Aug 5, 1941. J. M. O'MALLEY 2,251,596

SWITCH MECHANISM

Filed May 28, 1940

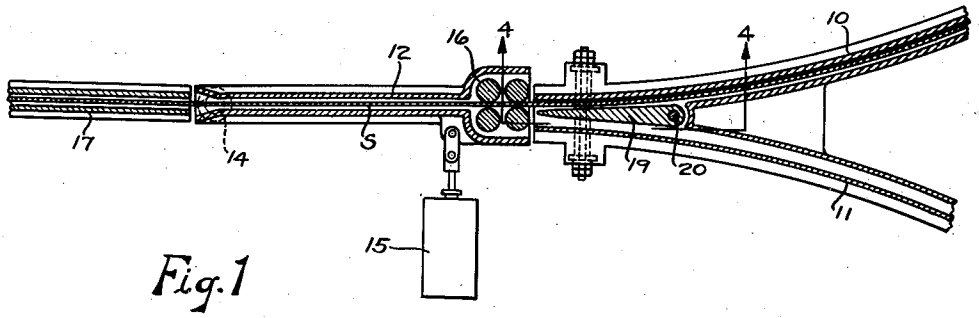


Fig. 1

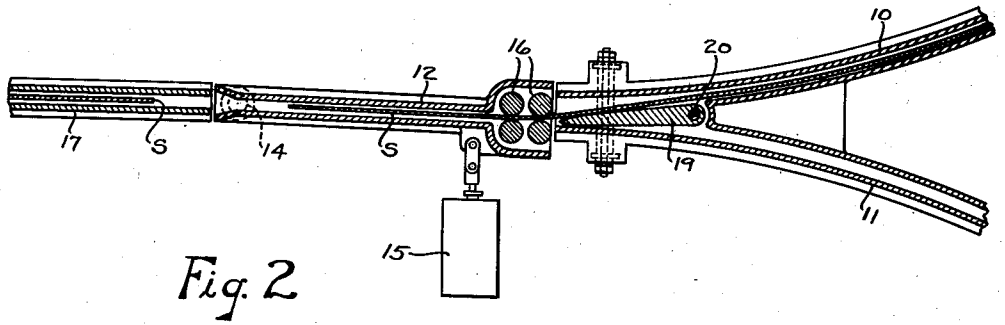


Fig. 2

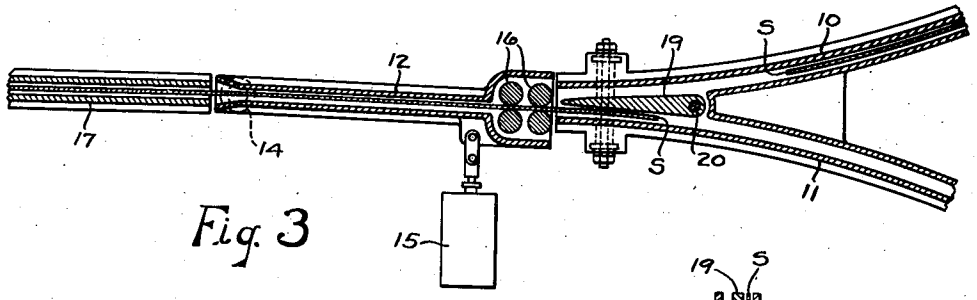


Fig. 3

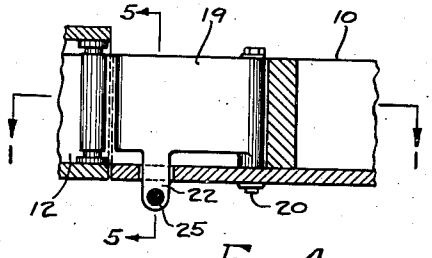


Fig. 4

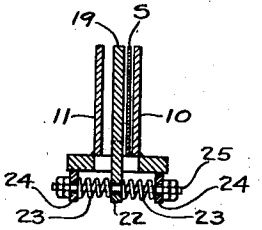


Fig. 5

INVENTOR
JOSEPH M. O'MALLEY
BY Albert G. Blodgett
ATTORNEY

Patented Aug. 5, 1941 2,251,596

UNITED STATES PATENT OFFICE

2,251,596

SWITCH MECHANISM

Joseph M. O'Malley, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass., a corporation of Massachusetts

Application May 28, 1940, Serial No. 337,666

5 Claims. (Cl. 193—39)

This invention relates to switch mechanism, and more particularly to mechanisms for directing longitudinally traveling elongated material into selected paths.

In the handling of the metal bars or strips delivered by a rolling mill, it is often necessary to guide successive bars into different paths of travel. Since these bars may be traveling at high speed and usually follow one another very closely, only a brief time interval is available for operation of the switch between the departure of one bar and the arrival of the next. It is difficult to construct a switch mechanism which will be sufficiently heavy and rugged to withstand the conditions of service and yet be capable of operating with the required rapidity.

It is accordingly one object of the invention to provide a comparatively simple and dependable switch mechanism adapted to direct successive pieces of longitudinally traveling elongated material into different paths.

It is a further object of the invention to provide a switch mechanism for elongated material so constructed and arranged that it can be reversed while one piece of material is still passing therethrough, without harmful effect upon the material.

With these and other objects in view, as will be apparent to those skilled in the art, the invention resides in the combination of parts set forth in the specification and covered by the claims appended hereto.

Referring to the drawing illustrating one embodiment of the invention and in which like reference numerals indicate like parts.

Fig. 1 is a sectional plan view of a switch mechanism showing one piece of material passing therethrough, the section being taken on the line 1—1 of Fig. 4;

Fig. 2 is a view similar to Fig. 1, but showing the switch mechanism reversed while the material is still passing through;

Fig. 3 is a view similar to Fig. 2, but showing the position of the parts after the first piece of material has left the switch mechanism and the following piece has entered the same;

Fig. 4 is a section on the line 4—4 of Fig. 1; and

Fig. 5 is a section on the line 5—5 of Fig. 4.

The embodiment illustrated comprises two horizontal guideways 10 and 11 for longitudinally traveling elongated material, such as the hot metal strip S delivered by a rolling mill (not shown). This strip travels on edge through the guideways, which may lead to apparatus (not shown) for cooling the strip and winding it into coils. The entrances to the two guideways are adjacent. Anterior to the two guideways 10 and 11 there is provided a third guideway 12 which is preferably in the form of a movable switch member adapted to register with the entrances of the two guideways selectively. For this purpose, the switch member 12 is supported upon a vertical pivot 14 near its front or entrance end, and its is arranged to be swung about this pivot by means of a fluid pressure motor 15 which can be controlled in any desired manner. Idler rollers 16 are shown at the rear or exit end of the switch member to form an anti-friction surface for contact with the strip material. This material is directed to the inlet end of the switch member 12 by means of a fourth guideway 17.

The entrances to the two guideways 10 and 11 are separated by a member 19 in the form of a vertical plate having a comparatively sharp front edge located close to the exit end of the switch member 12. This plate 19 is pivotally supported near its rear edge on a vertical pin 20, so that it can swing laterally toward either side.

The plate 19 is yieldably biased toward its central position, and for this purpose a downwardly extending arm 22 is formed on the plate near its front edge. This arm is engaged on opposite sides by two light coiled springs 23 (Fig. 5) which are supported at their outer ends by lugs 24 depending from the fixed guideway structure. These springs are held in place by a horizontal bolt 25 which extends through the springs and through apertures in the lugs 24 and arm 22.

The operation of the invention will now be apparent from the above disclosure. With the switch member 12 swung to its left-hand position, as shown in Fig. 1, the front end of the on-coming strip S will pass to the left of the member 19 and into the guideway 10. If now it is desired to direct the following piece of strip into the other guideway 11, the switch member 12 will be swung to its right-hand position, as shown in Fig. 2, and this can be done before the rear end of the first piece has left the switch mechanism since the lateral pressure of the strip against the member 19 will simply swing this member about its pivot 20 without producing any abrupt bend in the strip. Then the instant the rear end of the first piece leaves the rollers 16 of the switch member, the member 19 will be returned to its central position by the action of the springs 23, and the front end of the following piece of strip will pass to the right of the

member 19 and into the guideway 11, as shown in Fig. 3.

The switch mechanism disclosed is rugged and dependable, and since it can be reversed while one piece of stock is still passing therethrough, it is particularly adapted for the control of pieces which follow one another very closely.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A switch mechanism comprising two guideways for longitudinally traveling elongated material having adjacent entrances, a third guideway positioned anterior to the said two guideways, the third guideway and the said two guideways being relatively movable in a direction transverse to the path of the material to effect registration of the third guideway with either of said entrances selectively, and a member separating said entrances and yieldable transversely of the path of the material.

2. A switch mechanism comprising two guideways for longitudinally traveling elongated material having adjacent entrances, a third guideway positioned anterior to the said two guideways, the third guideway and the said two guideways being relatively movable in a direction transverse to the path of the material to effect registration of the third guideway with either of said entrances selectively, a member pivotally mounted between said entrances and arranged to swing toward either entrance, and means yieldably biasing said member toward its central position.

3. A switch mechanism comprising two guideways for longitudinally traveling elongated material having adjacent entrances, a third guideway positioned anterior to the said two guideways and movable into registration with either of said entrances selectively, a member separating said entrances and movable toward either of said entrances, and means yieldably biasing said member toward its central position

4. A switch mechanism comprising two guideways for longitudinally traveling elongated material having adjacent entrances, a third guideway pivotally supported anterior to the said two guideways and arranged to swing into registration with either of said entrances selectively, a member pivotally supported between said entrances and arranged to swing toward either entrance, and means yieldably biasing said member toward its central position.

5. A switch mechanism comprising two guideways for longitudinally traveling elongated material having adjacent entrances, a third guideway located anterior to the said two guideways and pivotally supported adjacent its front end in such a manner that its rear end may be swung into registration with either of said entrances selectively, a plate located between said entrances and pivotally supported adjacent its rear end in such a manner that its front end may swing toward either entrance, and means yieldably biasing said plate toward its central position.

JOSEPH M. O'MALLEY.