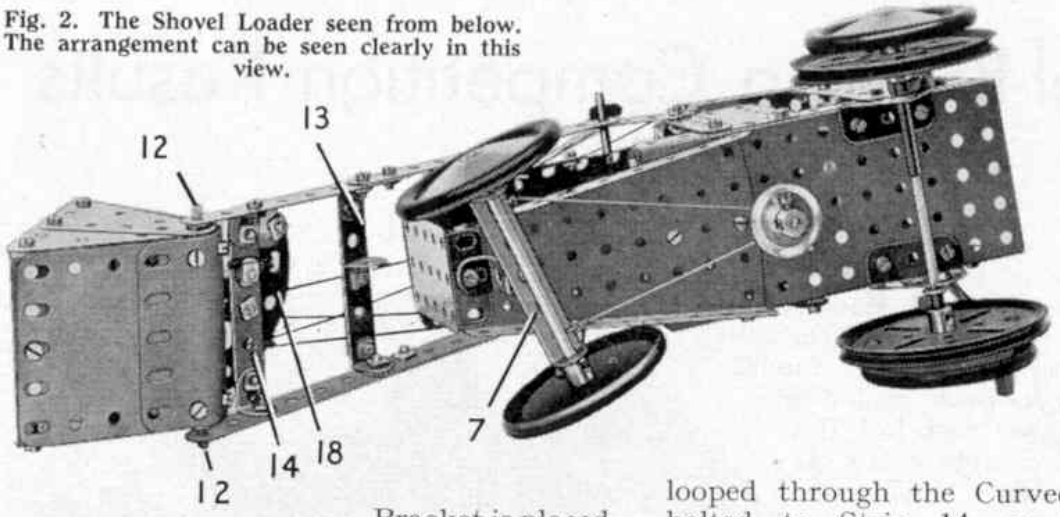

Fig. 2. The Shovel Loader seen from below. The arrangement can be seen clearly in this view.

Bracket is placed on a $\frac{3}{8}$" Bolt 12 passed through the Triangular Flexible Plates on each side and fixed in them by a nut. The Angle Brackets support a U-section Curved Plate and this is connected to the Double Angle Strips by two $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates.

Each side of the arm supporting the shovel is made from two $5\frac{1}{2}"$ Strips overlapped five holes. The sides are connected by two $2\frac{1}{2}"$ Strips 13 and 14. Strip 13 is bolted to an Angle Bracket and a $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip, while Strip 14 is attached to two Angle Brackets. A Stepped Bent Strip is fixed to Strip 14 and a 1" Pulley 15 is fixed on a 1" Rod mounted in it. The arm pivots on a $3\frac{1}{2}"$ Rod held by Spring Clips in the Strips 9.

The shovel is raised or lowered by turning a Crank Handle mounted in Flat Trunnions bolted to the chassis. An Angle Bracket 16 bolted to one of the Flat Trunnions is arranged to press against the lugs of a Spring Clip on the Crank Handle, to prevent it from turning too freely. Cord fastened to the Crank Handle is taken over Rod 4 and Pulley 11, round Pulley 15, and is tied to one of the Strips 9.

The catch to lock the shovel in its loading position is made from an Angle Bracket 17 that engages under one end of a $2\frac{1}{2}"$ Stepped Curved Strip 18. The Curved Strip is lock-nutted to a Fish-plate, which is bolted to Strip 14. A $2\frac{1}{2}"$ Driving Band is looped through the Curved Strip and is bolted to Strip 14, so that normally it pulls the Curved Strip against the Stepped Bent Strip. The catch is released by operating a lever 19, lock-nutted to one side of the cab. Cord tied to the lever is passed over the Rod on which the shovel arm pivots, and is tied to the Curved Strip 18. When the shovel arm is raised, releasing the catch allows the shovel to swing down to discharge its load. The shovel is returned to its working position automatically as the arm is lowered by a Cord 20. This Cord must be taut when the shovel is at ground level with the catch engaged.

Parts required to build the Shovel Loader: 8 of No. 2; 2 of No. 3; 7 of No. 5; 5 of No. 10; 2 of No. 11; 8 of No. 12; 1 of No. 15b; 3 of No. 16; 1 of No. 17; 2 of No. 18a; 1 of No. 18b; 2 of No. 19b; 1 of No. 19g; 3 of No. 22; 1 of No. 24; 6 of

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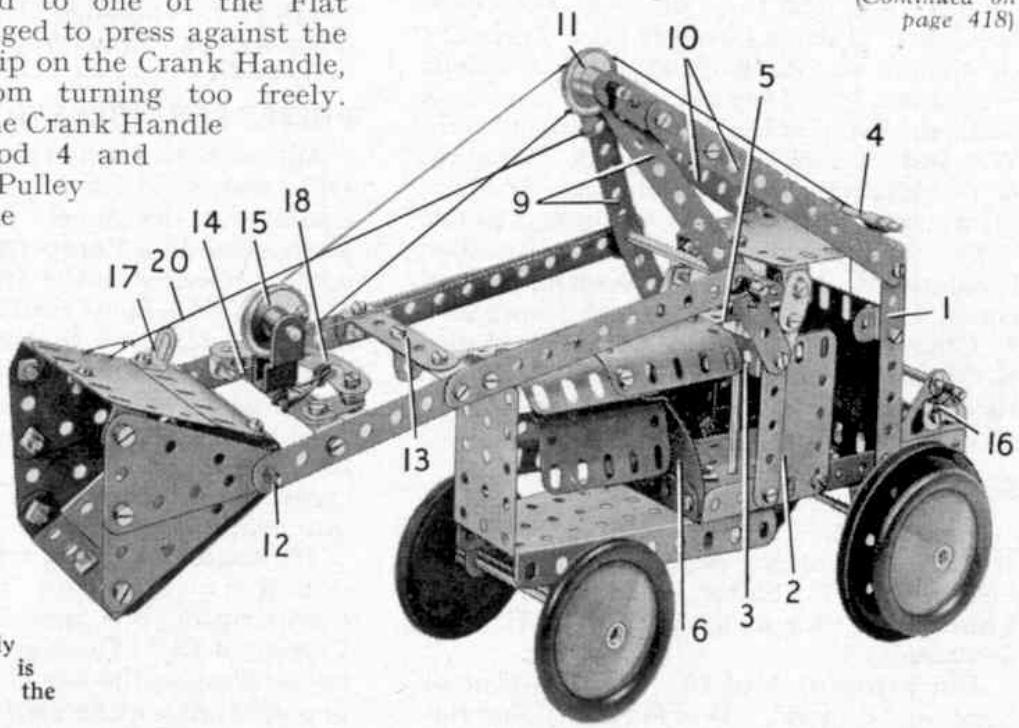

Fig. 3. In this view the operating arm of the Shovel Loader is partly raised, and the catch is released to discharge the contents of the shovel.

Meccano Shovel Loader

An Attractive Model for Outfit No. 4

CONSTRUCTION of the model is begun by making the chassis, which consists of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate and a Flanged Sector Plate overlapped three holes and bolted together. Each side of the cab is made by fixing a $3\frac{1}{2}''$ Strip 1 and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 2 to the Flanged Plate. The Flexible Plate is strengthened by a $2\frac{1}{2}''$ Strip, and this is extended upward by two Fishplates that form the windscreen frame. The sides are connected

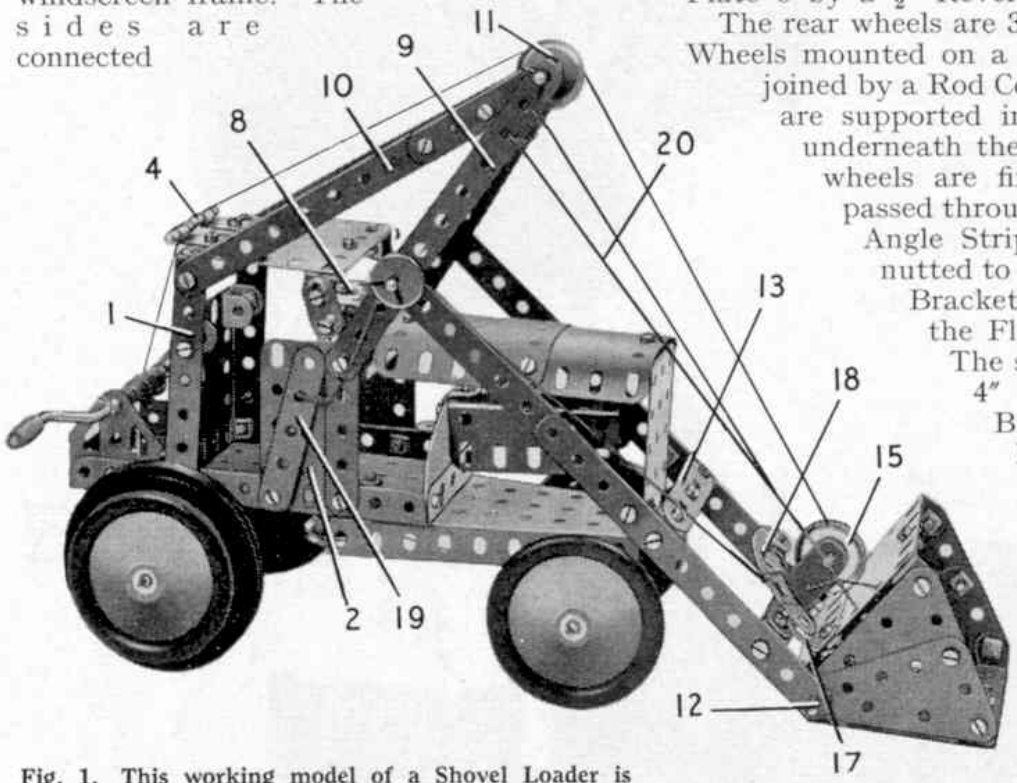

Fig. 1. This working model of a Shovel Loader is designed for construction with parts in a No. 4 Outfit.

by $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips bolted between the Strips 1 and between the upper pair of Fishplates, and by a similar Double Angle Strip 3.

The cab roof is a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate, and the back of the cab is another $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate bolted to Double Brackets fixed to the Strips 1. Two Right Angle Rod and Strip Connectors are attached to the rear edge of the roof, and these support a 2" Rod 4.

The radiator is a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate bolted to the narrow end of the Flanged Sector Plate. The top of the bonnet is formed by two $1\frac{11}{16}''$ radius Curved Plates overlapped two holes and bolted together. The top of the bonnet is attached to the $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate by a $\frac{3}{8}''$ Bolt, with three Washers on it for spacing purposes, and is connected to the Double Angle Strip 3 by an Angle Bracket. The bolt used to fix the top of the bonnet to the Angle Bracket supports also a $2\frac{1}{2}''$ Strip 5, which projects three clear holes into the cab. The engine unit is represented by a U-section Curved Plate connected to a Semi-Circular Plate 6 by a $\frac{1}{2}''$ Reversed Angle Bracket.

The rear wheels are 3" Pulleys and Road Wheels mounted on a $1\frac{1}{2}''$ and a $3\frac{1}{2}''$ Rod joined by a Rod Connector. The Rods are supported in Trunnions bolted underneath the chassis. The front wheels are fixed on a $3\frac{1}{2}''$ Rod passed through a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 7, which is lock-nutted to a $\frac{1}{2}''$ Reversed Angle Bracket bolted underneath the Flanged Sector Plate. The steering column is a 4" Rod fitted with a Bush Wheel 8. The Rod is supported in Strip 5 and in the Flanged Plate, and is held in place by a Spring Clip. A length of Cord is wound four or five times round the lower end of the Rod, and each end is tied to the Double Angle Strip 7 as shown in Fig. 2. A 1" Pulley fixed on the steering column prevents the Cord from slipping out of place.

The jib that supports the shovel arm consists of a $5\frac{1}{2}''$ Strip 9 and a made-up strip 10 on each side, bolted to the cab. Strip 10 is formed by a $5\frac{1}{2}''$ and a $2\frac{1}{2}''$ Strip overlapped three holes. The Strips on each side are connected at their upper ends by a $1\frac{1}{2}''$ Rod fitted with Spring Clips. A 1" Pulley 11 is mounted freely on the Rod between the Strips.

Each side of the shovel is formed by two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plates arranged as shown, and the sides are connected by $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips. An Angle