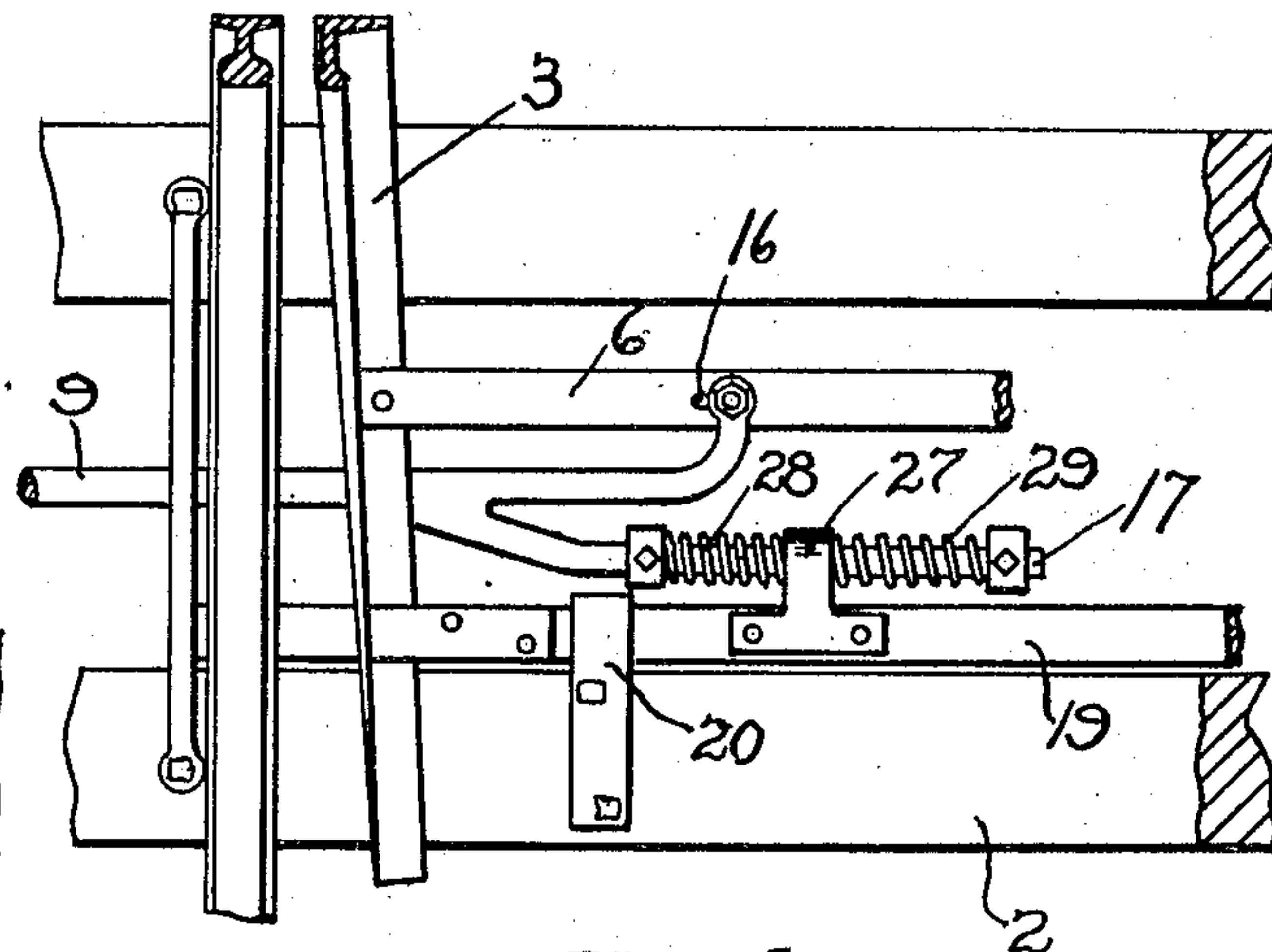
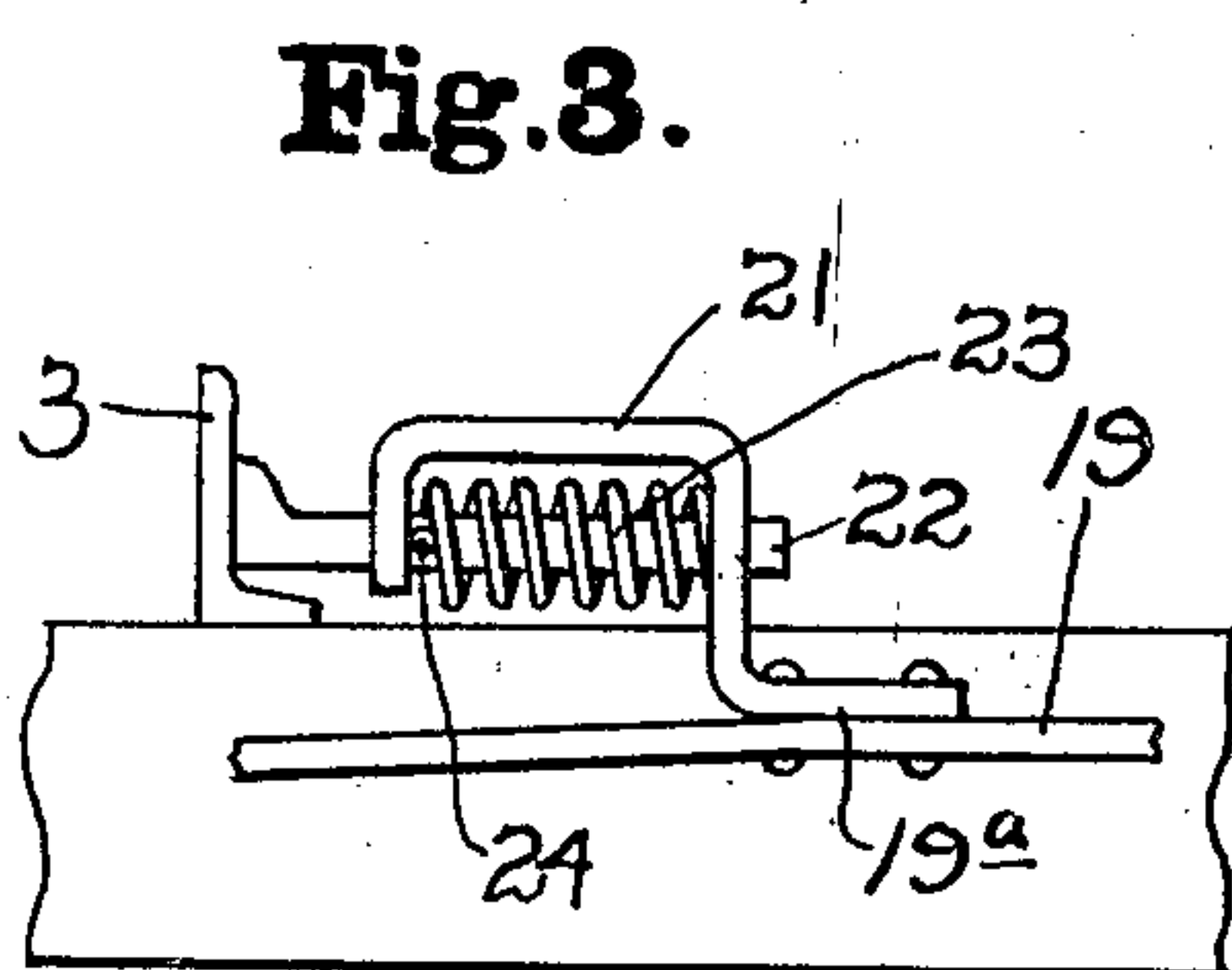
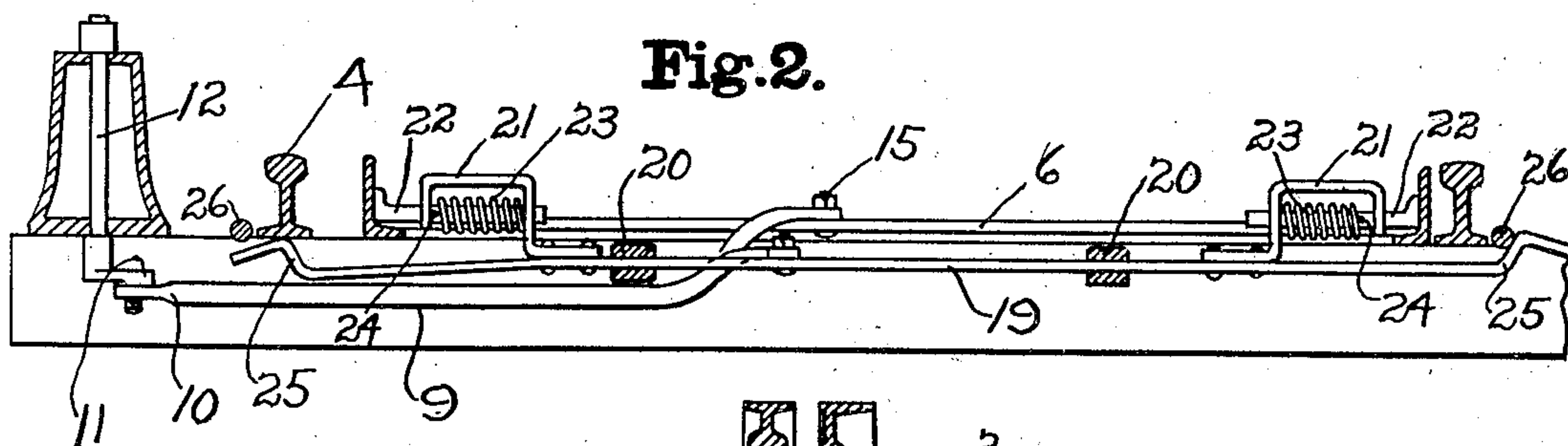
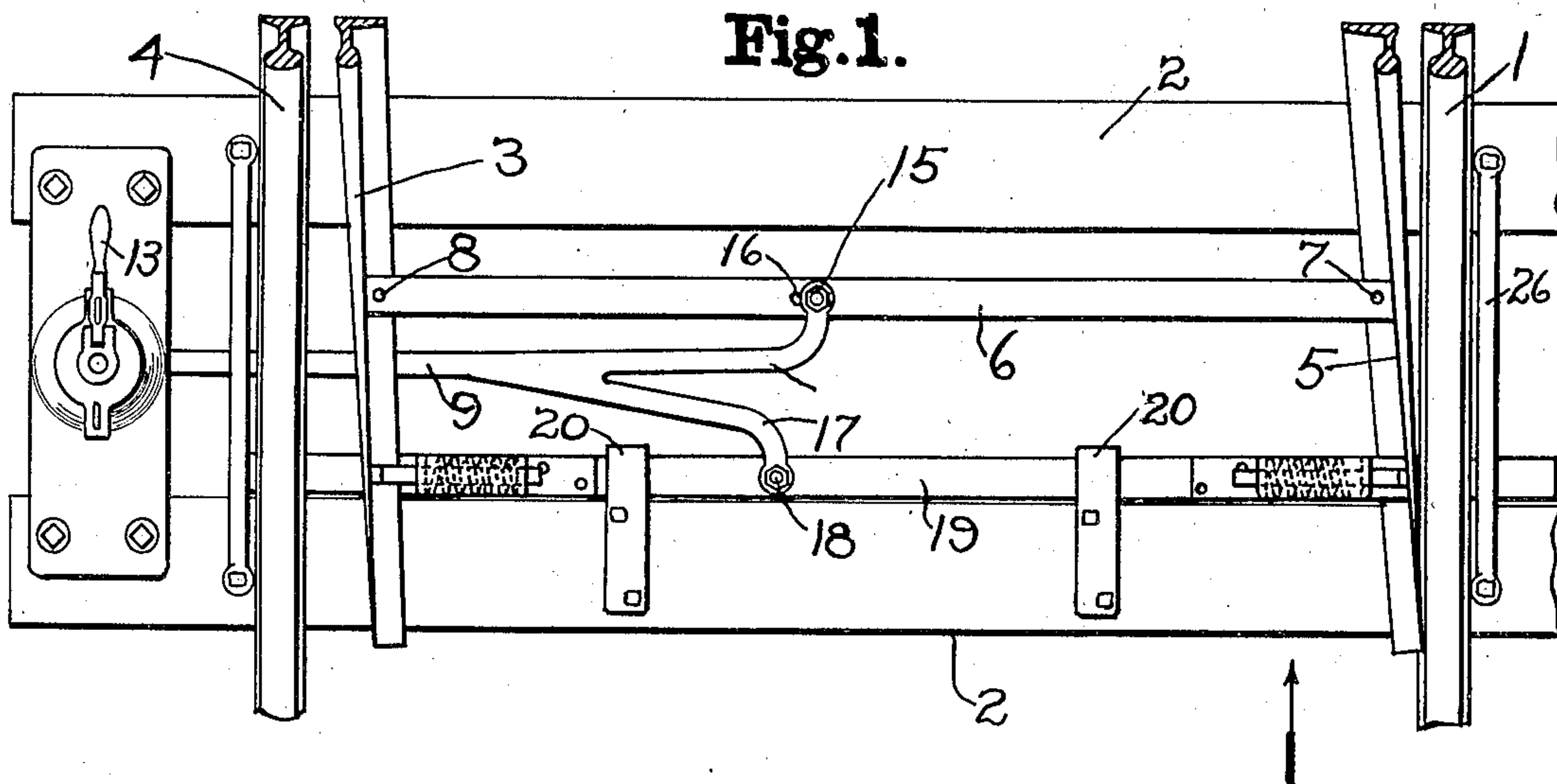


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 LOCK FOR RAILWAY SWITCHES.  
 APPLICATION FILED APR. 9, 1909.

927,789.

Patented July 13, 1909.

2 SHEETS—SHEET 1.



WITNESSES  
 Willard H. Bardeley  
 E. J. Ogden

INVENTOR  
 John O. Hale.

BY Howard C. Barlow  
 ATTORNEY

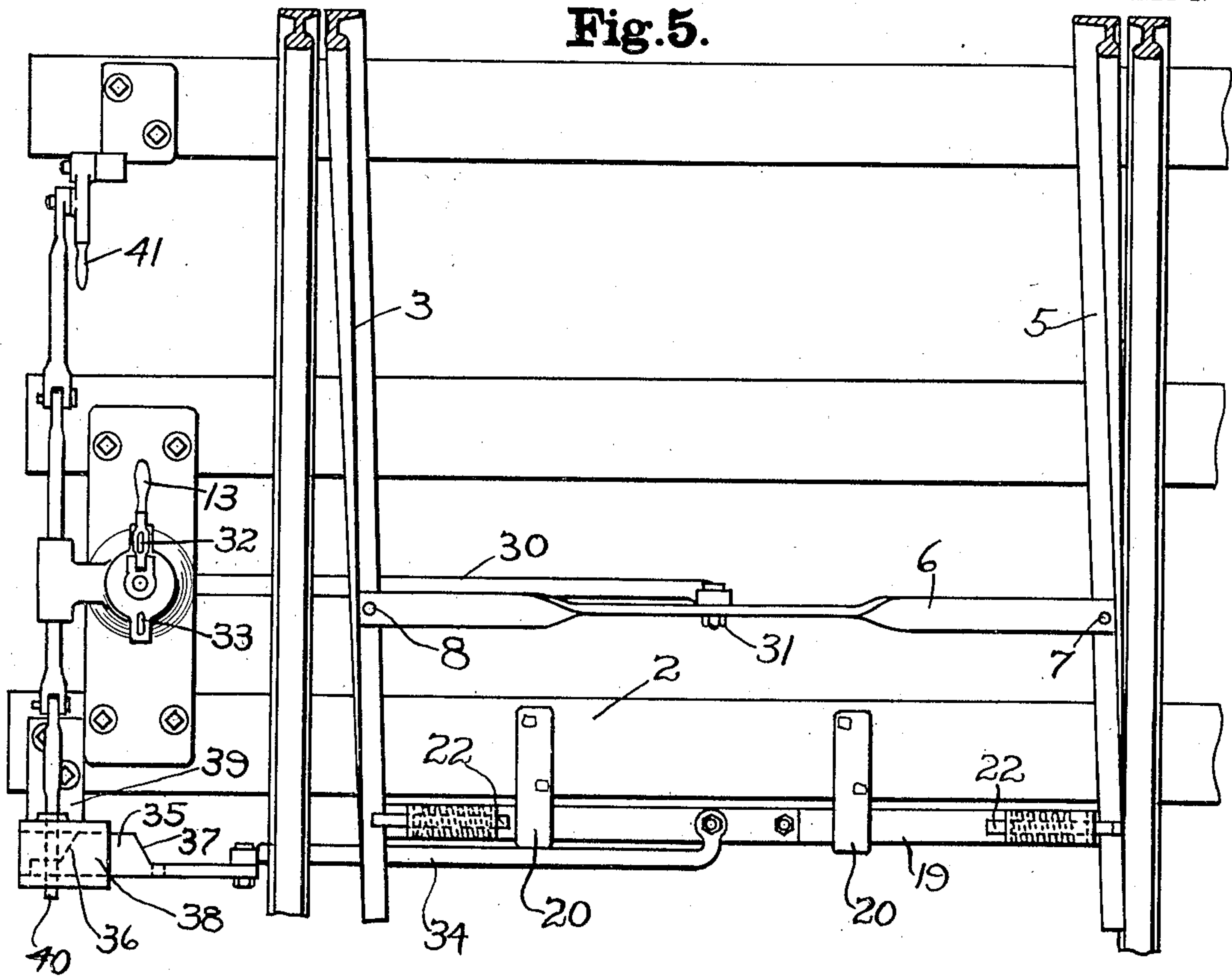
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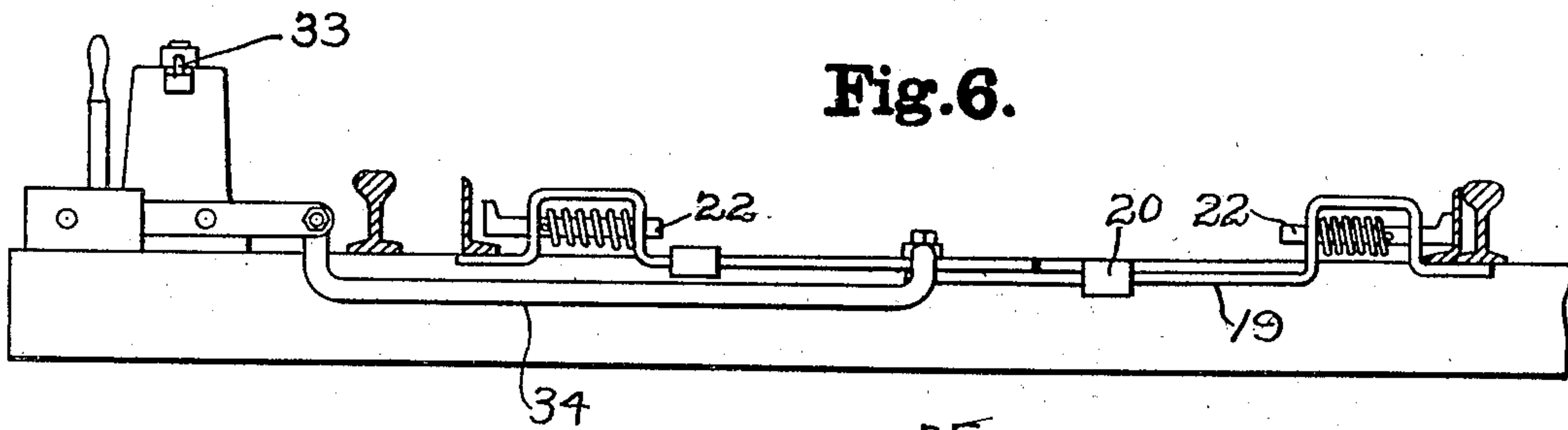
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2 SHEETS—SHEET 2.

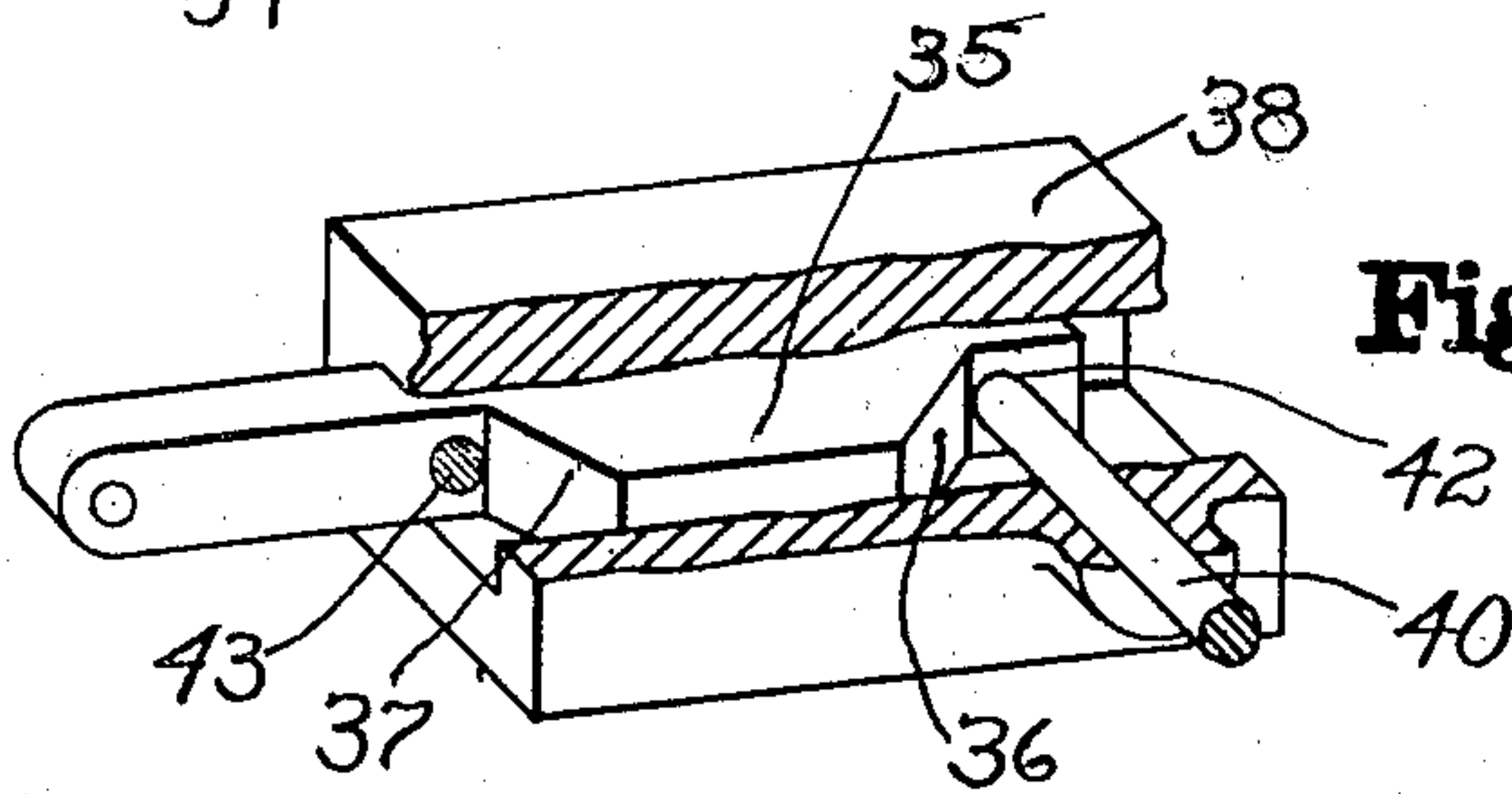
**Fig. 5.**



**Fig. 6.**



**Fig. 7.**



WITNESSES:  
*Willard H. Bardsley*  
*E. V. Ogden*

INVENTOR  
*John O. Hale.*

BY *Howard E. Barlow*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

JOHN O. HALE, OF WORCESTER, MASSACHUSETTS.

## LOCK FOR RAILWAY-SWITCHES.

No. 927,789.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed April 9, 1909. Serial No. 488,792.

*To all whom it may concern:*

Be it known that I, JOHN O. HALE, a citizen of the United States, residing at the city of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Locks for Railway-Switches, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to locks for railway switches and is an improvement on my co-pending application Serial Number 439,710, filed June 22, 1908.

15 The object of this invention is to provide simple and effective means to be readily attached to switches of this character whereby the split rail or switch points may be positively thrown and locked and then pressed by a flexible tension to take up the wear or 20 lost motion in the parts.

It is found in practice very difficult to prevent bolts from becoming loosened in the mechanism on railroad tracks owing to the excessive jar and working of the parts, due 25 to the rapid passing of heavy trains, and where the ordinary tie rod is used in a switch and the same becomes slightly loosened it fails to carry or move the switch points into the proper position when thrown sometimes 30 causing the derailing of the train. In order to obviate this very serious difficulty I have provided a connection to the tie rod whereby the positive throwing of the switch is assured and I have also provided a spring 35 pressed member adapted to be operated in conjunction with the tie rod connection to take up any looseness or backlash in said tie rod or other connections, and to hold the point of the switch firmly in position against 40 any pressure, jar or vibration of the passing trains.

Another feature of my improved apparatus is that a positive connection may be made between the tie rod and the switch 45 throwing lever and an independent or auxiliary yielding connection may be made between said rail points and another locking device, whereby the rail points may be first positively moved into position and permanently 50 locked and subsequently be further pressed into position with a flexible tension, which tension may be applied and permanently locked by a separate and independent interlocking mechanism.

An advantage of my combined locking 55 and interlocking device is that owing to its extremely simple construction it may be readily applied to the switches now in use and kept in repair by the ordinary tools used 60 by the section hands.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the 65 appended claims.

In the accompanying drawings: Figure 1— is a plan view illustrating my mechanism attached to a switch and set in position to close and lock the switch point and cause the train approaching in the direction of 70 the arrow to take the side track. Fig. 2— is an end view showing the rails, a portion of one of the ties and some of the mechanism in section. Fig. 3— is an enlarged view showing one of the spring pressed bolts or 75 members which is adapted to engage one of the rail points with a flexible tension. Fig. 4— is an enlarged plan view showing a modification which illustrates a positive connection to the tie rod and another arrangement of a spring pressed member 80 through which the switch points are operated. Fig. 5— is a plan view illustrating a positive connection between the tie rod and a switch throwing lever and another independent or auxiliary yielding connection 85 between said rail points and another interlocking device. Fig. 6— is an end elevation of the mechanism illustrated in Fig. 5. Fig. 7— is an enlarged view in perspective, partially in section, illustrating the cam operated by the interlocking bolt through which a flexible tension is exerted 90 on the rail points.

Referring to the drawings, 1 designates 95 the main track rails which are laid in the customary manner upon the ties or sleepers 2. Let it be supposed that the switch point 3 when moved against the rail 4 completes the main track and the switch point 5 when 100 pressed against rail 1 completes the side track.

In practice the points 3 and 5 are connected by the tie rods 6 by means of bolts 7 and 8. These bolts owing to the constant 105 jarring of the rapidly passing trains often become loosened and the tie rod consequently has considerable lost motion, and



sometimes becomes entirely free at one end, so that when it is attempted to move these rail points from one side to the other, by means of said tie rod alone they are likely not to be carried the full length of their stroke so as to lie properly up against the rail. To overcome this objectionable and dangerous feature in switches of this character I have provided a bifurcated connecting rod 9 which is attached at one end to the usual offset portion 11 of the switch shaft 12, the same being arranged to be manipulated by the hand lever 13. One of the members 14 at the opposite end of said rod 9 is loosely connected to the tie rod 6 by a bolt 15 passing through a slotted hole 16. The other member 17 of said rod is connected by means of the bolt 18 to the bar 19, which is held to slide endwise in suitable bearings 20—20 supported from the sleeper 2. Frames 21 are either riveted, welded or otherwise connected at 19<sup>a</sup> to this rod 19 in which frames are slidably mounted bolts 22 adapted to be pressed outwardly against the rail points by springs 23, acting between said frame and the stop pins 24 in said bolts. In order to assist these spring pressed bolts to retain the rail points in position, each end of this bar 19 may be made resilient and extend out beyond the rails and be bent up near their outer ends as at 25, said bent-up portion being adapted to spring upward and hook over the outer edge of the rail, or if desired an extra guard bar, such as that illustrated at 26, in Figs. 1 and 2, may be provided to relieve the rail and receive the wear due to the friction of these auxiliary locks.

In place of mounting spring bolts, such as those best illustrated in Fig. 3, on the rod 19 it is found that one of the fingers 17 of the bifurcated connecting rod 9 may be passed through an ear 27 attached to said rod 19 and have springs 28 and 29 mounted on either side of said ear whereby the bar 19 may be carried with a yielding pressure by the connecting rod 9 against the point of the rail to retain the same with a similar effect as that obtained by the bolt 22 in Fig. 3.

A very desirable construction wherein the rail points are held by an auxiliary yielding pressure, is illustrated in Figs. 5, 6 and 7, in which the connecting rod 30 is bolted permanently at 31 to the tie rod 6, the opposite end being connected to the switch locking mechanism the same as that illustrated in Fig. 2, whereby the switch is operated and locked either in the open or closed position by the throwing of the switch handle 13 from the point 32 around to the point 33 on the opposite side of the switch stand. This simple method might be sufficient for operating the switch points if it were not for the lost motion caused by the looseness of

the bolts and other connections whereby the switch points are not always thrown into the required position against the rails and a train passing over the same may take the wrong track and be derailed.

In order to insure the complete throwing of the rail to its required position I have provided an auxiliary yieldable retaining mechanism which includes the endwise sliding bar 19 with its spring actuated bolts 22 at either end, as above described to work in connection to the primary throwing mechanism and flexibly engage the inner side of the rail points 3 and 5, and to this bar I have attached an independent connecting rod 34, the opposite end of which is connected to the sliding cam 35. This cam is provided with inclined faces 36 and 37 and is adapted to slide endwise in its casing 38, the same being supported from the sleeper 2 as at 39. In order to apply a tension to these rail points through the spring pressed bolts or members 22 and at the same time to positively lock the same against any possible movement, I have provided an endwise sliding bar 40 which is actuated by an operating handle 41 whereby when the switch points are thrown to the right, as illustrated in Fig. 5, the forward movement of said handle 41 causes the bolt 40 to engage the inclined face 36 of the cam 35 and press the bolt 22 against the point 5 of the rail, holding the same firmly in position with a flexible tension.

When it is desired to throw the switch to the opposite side the handle 41 of the interlocking device is first actuated to unlock the mechanism by withdrawing the bolt 40 from the hole 42 in the cam member, then the lever 13 may be operated to move the rail points to the desired position, after which the interlocking bolt is again operated by the handle, which bolt engages the opposite face 37 of the cam, thus exerting a flexible tension on said rail points, when a further movement of the bolt carries it into the hole 43 positively locking the same in that position.

My improved railway switching apparatus is extremely simple in construction; is easily applied to any railway switch without the employment of skilled labor; effectually removes the liability of accident caused by the effect of lost motion, loose bolts, etc.; is strong and durable, and owing to its simple construction may be readily repaired, or the parts replaced by those ordinarily employed on the railroad for such purposes.

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

1. A railway switch comprising movable switch points, means for throwing and locking said points and yieldable auxiliary



means adapted to assist in positioning and retaining said points, substantially as described.

2. A railway switch comprising, movable switch points, means for throwing and locking said points and independent means adapted to assist in the final positioning and retaining of said points by a flexible tension, substantially as described.

3. A railway switch comprising movable switch points, means for throwing and locking said points and independent means adapted to assist in the final positioning and retaining of said points by a flexible tension, and means for locking said independent means, substantially as described.

4. A railway switch comprising movable switch points, a member positively connecting said switch points to a switch throwing device, means for locking said device when the switch has been thrown, independent means to be subsequently operated for engaging said points with a yielding tension, and means for locking said independent means.

5. A railway switch comprising movable switch points, a tie rod between said points, a switch throwing device, a member connecting said rod and said device, means for locking said device when the points have been positioned, yieldable means adapted to engage one of said points at a time, independent means for exerting a tension on said yielding means, and means for locking said yieldable means in position.

6. A railway switch comprising movable switch points, a switch throwing device, a member connecting said points and said device, means for locking said device when the points have been positioned, yieldable means adapted to engage said points, a cam adapted to cause said yielding means to exert a tension on said switch points, and means for operating and locking said cam.

7. A railway switch comprising movable

switch points, means for throwing and locking said points and independent means adapted to assist in the final positioning and retaining of said points by a flexible tension, means for locking said independent means, and means whereby said independent locking means must be released before the throwing means can again be operated.

8. A railway switch comprising movable switch points, means for throwing and locking said points, an endwise movable bar provided with yielding means for engaging the rail points and independent means for causing said yielding means to force one of the switch points at a time against the main rail, and means for locking said yielding means while under tension.

9. A railway switch comprising movable switch points, means for throwing and locking said points, an endwise movable bar engaging the rail points, said bar being free when unlocked to be moved by contact with said points, and independent means for causing said yielding means to force the switch point against the main rail, and means for locking said yielding means while under tension.

10. A railway switch comprising movable switch points, a tie rod between said points, a switch throwing device, a member connecting said rod and said device, an endwise movable bar provided with spring pressed bolts at its ends for engaging the rail points, said bar being free when unlocked to be moved by contact with said points, a cam adapted to cause said bolts to exert a tension on each of said switch points, and means for operating and locking said cam.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN O. HALE.

Witnesses:

HOWARD E. BARLOW,  
E. I. OGDEN.