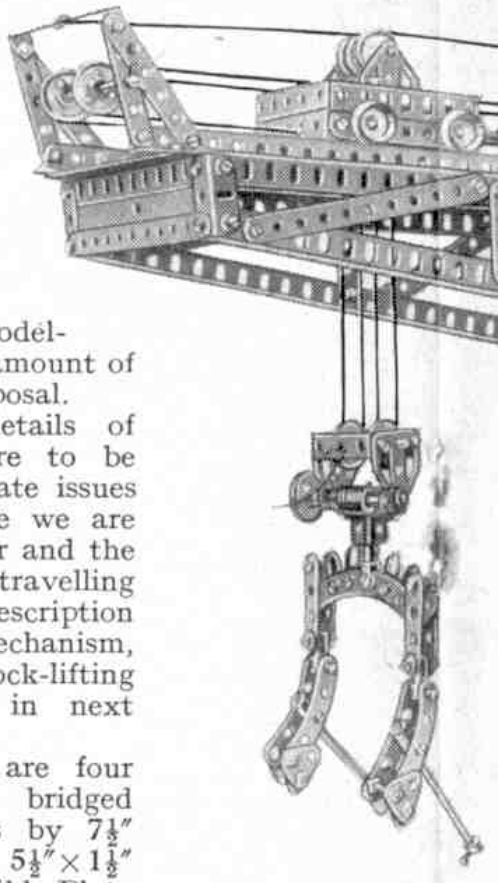
Meccano Special Model

Harbour-Building Crane



ON almost every coast line it is possible to find a few natural harbours. In olden times these were sufficient for sheltering the small ships of those days, but as times changed and ships became both larger and more numerous, it became increasingly necessary to provide many more harbours by artificial means, and for this purpose very strong breakwaters had to be constructed. Usually these great breakwaters are built up from huge blocks of concrete and granite, each weighing anything up to 50 tons or more, and giant cranes of a special type are necessary to handle these blocks and place them in position. They are known as block-setting cranes, and some of them are among the largest cranes in existence.

The splendid model shown in Fig. 1 on these pages is designed to represent one of these huge cranes. It incorporates all essential movements and will be found a really absorbing subject for any model-builder with a fair amount of Meccano at his disposal.

Constructional details of this fine model are to be given in two separate issues of the *M.M.* Here we are describing the tower and the boom with its travelling bogie, and a full description of the operating mechanism, and the special block-lifting gear, will appear in next month's *M.M.*

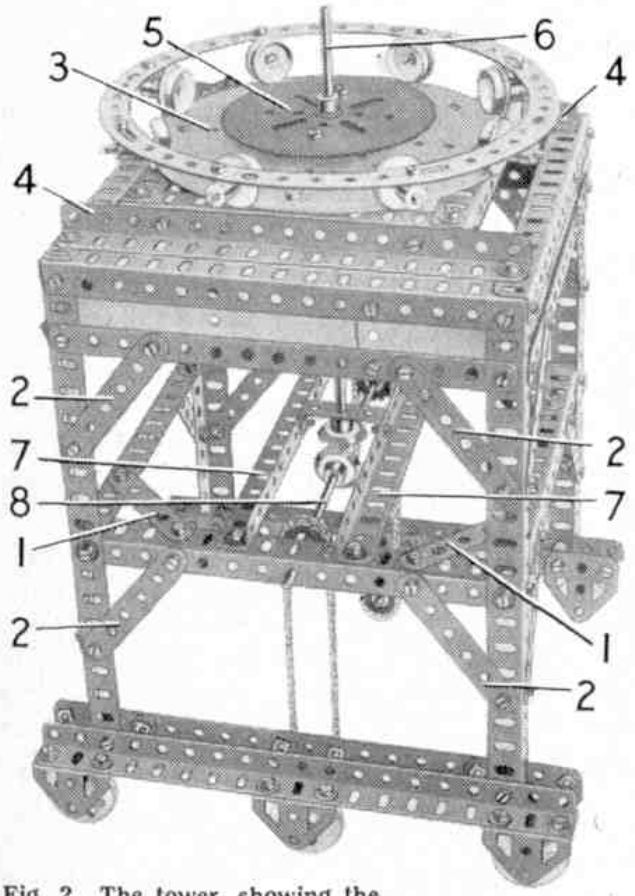


Fig. 2. The tower, showing the drive to the travelling wheels, and the roller bearing.

The tower legs are four $9\frac{1}{2}''$ Angle Girders bridged at the upper ends by $7\frac{1}{2}''$ Angle Girders. A $5\frac{1}{2}'' \times 1\frac{1}{2}''$ and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate are bolted to each $7\frac{1}{2}''$ Angle Girder, and are edged by $7\frac{1}{2}''$ Strips. The legs are connected halfway up the tower by four $7\frac{1}{2}''$ Angle Girders. The $2\frac{1}{2}''$ Strips 1 and 3″ Strips 2 make the assembly rigid.

The lower track of the roller bearing for the boom is a 6″ Circular Plate 3. It is fixed to a square made from four $5\frac{1}{2}''$ Angle Girders, and is bolted to two $7\frac{1}{2}''$ Angle Girders 4 fixed across the top of the tower. The rollers are eight $\frac{3}{4}''$ Flanged Wheels, each free to turn on a $\frac{3}{4}''$ Bolt fixed in a Collar. The Collars are fixed by bolts to a Circular Strip, but each is spaced from it by a nut.

A Wheel Disc is bolted at the centre of the Circular Plate 3, and a $3\frac{1}{2}''$ Gear 5 is attached to the Plate by $\frac{3}{4}''$ Bolts. Rod 6 (8″) is free to turn in the Gear 5 and in the Wheel Disc, and is mounted at its lower end in a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip bolted between $7\frac{1}{2}''$ Angle Girders 7. A $\frac{7}{8}''$ Bevel on Rod 6 meshes with a similar Bevel on 8″ Rod 8. Rods 6 and 8 are held in position by Collars. Rod 8 carries two $\frac{3}{4}''$ Sprockets.

Bearings for the travelling wheels are made by bolting $9\frac{1}{2}''$ Angle Girders to the lower ends of the tower legs, and by attaching $9\frac{1}{2}''$ Strips to $1'' \times \frac{1}{2}''$ Angle Brackets fixed to the legs. Three Trunnions are bolted to each $9\frac{1}{2}''$ Angle Girder, and three Flat Trunnions are connected to

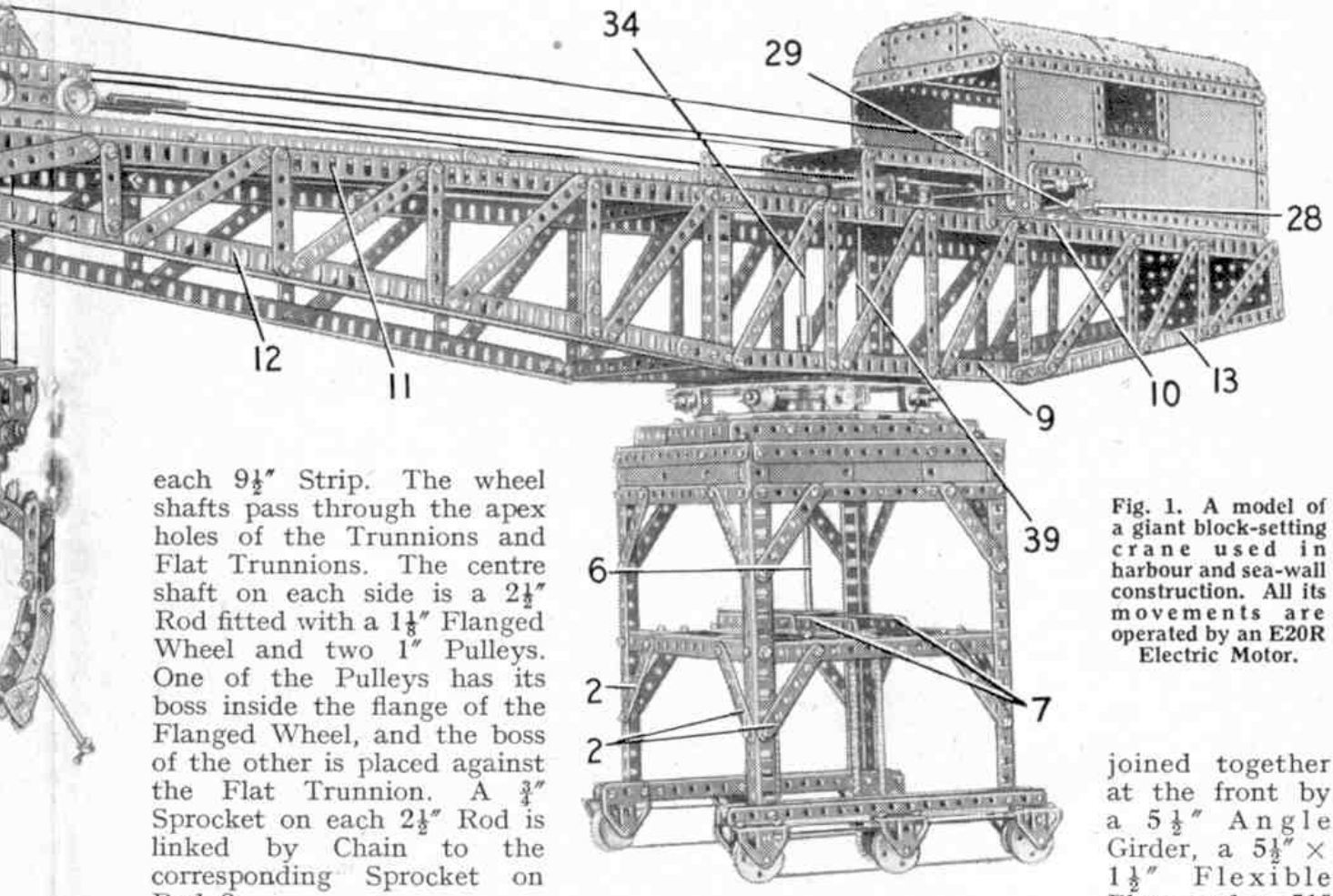


Fig. 1. A model of a giant block-setting crane used in harbour and sea-wall construction. All its movements are operated by an E20R Electric Motor.

each 9½″ Strip. The wheel shafts pass through the apex holes of the Trunnions and Flat Trunnions. The centre shaft on each side is a 2½″ Rod fitted with a 1⅛″ Flanged Wheel and two 1″ Pulleys. One of the Pulleys has its boss inside the flange of the Flanged Wheel, and the boss of the other is placed against the Flat Trunnion. A ¾″ Sprocket on each 2½″ Rod is linked by Chain to the corresponding Sprocket on Rod 8.

The 1″ Pulleys are connected by 10″ Driving Bands to other 1″ Pulleys on 2″ Rods carrying the outer travelling wheels. These Rods are also fitted with 1⅛″ Flanged Wheels.

The boom is mounted on a 6″ Circular Plate that forms the upper track of the main bearing. Its main girders are each made by bolting a 12½″ Angle Girder 9 to the Circular Plate. A 4½″ Angle Girder is attached vertically to each end of the Girder 9 and these support a 24½″ Angle Girder 10 extended by a further 24½″ Angle Girder 11. A 1½″ Angle Girder is fixed to the end of Girder 11, and is connected to a 24½″ Angle Girder 12 linked to Girder 9 by a 2½″ Strip. Angle Girder 10 is connected by a 2½″ Angle Girder to a 12½″ Angle Girder 13, which is bolted to a 2″ Strip fixed at the rear end of Girder 9. The main boom girder is braced by Strips of various sizes.

The boom girders are joined together at the front by a 5½″ Angle Girder, a 5½″ × 1½″ Flexible Plate and a 5½″ Strip, by two 5½″ Angle Girders bolted between the ends of Girders 9, and by a 5½″ × 2½″ Flat Plate and a 5½″ Angle Girder at the rear of the boom. The platform on which the mechanism and cab are mounted is made by bolting five 5½″ × 3½″ Flat Plates across the Angle Girders 10. The rails for the crab or bogie that carries the lifting tackle, are each made from an 18½″ and a 12½″ Angle Girder (*Continued on page 164*)

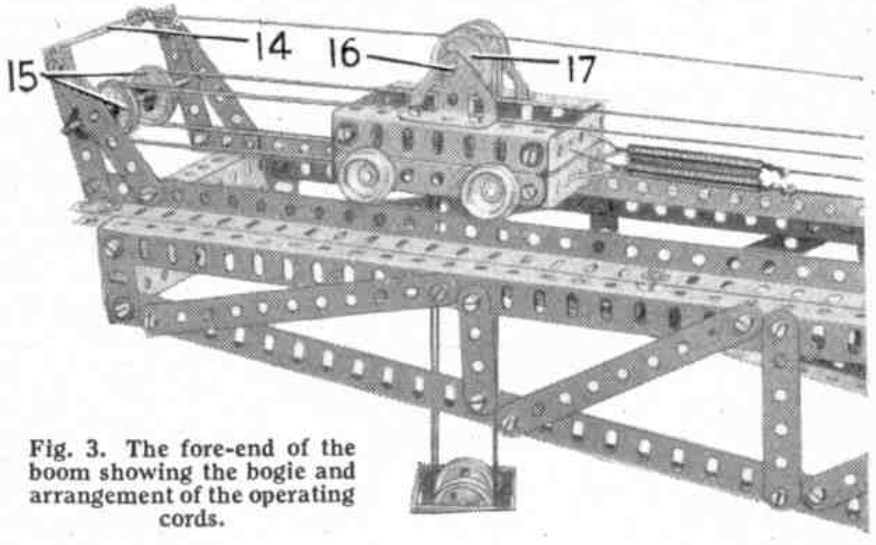


Fig. 3. The fore-end of the boom showing the bogie and arrangement of the operating cords.

Shipbuilding in Belfast—(*Continued from page 132*)

Luftwaffe, and fire and explosion wrought tremendous havoc in all parts. There can be no doubt that the attacks were made with the deliberate intention of obliterating the shipyards and engine works, and thus to neutralise the valuable work that was being done, in both new construction and maintenance and repair, for the Western Approaches and other theatres of war.

Harland and Wolff's can claim the questionable privilege of being the most heavily damaged shipyard in Great Britain during the second world war, but thanks to the industrious labours of its employees, ably supported by several large building contractors, the badly damaged premises have been entirely reconstructed and replaced by the most modern shops and equipment.

The Company played an important role in the shipbuilding effort of the United Kingdom during the second world war, when the Harland and Wolff output was approximately 10 per cent. of the total merchant ship output of the British Isles. It has repeatedly headed the tonnage returns of the world's shipbuilders and to-day, with a full order book, it is playing its part in the fight for national economic recovery. 1952 was the thirteenth year in succession in which more than 100,000 gross tons of shipping was launched by the Company—a noteworthy achievement for the Queen's Island shipyard, which celebrates its centenary this year.

Waterloo to Padstow by A.C.E.—(*Cont. from page 119*)

34023 *Blackmore Vale*, lightly loaded with the four vehicles now left, ran to such good purpose that the five minutes we were late in starting from Central were almost regained. We arrived a minute early at Meldon Junction, but there we were unfortunately delayed four minutes by signals, waiting the 12.45 p.m. Padstow to Okehampton.

Particularly smart work at Halwill, where no less than 1¾ minutes were picked up, saw us "right time" at Camelford, despite having lost 2¾ minutes at Launceston taking water. A two-minute signal delay at St. Kew Highway could not be recovered however, and so we finally came to a stop at the outermost terminus of Padstow two minutes late after a most enjoyable and memorable journey.

Britain's Delta Bomber—(*Continued from page 123*)

One day we might know which is, in fact, the more formidable; but for the time being the R.A.F. could hardly care less. Knowing that all three of Britain's super-bombers, the Valiant, Victor and Vulcan, are better than any others in the world, they have simply ordered all three. The result will be the surest guarantee of that longed-for "peace and goodwill" which was in all our minds the day the Victor made its first take-off.

Meet Tom Hayhow—(*Continued from page 137*)

Service, who sorted out the weather for him and, during his return from Copenhagen, guided him into a veering wind stream which put his ground speed up to 150 m.p.h. instead of the usual 120 m.p.h. He seldom mentions the fact that each flight has cost him about £75, for which his only reward is the satisfaction of having gained one more record for his country.

It seems significant that Tom Hayhow's records have been achieved at the start of this second Elizabethan Era, in which British aircraft rule the skies just as British ships ruled the seas under Elizabeth the First. Tom Hayhow has that traditional spirit of adventure, combined with practical common-sense, that is so badly needed today; and I feel sure that all *M.M.* readers will join with me in wishing "God speed" to this grand sportsman at the start of the racing season in this Coronation Year.

Recovering Derailed Locomotives—

(*Continued from page 138*)

cannot lift it, and other ingenious methods have to be tried in order to recover it. In the worst cases, there may be no alternative but to cut the locomotive to pieces. When a tank engine, No. 30672, disappeared down a lift shaft at Waterloo Station a few years ago, the breakdown gang took the engine to bits below ground.

The age of a locomotive may be such that it is not worth the cost of elaborate recovery operations; for example, when a 53-year old goods engine, No. 43260, plunged into a drainage canal at Shapwick, Somerset, in 1949, it was scrapped on the site.

Perhaps the most remarkable feature of these mishaps was that, in every case, the enginemen escaped with their lives.

Meccano Harbour Blocksetting Crane—

(*Continued from page 141*)

joined by a 1½" Strip, and they are attached by Fishplates to Girders 10 and 11. The 1½" Strip should be placed on the outside face of each of the rails, as otherwise the flanges of the bogie wheels may foul the edges of the Strip as the bogie passes over the join. The rails overhang the front of the boom by one hole, and a gantry made from two 2½" and two 3" Strips connected by a 3½" × ½" Double Angle Strip 14 is bolted to them. A 4" Rod is held in the gantry by Spring Clips, and two 1" loose Pulleys 15 are mounted between Spring Clips on this Rod.

Each side of the bogie consists of two 3½" Angle Girders joined by Fishplates to make a channel section girder, and the sides are connected together by four 2½" × ½" Double Angle Strips. Two 3½" Rods mounted in the lower pair of Angle Girders carry ¾" Flanged Wheels spaced so that they fit the rails. A 2" Rod 16 passes through Trunnions bolted to the carriage, and on it are three 1" loose Pulleys 17 retained between Collars.

(*To be continued next month*)

"THE STRATFORD UPON AVON AND MIDLAND JUNCTION RAILWAY"

By J. M. Dunn (The Oakwood Press. 5/-)

The S.M.J., as the line dealt with in this book was known, operated some of the most unprofitable lines in England, and was never really well known in spite of its efforts to popularise itself as the Shakespeare Route. Its passenger traffic has now ceased, but its western end is likely to see more activity than before as the result of the routing of much heavy goods traffic from the old Great Central line to South Wales by way of Woodford and Broom Junction.

Mr. Dunn tells his story concisely, with a sketch map that make it easy to follow the meanderings of this elusive system, and diagrams and details of its engines, one, surprisingly enough, of the Fairlie double-boiler type.

"THE NORTH STAFFORDSHIRE RAILWAY"

By "Manifold" (J. H. Henstock Ltd. 25/-)

The compact North Staffordshire Railway, based on Stoke, was a busy and efficient line that proudly boasted of never having had a passenger killed in any of its passenger trains. It owned canals and looked after them, and had hotels, two golf courses, a County cricket ground and such unusual equipment as a barge lift, a manual fire engine, two steam buses and a steam roller.

In this book, the joint writings of five authors, all familiar with the line and its territory, trace the history of this unique line from the canal era to the end of its independent existence in 1923, the year of grouping. Illustrations are plentiful, showing engines, trains and other equipment, while there are also a map, gradient profiles and other items.

Meccano Special Model

Harbour-Building Crane

THIS month we continue the constructional details of the fine Meccano harbour-building crane that was illustrated on pages 140 and 141 of the March issue of the *M.M.* Last month we described the construction of the tower and the boom; now we are dealing with the mechanism and the special block-lifting gear, which are shown in the accompanying illustrations.

The power unit and mechanism are assembled as a unit on a platform made by bolting two 3½″×2½″ Flanged Plates between two 12½″ Angle Girders 18 (Fig. 2). The winding shafts are mounted in 5½″×2½″ Flat Plates 19 bolted to the forward ends of the Angle Girders, and an E20R Electric Motor is bolted to the 3½″×2½″ Flanged Plate fixed between the rear ends of the Girders. The Flat Plates 19 are connected by two 3½″×½″ Double Angle Strips.

A ½″ Pinion on the Motor armature shaft engages a 57-tooth Gear on a 3″ Rod 20. This Rod carries a Worm that meshes with a 57-tooth Gear on a 1½″ Rod, which carries also a 1″ Sprocket 21. The bearings for the 1½″ Rod are provided by 2″ Flat Girders bolted to two 2″ Angle Girders arranged in U-shape and fixed to the Motor side-plate.

Sprocket 21 is connected by Chain to a ¾″ Sprocket on a Rod mounted in the Flat Plates 19. The Rod is fitted with a 1½″ Sprocket 22, and with two ½″ Pinions that are arranged with the boss of each placed against one of the Flat Plates. These Pinions are in constant mesh with 57-tooth Gears 23 and 24, and the Gears are loose on the hoisting and bogie-operating shafts respectively.

The hoisting shaft is mounted in the Flat Plates 19, and in addition to the Gear 23 it carries a Collar 25, a 1″ Pulley with a Rubber Ring, a ¾″ Washer, two Bush Wheels, a Collar 26 and a Compression Spring 27. The Compression Spring is fitted between a Collar and the Flat Plate, and normally it holds the 1″ Pulley away from Gear 23. A ⅜″ Bolt in Collar 26 engages a ⅜″ Bolt in the Flat Plate and acts as a brake. The 1″ Pulley can be forced against the Gear 23 by moving a Rod 28. This Rod is fitted with a Coupling between the Flat Plates 19, and two 2½″ Rods held in the Coupling bear against the ¾″ Washer, so that the Rod can be used to press the Pulley against the Gear. The sliding action of Rod 28 also disengages the ⅜″ Bolt in the Collar 26 and thus automatically releases the brake.

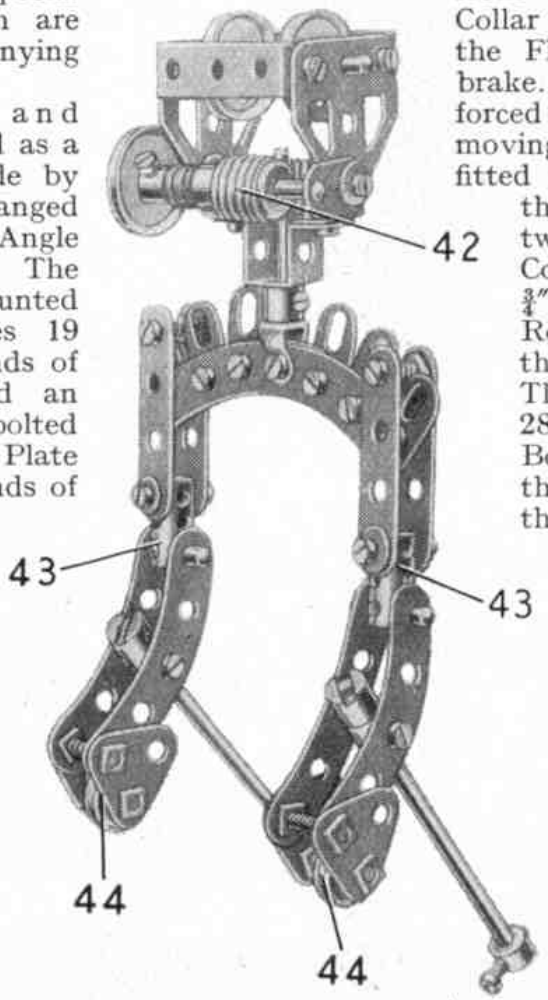


Fig. 1. This special block-lifting tackle is designed to set concrete blocks at an angle, as required in building breakwaters on the inclined bond system.

The drive to the bogie operating shaft is arranged in a similar way, except that the Compression Spring is on the opposite side of the mechanism, and Rod 29 must be pulled instead of pushed to force the 1″ Pulley against its Gear 24. The carriage shaft is fitted with two 1″ Pulleys 30 in place of the Bush Wheels on the hoisting shaft.

Sprocket 22 is connected by Chain to a 1″ Sprocket on a Rod 31, which is fitted with two Worms and is mounted in 1½″ Strips bolted to the Flat Plates 19. The ½″ Pinions 32 and 33 can be slid into mesh with the Worms to drive the slewing and travelling motions.

Pinion 32 is fixed on a Rod mounted in two 1″×1″ Angle Brackets, and a ½″ diameter, ½″ face Pinion on this Rod is in constant mesh with a 1½″ Contrate on a Rod 34. Rod 34 is mounted in a 5½″ Strip 36, and is connected by a

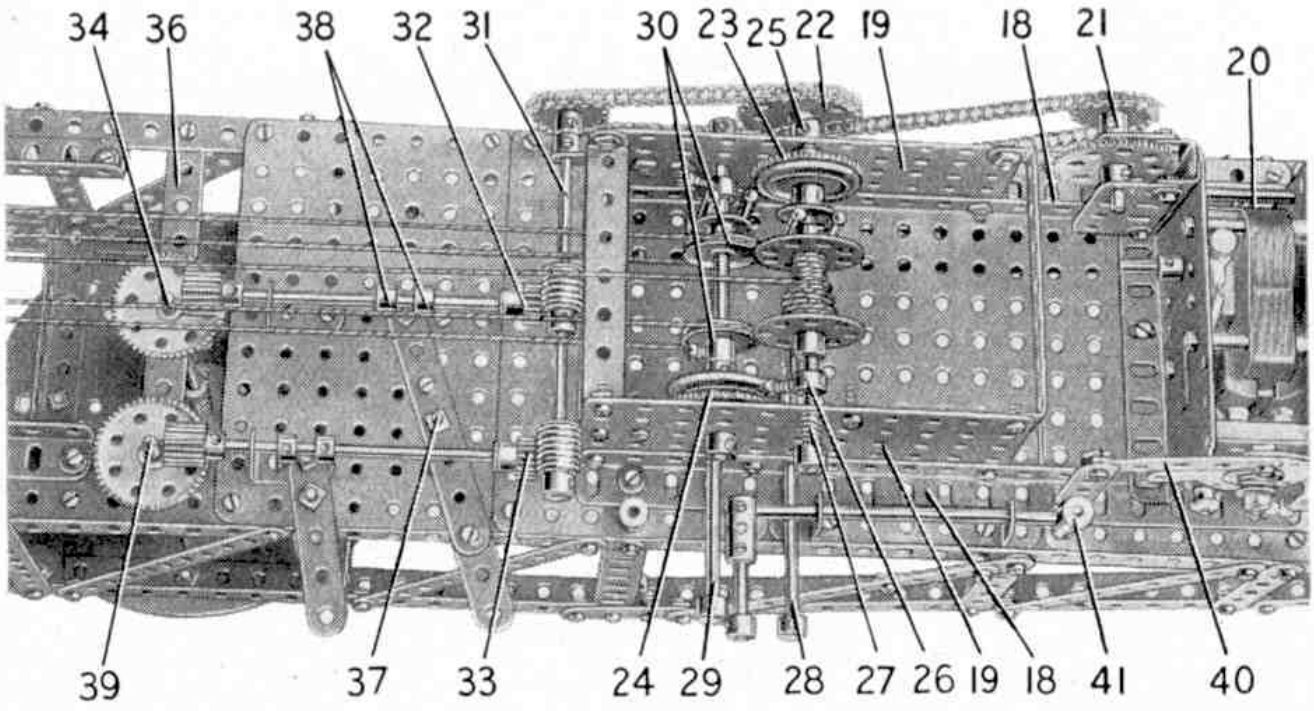


Fig. 2. Arrangement of the Motor and driving mechanism of the Harbour-Building Crane.

Coupling to Rod 6. The sliding movement of Pinion 32 is controlled by a lever made from two 3½″ Strips overlapped five holes. The lever pivots on a ¾″ Bolt 37, and is spaced on the Bolt by Washers so that a bolt placed in the end hole of the lever engages between two Collars 38.

The drive to Rod 39 is similar to that for Rod 34, but the lever is a 2½″ Strip. Rod 39 is 6½″ in length and is mounted in Strip 36 and in the 6″ Circular Plate of the boom. It is fitted at its lower end with a ½″ Pinion that engages with the 3½″ Gear 5.

A 2½″ Strip 40 is lock-nutted to the Motor switch, and is bolted tightly to a 2″ Strip connected to a Coupling 41. This Coupling is fixed on a Rod that is free to slide in a 2½″ × 1″ Double Angle Strip and is fitted with a handle formed by a 1½″ Rod held in a second Coupling.

The carriage is operated by two Cords. Each of these is tied to the front of the carriage, and is passed round one of the Pulleys 15 and one of the Pulleys 30. It is then tied to a Tension Spring, which is stretched slightly and is connected by Cord to the rear of the carriage.

The pulley block consists of two Flat Trunnions connected by three 1½″ × ½″ Double Angle Strips, and it is fitted with a 2″ Rod and two 1″ loose Pulleys held in place by Collars. The hoisting Cord is tied between the Bush Wheels on the hoisting shaft, and is led over one of the Pulleys 17 and one of the Pulleys in the block. It is taken again round one of the Pulleys 17 and the remaining Pulley in the block, then is led over the third Pulley 17 and is tied finally to Double Angle Strip 14.

The block-setting tackle is shown complete in Fig. 1. A Double Bent Strip is bolted to the underside of the pulley block, and a 1½″ Rod mounted in it is fitted with a ½″ Pinion and an End Bearing. A Worm 42 on a 2″ Rod passed through Fishplates engages the Pinion, and two 2½″ Curved Strips overlapped three holes are held in the End Bearing.

The lifting tackle consists of two links, each made in the same way. Two 2″ Strips connected by a ¾″ Bolt are fixed on each side of a Coupling 43, and two 2½″ Curved Strips pivot on a 1″ Rod held in the Coupling. A 1″ Triangular Plate is bolted to each Curved Strip, and a ½″ loose Pulley 44 is mounted on a ¾″ Bolt held by nuts in the Triangular Plates. The lifting bar is a 3½″ Rod fitted with half a Dog Clutch and a Collar, and it is passed through a Collar pivoted on bolts in the centre holes of the Curved Strips.

The model is completed by attaching a simple cab to Rod Sockets fixed to the boom. A gap is arranged in one side of the cab to accommodate the control levers, and a cover plate is placed over the exposed gearing.

Parts required to construct the model Harbour-Building Crane: 3 of No. 1; 3 of No. 1a; 4 of No. 1b; 22 of No. 2; 12 of No. 2a; 12 of No. 3; 22 of No. 4; 32 of No. 5; 13 of No. 6; 11 of No. 6a; 6 of No. 7; 2 of No. 7a; 6 of No. 8; 8 of No. 8a; 12 of No. 8b; 10 of No. 9; 4 of No. 9a; (*Continued on page 222*)

Mobile Cranes at Work—(*Continued from page 177*)

of duties and are a highly efficient engineering job.

The crane seen engaged in grabbing work on our cover, which is a reproduction of a painting by Terence Cuneo, is of the KL44 type. It is engaged on excavation work, for which it is provided with a grab that allows it to lift up earth and other material to be moved. This is readily deposited in lorries for removal by swinging the jib round and operating the mechanism that opens the grab, the movements of which are controlled by the crane operator.

In work of this kind the crane has to move about over rough and broken ground, in conditions often difficult for the movement of a wheeled vehicle. To meet such conditions the KL44 type can be mounted on crawler tracks, as in the crane seen on our cover. The KL66 crane can be mounted similarly.

With a Camera in the Midlands—

(*Continued from page 192*)

more shots on this length, I left after breakfast next morning, my intention being to use up the remainder of the plates at the troughs between Denham and Ruislip, where one again gets a joint G.W. and G.C. line. These troughs were, until comparatively recently, in more or less open country. As they are now at the rear of a new housing estate, I had some considerable difficulty in finding them at all, and after trespassing through the garden of a somewhat irate lady who eventually relented and gave me permission, I was able to get a few shots of G.W.R. Birmingham expresses and of a couple of goods hauled by "Austerity" 2-8-0s.

Having finished all my plates I scrambled back into the garden again across a deep and very slippery ditch and through another very flourishing bed of nettles, tearing my other pair of trousers on a projecting nail. This resulted in the dropping of my camera case into the bed of nettles and therefore I had to plunge my hand and arm into them in order to retrieve it, with a very good chance of slipping back into the ditch!

However, I managed to reach the car in conditions of comparative comfort and had a pleasant run home through Watford.

How Tennis Rackets are Made—

(*Continued from page 203*)

He ends with a touch of machine sand papering, and the racket is then ready for lacquering and polishing.

A perfect surface is necessary for these final operations. A filler is first applied to the wood, and the grain is again smoothed down with a fine abrasive paper. The parts not to be treated are then masked with paper, and lacquer is sprayed on. Next the crescent base is painted by hand, and strip decorations are added and the necessary transfers applied. Then the frame is ready for the final spraying with successive coats of transparent lacquer. This must be perfectly even, so a special electrostatic method of deposition of the lacquer is used. The frame is finally buffed to a high polish.

Stringing is the next stage in the production of a racket. For this selected sheep gut is used, and it is interesting to find that the gut from as many as five to seven sheep is needed to provide the strings for a single racket. The main strings are threaded by hand and tensioned on a machine, and the tension is maintained at every point by ingenious "locking" of the strings. The cross strings are tensioned by a mechanical winch on the stringing machine, which locks them at the correct stress to prevent over tensioning. The whole proceeding takes about half an hour. The thinner strings called "treblings" are threaded by hand across the main strings at the top and bottom of the body.

The string tension for the rackets of Wimbledon or Davis Cup players is often as much as 75 lb., but for the rackets used by the average Club players 50 to 70 lb. is usual.

The strings are finally weather proofed by applying a special varnish by hand. The grip is then wrapped securely round the handle and the end piece is added. This completes the racket, which is then carefully checked for weight and balance before it is placed in the wrapping in which it reaches the enthusiast who is to play with it.

Meccano Special Model—(*Continued from page 207*)

2 of No. 9b; 2 of No. 9d; 2 of No. 9e; 2 of No. 9f; 20 of No. 10; 6 of No. 12; 4 of No. 12a; 4 of No. 12b; 6 of No. 12c; 2 of No. 13a; 3 of No. 14; 1 of No. 15; 6 of No. 15a; 2 of No. 15b; 4 of No. 16; 2 of No. 16a; 1 of No. 16b; 5 of No. 17; 9 of No. 18a; 2 of No. 18b; 6 of No. 20; 12 of No. 20b; 13 of No. 22; 7 of No. 22a; 2 of No. 23; 2 of No. 24; 1 of No. 24a; 1 of No. 25; 5 of No. 26; 2 of No. 26a; 1 of No. 27; 3 of No. 27a; 1 of No. 27b; 2 of No. 28; 2 of No. 30; 4 of No. 32; 6 of No. 35; 486 of No. 37; 40 of No. 37a; 147 of No. 38; 2 of No. 38d; 2 of No. 40; 2 of No. 43; 1 of No. 45; 1 of No. 46; 4 of No. 48; 4 of No. 48a; 3 of No. 48b; 6 of No. 52a; 3 of No. 53; 41 of No. 59; 7 of No. 63; 3 of No. 70; 6 of No. 90; 1 of No. 94; 1 of No. 95a; 2 of No. 96; 5 of No. 96a; 2 of No. 103g; 16 of No. 111; 3 of No. 111a; 12 of No. 111c; 2 of No. 120b; 8 of No. 126; 8 of No. 126a; 2 of No. 133a; 1 of No. 145; 2 of No. 144; 2 of No. 146; 2 of No. 155; 1 of No. 166; 4 of No. 179; 4 of No. 186b; 8 of No. 188; 6 of No. 189; 1 of No. 190; 2 of No. 191; 10 of No. 192; 1 of No. 196; 1 of No. 197; 2 of No. 200; 4 of No. 214; 1 E20R Electric Motor.

PINION FOR GEARED ROLLER BEARING

Owners of the pre-war Meccano Geared Roller Bearing (Part No. 167) may be interested to know that a few of the special 16-tooth Pinions (Part No. 167c), for use with the Geared Roller Bearing, are still available.

The Pinions can be used with standard Meccano Axle Rods, but cannot be meshed with any of the ordinary Meccano gears. Two of them can be used together to give a 1:1 ratio. Their diameter is 1$\frac{5}{32}$ in. and face $\frac{1}{4}$ in. These parts have been withdrawn from the Meccano range, and no further supplies of the Roller Bearing itself are available.

Anyone requiring this special Pinion should take this opportunity of obtaining one, for no more will be available once the present small stock is sold. The Pinions can be obtained direct from Meccano Ltd., Binns Road, Liverpool 13, and the price is 2/6 each post free.

B.R.M. DISPLAY IN BIRMINGHAM

Readers living in the Birmingham area will find many attractions in the National Trades and Homelife Exhibition that opened in Bingley Hall, Birmingham, on 18th March and will remain open until 18th April. Included among the exhibits is an actual B.R.M. Racing Car, and films of the car during construction and racing are being shown. The Rubery, Owen film *For Every Vehicle* also can be seen, and a set of large coloured transparencies of the B.R.M. forms part of the display.

Mr. Raymond Mays is in attendance, with the well-known racing drivers Reg Parnell and Ken Wharton, and another attraction included in the B.R.M. exhibition is the Shell Petroleum Company Neoflo Display, depicting the latest catalytic Petroleum Cracker, the most up-to-date development in refining petrol.

Details of the B.R.M. Club are available on the stand, together with sets of post card size photographs of the B.R.M. and its drivers.