

No. 888,409.

E. N. STROM.

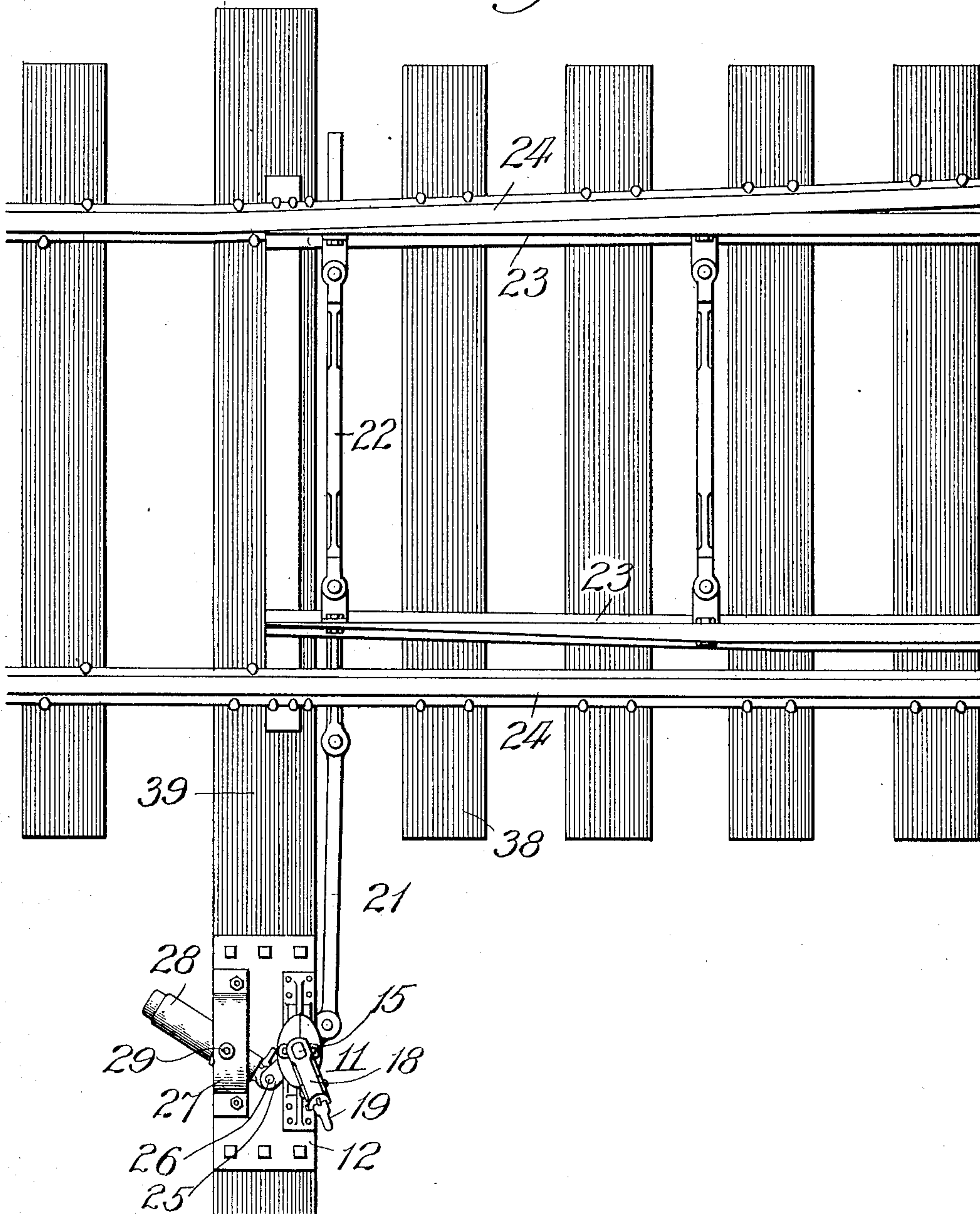
PATENTED MAY 19, 1908.

DEVICE FOR THROWING RAILWAY SWITCHES.

APPLICATION FILED FEB. 1, 1908.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Ed. O. Gaylord,
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Eugene N. Strom,
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Attys

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5 SHEETS—SHEET 2.

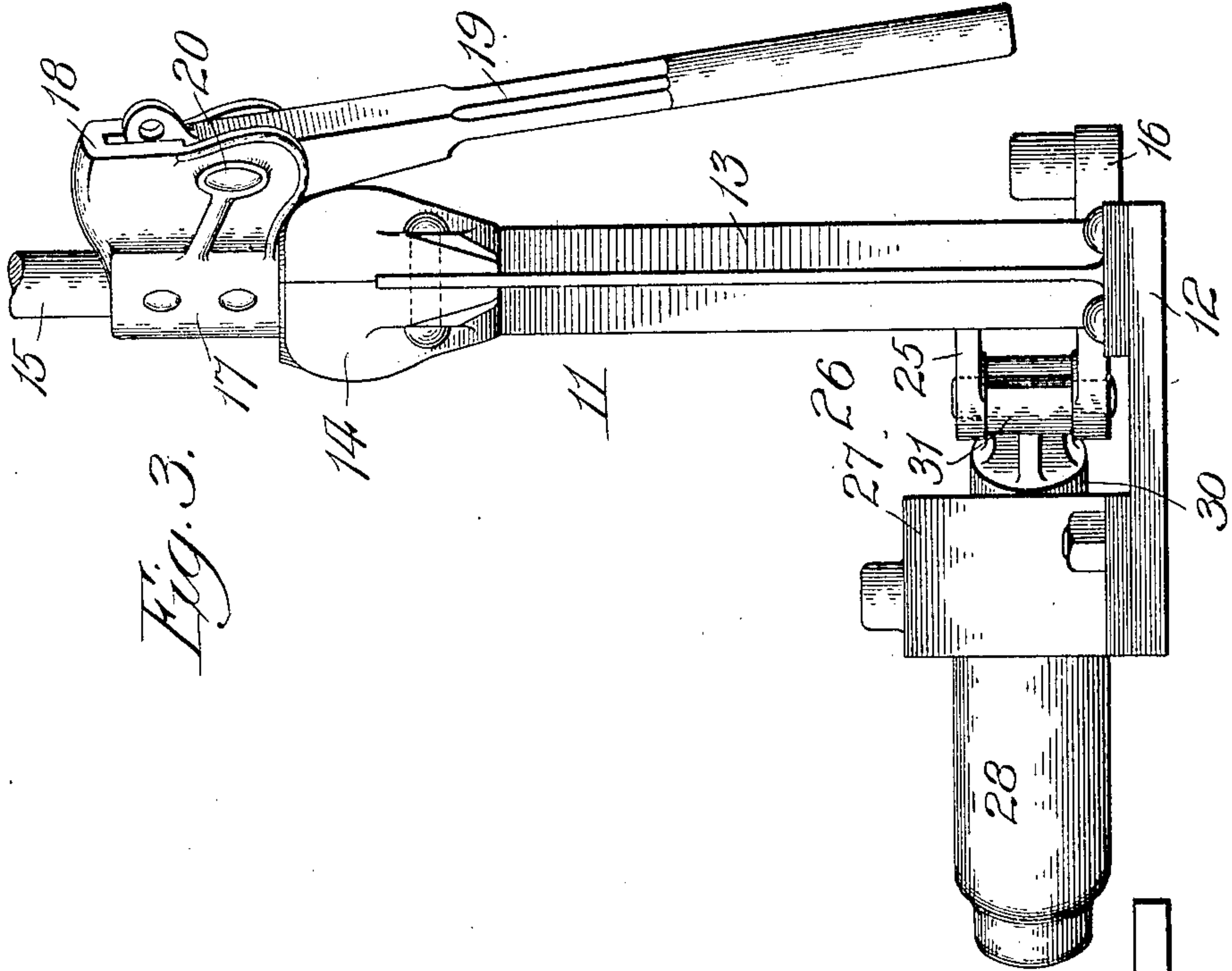


Fig. 3.

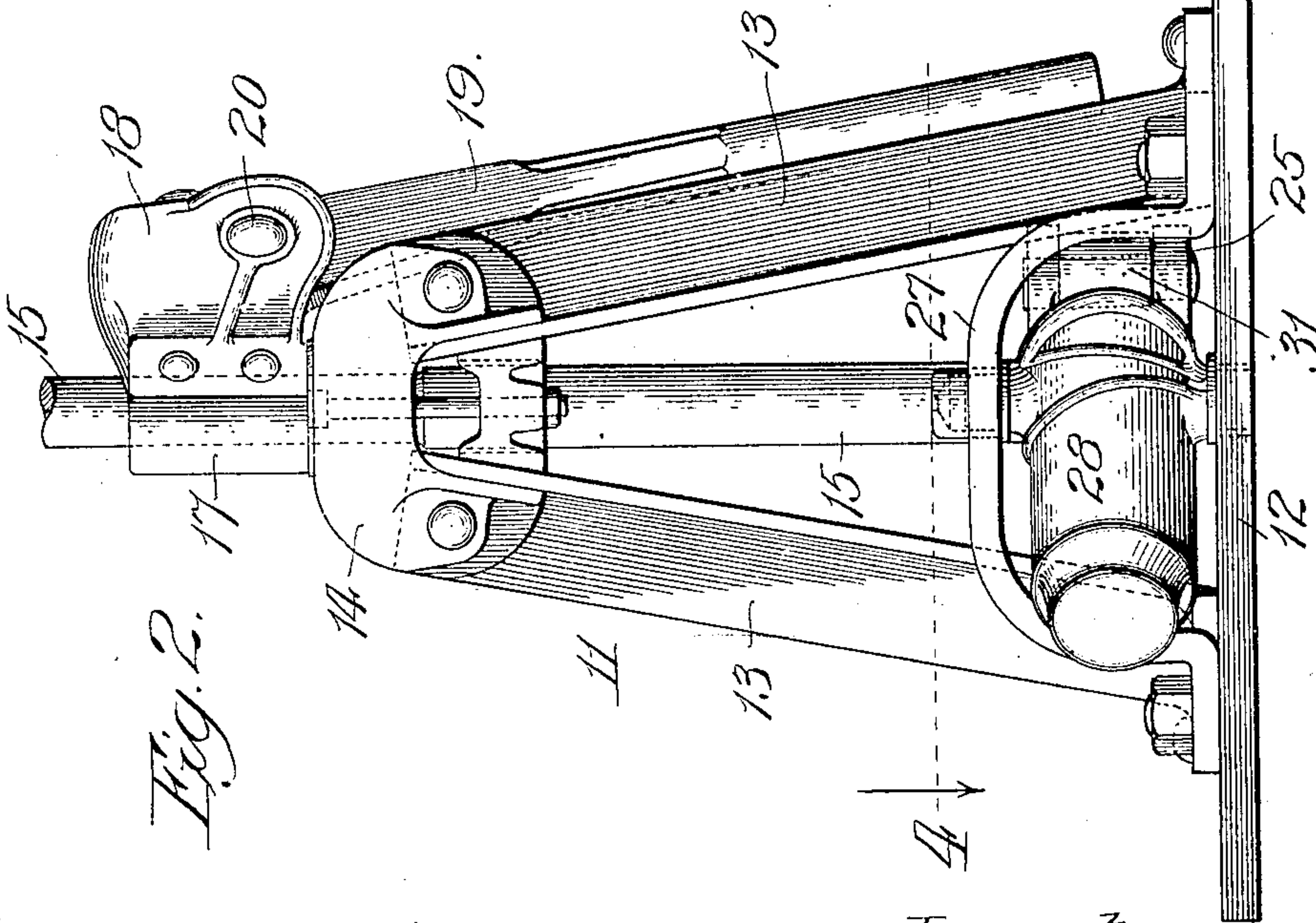


Fig. 2.

Witnesses:
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John Enders

Inventor:
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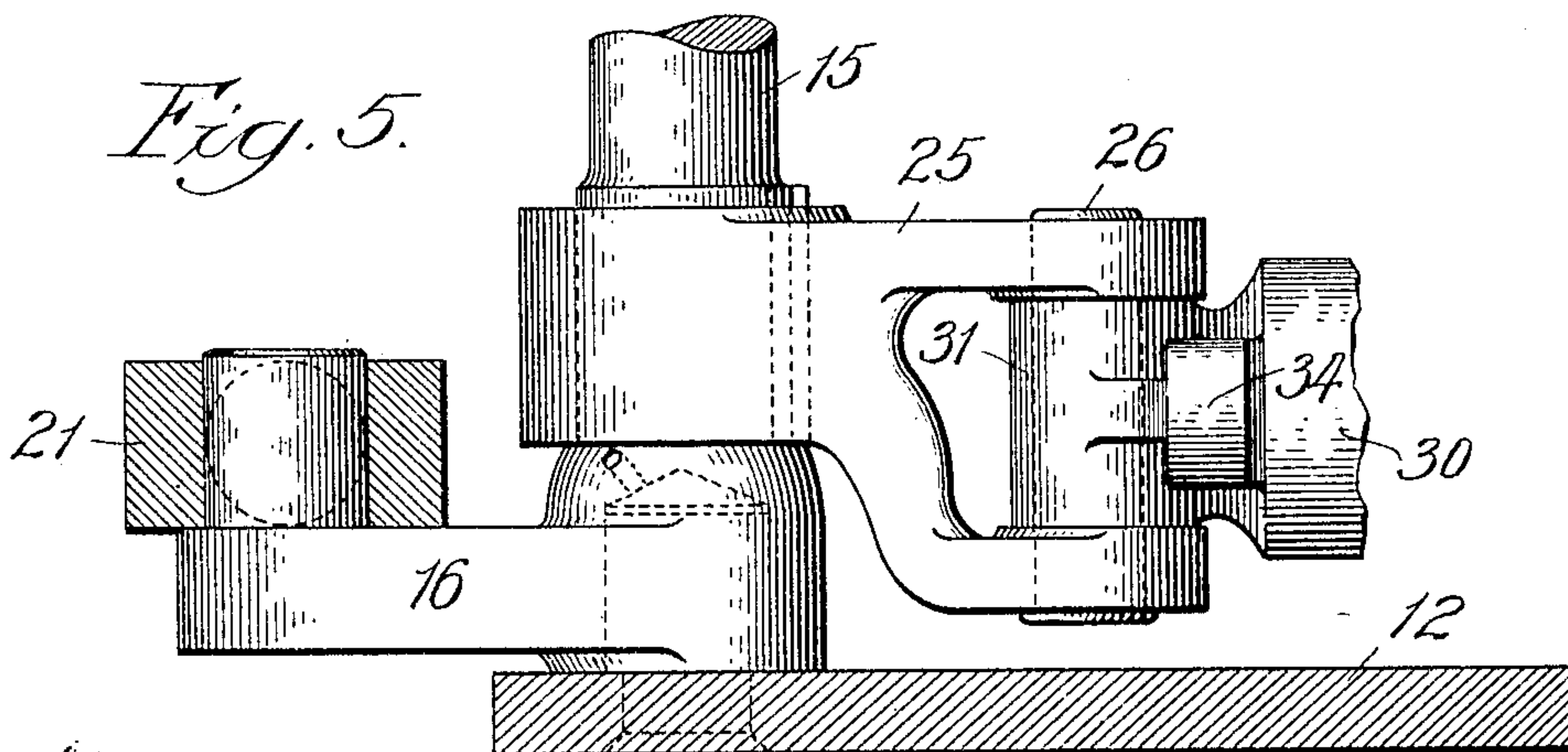
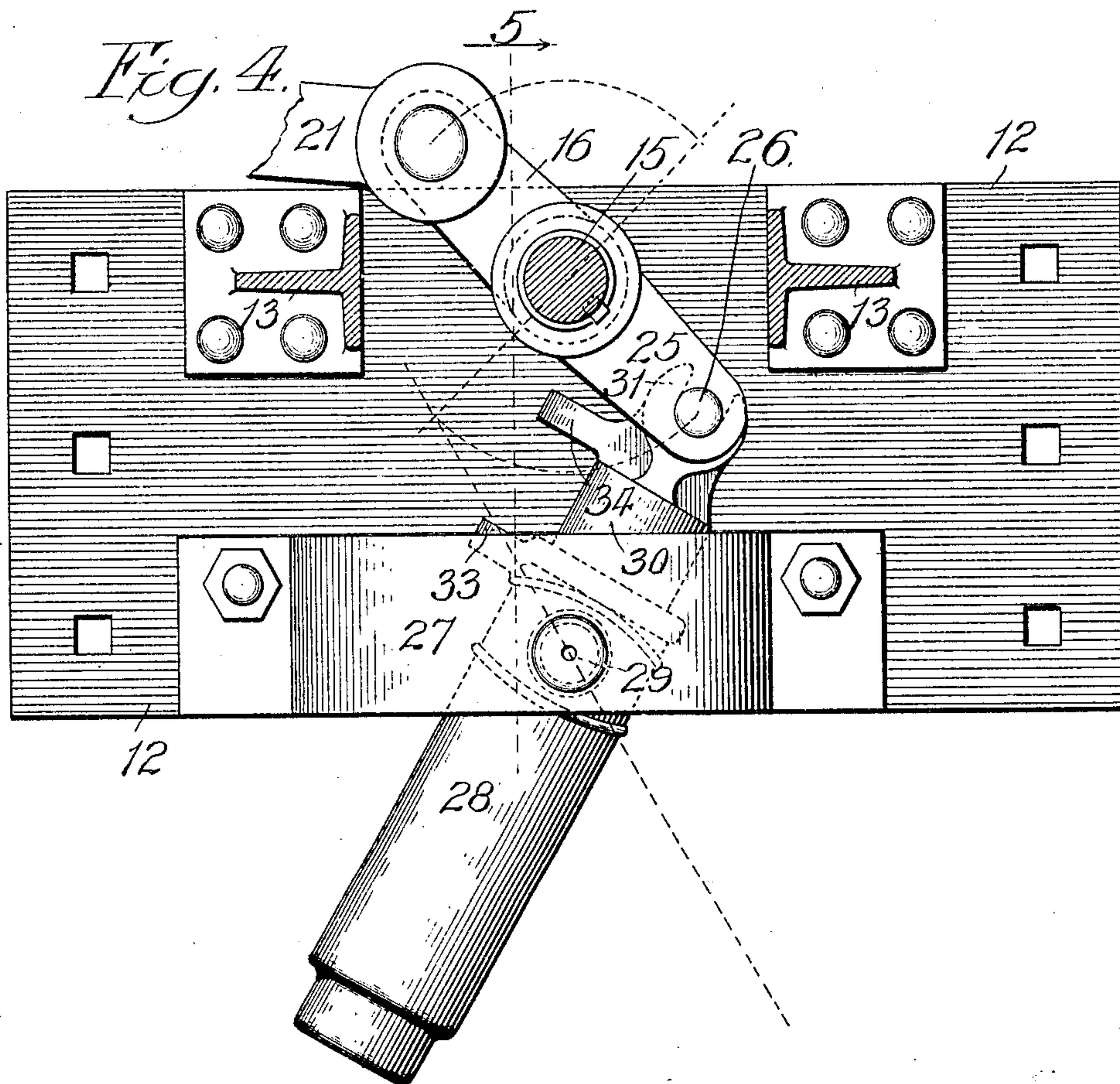
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APPLICATION FILED FEB. 1, 1908.

5 SHEETS—SHEET 3.



Witnesses:
 Jas. L. Gaylord,
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No. 888,409.

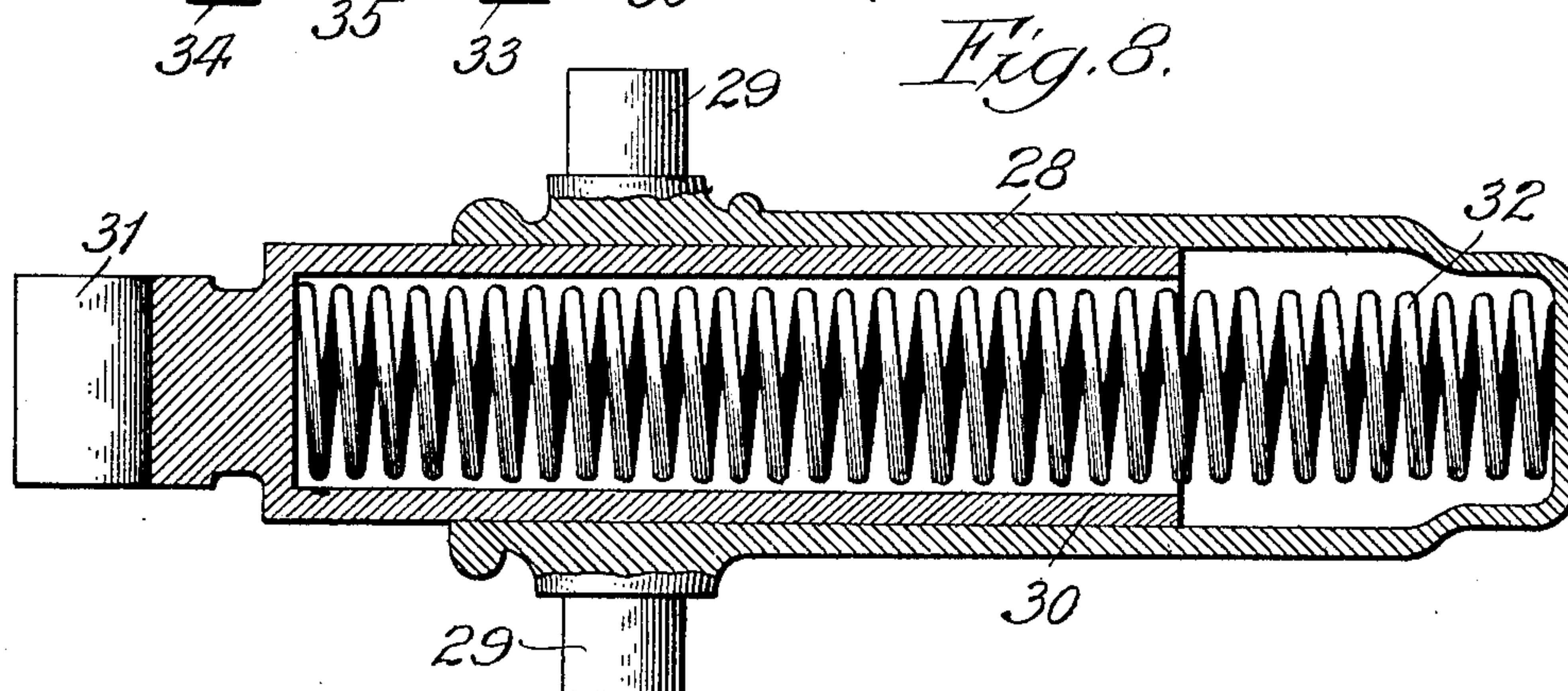
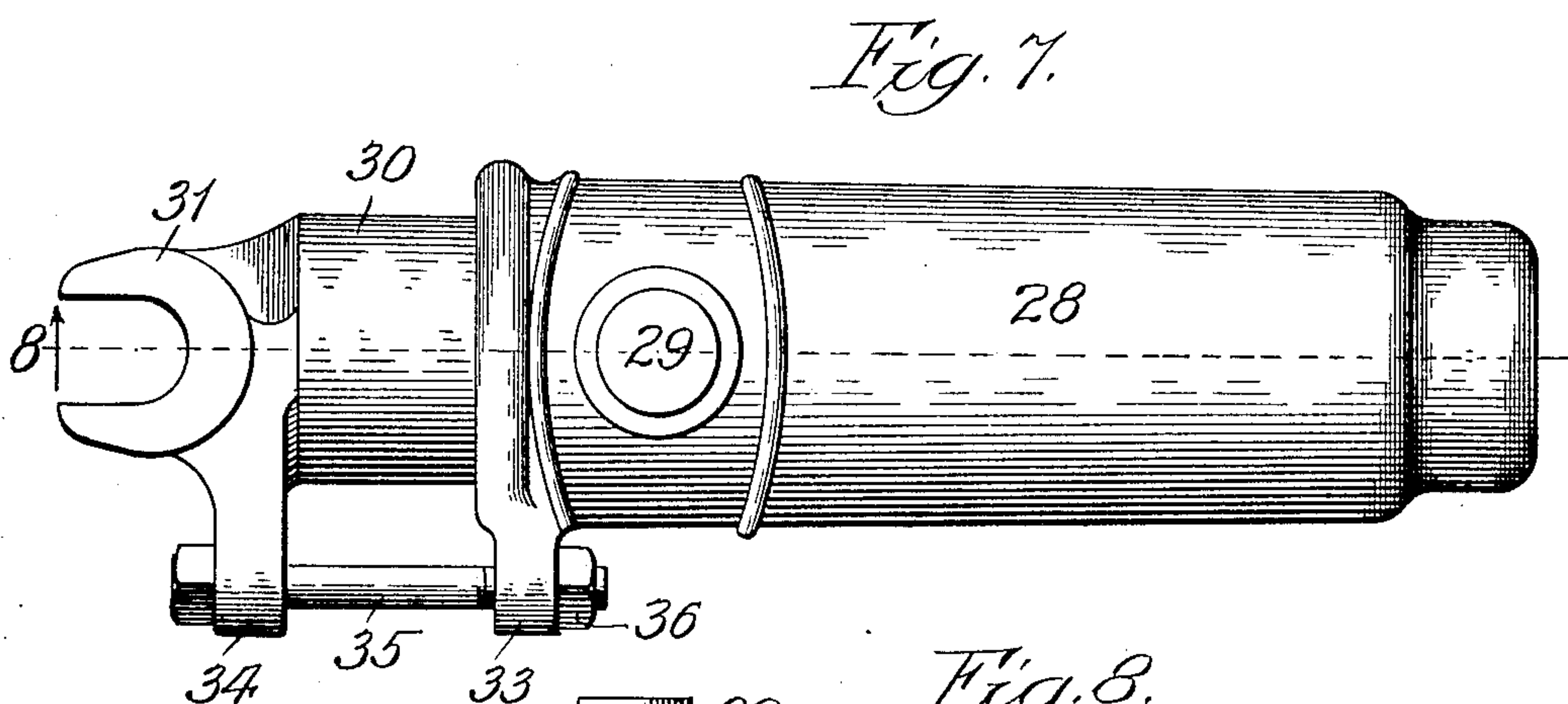
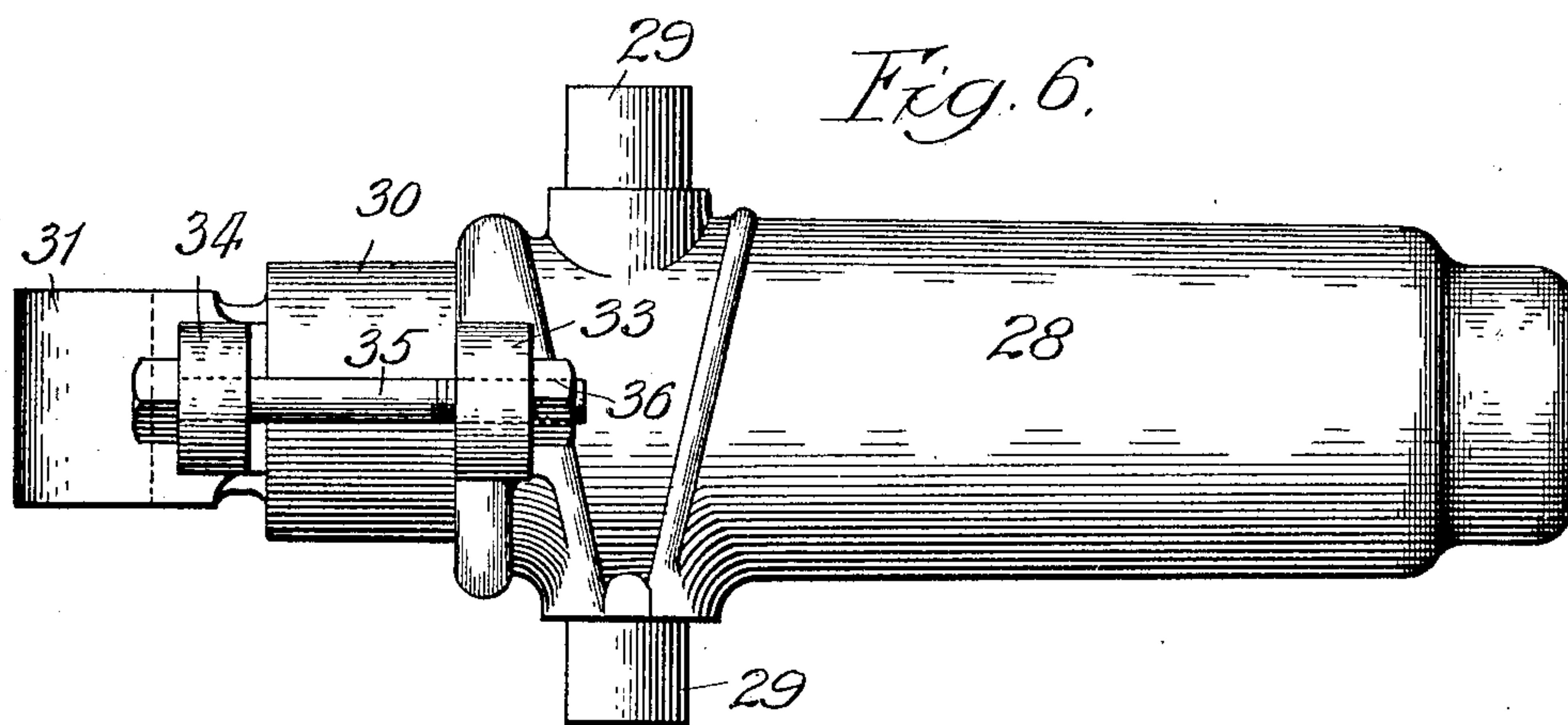
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DEVICE FOR THROWING RAILWAY SWITCHES.

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5 SHEETS—SHEET 4.



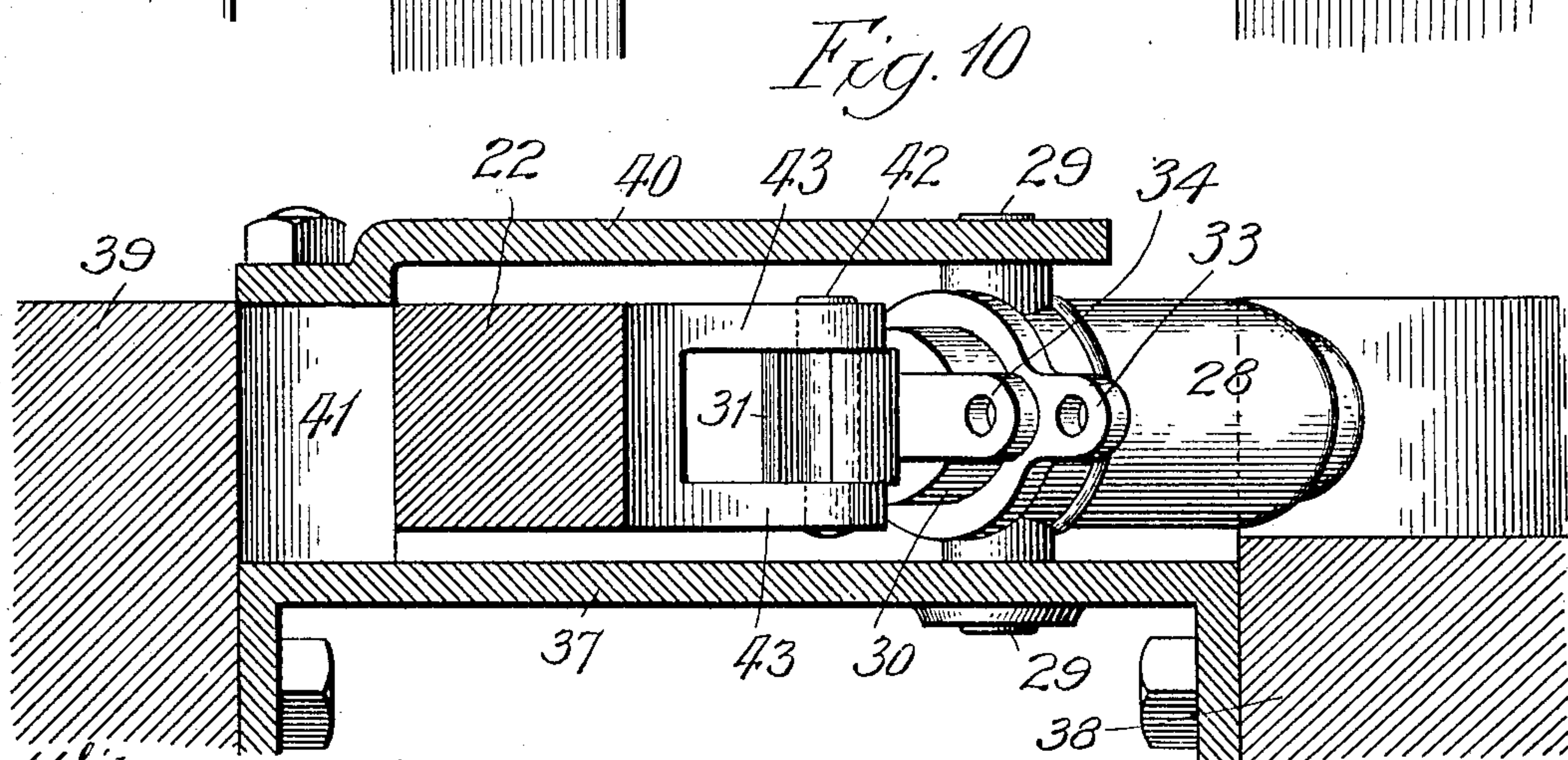
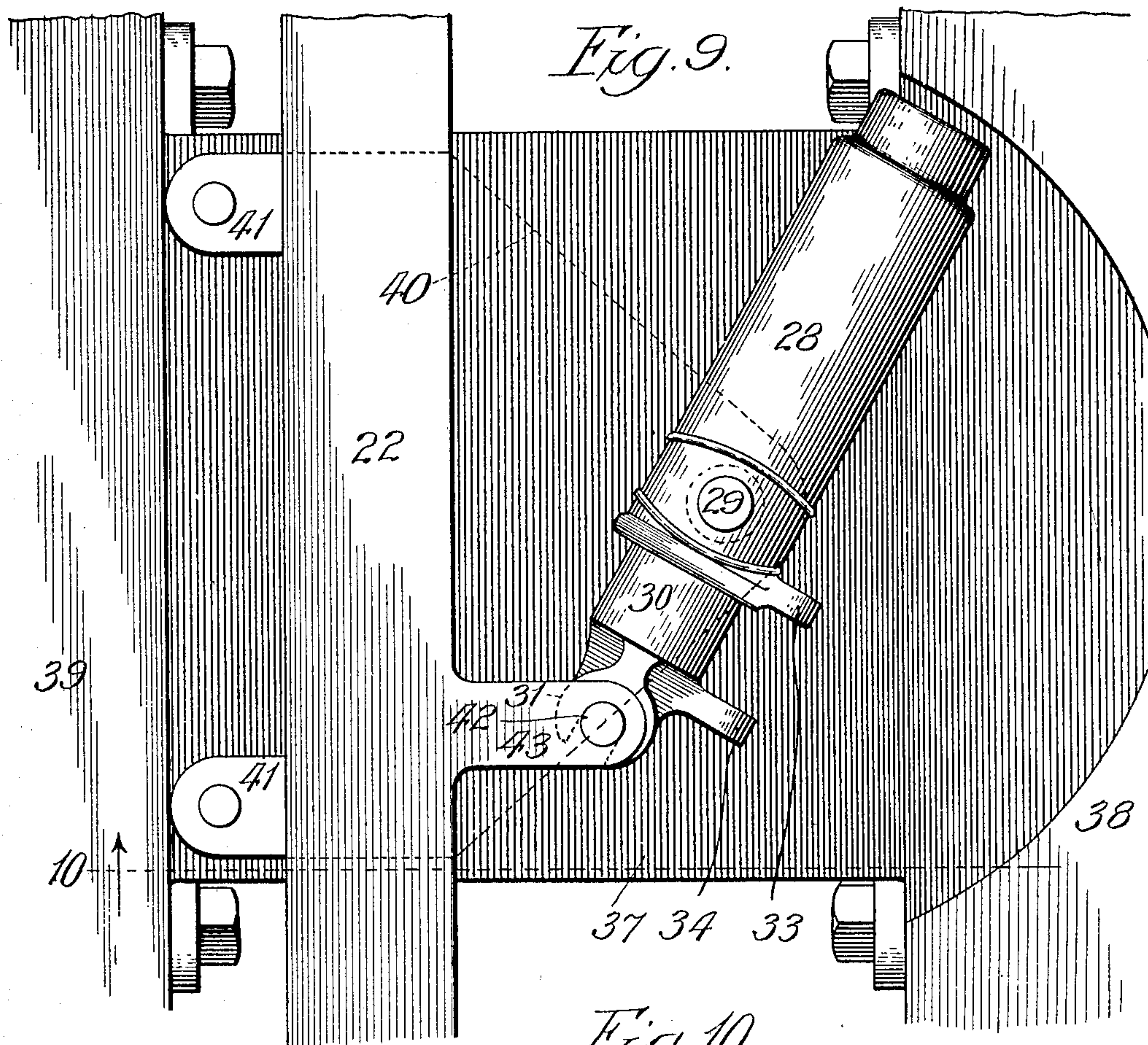
Witnesses:
Ed. J. Payford.
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PATENTED MAY 19, 1908.

DEVICE FOR THROWING RAILWAY SWITCHES.

6 SHEETS—SHEET 5.



Witnesses:

Dear E. Payford.
 John Enders

Inventor:

Eugene N. Strom,
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UNITED STATES PATENT OFFICE.

EUGENE N. STROM, OF CHICAGO, ILLINOIS, ASSIGNOR TO PETTIBONE, MULLIKEN & CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

DEVICE FOR THROWING RAILWAY-SWITCHES.

No. 888,409.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed February 1, 1908. Serial No. 413,823.

To all whom it may concern:

Be it known that I, EUGENE N. STROM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Devices for Throwing Railway-Switches, of which the following is a specification.

The primary object of my invention is to provide a novel embodiment of spring-device in connection with a switch in a railway track, which shall serve to automatically complete the throw of the switch after it has been started by hand and insure the full throw in every instance, while resiliently holding the switch in its set position.

I have more especially devised my improvement for use with a split-switch operated from a switch-stand, and therefore illustrate it in that connection in the accompanying drawings, in which—

Figure 1 is a broken plan view of a railway-track containing a split-switch equipped with my improvement; Fig. 2, a broken view showing a switch-stand in elevation with my improvement applied thereto; Fig. 3, a similar view of the same regarded at right-angles to the view presented in Fig. 2; Fig. 4, an enlarged plan section on line 4, Fig. 2; Fig. 5, a section taken at line 5 on Fig. 4, and viewed in the direction of the arrow, but showing the crank on the switch-stand spindle and the spring-device engaging therewith in the dead-center position; Fig. 6 is an external view of the spring throw-completing device, showing its preferred construction; Fig. 7, a similar view of the same regarded at a right-angle to the presentation in Fig. 6, and Fig. 8, a section on line 8, Fig. 7; Fig. 9 is a broken plan view showing, as a modification, my improvement applied directly to a switch-bar, and Fig. 10, a section on line 10, Fig. 9.

While any desired construction of switch-stand 11 may be used, that illustrated involves a base 12 from which rise the upwardly converging legs 13 joined at their upper ends by a head 14, through which passes the rotary spindle or target-rod 15, journaled at its lower end in the base 12, and carrying near the base a crank 16; and above the head is secured upon the spindle a collar 17 having an extension 18, to which the operating handle 19 is pivoted at 20.

It will be observed that the switch-stand

is devoid of the usual peripherally-notched table for confining the operating-lever at the ends of its throws to lock the switch, such table being rendered unnecessary by my improvement hereinafter described.

The crank 16 is connected in a usual way by a connecting-rod 21 with a switch-bar 22 joining the similar point-rails 23, 23 of the split-switch, which is laid between the main rails 24, 24. On the spindle, above the crank 16, is secured, to extend aliningly therewith, at the opposite side of the spindle, a second crank-arm 25, bifurcated at its outer end, as represented in Fig. 5, where it carries a pin 26.

A bearing 27, shown of yoke-shape, is detachably secured on the base 12 and has pivotally confined in it the rail-throw-completing spring-device of my improvement illustrated in detail in Figs. 6 to 8, inclusive, and described as follows: A sleeve 28, closed at one end and open at its opposite end, is provided near its open end with oppositely extending trunnions 29, 29, at which, respectively, it is journaled in the base 12 and the top of the yoke 27. With this sleeve telescopes an inner sleeve 30, open at its inner end and closed at its outer end, the latter terminating in a forked head 31 to engage with the pin 26 of the crank-arm 25; and a stiff-spiral spring 32 is confined between the closed ends of the telescoping sleeves, which thus afford an expansible and contractible housing for the spring. For a purpose hereinafter described, a perforated ear 33 is provided on the sleeve 28 at its open end, and a similar ear 34 extends from the closed end of the sleeve 30, these ears being designed to receive a bolt 35 removably fastened by a nut 36 to temporarily hold the sleeves together against the tendency of the spring to separate them.

To set the spring-device into operative position in connection with the switch-stand, the yoke 27 may be removed to permit one trunnion 29 to be adjusted in the base 12 and to engage the forked head 31 with the pin 26 of the crank-arm 25, the spindle then being turned to the position at which the crank 25 will be on a dead-center with the trunnions 29, the operator holding the spindle, by the handle 19, at that position, and the spring 32 being confined by the bolt 35 under its highest tension. Thereupon the yoke 27 is fastened in place to journal the spring-de-

vice at its respective trunnion 29. The bolt 35 may then be removed to permit the spring 32 to expand to the minimum extent of its compression, thereby permitting it to turn the spindle (then released by the operator) to the position in which the crank 16 will be set for holding at one end of its throw the switch through the medium of the connecting-rod 21. This is the position of the parts represented in Fig. 4. Whenever a broken or worn-out spring-device is replaced by a new one, the operation is performed in the manner described, and it is required that the spring-device shall be furnished with its telescoping sleeves secured together against the separating tendency of the spring confined in them, as by means of the bolt 35, since otherwise it would obviously be impracticable to adjust the spring-device in place. With the parts thus assembled, to throw the switch the operator, by manipulating the handle 19, turns the spindle to the position at which the pivot of the crank-arm 25 and the trunnions 29 just pass the dead-center, thereby compressing the spring 32 to its maximum tension at the dead-center, immediately upon passing which the recoil of the spring completes the throw, the operator having released the handle when the dead-center is passed. As will thus be seen, the operator merely has to start the throw, which is completed automatically and, of necessity, fully, thereby always insuring completeness of the throw of the switch and avoiding the possibility of accident from failure in completing the throw. Moreover, the automatic action of the spring-device enables the operator to throw the switch very quickly and without giving the matter any further attention after starting it in the manner described, since the expansion of the spring must necessarily complete it even to the extent of insuring abutment of the switch-rail against the respectively adjacent main rail where wear between them would otherwise prevent them from meeting. As will also be understood, because of the resilient pressure with which the spring holds the switch in its thrown position, the flanges of wheels may run through the switch and throw it without injuring the mechanism.

Instead of applying the spring-device immediately to the switch-stand in the manner described, it may be directly applied to the connecting-bar 21, or to a switch-bar 22 as shown in Figs. 9 and 10. For such application a lower bearing-plate 37 is provided to extend between the two ties 38, 39 defining the space in which the switch-bar works, this plate being bolted through depending flanges to the opposing sides of the ties, and an upper bearing-plate 40 (shown by dotted representation in Fig. 9) is bolted at one end to spacers 41 rising from and integral with the plate 37, to extend over the upper plate. The trunnions 29 of the spring-device are

journaled in these bearing-plates as shown, and the forked-head 31 engages a stud 42 between a pair of arms 43 extending rigidly from the switch-bar at a right-angle thereto.

The operation is the same with the modified construction as that already described. Namely, to throw the switch the operator manipulates the handle 19 to turn the spindle and thereby, through the connection therewith of the switch-bar, shift the latter to compress the spring 32 until the spring-device and the arms 43 attain a dead-center, on passing which the recoil of the spring will finish the movement of the switch-bar and complete the throw of the switch.

The gist of my invention consists in so applying a spring, under confinement, to a switch that a partial throw of the switch by hand will effect such compression of the spring as will cause the recoil thereof to automatically complete the throw; and since this principle may be applied in various ways and may be embodied in various forms of spring-devices, it is my intention to be understood as including within my invention such various ways and forms of embodiment.

What I claim as new and desire to secure by Letters Patent is—

1. In combination with a railway-switch, hand-operated means for starting the throw of the switch, and a coiled-spring confined for longitudinal compression and expansion in a contractible and extensible housing with one member of said housing secured to a stationary support and the other member thereof having a connection with said switch to tension the spring by the initial hand-operation of said means past the dead-center in said connection and thereafter free the spring to complete the throw by its recoil.

2. In combination with a railway-switch, hand-operated means for starting the throw of the switch, and a spring-housing formed of telescoping members with a spring confined therein, one member of said housing being pivotally secured on a stationary support and the other member having a connection with said switch to tension the spring by the initial hand-throwing-operation of said means past the dead-center in said connection and thereafter free the spring to complete the throw by its recoil.

3. In combination with a switch-stand having a rotary spindle provided with an operating handle and a crank for connection with a railway-switch, a spring-device consisting of a housing formed of telescoping members and a spring confined in the housing to be tensioned by turning said handle, one of said members being pivotally supported on the switch-stand and the other member having a crank-connection with said spindle, for the purpose set forth.

4. In combination with a switch-stand having a rotary spindle provided with an

operating handle and a crank-arm for connection with a railway-switch, a second crank-arm on the spindle, a bearing secured on the switch-stand base, and a spring-device consisting of a housing formed of telescoping members and a spring confined in the housing, one of said members being pivotally supported on said base and the bearing thereon and the other member being connected with said second crank-arm and actuated to compress the spring by turning said handle, for the purpose set forth.

5. In combination with a switch-stand having a rotary spindle provided with an operating handle and a crank-arm for con-

nection with a railway-switch, a second crank-arm on the spindle and a spring-device consisting of a housing formed of telescoping sleeves with a bolt releasably fastening them together near their outer ends and a spring confined in said sleeves, one sleeve being pivotally fastened on the base of said stand and the other sleeve terminating in a bifurcated head engaging said second crank-arm, for the purpose set forth. 20

EUGENE N. STROM.

In presence of—

A. U. THORIEN,
R. A. SCHAEFER.