

E. RYAN.  
SLACK ADJUSTER FOR DRAW BARS.  
APPLICATION FILED MAY 23, 1908.

929,114.

Patented July 27, 1909.

3 SHEETS—SHEET 1.

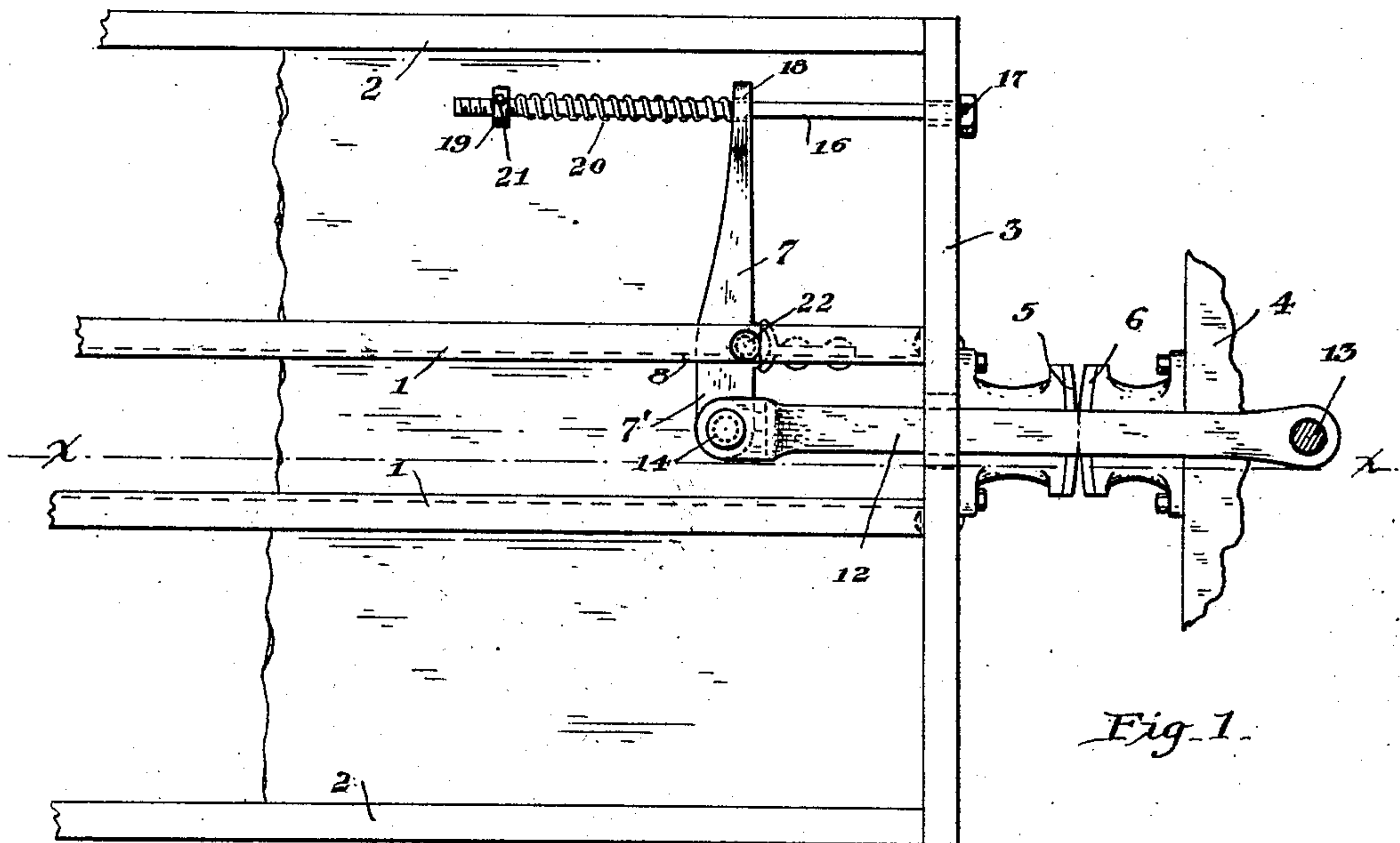


Fig. 1.

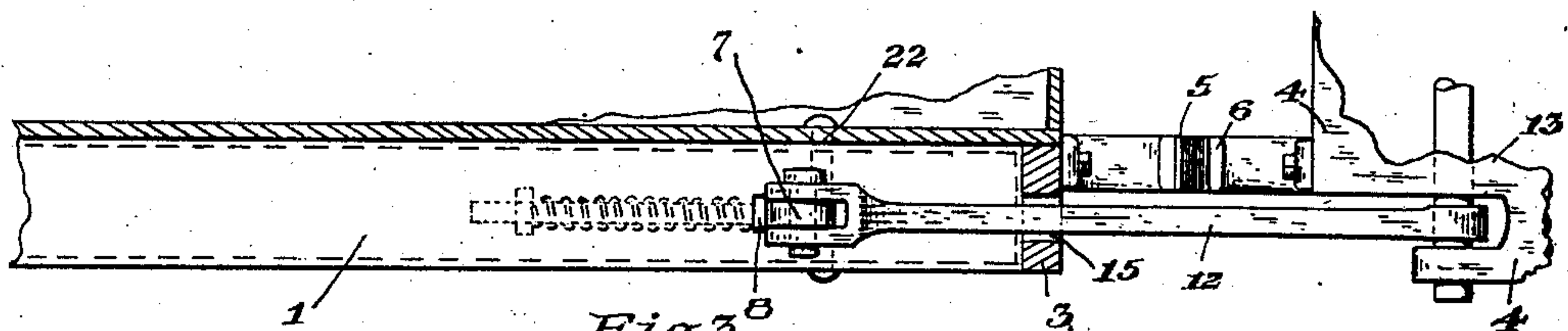


Fig. 3.

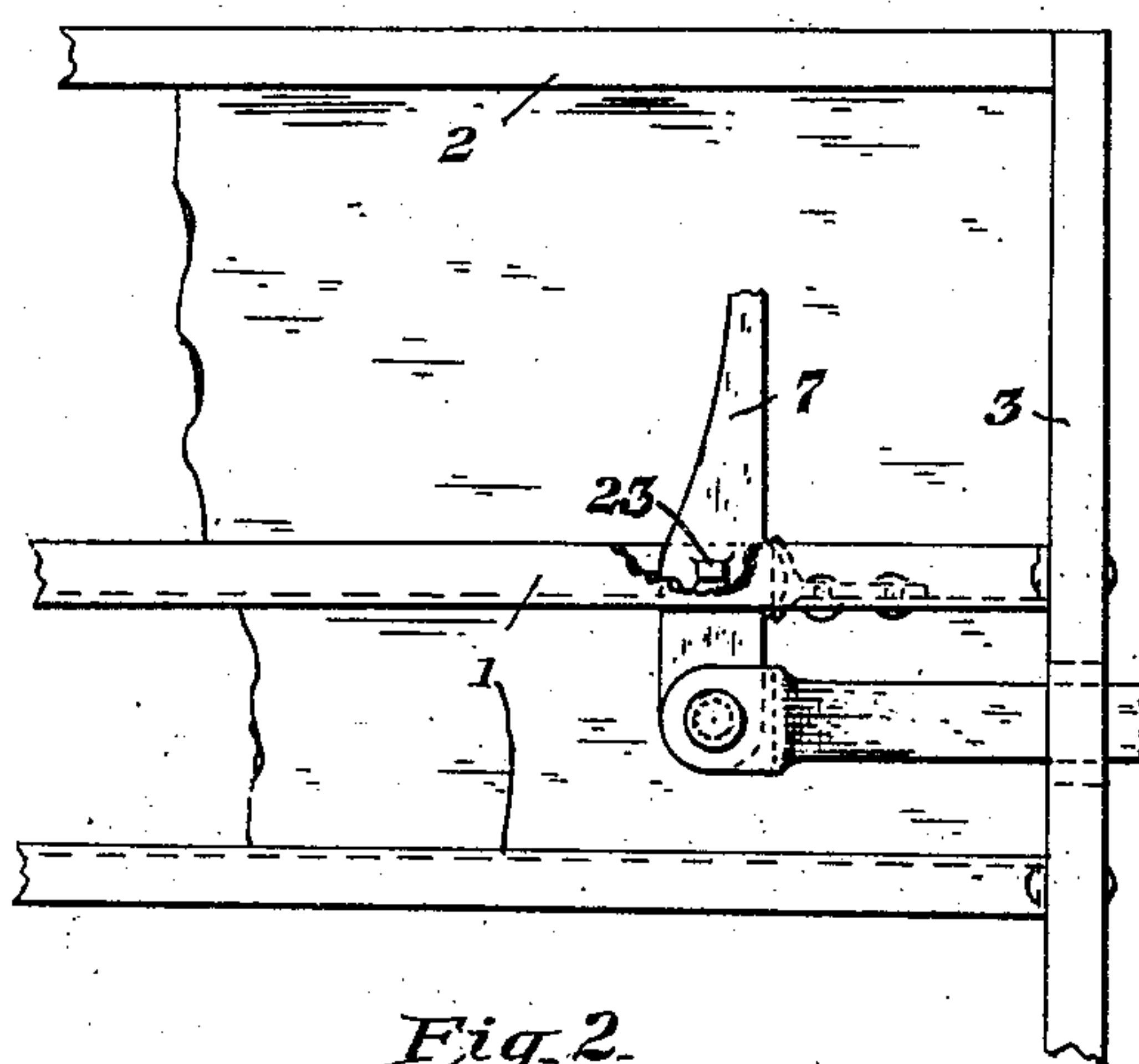


Fig. 2.

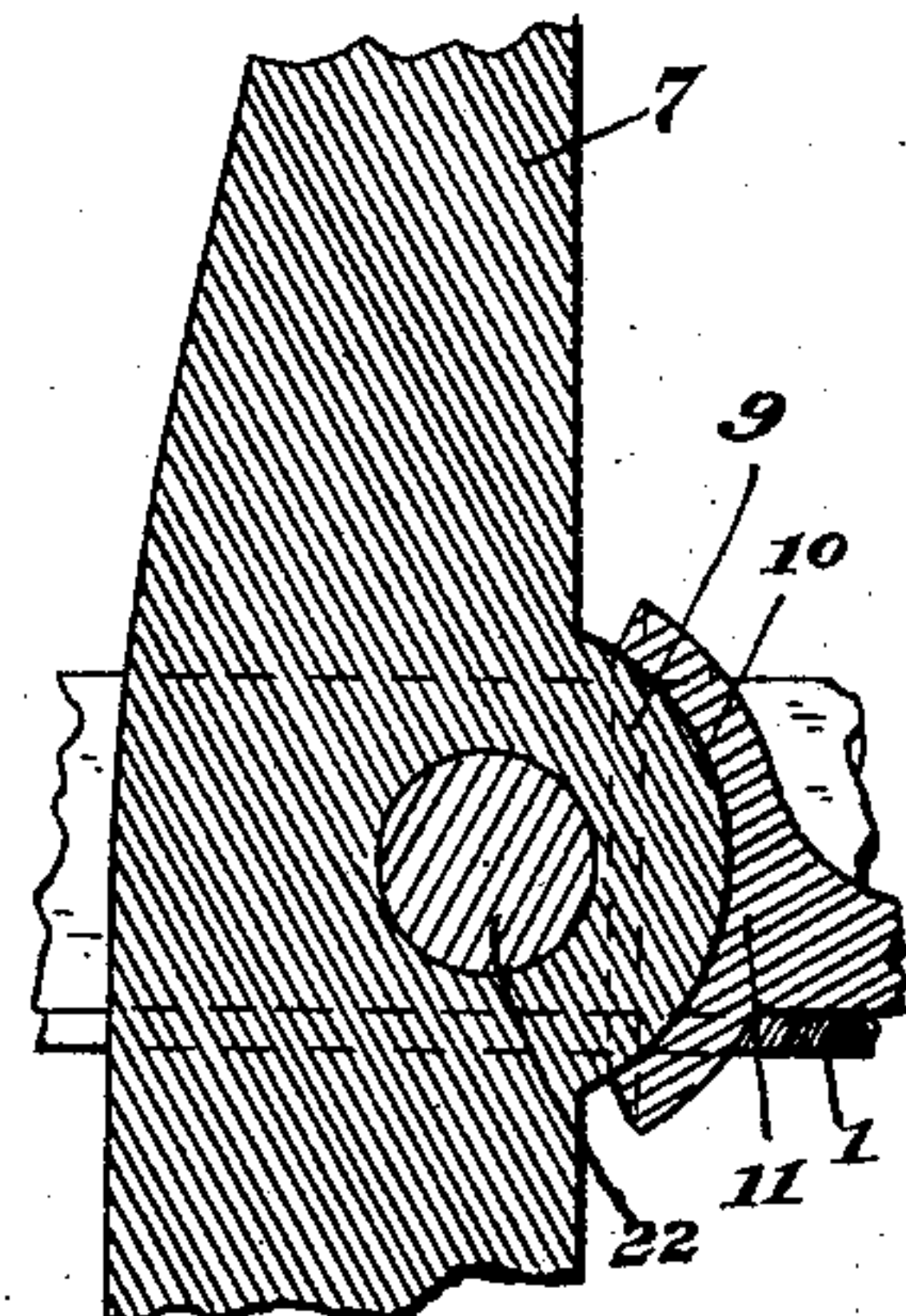


Fig. 4.

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3 SHEETS—SHEET 2.

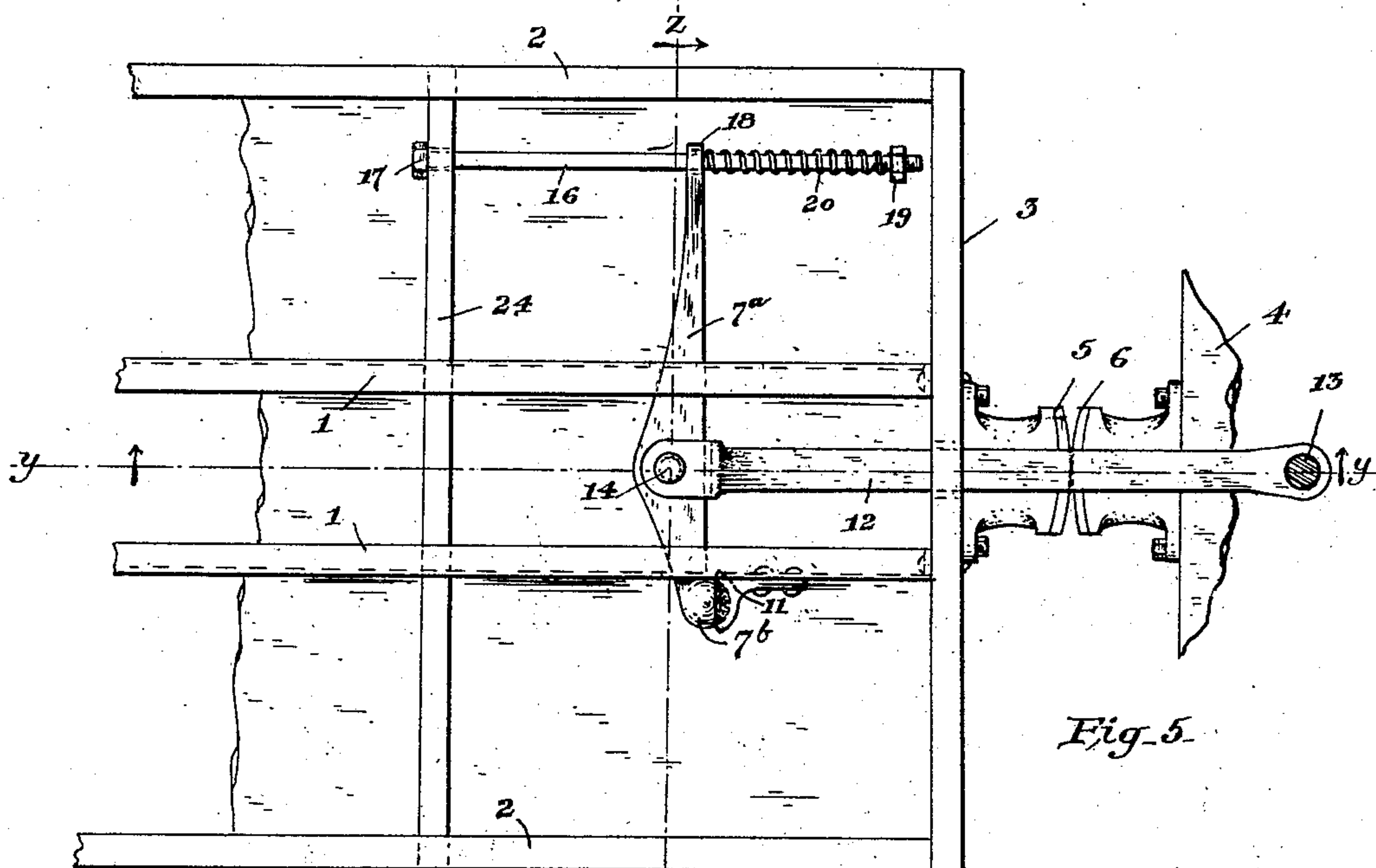


Fig. 5.

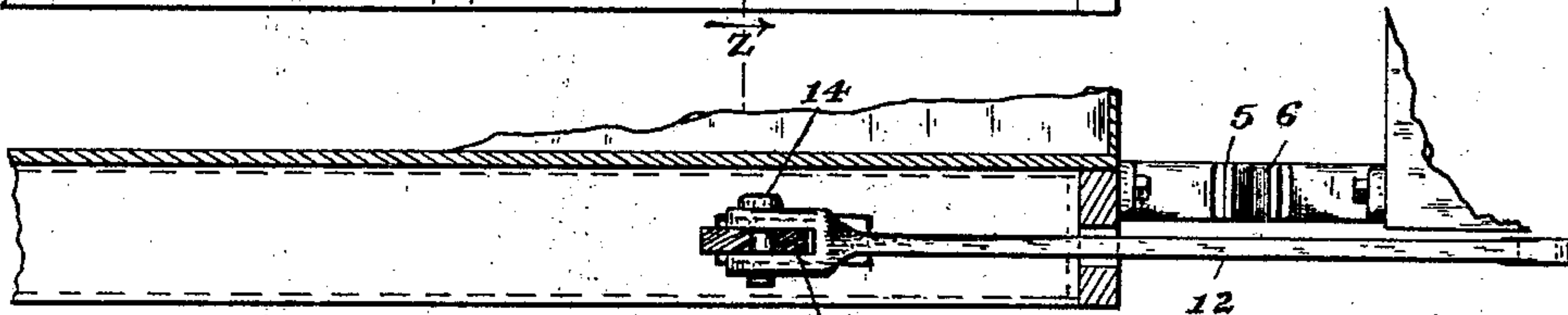


Fig. 6. 7a

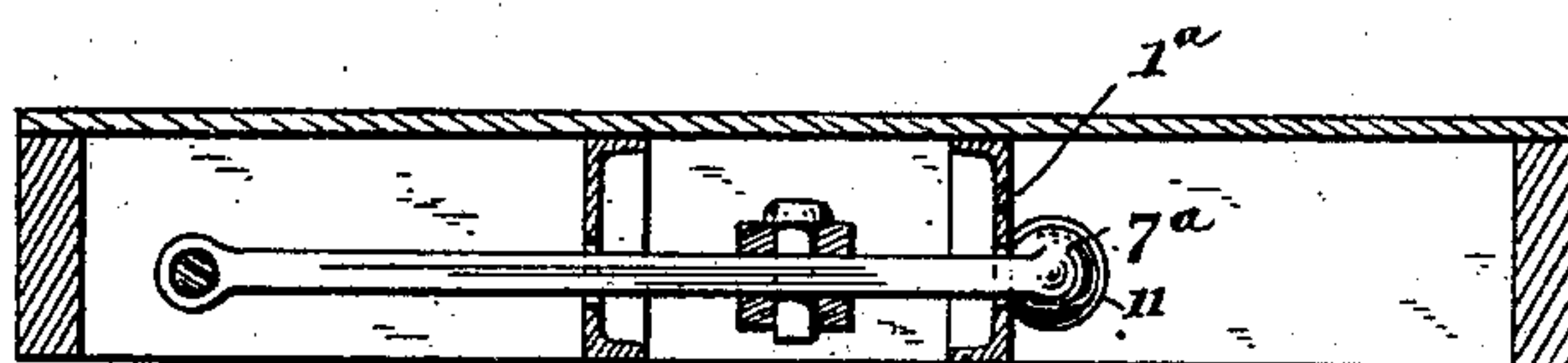


Fig. 7.

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3 SHEETS-SHEET 3.

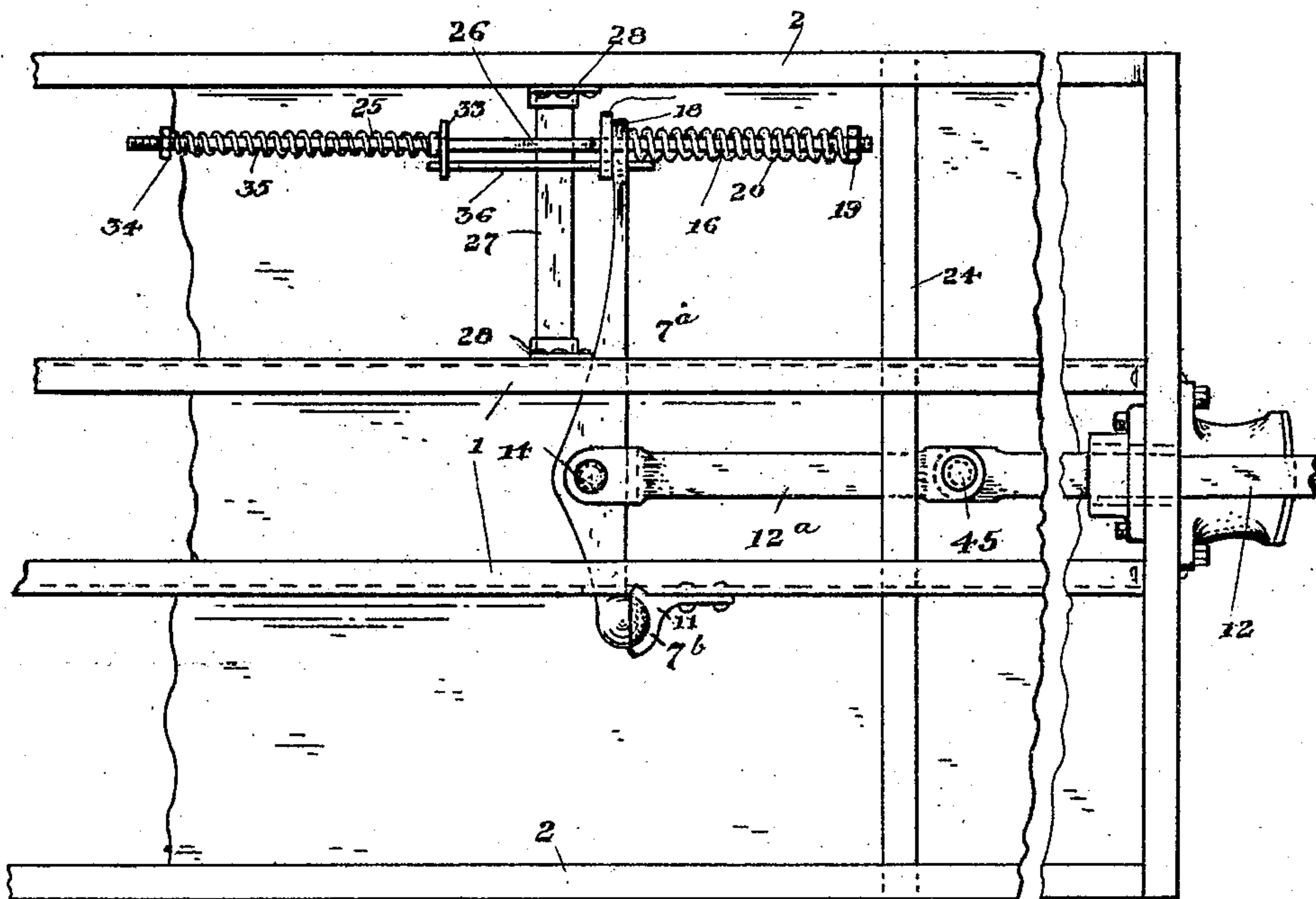


Fig. 8.

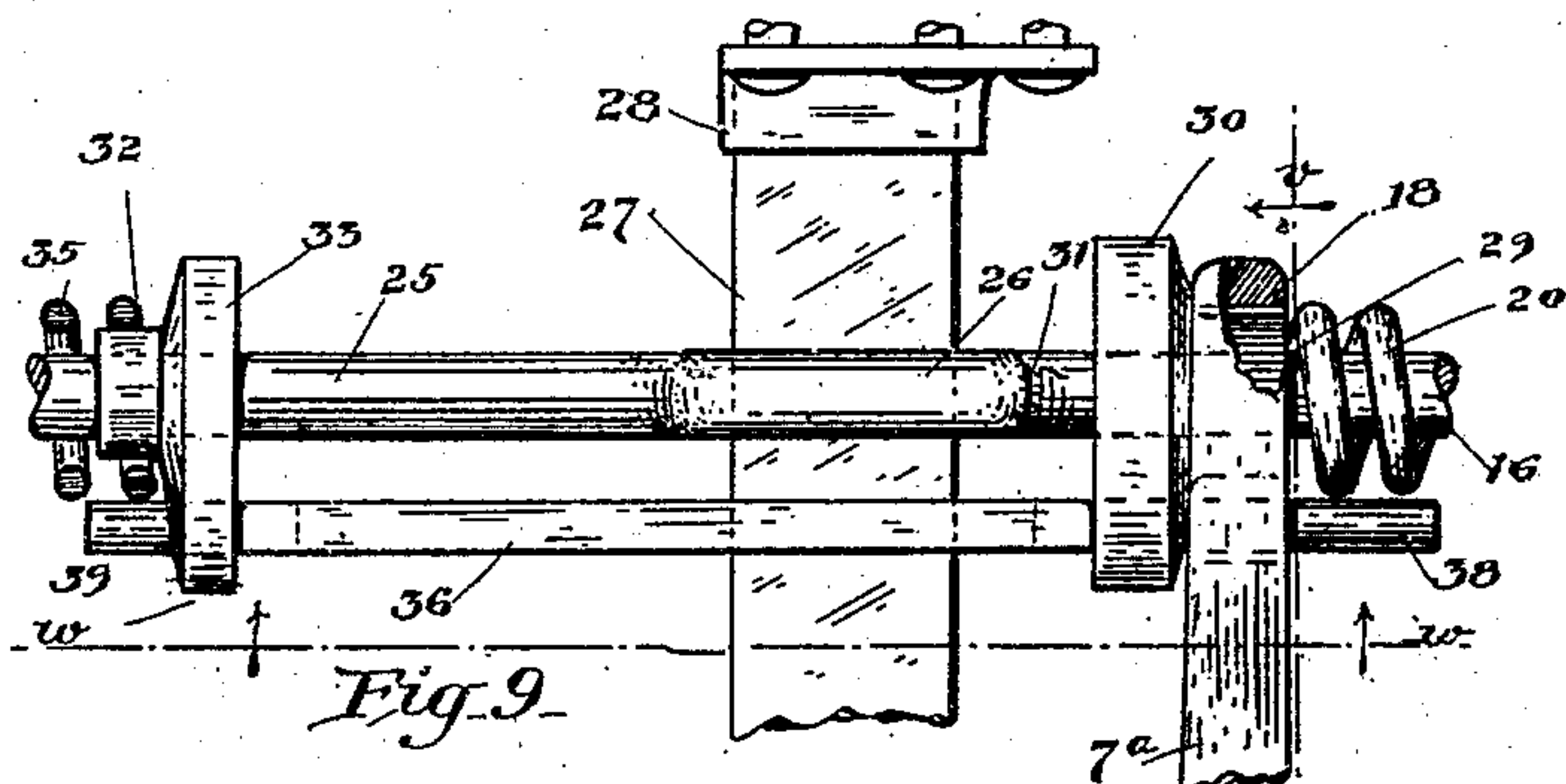


Fig. 9.

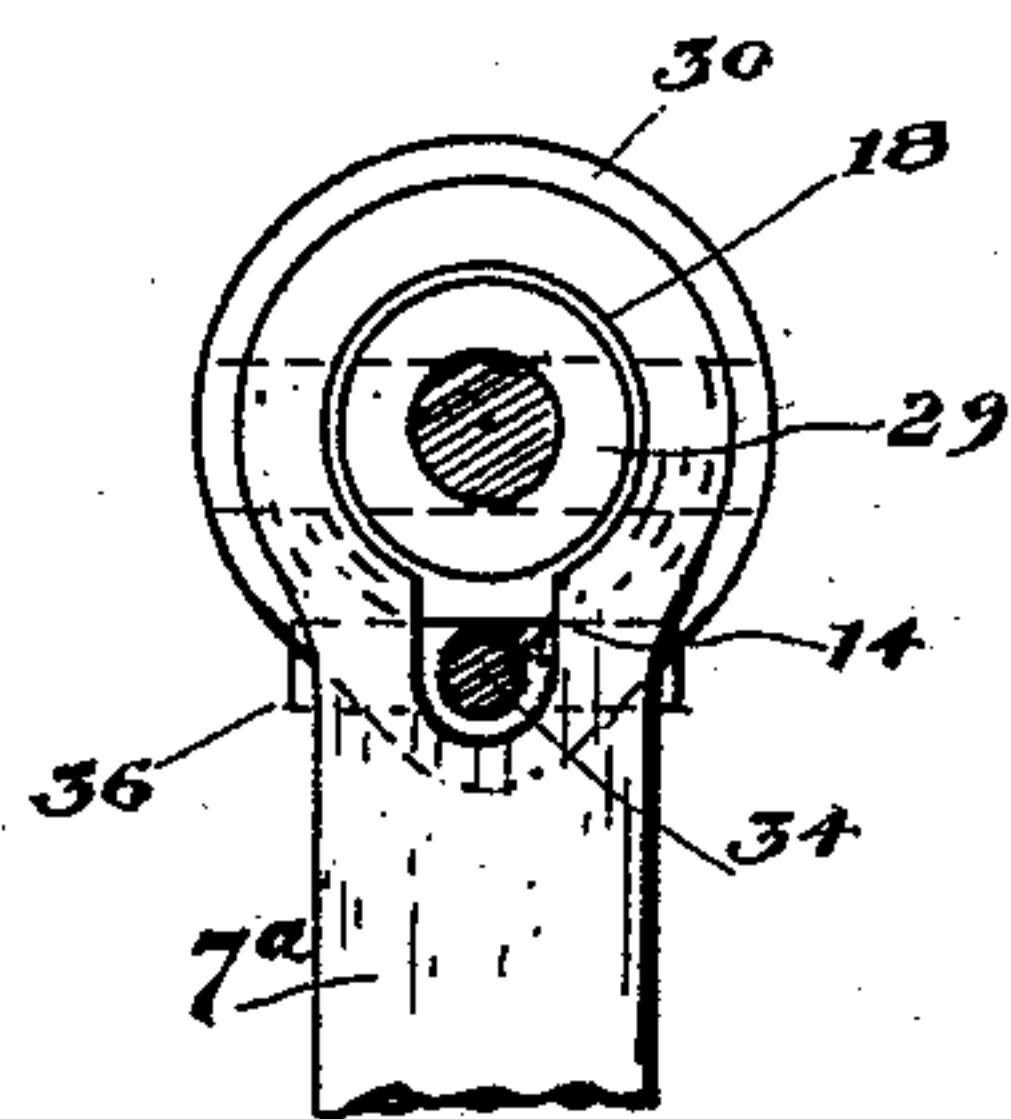


Fig. 11.

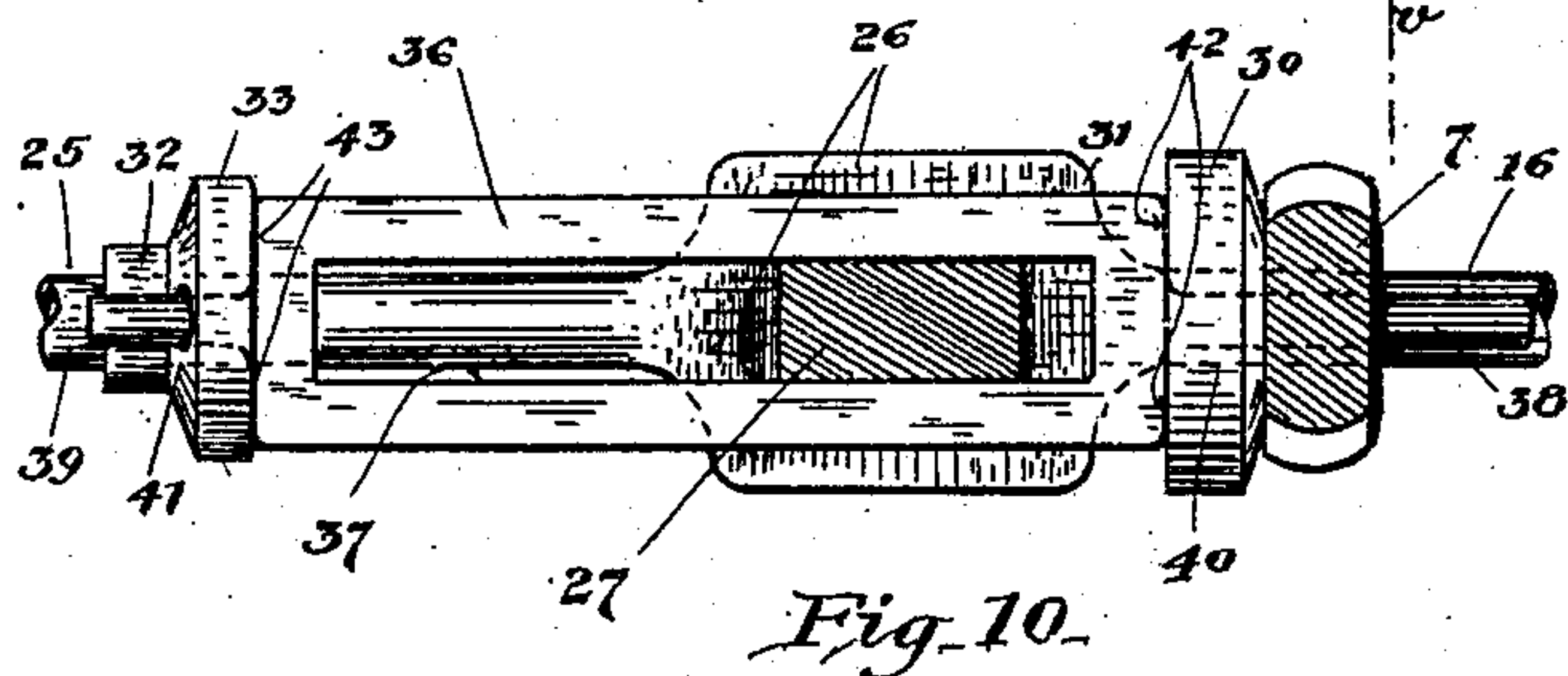


Fig. 10.

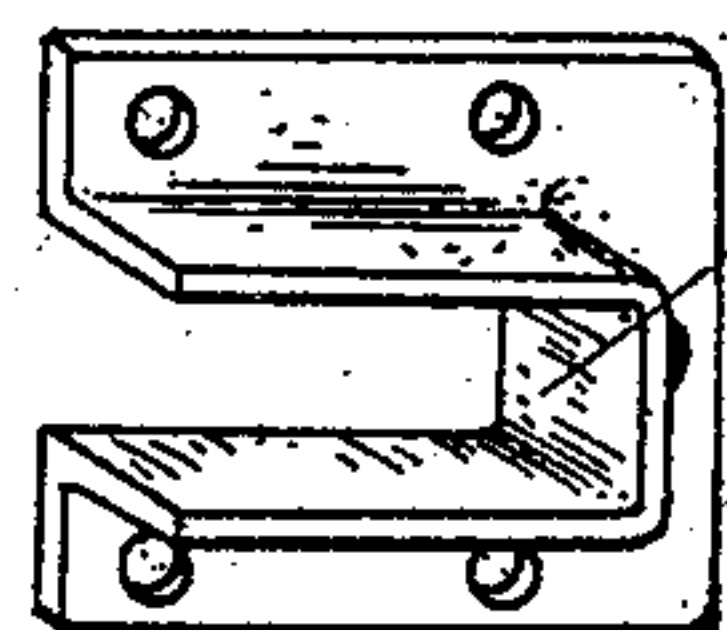


Fig. 12.

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# UNITED STATES PATENT OFFICE.

EDWARD RYAN, OF CLINTON, IOWA.

## SLACK-ADJUSTER FOR DRAW-BARS.

No. 929,114.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed May 23, 1908. Serial No. 434,642.

*To all whom it may concern:*

Be it known that I, EDWARD RYAN, a citizen of the United States, residing at Clinton, county of Clinton, and State of Iowa, have  
5 invented certain new and useful Improvements in Slack-Adjusters for Draw-Bars, of which the following is a specification.

My invention relates to draw-bars for connecting the tender to a locomotive, and particularly to slack-adjusters for draw-bars.

The object of my invention is to provide a device of the class mentioned, which shall maintain a constant but yielding contact between the chafing plates at all times.

15 A further object of my invention is to provide a slack-adjuster which shall maintain a pull upon the draw-bar and coupling-pins of greater force than the tractive force of the locomotive, and equipped with means  
20 for relieving a large percentage of the pull on the coupling-pins when the locomotive is at rest, or not working up to its full capacity.

Other objects will appear hereinafter.

With these objects in view, my invention  
25 consists generally in a locomotive and its tender, in combination with a lever pivotally connected to one thereof, a draw-bar pivotally connected at one end to the other and having its opposite end connected to said  
30 lever, and a yielding connection between said lever and the underframe upon which it is mounted.

My invention further consists in a locomotive and its tender, in combination with a  
35 lever pivotally mounted beneath the latter, a draw-bar connected at one end to the locomotive and at the other end to one arm of said lever, a spring impinging against the other arm of a lever and exerting a pull on  
40 said draw-bar greater than the tractive force of the locomotive, and an oppositely acting spring of less power adapted to counteract a large percentage of the force of the first  
45 said spring when the locomotive is at rest or working under its full capacity.

My invention further consists in various details of construction and arrangements of parts, all as will be fully described hereinafter.

50 My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which,

55 Figure 1 is a bottom plan view of the forward end of a tender and the adjacent part of the locomotive underframe equipped

with a slack-adjuster embodying my invention in one form, Fig. 2 is a similar detail view of a portion of the device illustrating a slight modification, Fig. 3 is a vertically  
60 longitudinal section on the line  $x-x$  of Fig. 1, Fig. 4 is a detail sectional view upon an enlarged scale illustrating the pivotal connection between the lever and the underframe, as shown in Fig. 1, Fig. 5 is a view  
65 similar to Fig. 1 illustrating a slight modification, Fig. 6 is a vertical longitudinal section on substantially the line  $y-y$  of Fig. 5, the draw-bar being illustrated in elevation, Fig. 7 is a vertical transverse section  
70 on the line  $z-z$  of Fig. 5, Fig. 8 is a view similar to Figs. 1 and 5 illustrating a further modification of my invention, wherein the main spring is partially counterbalanced by a second spring, Fig. 9 is a detail plan  
75 view upon an enlarged scale illustrating the connection between the springs, Fig. 10 is a section on the line  $w-w$  of Fig. 9, Fig. 11 is a section on the line  $v-v$  of Fig. 9, and Fig. 12 is a perspective view of one of the  
80 socket members by means of which the tension device is mounted upon the underframe.

Referring to Figs. 1 to 4 inclusive, 1—1 indicate the draft-sills of a tender, 2—2 the  
85 outer sills and 3 the breast beam sill of a tender, and 4 a portion of the underframe of a locomotive. The tender and locomotive are equipped with the usual chafing plates 5 and 6 respectively. Pivotaly mounted beneath the tender is a lever 7. This may  
90 be pivotally connected to any portion desired which is practical, but I prefer to pivot the same to one of the draft sills 1. To this end, the web of the sill is apertured  
95 as at 8 to permit the lever to extend there-through, and the lever is provided with a boss 9, preferably having a spherical face 10 which rests in a socket member 11 secured to the web of the member 1 at the forward  
100 end of the aperture 8.

12 indicates the draw-bar pivotally connected as at 13 to the locomotive, and at the other end to the short arm 7' of the lever 7, the draw-bar passing through an aperture  
105 15 in the breast beam 3.

14 indicates the coupling-pin connecting the draw-bar to the lever on the tender, 13 indicating a coupling-pin connecting the same to the locomotive.

A yieldable connection is provided be-  
110 tween the long arm of the lever and the underframe of the tender, and this is ar-



ranged to exert a pull on the draw-bar opposite to that exerted by the locomotive, and of greater power than the tractive force of the locomotive.

5 16 indicates a rod extending through the breast beam and having the head 17 resting against the outer face thereof. The rod 16 extends through an eye or aperture 18 on the end of the lever, and is provided with a  
10 nut or collar 19, threaded upon its end and between which, and the end of the lever is interposed a spring 20, the spring 20 bearing against the end of the long arm of the lever, exerting a greater pull on the draw-  
15 bar than the tractive force of the locomotive, hence, it is obvious that the chafing plates will be maintained in constant contact. By adjusting the nut 19 on the rod, the pressure of the spring may be regulated to take up  
20 the wear of the several parts and maintain the proper pull on the draw-bar. This may be done by turning either the nut or the rod, the latter being preferable, as the head 17 is accessible and more convenient to reach  
25 than the nut 19.

21 indicates a hole in the nut to receive a pin or rod to hold the nut against turning while the rod is being turned.

Suitable means are provided to prevent  
30 separation of the locomotive and tender should the long arm of the lever or the tension device break.

In Figs. 1, 3 and 4 I have illustrated a pin  
35 22 extending through the lever and the flanges of the beam 1, and having its axis extending through the center of the ball and socket joint 9—11. This will prevent the lever from pulling through should the parts break as above mentioned. Instead of the  
40 pin 22, lugs 23 may be provided or formed upon the lever 7, which are of sufficient size to be unable to pass through the aperture 8, as shown in Fig. 2.

In Figs. 5 to 7 inclusive, I have illustrated  
45 a slight modification, wherein both the long and short arms of the lever are upon the same side of the fulcrum point, the principal difference being in the reversal of the position of the tension device. In this form, the  
50 lever 7<sup>a</sup> extends through apertures in both of the draft-sills 1—1. The fulcrum of the lever comprises a spherical head or end 7<sup>b</sup> which rests against the web 1<sup>a</sup> of the draft-sill. It is obvious that inasmuch as the  
55 coupling-pin 14 is upon the same side as the fulcrum point 7<sup>b</sup>, the rod 16 must be reversed, and to this end, it is secured or fixed to one of the members 24 of the body bolster.

In Figs. 8 to 12 inclusive, I have illustrated  
60 a further modification wherein the device is equipped with means for counterbalancing in a great measure the strain upon the pins due to the tension of the spring 20. In this form, the rod 16 is provided with an  
65 extension 25 in alinement therewith, and in-

intermediate of the portions 16 and 25 is an  
eye or yoke 26 through which extends a beam 27 resting in sockets 28 fixed to the sills 1 and 2. The beam or bar 27 fits snugly in  
the eye 26 and prevents longitudinal move- 70  
ment of the rod 16—25. Slidably mounted upon the rod 16 is a sleeve 29 having an annular flange 30, and the eye 18 of the lever 7<sup>a</sup> is of sufficient size to receive said sleeve, the flange 30 being interposed between the 75  
end of the lever and the eye 26 which being enlarged as shown clearly in Fig. 1 presents a shoulder 31 against which the member 30 abuts when the locomotive is at rest. Slidably mounted upon the rod portion 25, is a 80  
similar sleeve 32 having a flange 33 between which and a nut 34 on the end of the rod, is interposed a spring 35, which is of less power or force than the tractive force of the locomotive. Interposed between the flanges 85  
30 and 33 is an elongated member 36 which is longitudinally slotted as at 37 to receive the beam or bar 27, the slot being of sufficient length to permit ample longitudinal movement of the sleeves on their respective 90  
rod portions. The ends of the member 36 are provided with the longitudinally projecting pintles 38 and 39 which extend through apertures 40 and 41 in the flanges 30 and 33 respectively. The ends of the 95  
member 36 form shoulders 42 and 43 respectively, and the flanges 30 and 33 are normally held in engagement therewith by their respective springs. When the locomotive is at rest, the force of the spring 35 is 100  
communicated to the lever 7<sup>a</sup> through the interposed member 36, relieving the coupling-pins of a large per cent. of the strain due to the force of the spring 20. When the pull of the locomotive is exerted upon the draw-bar, the lever tends to compress the spring 20, and when the train is taking a curve the spring is somewhat compressed, however the spring 30 maintains the several parts in contact. It should be noted that the 110  
eye 18 is notched as at 44 to receive the pintle 38, the latter being somewhat elongated, preventing sudden movements of the lever from separating the parts. On account of the length of the rod 16—25, it is arranged back of the front bolster 24 and the draw-bar 12 is provided with an extension 12<sup>a</sup> pivotally connected to the main portion as at 45. 115

Having described my invention what I claim as new, and desire to secure by Letters Patent, is: 120

1. In combination with a locomotive and its tender, a lever pivotally connected to one, a drawbar pivotally connected to the other, and a connection between said lever and the one to which it is pivoted exerting yielding resistance to the movement of said lever. 125

2. In combination with a locomotive and its tender, a lever pivotally connected to one, 130



a drawbar pivotally connected to the other and having its opposite end connected to said lever, and an elastic yielding connection between the lever and its support exerting 5 yielding pressure on the lever opposed to the draft force on the tender.

3. A locomotive and its tender, in combination with a lever pivotally connected to one thereof, a draw-bar pivotally connected 10 to the other and having its opposite end connected to said lever, and means engaging said lever and offering yielding resistance to side draw-bar of greater force than the tractive force of the locomotive, substantially as 15 described.

4. A locomotive and its tender, in combination with a lever pivotally mounted beneath the tender, a draw-bar connected at one end to the locomotive and at the other 20 end to said lever, and a yieldable connection between the long arm of said lever and the underframe of the tender, and offering yield-

ing resistance to said draw-bar of greater force than the tractive force of the locomotive, substantially as described. 25

5. A locomotive and its tender, in combination with a lever pivotally mounted beneath the tender, a draw-bar connected at one end to the locomotive and at the other end to said lever, a spring impinging against 30 one arm of said lever and offering yielding resistance thereto of greater force than the tractive force of the locomotive, and a second spring of less strength adapted to partially counterbalance the force of the first said 35 spring, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD RYAN.

Witnesses:

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HELEN F. LILLIS.