

Dec. 19, 1939.

W. J. GLENN

2,184,118

GUIDE FOR ROLLING MILLS AND OTHER MACHINES

Filed May 22, 1937

2 Sheets-Sheet 1

Fig. 1.

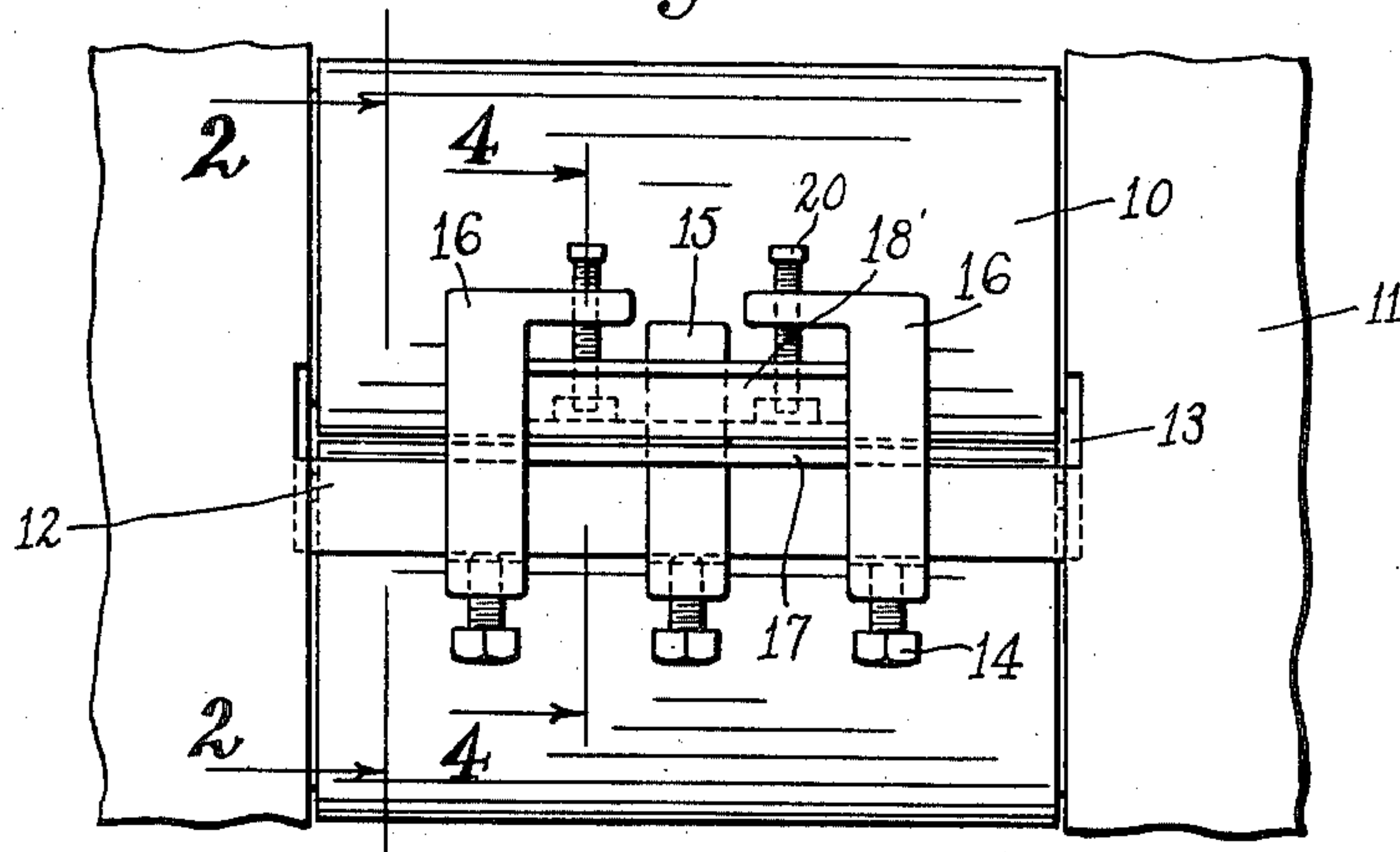


Fig. 2.

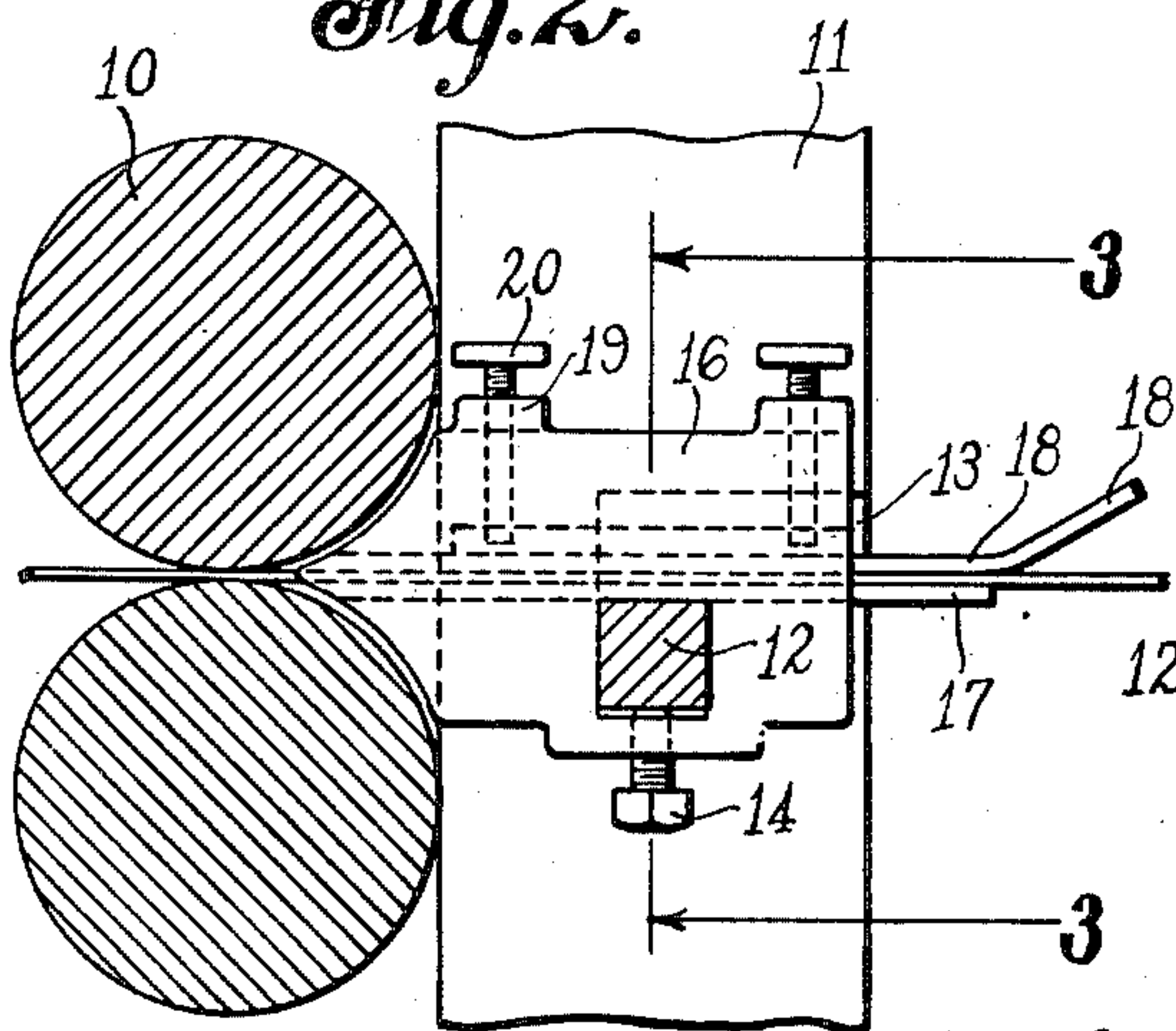


Fig. 3.

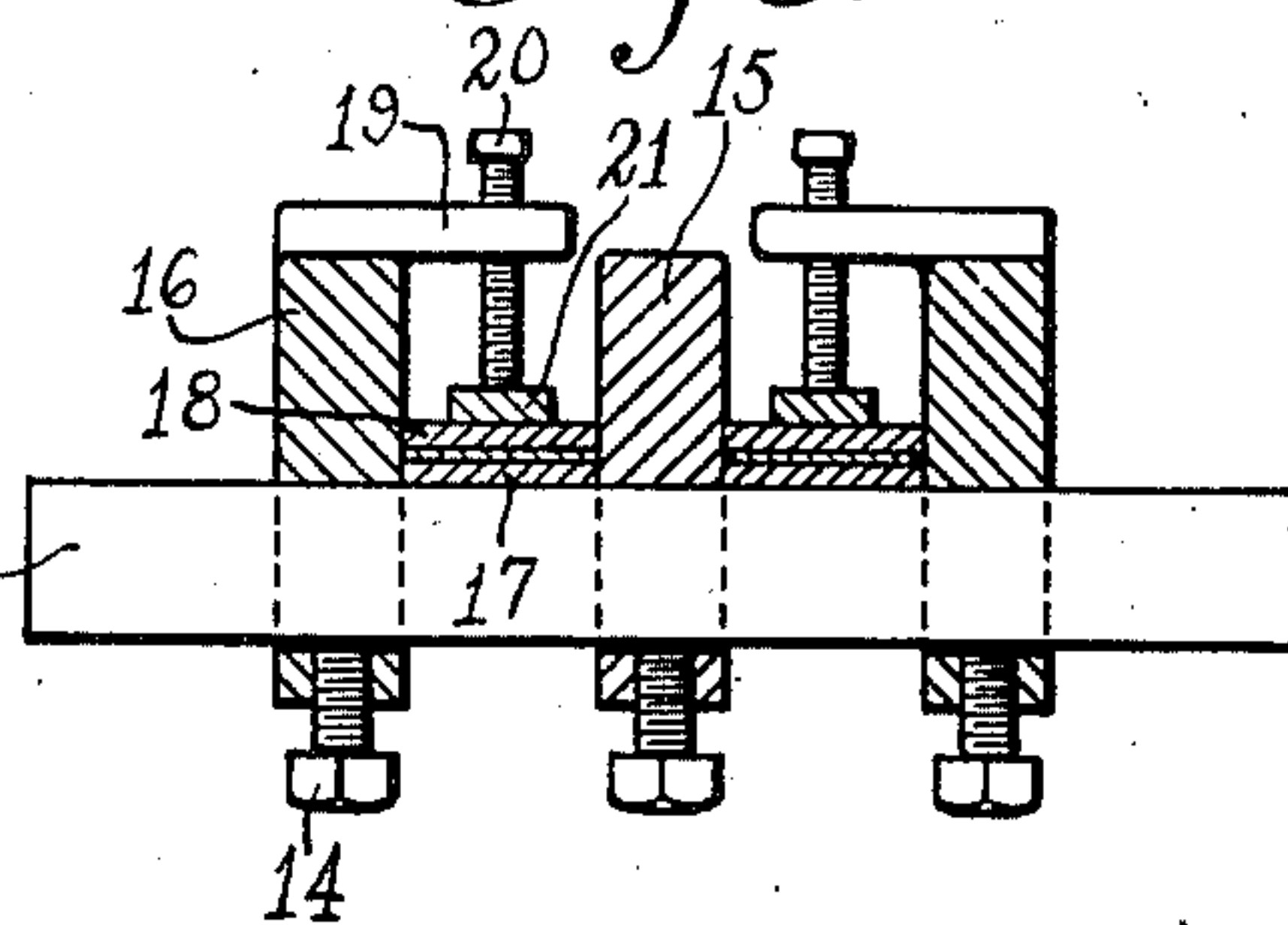
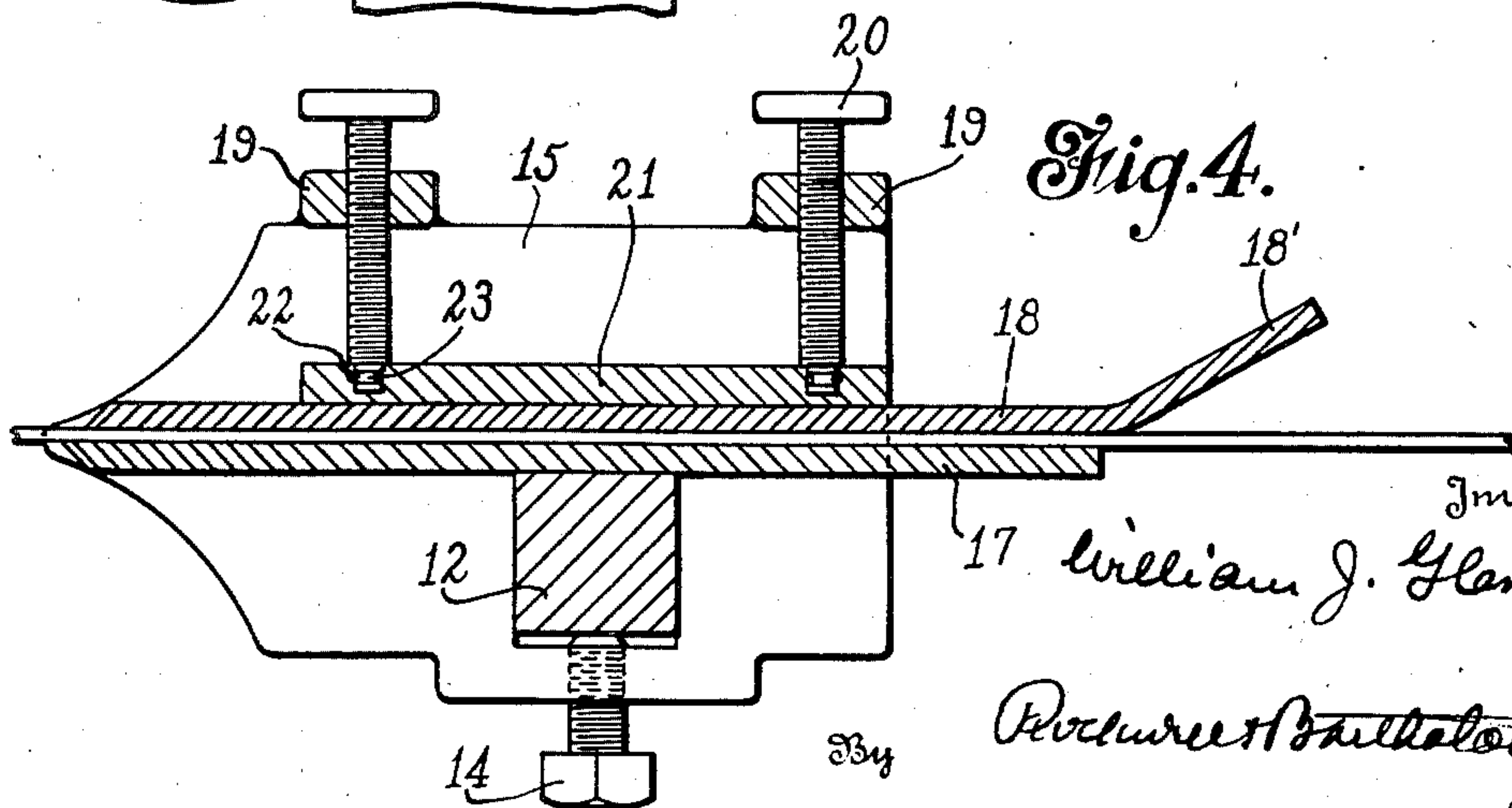


Fig. 4.



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Fig. 5.

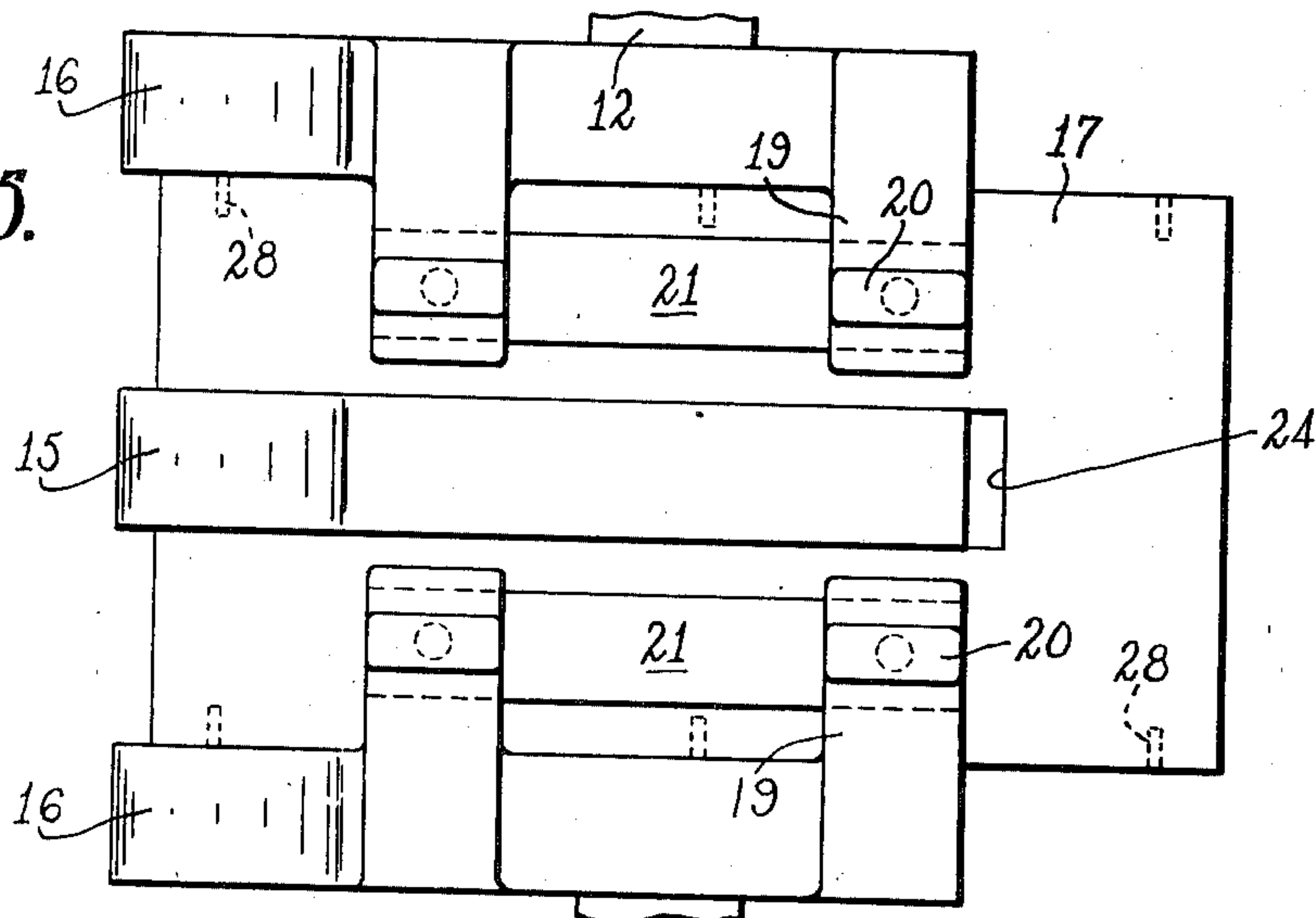


Fig. 6.

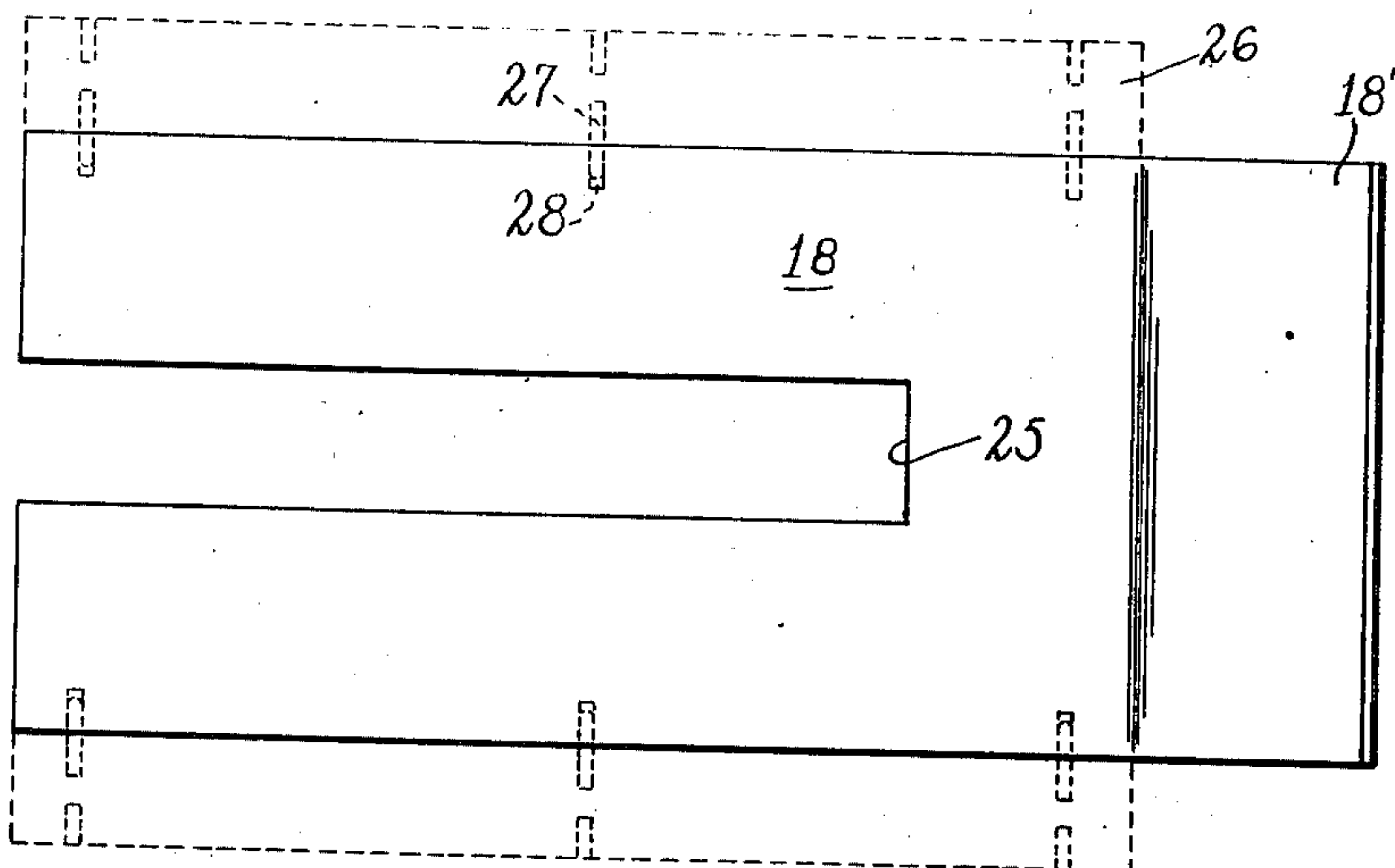


Fig. 7.

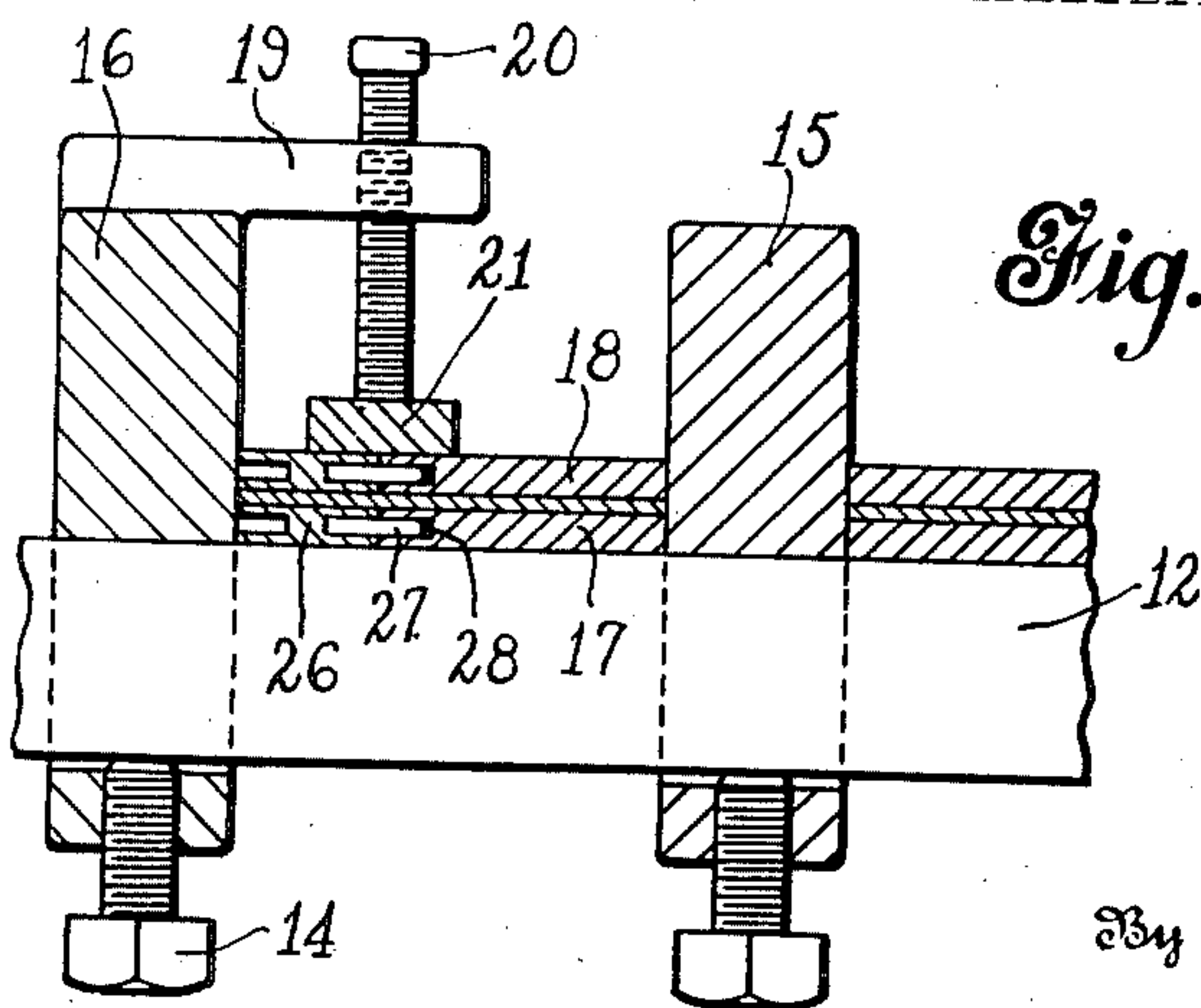
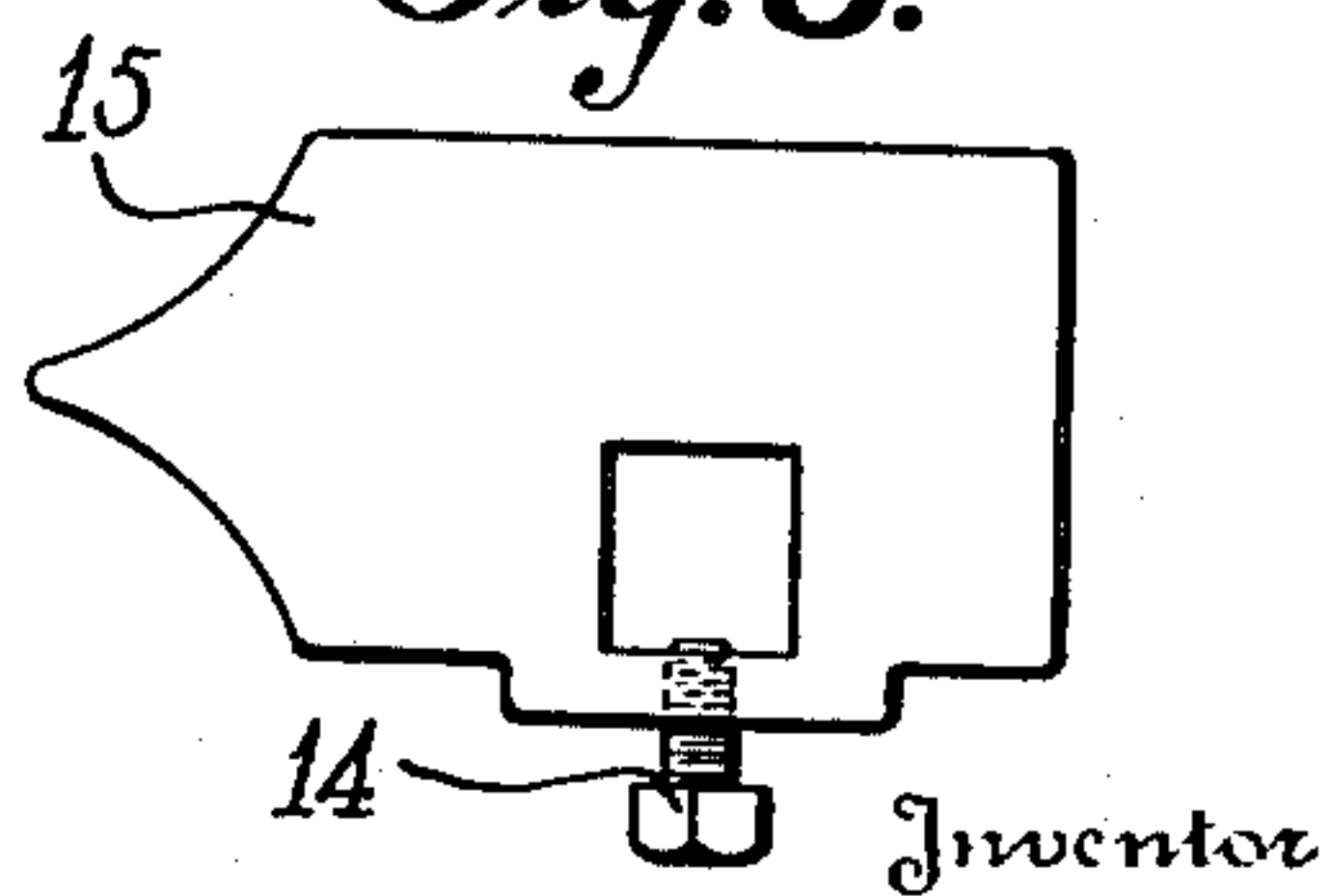


Fig. 8.



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UNITED STATES PATENT OFFICE

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GUIDE FOR ROLLING MILLS AND OTHER
MACHINES

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Application May 22, 1937, Serial No. 144,144

8 Claims. (Cl. 80—51)

This invention relates to means for rolling metal, and it has particular reference to improvements in the cold rolling of thin strips of non-ferrous metal such as brass, although it is not limited to that application.

In rolling mills for the cold reduction of metal strips, and especially thin flexible strips, which are introduced into the roll bite with the assistance of guides of the peg and plate type, it has been customary heretofore to pass the strips through the rolls one at a time, and to use the same rolls for strips of various widths. In many cases the strip is much narrower than the rolls, so that a considerable amount of the roll surface is wasted. This method of procedure is inefficient and greatly limits production, and yet it has been persisted in for many years.

One of the objects of the present invention is to overcome these drawbacks by providing a method and means whereby two or more strips, one alongside another, may be safely and conveniently fed to and passed through the rolls at the same time.

The invention also contemplates the provision of a novel guide for this purpose.

A further object which I have in view is the provision of a guide structure conveniently adaptable to strips of varying widths, which can be readily manipulated and adjusted as required by different conditions of use, and which eliminates the maintenance in the cupboard of the usual large stock of varying sizes of plates and pegs.

In the accompanying drawings:

Fig. 1 is a partial front elevation of a rolling mill, equipped with my improvements, designed to roll two strips concurrently.

Figs. 2, 3 and 4 are, respectively, sections on lines 2—2 of Fig. 1, 3—3 of Fig. 2, and 4—4 of Fig. 1;

Fig. 5 is a top plan view of the guide, with the peg removed and the plate pulled forward slightly out of its operative position;

Fig. 6 is a plan view of the peg showing in dotted lines additional sections which may be used to increase its width;

Fig. 7 is a fragmentary transverse section through the guide structure showing it as used in connection with a strip wider than that shown in Fig. 3; and

Fig. 8 is a detail side elevation of the middle or intermediate member or guide of the guide structure.

In the drawings, I have shown at 10 in Figs. 1 and 2, for purposes of illustration, the rolls of a

two-high mill having the usual housings 11 between which extends the customary cross bar 12. This cross bar is removable as it is set in the customary L-shaped grooves 13 in the housings. Mounted on this cross bar is an improved structure now to be described.

The guide structure comprises three guides or members slidably adjustable along the square cross bar and having square openings engaging the same, and each equipped with a set screw 14 threaded through the respective member and engageable with the lower surface of the cross bar to clamp the member in adjusted position. The guides are adapted to engage the side edges of the strips, and they comprise an intermediate member 15 and two side members 16 spaced apart at the required distance from each other to engage and guide the side edges of two strips introduced to the rolls at the same time.

Between the intermediate member 15 and each side member, and resting on the cross bar, is a portion of a guide plate 17, and above the guide plate is a peg 18, which is provided with any convenient handle or other manipulating means such as exemplified by the upwardly slanted rear end portion 18'. Each of the side guides 16 is provided at the upper end with two spaced inwardly directed overhanging lugs 19, into which are threaded hand-manipulable pressure screws 20. The pressure screws 20 on each side of the intermediate guide are adapted to act jointly upon a pressure plate 21, which in turn acts upon the adjacent portion of peg 18, which in turn presses the strip down against the corresponding portion of the plate 17. The pressure plate or strip 21 is preferably suitably connected to and carried by its cooperating pressure screws, for which purpose the lower end of each screw may be mounted to rotate freely in a socket of the pressure plate, but to be prevented from withdrawal from the plate by means such as a pin 22 engaging the groove 23 in the end of the screw.

It will be observed that the guide plate 17 and peg 18 have portions adapted to act concurrently upon strips introduced or fed at the respective sides of the intermediate member 15. There should, of course, be suitable provisions permitting ready assemblage and disassemblage of the removable plate and peg, and preventing the dislocation thereof while the strips are passing between them. With this in view, I preferably arrange the parts so that the intermediate guide member 15 acts as a stop for the plate and peg, and by preference this is brought about by making the plate and peg of bifurcated form so

that in operative position they straddle the intermediate guide member and are held in place thereby. In the particular form shown in the drawings, this result is accomplished by cutting
 5 out the plate at 24 so that it fits over and conforms to the guide member, and by providing the peg with a corresponding cut-away portion or slot 25.

In the case illustrated in Figs. 1 to 5, inclusive,
 10 a guide is provided for relatively narrow strips. Fig. 7 illustrates a case where wider strips are being handled. In the latter case the plate 17 and peg 18 are brought to the required width by connecting to them at their sides additional guide
 15 sections or portions 26. These additional sections are supplied in varying widths, as required, and each such section can be conveniently connected to its corresponding plate or peg body by appropriate means, for example, by small pins or dowels 27 projecting from the additional section and
 20 adapted to engage sockets 28 in the edge of the adjacent guide member. By these means the guide structure may be adjusted to handle strips of varying widths. The width of the guide portions of the bodies of the plates and pegs is such
 25 as to permit the handling of strips of the minimum width which will be acted upon by the mill, and by providing extra sections or pieces 26 of different widths (which can be stored in a relatively small space), the guide is adaptable readily
 30 to the different strip widths without the necessity of keeping in the cupboard the usual large number of assorted plates and pegs.

The operation of the device will be more or less
 35 obvious to those skilled in the art. It is particularly adapted for the handling of thin flexible strips which are to undergo slight reduction, or finishing or polishing operations, and where, due to the flexibility of the strip, it is necessary for
 40 the latter to be confined in the guide with the required degree of friction, with its side edges in close contact with the upstanding guide members. It is understood, of course, that before the strips are introduced to the rolls the separate
 45 peg is not in place, but that after the ends of the strips have been placed upon the guide plate, the peg is shoved into place against the intermediate guide member, and the pressure plates 21 brought down to bring the required pressure on
 50 the strips. While, however, the structure is particularly intended for this purpose, i. e., the handling of strip metal, it may, upon the removal of the guide plate and peg, be used for the introduction of larger pieces, such as bars, to the
 55 rolls.

Where an unusually wide strip is to be passed through the rolls, two of the three guide members may be shoved over to one end of the rolls in
 60 such a manner that a single strip of relatively great width may be fed in between the member 15 and one of the side members 16. The fact that the cross bar is readily removable from the housings and the several guide members readily removable from it and replaceable, obviously increases the scope of the appliance in meeting
 65 various conditions of use.

Another advantage of my improved guide structure lies in its applicability to existing rolling mills and similar machines which are customarily provided with removable cross bars of
 70 the general type herein illustrated. Of course the device can be readily applied at relatively low expense to new mills or other machines.

It will be apparent that my invention is applicable to other types of mills than that herein

shown, for example, four-high mills, cluster mills, etc. It is also applicable to roll-equipped machines such as slitters, cutting-off machines, washing machines, drying machines, and the like. It is likewise applicable to edging rolls.

Where a single strip of extra width is passed through the rolls, as above described, between the intermediate guide and one of the side guides an ordinary or old-style peg and plate will, of course, be used. The pegs and plates of my invention can be made of wood for finishing mills, and of brass or other suitable metal for run-down and break-down rolls. The guide members are made of suitable metal, and have smooth hard surfaces for contact with the side edges of
 15 the strips.

By my improvements a notable increase in production is obtained, which in many cases is so great as to be of the order of 100%, without the necessity of additional equipment, and by reason of the employment of my new method and the substitution for old-type guides of new guides similar to those herein shown, which enable that method to be carried out. The new guide herein described is of simple and inexpensive construction, and embodies a minimum number of parts, and provides, as described, for the rolling or feeding of strips, and in some cases of bars, which differ in width throughout quite a large range. Naturally the length of the rolls employed in a particular machine is a controlling factor, but usually a given pair of rolls is employed for rolling strips varying in width over a wide range, and by my invention the capacity of the rolls is greatly extended, permitting a
 25 highly desirable increase of production from the plant at low cost without increasing the hazards of the operators. In a mill where automatic stickers are employed, these may be used in connection with guides such as herein described.

While I have shown and described the procedure preferably employed and a preferred means for guiding the strips to the rolls, it is to be understood that this by way of example rather than by way of limitation, and that various changes and modifications may be made in these respects without departing from the principles of my invention or the scope of the appended claims.

What I claim is:

1. In a guide for introducing strip metal to the bite of co-acting rolls, two outer guides, an intermediate guide for guiding two strips, and a single peg and plate cooperating with said guides.
2. In a guide for rolling mills and similar machines, outer guides to engage margins of two strips, an inner guide to engage adjacent margins of said strips, and a peg and plate adapted for use between the outer guides, said inner guide dividing the peg and plate into guide portions for the respective strips.
3. A guide for rolling mills and similar machines having a bifurcated guide plate and a bifurcated peg in combination with a guide structure having a guide member straddled by said peg and plate.
4. A guide for rolling mills and other machines comprising in combination with the rolls a removable cross bar in front of the rolls, three guide members adjustable along said cross bar, two of said members being adapted to engage and guide the outer margins of strips entering the rolls side by side, and the other guide member being adapted to engage and guide the adjacent margins of the strips, a bifurcated guide plate and a

bifurcated peg set between the outer guide members and straddling the inner guide member, and means in association with the outer guide members for exerting a predetermined amount of pressure against the peg in a downward direction.

5. In a guide such as described, the combination of guide members adapted to engage and guide the respective outer edges of strips entering the rolls side by side, a peg and a plate set between said members, and a partition member which engages and guides the inner margins of the strips and also serves as a stop for the peg and plate.

6. The combination with a guide having guide channels for two strips located side by side, of a single peg and plate cooperating with and common to said channels.

7. A guide for rolling mills and other machines comprising adjustable outer guide mem-

bers, an adjustable inner guide member between said outer members, and a guide plate and peg common to the passages on opposite sides respectively of the inner guide member, said guide plate and said peg each having a longitudinal slot by which it straddles said inner guide member.

8. A guide for rolling mills and other machines comprising in combination with the rolls a removable cross bar in front of the rolls, three guide members adjustable along said cross bar, two of said members being adapted to engage and guide the outer margins of strips entering the rolls side by side, and the other guide member being adapted to engage and guide the adjacent margins of the strips, and a guide plate and peg set between the outer guide members and each having a longitudinal slot which enables it to straddle the inner guide member.

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