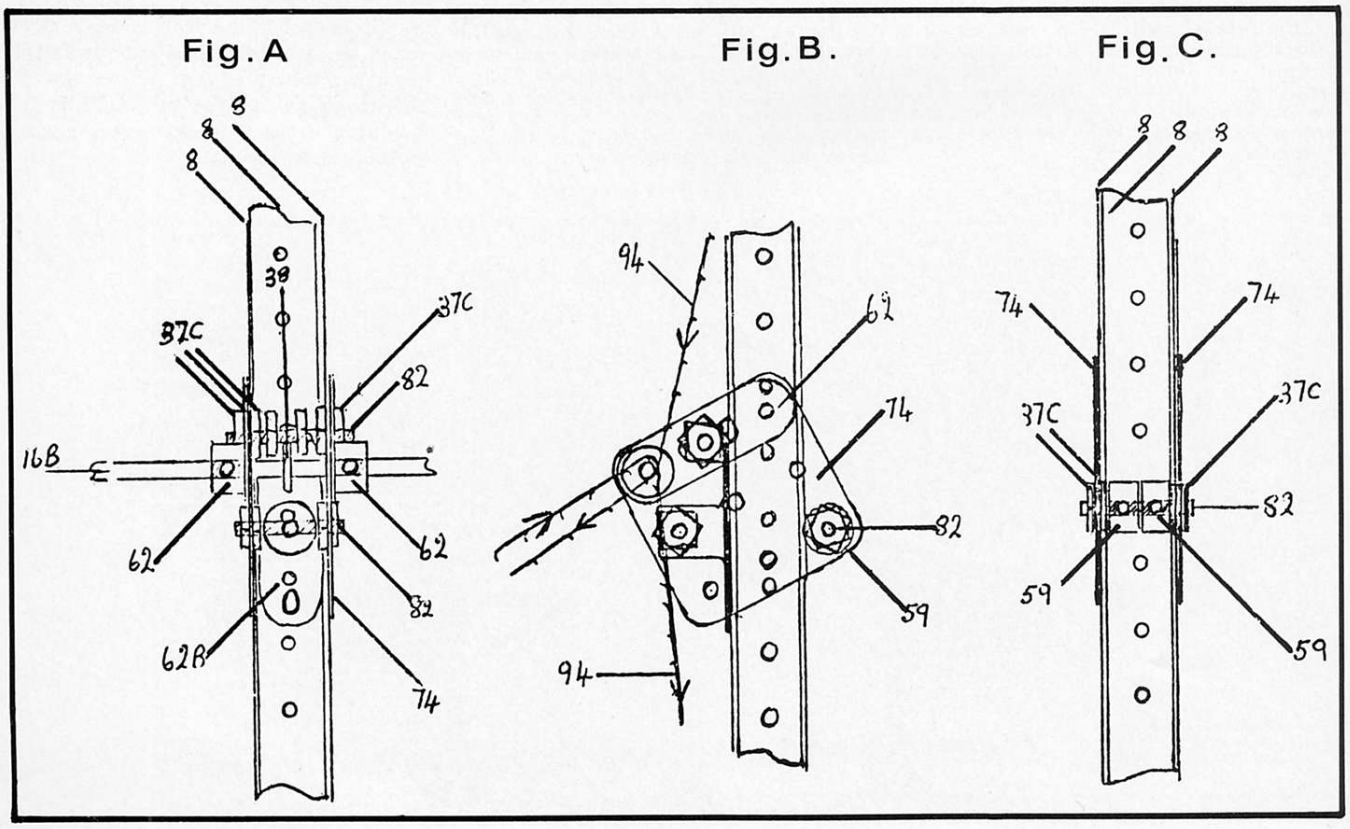
Screwed onto the lower Screwed Rod in fig A is a Double Arm Crank which is held in place between Plates 74 by four Nuts. The upper end of the Double Arm Crank is trapped against one Angle Girder 6 by two Nuts on upper Screwed Rod 82 in fig A.

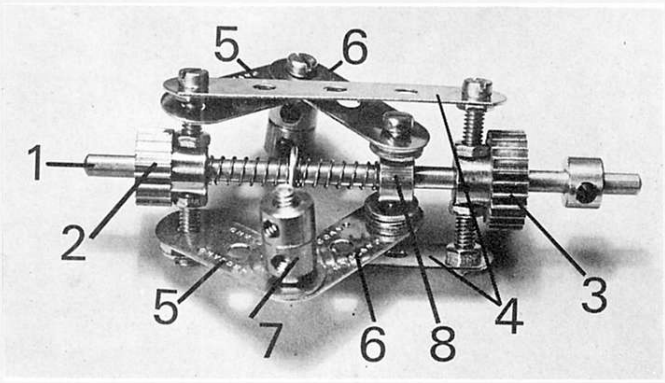
It will be seen from figs B and C that the Screwed Rod carries two Collars 59 which are free on the Rod and which run up and down on Girder 6 as a support roller for the front of the arm. The movement of the arm is operated





Right - Mr. Henry Hudson of Lincoln pictured with the "Silver Jubilee" Grandfather Clock which he built last year. Above, a rear view of the Clock showing the cycle sprocket escapement wheel. Below, sketches showing the Adjustable Digger Arm described on this page.





Pictured left is a simple, yet functional Two-speed Automatic Gearbox designed by 14 year old Jonathan Wynn of Caerleon, Newport, Gwent. Note that Pinions 2 and 3 are loose on their support Rod, while Collar 8 is fixed on the Rod. Note also that the 1½" strips in the centrifuge assembly should pivot freely.

by Sprocket Chain 94 which is passed under andover Rod 16b and is kept apart by a Washer 38. The Chain is then anchored at the top and bottom of the arm, and so forms a loop round one of two ¾" Sprockets fastened into a Socket Coupling (not shown). This Socket Coupling would be mounted, free to turn, on an Axle Rod forming the bearing for the lower end of a suitable jib. Chain drive from the parent model's gearbox would be taken to the second Sprocket Wheel in the Socket Coupling."

PARTS REQUIRED			
4 – 8	1 – 38	2 – 62	2 – 74
1 – 16b	2 – 59	1 – 62b	3 – 82
14 – 37c			1 – 94

FIFTY-FOUR AND GOING STRONG!

Make no mistake, this title does not refer to Mr. Henry Hudson's age (he is in fact a young sixty-four!) It refers to the neat and efficient Grandfather Clock featured in the accompanying illustrations. The Clock was built by Mr. Hudson last year in honour of the Queen's Jubilee, yet the particularly interesting thing about it is that, although built for the Jubilee, it is made from parts that are as old as the Queen herself!

In fact, Henry bought his vintage Meccano Set in 1923 and, since that date, he has made scores of different working models. The Jubilee last year gave him an incentive to make the Clock and, having made it, he presented it to his employers, a well-known cycle retailer in Lincoln City. The Company decided to put the Clock on display in the High Street and, as a result, Henry Hudson and his Clock have appeared on television, radio and in numerous newspapers, both local and national.

A modest man, Henry does not have much to say about the success he has achieved in modelling. However, he did explain to Ray Drury, a Lincolnshire journalist, how the Clock was made up. A 14 lb weight drives the Clock for 18½ hours. The pendulum is 5 feet 6 inches long and the only non-Meccano part used is the escapement wheel which is a 20-teeth cycle sprocket and this is understandable as Henry is the Manager of the Cycle Department of his employers' shop! Overall height of the Clock is 6 feet 4 inches.

I am indebted to Ray Drury for providing me with the above information and accompanying photographs.

AUTOMATIC GEARBOX

For our next offering I am indebted to Jonathan Wynn of Newport, Gwent. Jonathan is the designer of the Compact Two-Speed Automatic Gearbox featured here and he is to be congratulated on an efficient little unit.

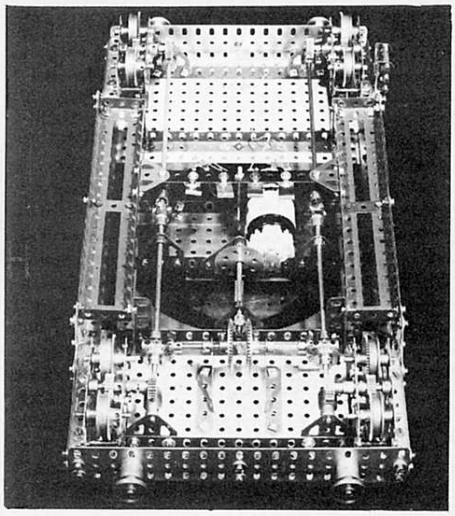
Carried in a suitable mounting, dependent upon the parent model, the unit consists of a centrifugally-operated sliding shaft 1 carrying a ½" Pinion 2 and a ¾" Pinion 3, spaced as shown but connected together by 2½" Strips and carried on ½" Bolts fixed in the bosses of the Pinions. Mounted loose on the Bolts fixed in the boss of Pinion 2 are two 1½" Strips 5 which are pivotally connected to two more 1½" Strips 6, using ¾" Bolts on each of which two Collars 7 are secured to serve as centrifuge weights. The ends of Strips 6 are pivotally attached to a Collar 8, being spaced from the Collar by two Washers on the shank of each securing Bolt. Two Compression Springs mounted on the shaft return the Gearbox to the lower ratio when the speed falls below the critical point. In operation, of course, Pinions 2 and 3 would engage with appropriate Gear Wheels mounted in appropriate positions.

PARTS REQUIRED			
2 – 5	1 – 25	2 – 37b	2 – 111
6 – 6a	1 – 26	6 – 38	4 – 111a
1 – 15b	10 – 37a	6 – 59	2 – 120b

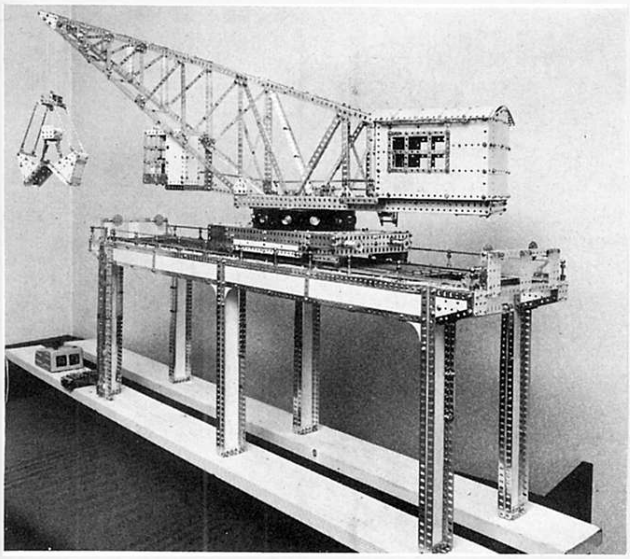
GRABBING CRANE

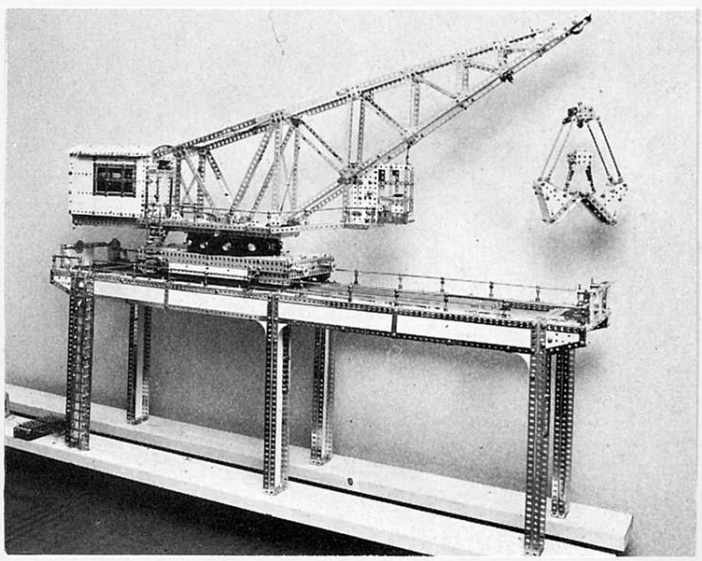
Finally this month I draw your attention to the outstanding Grabbing Crane illustrated here. It was designed and built by long-time enthusiast Hans Hoch of Winterthur, Switzerland, and I think you will agree that, on its high-level platform, it makes a magnificent display piece.

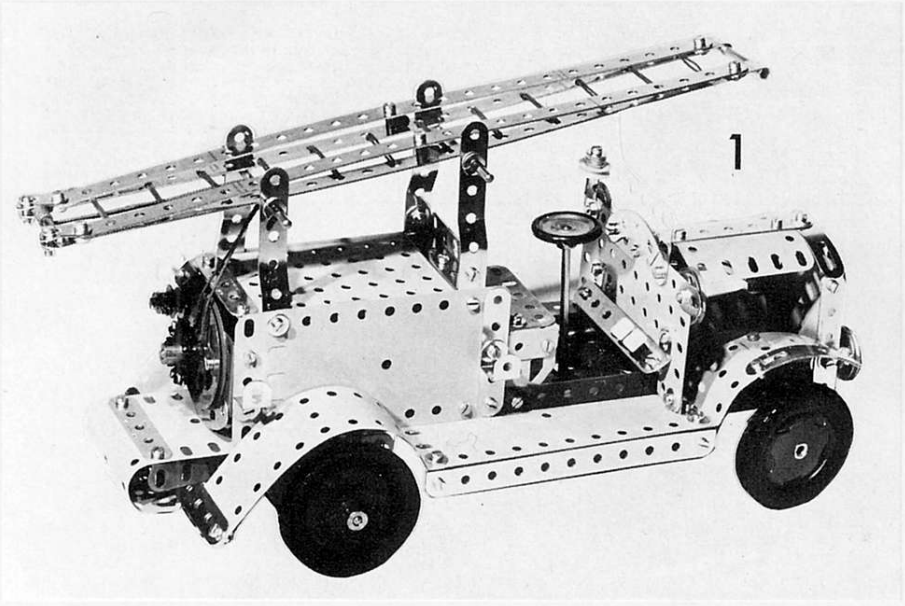
Unfortunately, I am not able to give much information on the model as Hans has supplied only a few very general details, but it is based on a real life original which is described as a Greiferdrehkran 15t x 17.50m. The model performs all the movements of the original – hoisting, grab-opening, slewing and travelling – with each movement powered by its own motor: the Meccano Power Drive Unit. As can be seen, it is built mainly from Meccano parts, although Hans does admit that he used one or two competitors' parts in the base frame roller bearing. Still, nobody's perfect!



Below - two views of an excellent display piece in the shape of a large Grabbing Crane designed and built by Mr. Hans Hock of Winterthur, Switzerland. Above, an underside view of the travelling crane platform





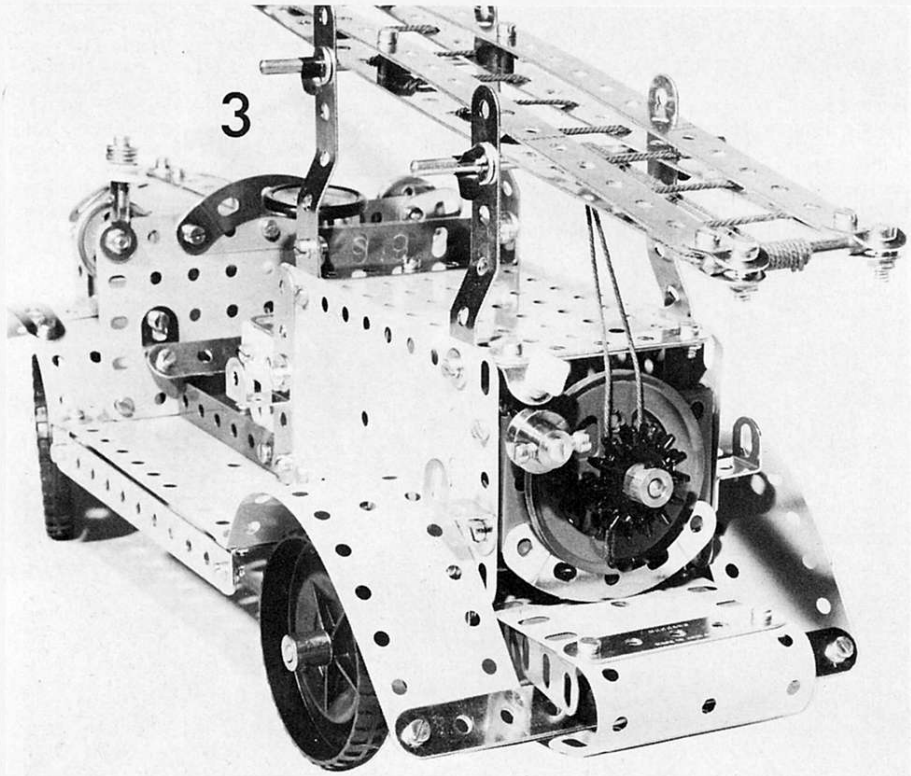


General view of the veteran Dennis Fire Engine showing detachable cantilever ladder

B. N. LOVE shows that realism and 'atmosphere' can be captured even in less-complex models with this No. 5 Set . . .

Veteran Fire Engine

Rear view of Fire Engine showing pumping platform detail and cord lacing detail of the ladder



Getting the most out of any Meccano Set, regardless of its size is a challenge which all enthusiasts should be prepared to accept. Age should not be a limitation on the size of set being used; many fine examples of smaller but appealing models have come forward from advanced constructors.

Fire engines have been one of the author's prime interests since boyhood, and the model illustrated here was inspired by a very expensive Japanese plastic kit of parts for the 1916 Dennis Motor Fire Engine.

Despite the limited parts in the No 5 Meccano set, a good overall likeness of the old Dennis Fire Engine has been achieved together with the following details. A removable cantilever ladder with a full set of rungs, positive steering through quite a wide angle, rear turbo fire pump with hydrant coupling unit and control valve, foot pedals in clutch and brake positions, fire bell, head and side lamps, wing mirror, and an engine block complete with cooling fan and exhaust pipe.

CHASSIS

Figs 1 and 2 show most of the details just mentioned. The first step in the construction is to make up the chassis from the two Sector Plates and the large Flanged Plate. Bolt the rear Sector Plate under the back row of holes in the Flanged Plate but sandwich a 2½" Double Angle Strip between the Plates with its lugs pointing downwards.

Now add two more 2½" D A Strips which, in turn, sandwich two 5½"x2½" Flexible Plates against the underside of the 5½"x2½"Flanged Plate (See Fig 4).

At this stage, only one Nut & Bolt should be used to hold each D A Strip, as the outer Bolts will be inserted when the mudguards are attached.

At the front, set the second Sector Plate three holes under the Flanged Plate where it will also trap the 5½"x2½"Flexible Plates, and the general form should appear as shown in Fig 4. Note that the Flexible Plates protrude by one row of holes forward of the end of the Flanged Plate, and this is clearly seen in Fig 7.

Continue the construction by bolting a 'U'-shaped 2½"x2½"Plate together with a 2½"Strip and a 2½"□Flexible Plate to the pump platform at the rear as shown in Fig 3. The inner end of the 2½" □Plate is bolted to the Sector Plate by a 2½"D A Strip, this time with the lugs pointing upwards.

Attach a pair of vertical 5½"Strips to these lugs, allowing one hole clear below, and then bolt on Semi-circular Plates to the lower end of the Strips to act as rear axle journals. The forward ends of the Semi-Circular Plates go to the D A Strip already in position (see Fig 4).

TANK

Sides for the emergency water tank forming the main part of the Fire Engine body are made from 4½"x2½"Flexible Plates, but each one is extended to the rear by lapping a 2½"x1½"Flexible Plate two holes in, and bolting through on the vertical 5½"Strips. A second pair of 5½" Strips support the side plates seven holes along, and these Strips touch the bottom of the Flanged Plate. All four Strips make the ladder supports and, as the forward pair stand one hole higher than the rear, a suitable slope for the ladder in its stowed position is thus achieved. No attempt should be made to bend the 5½"Strips at this stage.

A top for the water tank is supplied by a 4½"x2½"Flat Plate bolted to one 2½" D A Strip which is attached to the front ladder supports just behind the driver's seat. Its position is clear from Figs 2

and 3, and it can be hinged upwards while the pump and mounting are attached to the rear of the Fire Engine.

Take the 2½"x1½"Flanged Plate and bolt it between the side plates of the body as shown in Fig 3. To make up for the slightly narrow overall width of this small Flanged Plate, single spacing Washers are used between the flange and the side plates on all four bolt shanks.

An economy of Nuts and Bolts has to be observed if the model is to be kept within the confines of the No5 Set, and only one Bolt is used to secure the 2" Pulley to the small Flanged Plate where it also traps a 2½"Curved Strip in place.

Mount a Multi-Purpose Gear on a 1" Rod and secure this in the boss of the 2" Pulley to form the turbo pump.

Use a ¾"Bolt to secure the ½"Pulley with Boss to the upper left hand hole of the small Flanged Plate, placing a Spring Clip behind the Pulley as a stand-off spacer. The two lower Bolts holding the 2½"x1½"Flanged Plate also hold ½" Reversed Angle Brackets acting as hose and tackle rests at the sides of the Fire Engine. Two Set Screws are fixed in the ½"Pulley boss to simulate the hydrant hose union.

Now hinge down the cover plates of the water tank and fit a 2½"Strip across its rear end, with an Obtuse Angle Bracket at the left hand end of the Strip. Attach a square-headed white plastic carton-stud (taken from the outfit carton), to the Obtuse Angle Bracket with two Nuts to form the control valve. Standard Meccano Nuts will quite happily thread on to the shank of these plastic studs. All the construction just mentioned is clearly shown in Fig 3.

THE REAR MUDGUARDS

Rear mudguards may now be fitted, and these are formed from a pair of 5½"x1½" Flexible Plates. In the model illustrated, the first ½" of the Plates was set between a pair of Angle Girders so that a sharp right angle bend could be set on the end which is then trapped underneath the rear end of the 5½"x2½"Flexible Plates already forming the chassis floor.

The D A Strips below then receive their second Nuts & Bolts to hold the forward end of the rear mudguards in place.

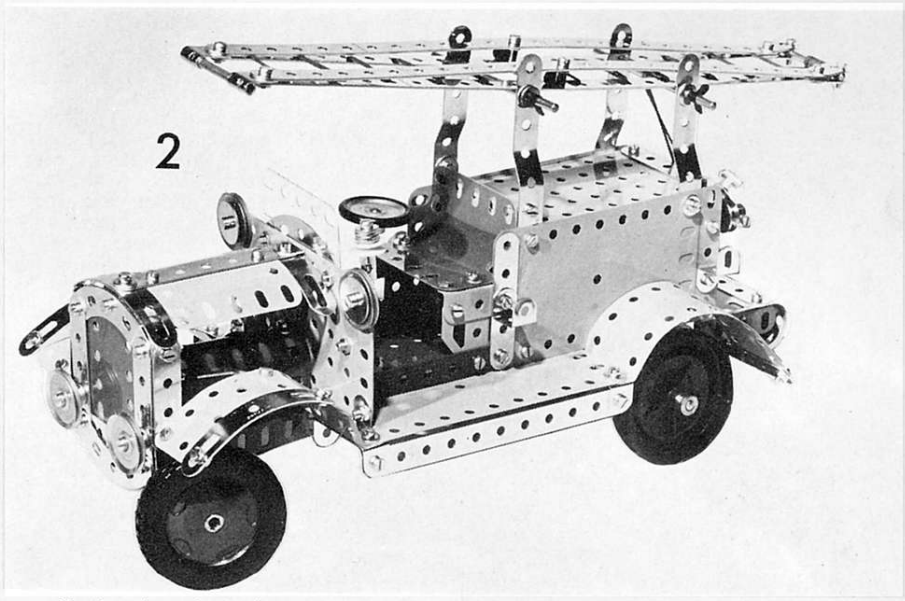
Experienced constructors retain Flexible Plates, in which they have set bends, for use in other models but, for the younger modeller who does not wish to make sharp bends in Flexible Plates, the forwards ends of the rear mudguards may simply be pushed just below the rear edge of 5½"x2½"Flexible Plates and attached thereto by ordinary ½"Brackets.

A smooth and gentle curve is set into the 5½"x1½"Flexible Plates to complete the contours of the rear mudguards, the tail ends of which are sandwiched by a pair of 5½"Strips holding an Obtuse Angle Bracket in their centre which is, in turn, bolted to the centre edge of the underpart of the 'U'-shaped Flexible Plate. Figs 3 and 4 make the construction quite clear.

THE 'CAB'

A pair of Flat Trunnions make vertical supports for the driver's seat, and Bent Trunnions form the ends of the bench as seen in Fig 6. One Transparent and one Blue 2½"□Plastic Plate form the 'upholstery' of the bench seat, being fixed with two Nuts & Bolts only, their rearwards and upper curvature giving a rigid form to the seat.

On the leading edges of the water tank side plates, 2½"Strips add reinforcement and support for the rear holes of the Bent Trunnions, at the same time holding ½" x ½"Double Brackets as the forward hose and tackle supports.



Further view of complete model showing steering lock and fittings around the bonnet

Fig 6 shows some of the details in the driving compartment where the dashboard bulkhead is the second 4½"x 2½"Flat Plate bolted centrally to the forward flange of the large Flanged Plate with one Bolt at the right, and located at the left by the Crank Handle forming the exhaust pipe as it passes rearwards from the engine compartment.

A 3½"Strip is mounted as shown by Obtuse Angle Brackets to form the foot pedal board, and two more plastic carton-studs do duty as clutch and foot brake pedal, each being stood off with a Spring Clip as spacer, and locked from below by a single Nut.

A transparent Plastic 2½"x1½"Plate forms the wind shield, and is supported by the overlaid 2½"Curved Strip. ¾" Washers and 9.5mm Bolts hold 1"Loose Pulleys to the corners of the bulkhead as side lamps, one Fishplate being used as a driving mirror on the offside.

Various illustrations show firebell, a ½" Plastic Pulley with three Washers mounted on a ¾"Bolt passing into a Rod & Strip Connector on the nearside corner of the bulkhead.

THE STEERING GEAR

Steering gear can now be given attention, a Bush Wheel being bolted to the last 2½" D A Strip. The second Bush Wheel is bolted to the upper side of the front Sector Plate with its centre three holes back from the front edge. It should be noted that the Meccano Bush Wheel will not bed down flat on a Plate etc, because of the ridge on its boss. Advanced constructors use Meccano Electrical thin Brass Washers [Part 561] to pack out this difference, but younger modellers can do the same thing by making paper washers to take up the slight gaps (about postcard thickness will do).

By studying Fig 7, the position of the Bush Wheel can be clearly seen, and at the same time as this is fixed, the 1"x½" Double Bracket is mounted under the leading edge of the Sector Plate as shown. This will form part of the bonnet mounting.

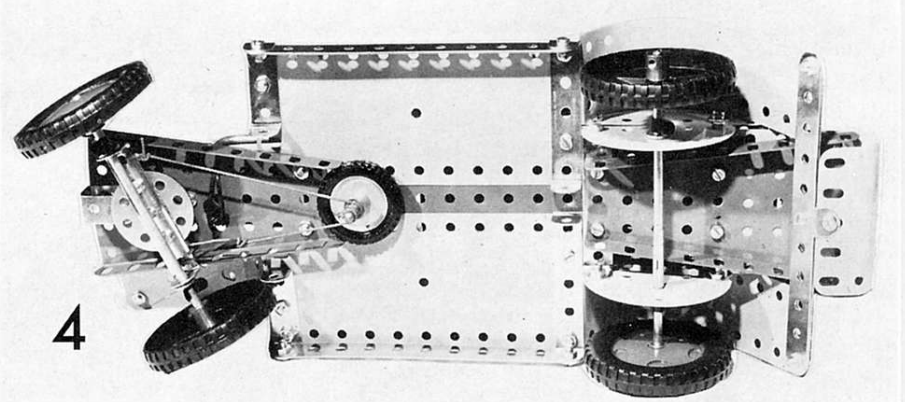
Fix a 1½"Rod into the lower Bush Wheel carrying the D A Strip, add a Spring Clip as a spacer, and then a Washer, and pass the Rod up through the Bush Wheel on the Sector Plate and put on a Spring Clip to hold the Rod in the right position for a free (but not sloppy) swivel.

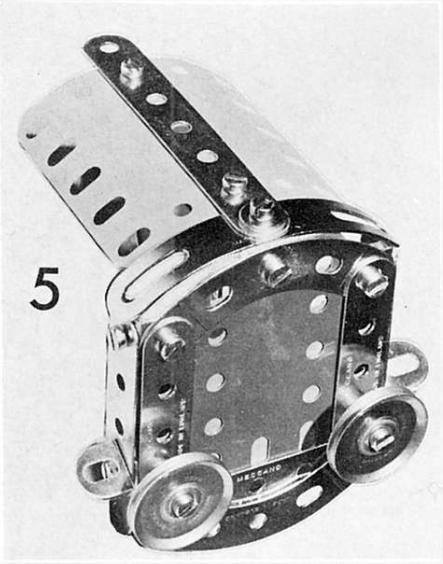
THE ENGINE

Now the 'engine block' can be made from one 2½"□, and one 1½"x2½"Blue Plastic Plate curved gently into a 'U' shape as shown in Fig 7 and then laced with a short length of Meccano Cord to retain its shape. The second Plastic Gear Wheel is attached to the top hole front of the 'block' by a Bolt and Washer, screwing directly into the tapped hole of the boss.

Now tuck the loop of a Spring Clip through the second slotted hole of the plastic plate close up to the 'fan', slide the cranked portion of the Crank Handle firmly into the Spring Clip. Take the 6" Driving Band and pass it round the 'block', through the Sector Plate holes →

Underside view of the model with front mudguards and bonnet removed.





Above, bonnet and radiator sub-assembly. Below, details of driver's compartment (top) and close-up of simulated engine (bottom)

as shown, and secure it below by looping its ends through and over the bow of a Spring Clip.

THE BONNET

Fig 5 shows the full details of the bonnet, which is made up as a separate sub-assembly. The radiator is backed by a 2½"□Flexible Plate which sandwiches a 2½"x1½"Blue Plastic Plate against the upper 2½"Curved Strip and the 2½" straight Strip at the bottom.

Headlamps consisting of 1"fixed Pulleys are bolted on by ½"Bolts two holes up the side 2½"Strips, and are backed by ½"Angle Brackets. Two more ½"Angle Brackets are fixed outside at the same level as attachment points for the front mudguards.

A 2½"□Curved Plate forms the bonnet and is held in place by a 3½"Strip attached to a ½"Angle Bracket at the top of the radiator, a Formed Slotted Strip being secured by the same Bolt as shown. Fig 1 shows how the bonnet is secured to the driving compartment bulkhead by a ½"Bracket set over the top of the 3½" Strip, and a second Formed Slotted Strip.

Finally the radiator is secured to the 1"x½"Double Bracket under the Sector Plate by a Bolt passing through the centre hole of the 2½"Strip running across the bottom of the radiator just behind the lower Curved Strip.

THE FRONT MUDGUARDS

To make two front mudguards, two 2½"x1½"Flexible Plates are given a right-angle bend and bolted under the leading edges of the chassis floor. The underview of Fig 4 shows two 1½"D A Strips bolted on below, and these support the bent rear edge of the mudguards. Again, if constructors do not wish to bend their Flexible Plates so sharply, the rear ends may be passed below the chassis floor level and secured by Angle Brackets or 1½"Angle Girders.

To complete the curvature of the front mudguards, 2½"x1½"Trianglular Flexible Plates are lapped on each other to form rectangular extensions, and are reinforced by Formed Slotted Strips set slightly forward to give the 'period' look to the mudguards.

WHEELS AND STEERING

Wheels and steering may now be fitted. For the rear axle, a 4½"Rod is extended by a 2"Rod as shown in the underneath view of Fig 4, and the wheel faces are reversed to give the 'veteran' look. Washers and Spring Clips set the wheels to a suitable spacing.

Another 4"Rod forms the front axle, spacing again being set by Washers and Spring Clips.

A 3½"Rod forms the steering column, topped by a 1"fixed Pulley with Flexible Ring. Double Spring Clips and a Washer locate the column above the large Flanged Plate in the centre line three holes back. Underneath the chassis, a 1" fixed Pulley with Motor Tyre makes a perfectly satisfactory lower bearing for the steering column, being left to lie snugly against the chassis floor with no real fixing other than the Washer and Cord Anchoring Spring seen in Fig 4.

A short length of Meccano Cord is tied to one outer hole of the D A Strip of the steering gear, wrapped three turns round the lower end of the steering column, knotted through the eye of the Spring, and then secured via the 2½"Rubber Driving Band to the other side of the D A Strip. This keeps a permanent tension on the steering cord giving very positive steering.

COMPLETION OF THE CHASSIS

Final strengthening of the chassis is made by bolting the lower corners of the driving compartment bulkhead plate to the rear end of the front mudguards by ½"Angle Brackets, and by adding a 5½"Strip at each side of the Fire Engine to reinforce the 'running boards' at chassis floor level. Extensive use is made of mutual bracing between components, resulting in a very rigidly-constructed model for such a modest outfit.

THE LADDER

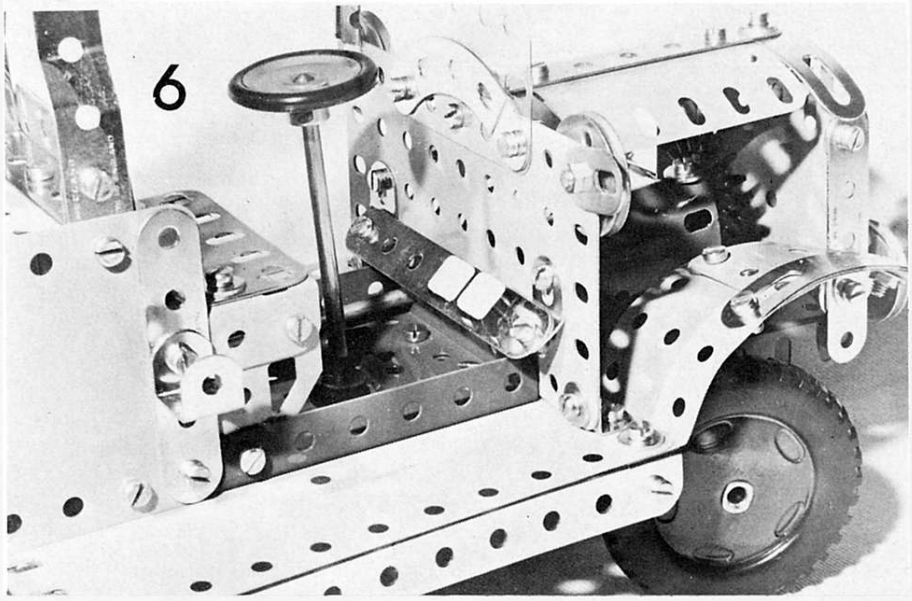
It only remains now to make the ladder, a very simple but neat-looking job, which requires a little patience and very few parts to assemble.

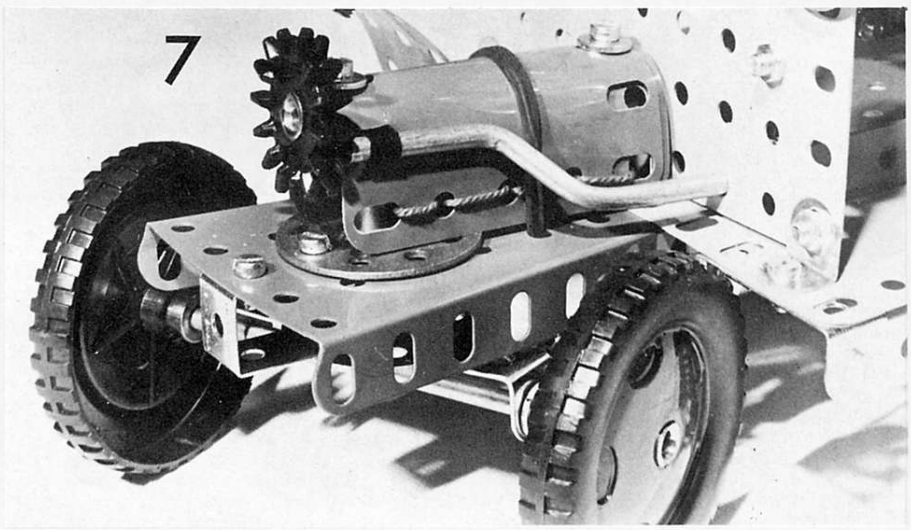
Start by taking a pair of 12½"Strips and the remains of the Hank of Meccano Cord. Lay the strips about 1½" apart, and then — with a doubled loop of Cord — thread the rungs of the ladder through each second pair of holes in the two Strips, taking guidance from Figs 1, 2 and 3.

Now attach a second pair of 12½" Strips, joining them at the top of the ladder by Bolts passing through Right Angle Rod & Strip Connectors sandwiched between the Strips. The loop in the end of the doubled Meccano Cord is trapped under the Strip by one of the Bolts.

Fit a 1½"Axle Rod into the Rod Connectors, making sure that a good grip is maintained (if necessary by squeezing the tubular section with a pair of pliers). If the Connector already has a tightly curved section, use a Bush Wheel on your short Axle Rod to push it into the Connector. It needs to go in only 3 or 4 mm to obtain the correct ladder spacing.

The cantilever effect at the centre of the ladder is achieved by using Spring Clip spacers which simply cling to the shanks of 9.5mm Bolts, clearly shown in Figs 1 and 2. At the lower end of the ladder, standard Nuts & Bolts are used to fix Fishplates by their round holes to the end of the 12½"





Strips, leaving the Nuts slightly slack. A 2" Rod is then trapped between the slotted ends of the Fishplates by 9.5mm Bolts, all Nuts being tightened in sequence.

Before the final tension is put on these nuts, 'square off' the ladder and draw the Cord, rung by rung, from top to bottom of the ladder until all rungs are under equal tension. Then tighten up the end of the Cord under one of the Fishplate pairs and wrap a few turns round the lower Rod as shown in Fig 3, to centralize the Cord on the bottom rung.

At this stage, the modeller has the choice of leaving the 5½"Strips supporting the ladder in an unbent state, although the illustrations in this article show a cranked bend set into them for the sake of appearance. Taking the last two 3½"Rods in the No5 Set, these are placed through the ladder supports and located by Spring Clips and Washers. If the end of the Cord is then knotted, it can be passed over the rear Rod of the ladder supports and over the Plastic Gear on the turbo pump to hold the ladder in its travelling or stowed position. The arrangement should be clear from Fig 3.

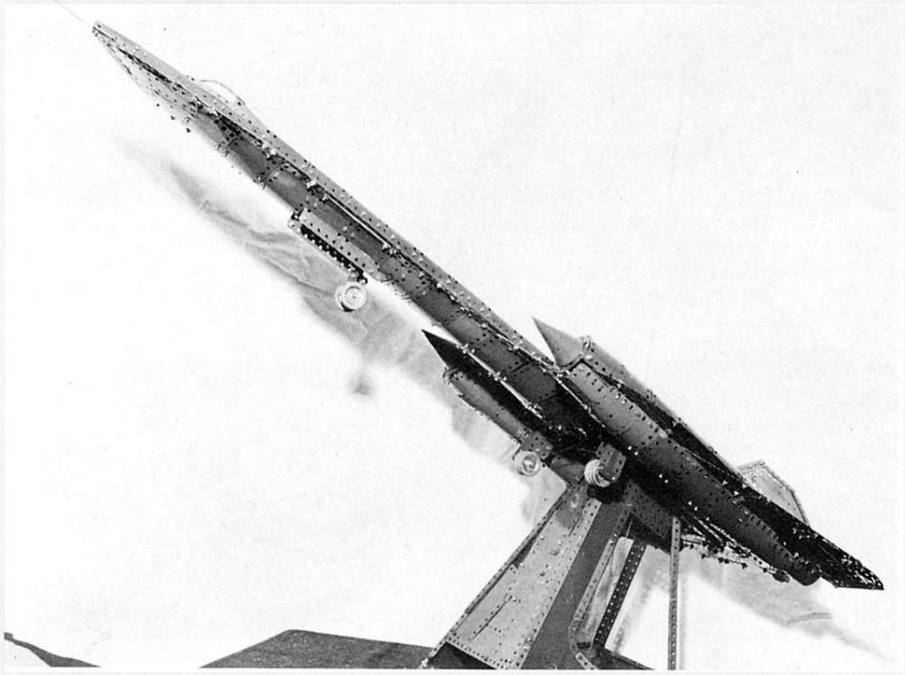
IMPROVEMENTS

Because this model has 'solid' front and rear axles, steering is not as efficient as it might be. If the front axle is replaced with a Rod which is ½" longer, one Road Wheel may be fixed to the Rod and the other left free to revolve on the axle, held in place by Washers and Spring Clips or Collars. This will give an immediate ease to the steering.

Again, if the composite rear axle is replaced by a 6"Rod and one wheel is also left free, steering will be further improved.

Modellers with a few extra parts can fit various fire fighting gear, extinguishers, hydrant hoses in the side brackets etc. There is still a pair of 3"Pulleys left in the No5 Set, and as the Dennis Fire Engine was supplied either as a straight-ladder or wheeled-escape type, this second version might be made from the contents.

Right: the author's SR 71 'Blackbird' mentioned in the text.



THAT NEXT MODEL

by Frank Beadle

There must be few Meccanomen who are at a loss as to what to build next, indeed most of us have several ideas stored at the back of our minds, having seen some mechanism of interest or an appealing Super Model of the past.

In fact, it is more probable that one is usually in a situation of interesting perplexity, in deciding 'which' and not 'what' to build next, from the ideas and thoughts which accumulate from time to time, even when one is engaged in the construction of a particular model and something is seen that will form the basis of a project in the future.

Models however, generally fall into three categories either from their origin or from the particular idea, and these can be grouped as follows:

EXISTING OR PREVIOUS MODELS

Many builders prefer to work from Supermodel Leaflets, or from a feature in the Meccano Magazine, which illustrates or describes, and has construction details together with a list of parts. Whilst not decrying this type of building, there are other approaches to Meccano modelling, yet the Blocksetter Supermodel of 1923, even if followed step by step, still can offer the most interesting problems when dealing with the tolerances of the cab mechanism gearing, or the cording of the working parts in general.

It is not just a matter of assembly in a repetitive, bit by bit fashion, as the 'proof of the pudding' as it were, lies in the final completion and the operation of the model in a sewing machine quietness and efficiency.

If one tackles an Andreas Konkoly model, it is not long before one is beset with the fine clearances and tolerences which that wizard always seems to incorporate. So, working from the existing literature of models built and tried still offers some stimulating thought, and forms an important part of one area of model selection.

FREELANCE EXISTING PROTOTYPES

This type of building falls into the second category of representing actual things in the everyday world, or beyond, such as the 'Star Trek' *USS Enterprise* model, recently featured by Meccano Ltd on the pre-Christmas Television Commercial shown in some parts of England, or an Oil Rig, or perhaps the SR 71 Lockheed *Blackbird*, or a recent modern lorry-mounted crane.

The item is nearly always of topical interest to the general public at exhibitions, and has the added value of letting the public at large know that Meccano is up-to-date and not confined to the 'steam age' model of the past — fascinating as these are with their more exposed framework than the streamlined appearance of things seen in the industrial and scientific world of today.

Anyone who has not tried this type of model, is advised to have a go and experience the thrill of designing at its very best, taxing the dexterity of thought to the utmost in representing some section with such Parts as Flexible Plates, which really come into their own to form the compound curves of some part of a modern piece of machinery.

Many modellers prefer, as I do, to work from makers drawings. Firms are only too glad to supply general layout details or drawings of their products, providing the courtesy of complimentary photographs of the finished achievement are sent to them when the model is completed. Scaling-down from the actual is an interesting job in itself, and can provide much pre-building thought when one has to work out on paper beforehand a scale from which to start. It could be 10mm to a foot, or more common on the Meccano modular system is one hole to 1 foot.

Conversly, the entire structure may be governed by the turntable for the rotating superstructure, or more likely, a particular wheel size, which will be a positive start to the scale of the project.

Freelance interpretation of existing items is certainly an exciting way to approach model building, and is very satisfying in its outcome.

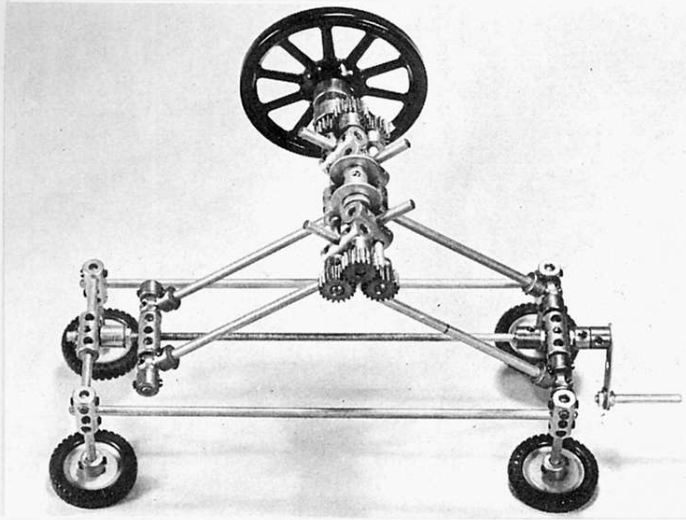
BUILDING FROM AN IDEA

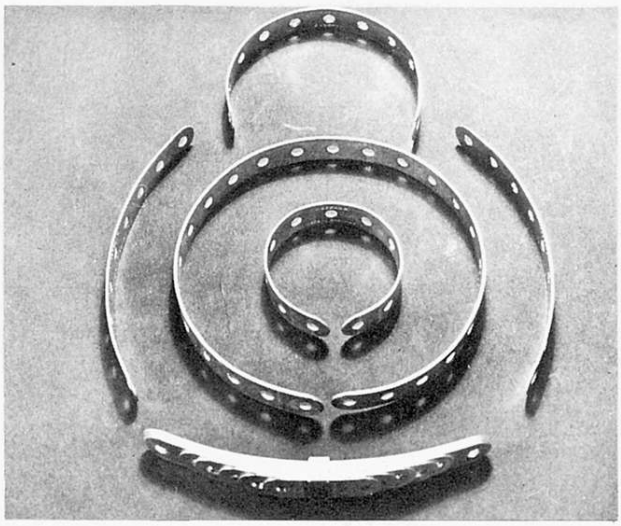
This offers perhaps the most interesting angle of model building, combining freelance — with its complications and trial and error of design — with a complete exploitation of Meccano parts.

Examples such as the Fence-Building-Machine recently built by Bill Roberts, or the French-Knitting Machine, devised last year by Bryan Reay of the North Eastern Meccano Society, offer the intricasies of an 'idea' which is virtually constructed from the 'inside' focal point of the model, to the frame work structure which is designed as the model progresses with no particular idea of eventual appearance.

If one has the patience to delve into the realms of the unknown to solve a particular problem, or be faced with limitations of space, contriving how to arrive at a solution that will bring the desired model to its final conclusion and satisfactory operation, this category of building does offer the ultimate in Meccano Modelling.

There is no doubt that Meccano is as versitile as us; its limitations are only governed by our own limitations, and its areas of design are boundless. Perhaps the three approaches outlined above may spur some of us to branch out into one or other, or better still all three.





STRIP-ROLLING MACHINE

A practical unit designed by "MECCANOMAN"

In Meccano modelling, it is at times required to curve Strips to an even radius. When this is attempted by hand, uneven results stem from the tendency for the Strip to bend in a series of kinks at each hole. It is also very difficult to maintain the curve smoothly to the extreme ends of the Strip.

The Strip Rolling Machine described here has been designed to have its rollers mounted as close as practicable so as to ensure smooth curving of the Strip between its holes. The choice of ½" centres allows all three rollers to be driven together through a chain of ½" Pinions which ensure smooth passage of a Strip through the rollers with the minimum of slip; it will even be found that painted Strips can be curved to quite an extent with minimul damage to the paint. However, in all cases where sharp radii are required, the Strip concerned should be curved in a succession of operations of gradually increasing severity.

The machine is also equally efficient in straightening the Strips after they have fullfilled their function. In addition, mutilated Strips can very often be restored by curving them gently first one way and then the other, thus gradually reducing the damage until straightness is achieved once more.

CONSTRUCTION

THE ROLLERS

Construction is commenced with the top roller assembly which consists of a 3½" Rod with a centrally-mounted Short Coupling, on either side of which are placed, in order: a 3/4"Washer, a 3/8"Washer, two Couplings by their end transverse holes; then a further 3/8" Washer, and finally a ½"Pinion, boss inwards.

The lead-in roller assembly is formed of a further 3½"Rod which passes through the other end transverse bores of the inner pair of Couplings mentioned above. This also carries a centrally-mounted Short Coupling, and ½"Pinions, boss inwards on both ends.

The feed-out roller assembly is a 4" Rod, this time through the end transverse holes of the outer pair of Couplings, with a central Short Coupling as before. On one end is a ½"Pinion, boss inwards, with one spacing Washer. On the other end, the additional ½" length allows the relevant end ½"Pinion to be mounted boss outwards. The boss of this ½"Pinion is then inserted into one recess of a Socket Coupling, whose other recess carries the boss of a Spoked Wheel, which acts as actuating handwheel. *All* tapped holes in both Pinions and Short Couplings are fitted with Grub Screws, those in the Short Couplings must be 3mm [69c] to ensure an unobstructed rolling surface.

THE OPERATING LEVERS

The four operating levers are formed of 3½"Crank Handles, which must be carefully selected to be identical in length, and in the profile of their bends. The use of these Crank Handles ensures that a full range of roller positions can be achieved without fouling the 3½"Rods.

The lower ends of the outer Crank Handles are mounted in the bases of Handrail Couplings whose transverse bores rotate freely on 1½"Rods which form part of the base frame assembly. These Rods are connected by Couplings at their inner ends, and carry vertical Couplings at their outer ends to act as leg supports. Collars are fitted against the inner faces of the Handrail Couplings for location purposes.

THE BASE

The other end of the base frame assembly is similar, but carries no Handrail Couplings or Collars. The sides of the frame are 8"Rods located in the central tranverse bores of the vertical Couplings. The legs themselves are 1½"Axle Rods, which carry 1"Pulleys and Tyres as feet.

ADJUSTMENT

The setting of the roller angle is determined by a special assembly mounted on an 8"Screwed Rod, which consists of a Coupling mounted by its central transverse threaded bore. This has 1"Rods protruding from its ends which carry the eyes of two Handrail Couplings, which in turn are retained by Collars. These Handrail Couplings are of course mounted on the lower ends of the inner pair of Crank Handles. Turning of the 8" Screwed Rod thus allows a fine adjustment of the roller angles. This Threaded Rod carries a lock-nutted Adaptor for Screwed Rod whose pin turns freely in the central transverse bore of the horizontal Coupling at one end of the base.

At the other end of the base, the Screwed Rod itself turns in the equivalent bore of the Coupling at that end. The operating handle is a Threaded Crank fitted with a long Threaded Pin as shown, and is lock-nutted to the end of the Screwed Rod. Endplay is controlled to close limits with a Threaded Boss, which is also locknutted.

A few examples of work done by the machine are shown. It will be seen that various lengths of Strips can readily be rolled into complete circles. The laminated spring, produced with the aid of the machine, is interesting, as it seems to have acquired additional resilience in the process; it will return to the camber shown even after being deflected until 'flat'. In passing, I should mention that its buckle is a Short Circuit Piece [Electrical Part 554]; the various leaves are kept in alignment by a long Grub Screw through the centre holes of the leaves, which is retained in place by the buckle.

PARTS REQUIRED

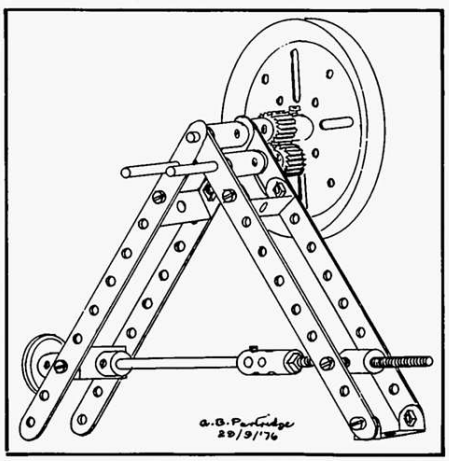
2 — 13a	6 — 26	1 — 64
1 — 15b	3 — 37c	1 — 69c
2 — 16	5 — 38	1 — 79
8 — 18a	2 — 38d	1 — 115a
2 — 18b	4 — 59	4 — 136a
1 — 19a	1 — 62a	4 — 142c
4 — 19s	11 — 63	1 — 171
4 — 22	3 — 63d	1 — 173a

AN 'ECONOMY VERSION'

by ALAN PARTRIDGE

This device is closely based on the foregoing machine which I have found so useful. My version contains the minimum of expensive brass parts, but is not so robust as 'Meccanoman"s.

The construction should be clear from the diagram after reading the description of the 'Rolls-Royce' version.



AMONG THE MODEL-BUILDERS

with 'Spanner'

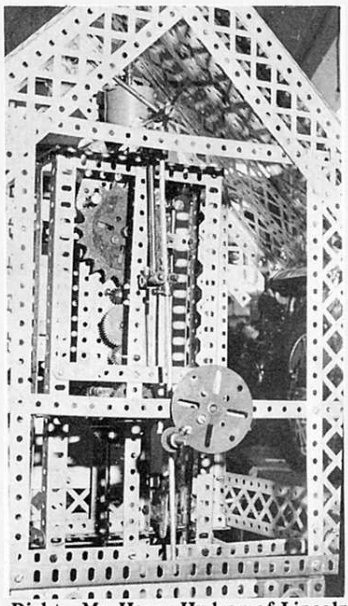
ADJUSTABLE DIGGER ARM

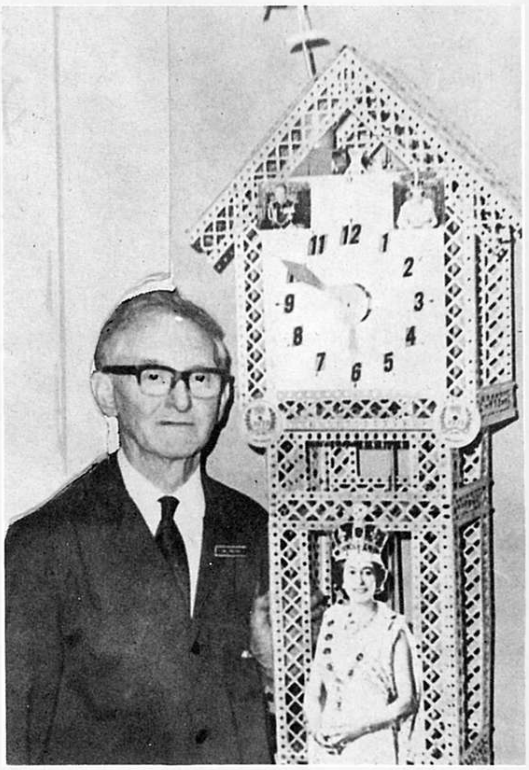
Mr. D. Penney of New Whittington, Chesterfield, recently supplied details of an Adjustable Digger Arm (see enclosed diagrams), accompanied by a very short note asking simply "Is this the material that the magazine is looking for?" I am now delighted to reply to this in the most positive way – by using the material! (I think this indicates that the answer to Mr. Penney's question is "Yes"!)

"The centre pillar for the adjustable arm", writes Mr. Penney, "is made from four 12½" Angle Girders bolted together to form a square section. Two 1½" x 1½" Flat Plates 74 are fastened around the Girders by three 1" Screwed Rods held by Nuts, the Nuts being adjusted so that the Plates slide up and down the Angle Girders. Two Cranks 62 are fastened to the Plates by the top Screwed Rod (fig A) and an Axle Rod 16b is passed through the Cranks to form a pivot for the arm.

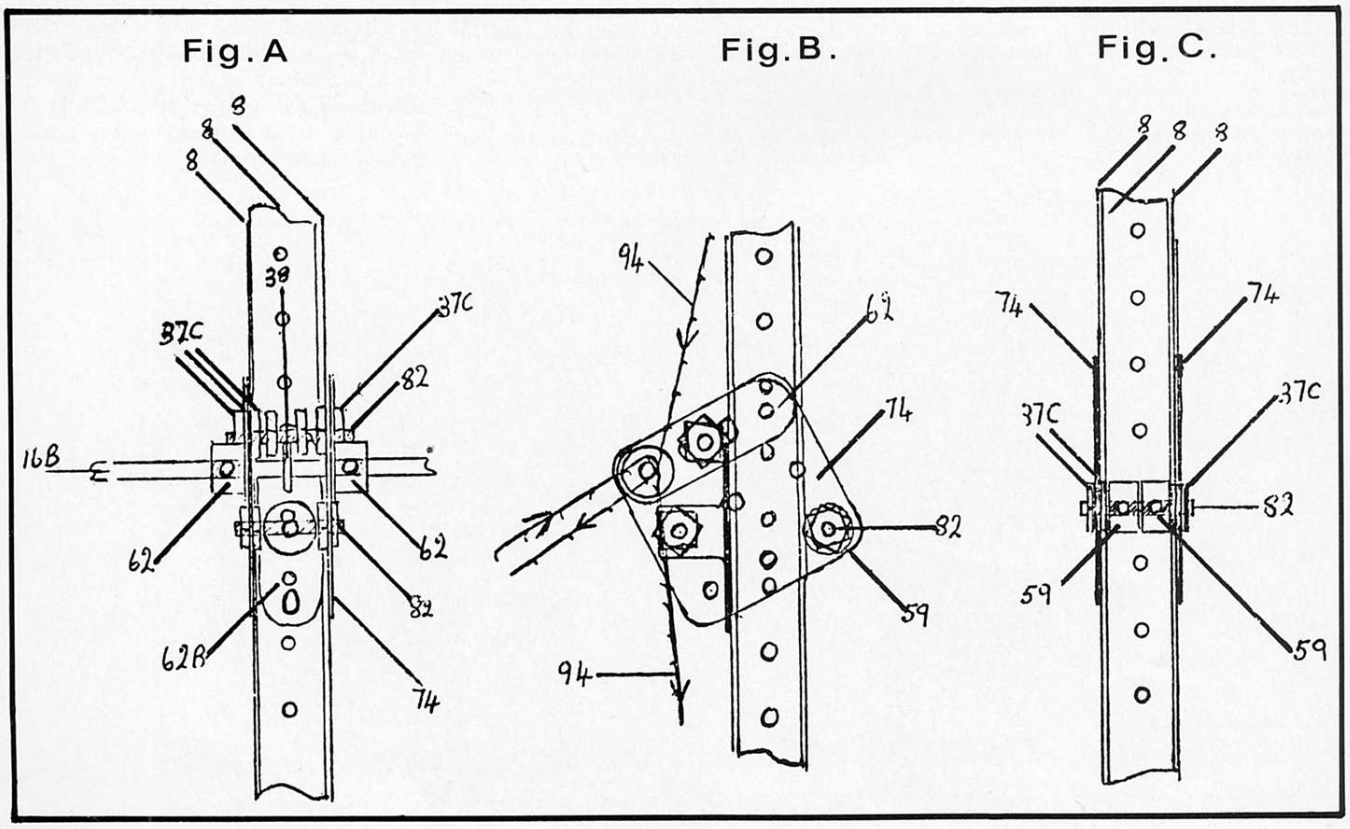
Screwed onto the lower Screwed Rod in fig A is a Double Arm Crank which is held in place between Plates 74 by four Nuts. The upper end of the Double Arm Crank is trapped against one Angle Girder 6 by two Nuts on upper Screwed Rod 82 in fig A.

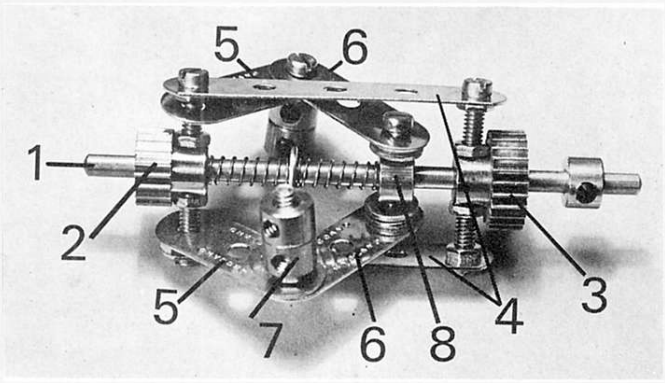
It will be seen from figs B and C that the Screwed Rod carries two Collars 59 which are free on the Rod and which run up and down on Girder 6 as a support roller for the front of the arm. The movement of the arm is operated





Right - Mr. Henry Hudson of Lincoln pictured with the "Silver Jubilee" Grandfather Clock which he built last year. Above, a rear view of the Clock showing the cycle sprocket escapement wheel. Below, sketches showing the Adjustable Digger Arm described on this page.





Pictured left is a simple, yet functional Two-speed Automatic Gearbox designed by 14 year old Jonathan Wynn of Caerleon, Newport, Gwent. Note that Pinions 2 and 3 are loose on their support Rod, while Collar 8 is fixed on the Rod. Note also that the 1½" strips in the centrifuge assembly should pivot freely.

by Sprocket Chain 94 which is passed under andover Rod 16b and is kept apart by a Washer 38. The Chain is then anchored at the top and bottom of the arm, and so forms a loop round one of two ¾" Sprockets fastened into a Socket Coupling (not shown). This Socket Coupling would be mounted, free to turn, on an Axle Rod forming the bearing for the lower end of a suitable jib. Chain drive from the parent model's gearbox would be taken to the second Sprocket Wheel in the Socket Coupling."

PARTS REQUIRED			
4 – 8	1 – 38	2 – 62	2 – 74
1 – 16b	2 – 59	1 – 62b	3 – 82
14 – 37c			1 – 94

FIFTY-FOUR AND GOING STRONG!

Make no mistake, this title does not refer to Mr. Henry Hudson's age (he is in fact a young sixty-four!) It refers to the neat and efficient Grandfather Clock featured in the accompanying illustrations. The Clock was built by Mr. Hudson last year in honour of the Queen's Jubilee, yet the particularly interesting thing about it is that, although built for the Jubilee, it is made from parts that are as old as the Queen herself!

In fact, Henry bought his vintage Meccano Set in 1923 and, since that date, he has made scores of different working models. The Jubilee last year gave him an incentive to make the Clock and, having made it, he presented it to his employers, a well-known cycle retailer in Lincoln City. The Company decided to put the Clock on display in the High Street and, as a result, Henry Hudson and his Clock have appeared on television, radio and in numerous newspapers, both local and national.

A modest man, Henry does not have much to say about the success he has achieved in modelling. However, he did explain to Ray Drury, a Lincolnshire journalist, how the Clock was made up. A 14 lb weight drives the Clock for 18½ hours. The pendulum is 5 feet 6 inches long and the only non-Meccano part used is the escapement wheel which is a 20-teeth cycle sprocket and this is understandable as Henry is the Manager of the Cycle Department of his employers' shop! Overall height of the Clock is 6 feet 4 inches.

I am indebted to Ray Drury for providing me with the above information and accompanying photographs.

AUTOMATIC GEARBOX

For our next offering I am indebted to Jonathan Wynn of Newport, Gwent. Jonathan is the designer of the Compact Two-Speed Automatic Gearbox featured here and he is to be congratulated on an efficient little unit.

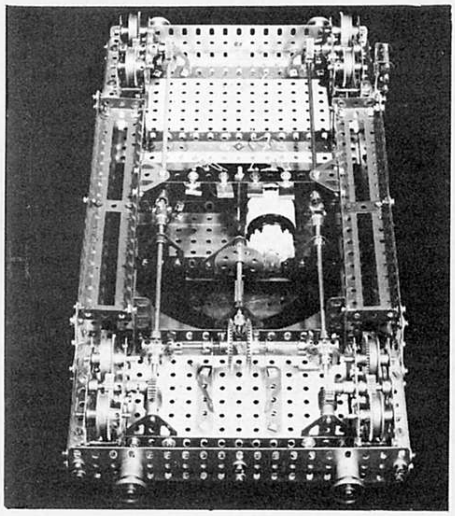
Carried in a suitable mounting, dependent upon the parent model, the unit consists of a centrifugally-operated sliding shaft 1 carrying a ½" Pinion 2 and a ¾" Pinion 3, spaced as shown but connected together by 2½" Strips and carried on ½" Bolts fixed in the bosses of the Pinions. Mounted loose on the Bolts fixed in the boss of Pinion 2 are two 1½" Strips 5 which are pivotally connected to two more 1½" Strips 6, using ¾" Bolts on each of which two Collars 7 are secured to serve as centrifuge weights. The ends of Strips 6 are pivotally attached to a Collar 8, being spaced from the Collar by two Washers on the shank of each securing Bolt. Two Compression Springs mounted on the shaft return the Gearbox to the lower ratio when the speed falls below the critical point. In operation, of course, Pinions 2 and 3 would engage with appropriate Gear Wheels mounted in appropriate positions.

PARTS REQUIRED			
2 – 5	1 – 25	2 – 37b	2 – 111
6 – 6a	1 – 26	6 – 38	4 – 111a
1 – 15b	10 – 37a	6 – 59	2 – 120b

GRABBING CRANE

Finally this month I draw your attention to the outstanding Grabbing Crane illustrated here. It was designed and built by long-time enthusiast Hans Hoch of Winterthur, Switzerland, and I think you will agree that, on its high-level platform, it makes a magnificent display piece.

Unfortunately, I am not able to give much information on the model as Hans has supplied only a few very general details, but it is based on a real life original which is described as a Greiferdrehkran 15t x 17.50m. The model performs all the movements of the original – hoisting, grab-opening, slewing and travelling – with each movement powered by its own motor: the Meccano Power Drive Unit. As can be seen, it is built mainly from Meccano parts, although Hans does admit that he used one or two competitors' parts in the base frame roller bearing. Still, nobody's perfect!



Below - two views of an excellent display piece in the shape of a large Grabbing Crane designed and built by Mr. Hans Hock of Winterthur, Switzerland. Above, an underside view of the travelling crane platform