Gear Wheel 48 and at the same time a $\frac{3}{8}$" Bolt fitted in a Collar 53 disengages a $\frac{3}{8}$" Bolt fixed in the Flat Plate 50. The lever is attached to a loose Collar by a nut and bolt and placed between two fixed Collars.

All the three Control levers are similar, and are pivotted to Angle Brackets fixed to a 3" x $1\frac{1}{2}$" Flat Plate, that is secured to the bottom edge of the Angle Girders 22. A $6\frac{1}{2}$" Rod 54 carries two 1" Pulleys 55 and a 50-tooth Gear Wheel. By operating lever 56 the Gear can be engaged with a $\frac{3}{4}$" Pinion on Rod 49.

A $\frac{3}{4}$" Sprocket Wheel 57 and a $\frac{1}{2}$" Pinion 59 are fixed on a $4\frac{1}{2}$" Rod 58. Connect the $\frac{3}{4}$" Sprocket Wheels 47 and 57 by a length of Chain. The Pinion 59 drives a 57-tooth Gear Wheel 60 on a $6\frac{1}{2}$" Rod 61 carrying a $\frac{3}{4}$" Sprocket Wheel 62, which is connected by Chain to the Sprocket Wheel 39.

A 1" Corner Bracket is bolted to the top Double Angle Strip 26 and also to the top $3\frac{1}{2}$" Strip 30. An $11\frac{1}{2}$" Rod 63, with two Bush Wheels 64, and a 60-tooth Gear Wheel is placed in the 1" Corner Brackets. Two Trunnions 67 are bolted to the Angle Girders 22. In these is placed a 5" Rod which carries a 1" Pulley fitted with a Rubber Ring and is held in place by Collars. On one end of the Rod is a Coupling which holds a $3\frac{1}{2}$" Rod 68. Rod 68 in turn carries at its lower end another Coupling in which is fixed a 2" Rod 69 that protrudes between the Bush Wheel 64. When the Rod 68 is moved over it brings the $\frac{1}{2}$" Pinion 65 into mesh with the Contrate Wheel 36 and the 60-tooth Gear Wheel 66 into mesh with the Worm Wheel 45. Two 1" loose Pulleys 70 are placed on a Rod mounted at the front of the boom as shown in the general view of the model. Two lengths of cord are attached to the front and rear Angle Girders of the trolley passed around the Pulleys 70 and those on the Rod 54, and then attached to the trolley again.

Pulley Block.

Two $2\frac{1}{2}$" Triangular Plates are joined together by two Double Brackets, and three 1" loose Pulleys, spaced with Washers are placed between the Triangular Plates on a $1\frac{1}{2}$" Rod held by Collars. A large Loaded Hook is carried on a 1" Screwed Rod passed through the apex holes of the Triangular Plates. The cord for raising and lowering the load hook is first tied to the Rod 51 between the Bush Wheels, and it is passed in turn around the four 1" loose Pulleys of the trolley and the three similar Pulleys that form the sheaves of the load pulley block. The end of the cord is then secured to the Angle Girder 28 at the front of the boom.

Finally a cover, formed from three $5\frac{1}{2}$" x $2\frac{1}{2}$" and one $5\frac{1}{2}$" x $1\frac{1}{2}$" Flexible

FIDLER'S BLOCK-SETTING GEAR

THE massive concrete blocks of which breakwaters and sea-walls are constructed are often laid horizontally in the same way as the bricks of an ordinary wall, but in many cases a more complicated form of setting is required, and the blocks are set at an angle—or, as it is technically termed, "on the inclined bond". In this way the breakwater is made much more capable of resisting the assaults of the sea than it would be if the blocks were set in the more usual position with their faces vertical.

By
"SPANNER"

The problem of slinging the blocks for setting on the inclined bond, however, presents some difficulty, a fact which will be more readily appreciated by anyone who has constructed a model of a crane and attempted to set a small block of wood or stone in the manner described. The problem is difficult even with a model, but in actual practice it is considerably more complicated, for the blocks must be lowered to within an inch or less of their correct position, and the movements controlled to a nicety even though they may have to be carried out in heavy seas and stormy weather.

The difficulty is solved by the ingenious tilting mechanism known as Fidler's patent block-setting gear. Photographs of this gear, together with a detailed account of its action, appeared in the Magazine some years ago, and as the mechanism proved of great interest to model-builders keen on constructing giant block-setting cranes I have decided to repeat the details here. The Meccano model of Fidler's Gear differs from the actual mechanism in detail only and functions in exactly the same manner as its prototype.

The mechanism is illustrated on this page. Two pairs of $5\frac{1}{2}$" Curved Strips 1, bearing twelve Fishplates 2 and spaced apart by the thickness of two Washers, represent the massive notched beam of the Fidler's Gear. This beam hangs from a swivelling joint, the whole being suspended from a special four-sheaved pulley block. The swivel bar consists of a 2" Rod 12 bearing at its lower end, a small Fork Piece on which the beam is pivoted, and is itself supported in the pulley block by means of a Collar. The rotating movement of the beam on the central swivel is controlled by a Worm Wheel 15, which meshes with a $\frac{1}{2}$" Pinion 16 secured to the vertical swivel bar.

Two links 3, each formed by a pair of 2" Strips and two $\frac{3}{4}$"

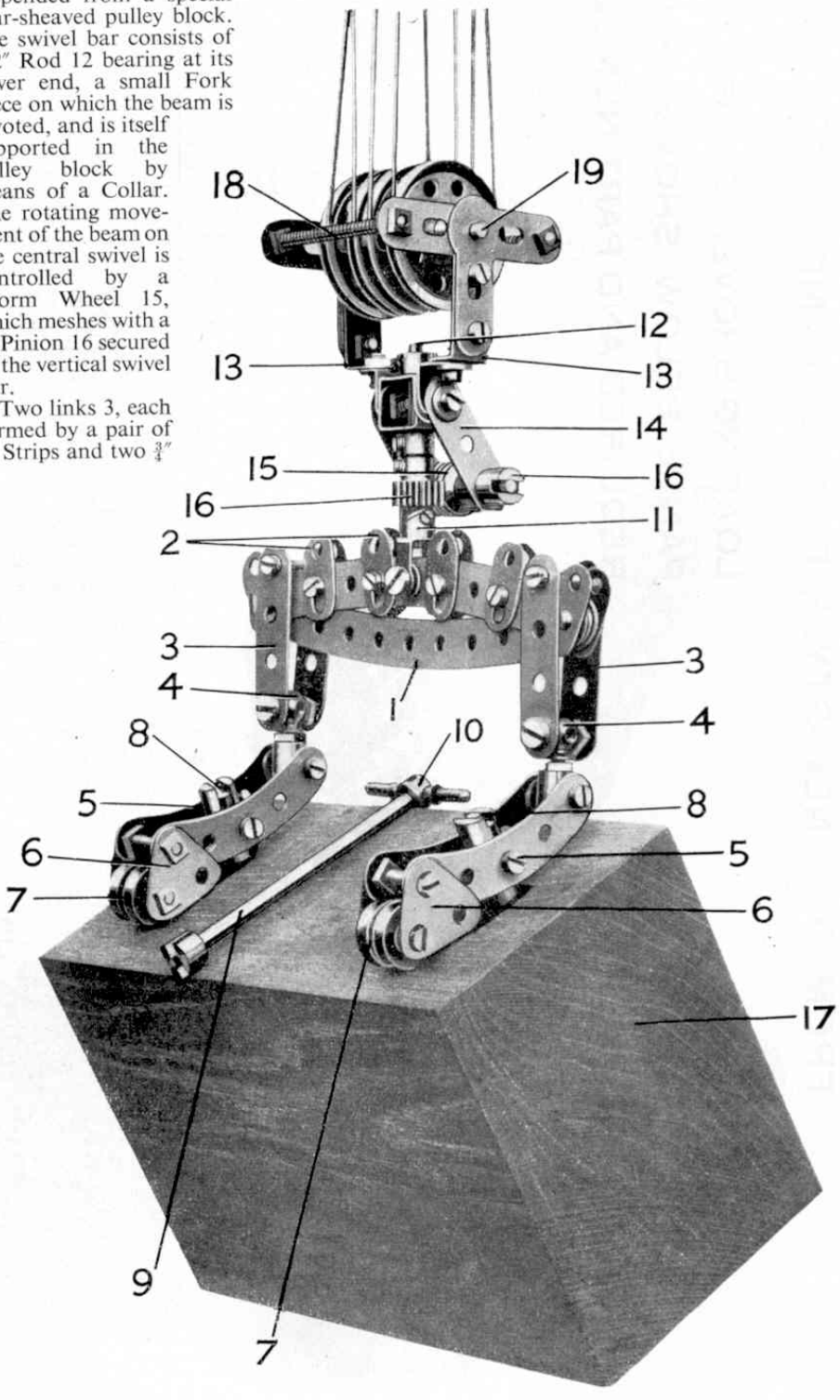


Fig. 1.

Bolts, are suspended from the outer notches of the beam. The lower $\frac{3}{4}$" Bolts of these links pass through the smooth bores of Handrail Supports 4 that are screwed into the longitudinal bores of two Threaded Bosses, where they are secured in position by nuts screwed tightly against the tops of the Bosses. Two $\frac{3}{4}$" Bolts, passed through the transverse holes of these Threaded Bosses, and held in place by lock-nuts, support the crossheads 5. Each crosshead consists of two $2\frac{1}{2}$" large radius Curved Strips to which two 1" Triangular Plates 6 are rigidly secured by means of a $\frac{3}{4}$" Bolt and nuts. A roller consisting of two $\frac{1}{2}$" loose Pulley Wheels 7 is mounted on a $\frac{3}{4}$" Bolt secured between each pair of Triangular Plates.

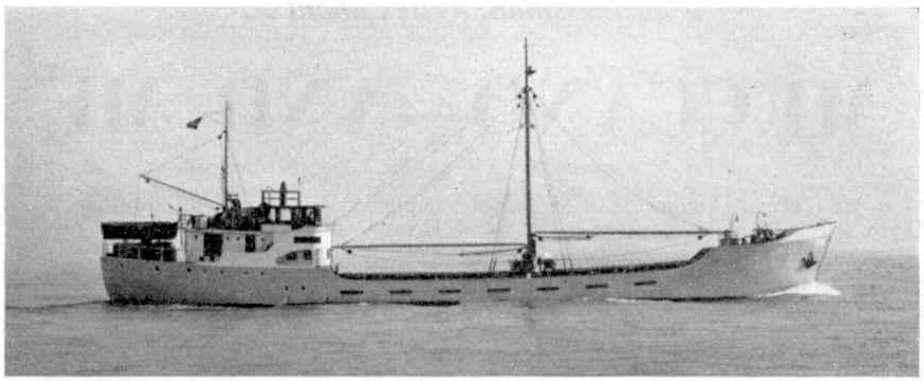
From the middle point of each crosshead hangs a Lewis bar. This bar is made by securing a Coupling across the end of a 5" Rod 8, the upper end of the Rod being attached to a Collar or a "spider" from a Universal Coupling. The Collar is pivoted on two ordinary bolts passed through the middle holes of the crosshead 5 and secured by nuts screwed firmly against the sides of the Collar to prevent the bolts from binding on the Rods 8. The upper end of each Lewis bar is fitted with the female portion of a Dog Clutch, and the male part of one Clutch should be attached to a Rod 9 to form a key with which the Lewis bars may be turned. The key is provided with a handle consisting of two Threaded Pins screwed into a Collar 10. The same arrangement is used to turn the Worm Wheel 15 that controls the swivelling movement of the beam. The Fork Piece 11 from which the beam is suspended is secured to a 2" Rod 12 journalled in two Double Brackets bolted, one within the other, to Angle Brackets, which in turn are secured to the 1" × $\frac{1}{2}$" Angle Brackets 13 in the pulley block. Two $1\frac{1}{2}$" Strips 14, which carry the Worm Wheel 15 on a $1\frac{1}{2}$" Rod, are secured by means of $\frac{3}{8}$" Bolts to the pulley block, from which they are spaced away by two Washers mounted on the shanks of the Bolts.

It will be observed that the pulley block is constructed from two pairs of old style Simple Bell Cranks bolted to the 1" by $\frac{1}{2}$" Angle Brackets 13, their outer arms being spaced apart by means of the 2" Threaded Rods 18. Those who do not possess any of the old style Bell Cranks should use the modern part No. 128 or some alternative form of construction. The sheaves consist of four $1\frac{1}{2}$" Pulley Wheels, one of which should be secured to the Axle Rod 19 in order to retain the latter in position.

In actual practice the concrete blocks which are to be set by Fidler's Gear are specially made with two perpendicular holes running completely through them. The holes are of sufficient width across one of their sections to take the T-shaped pieces at the ends of the Lewis bars. The blocks are also recessed at the lower ends of the vertical holes in order to prevent the Lewis bars from fouling the breakwater while the blocks are being set.

A New Series For "M.M." Readers

COASTER COMMENTARY



The motor vessel "Lireco", a typical Dutch coaster of 350 tons. Picture by John G. Callis.

WHEN a coaster admirer overhears the all-too frequent remark—"It's only a coaster", given in an undeniably disparaging tone of voice, such cursory dismissal of these interesting little vessels is apt to make his blood boil! It is true that they will be dwarfed in size by ocean-going liners or cargo ships but it does not follow that their importance should be underrated. Although they cannot carry such large quantities of merchandise, they make a strong link in the vast transport chain, with the added advantage that their small size enables them to go where a "big sister" cannot possibly go.

By

ROBERT GORE

What is a coaster? By and large, these little ships fall within two defined categories—dry and liquid cargo carrying—and within this range there are very many variations.

Throughout the world coasters are engaged on almost every kind of trade, and this sometimes means that they have to be specially built to meet the requirements of a particular cargo or port; alternatively, existing ships are modified for the same purpose. It seems they can be used for practically anything, and whereas they mostly do tramping from one port to another some are on regular trading routes where they might, quite properly, be regarded as liners. They certainly do not (as their name suggests) consistently sail along the coast, for they go far beyond sight of land and can cross an ocean.

What does a coaster look like? We have established that the coaster is a small ship—somewhat broad of beam—and the fact that we may know what duty one is engaged upon will not help us much, if at all. So as to give as much uninterrupted space as possible for handling cargoes in and out of the holds, the engines are placed towards the stern. A coaster also has a high forecastle, a raised quarter-deck above the engine room upon which is piled the superstructure, including the wheelhouse, funnel, accommodation, etc. This rather curious, and yet characteristic, bunched-up profile is generally common to all and might be accentuated when the ship has a well-deck between the forecastle and quarter-deck. Large coasters may have a bridge amidships.

One cannot imagine another class of ship that could give a ship spotter greater opportunity for exercising skill in recognition, and if a motto were ever required to be chosen for the coasting fleet what could be better than to borrow the Royal Artillery's "Ubique", which translated means "Everywhere?"

THE FIGHTER AIRCRAFT POCKETBOOK

This beautifully-produced book traces the progress of fighter aircraft between the years 1913 and 1961. It deals with aircraft of all the major powers and brings home the startling advances in the development of flight within the past half century. The first world war is well covered and there are some excellent photographs of Allied and German machines. Pictures of fighter aircraft produced between the wars reveal their progressive changes in shape, and the survey of that period in picture and text offers a year by year comparison of the development of the world's air forces. There follows a review of the second world war period until ultimately the sleek, fast piston-engined machines gave way to the products of the jet age. Written by Roy Cross and published by B. T. Batsford Ltd., the book costs 9s. 6d.