

B. G. WATKINS.
TROLLEY SWITCH.
APPLICATION FILED JAN. 21, 1907.

899,773.

Patented Sept. 29, 1908.

4 SHEETS—SHEET 1.

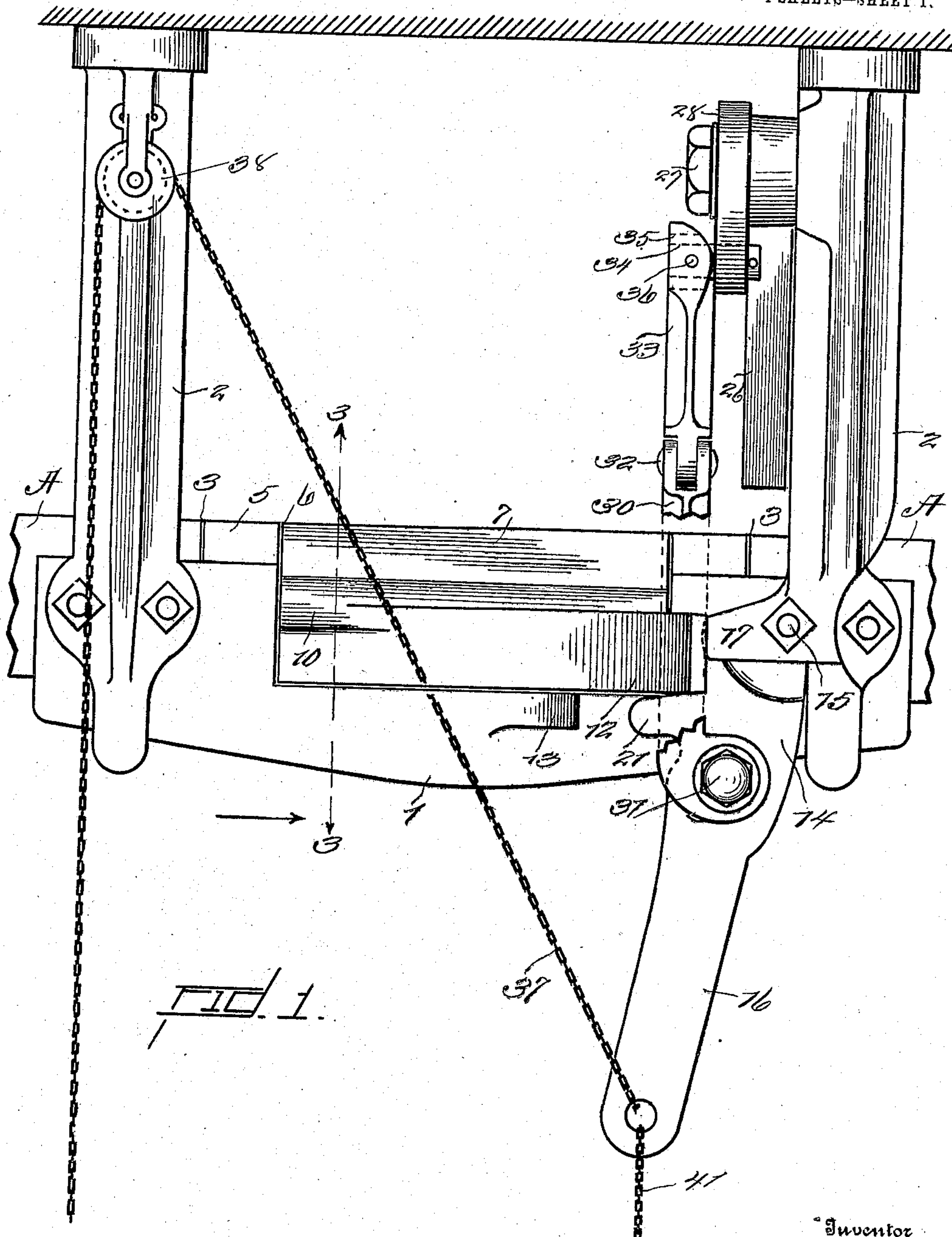


FIG. 1.

Witnesses
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4 SHEETS—SHEET 2.

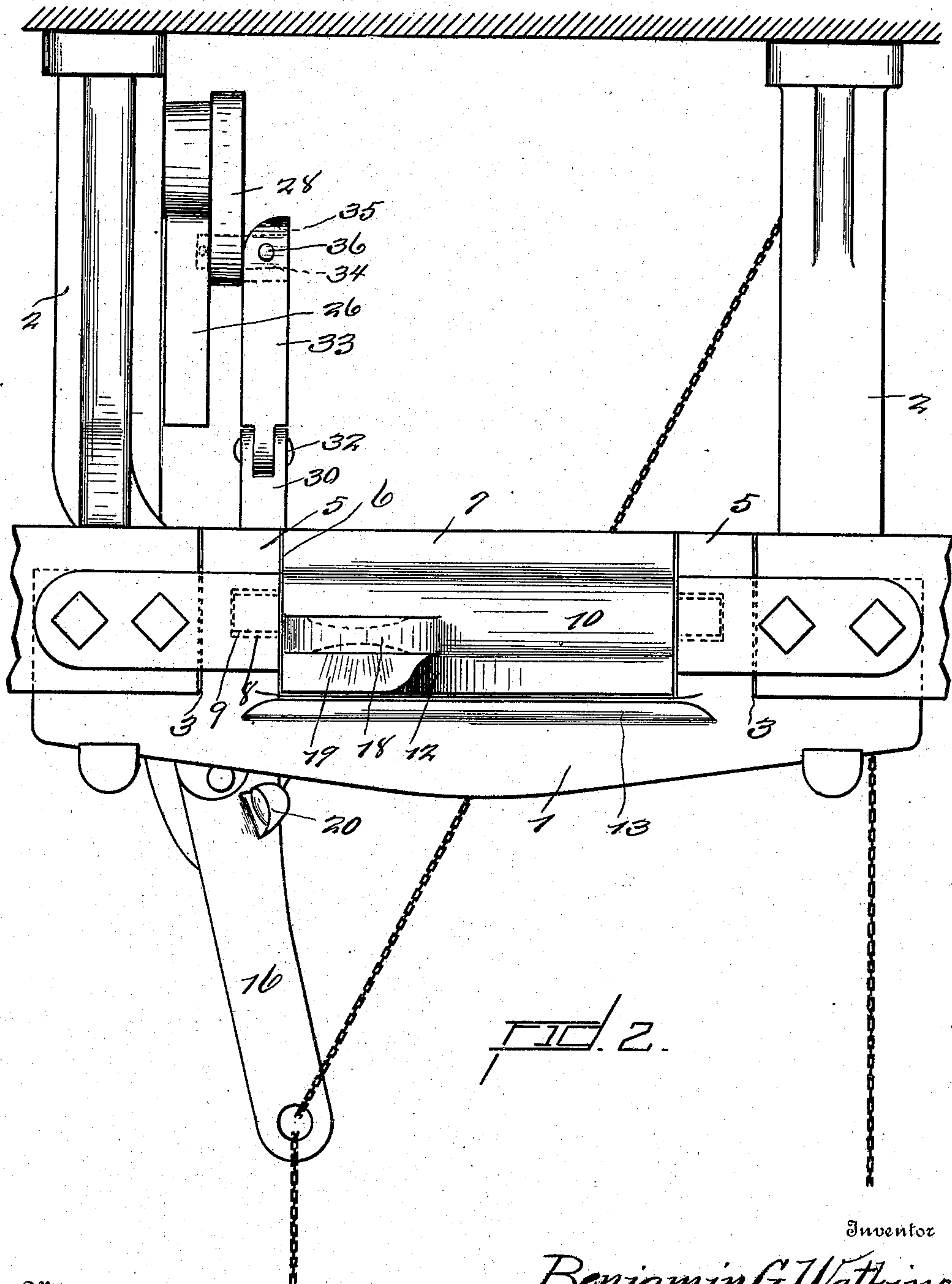


FIG. 2.

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Witnesses

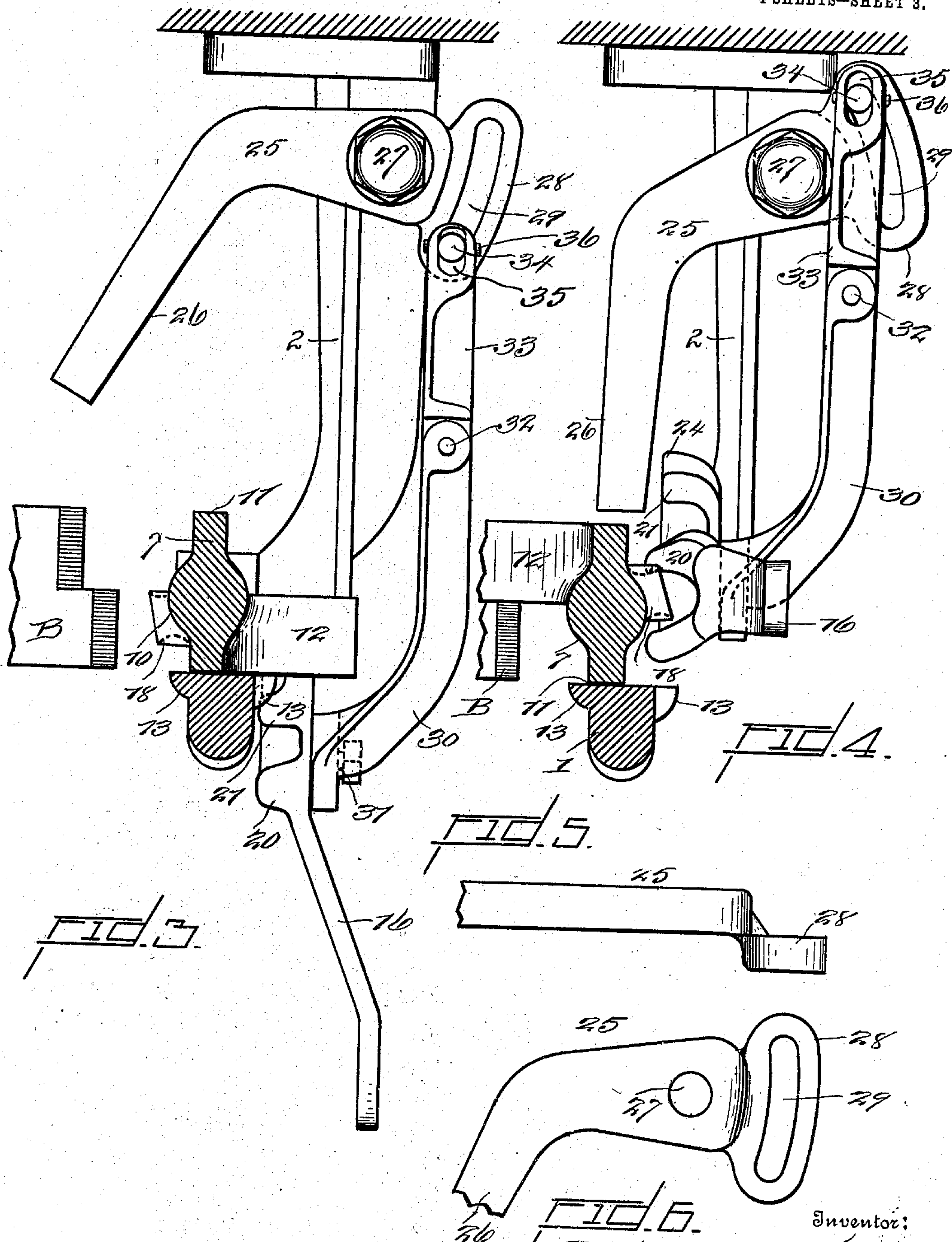
R. M. Brownell

A. J. Grandall D. W. S.

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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 7.

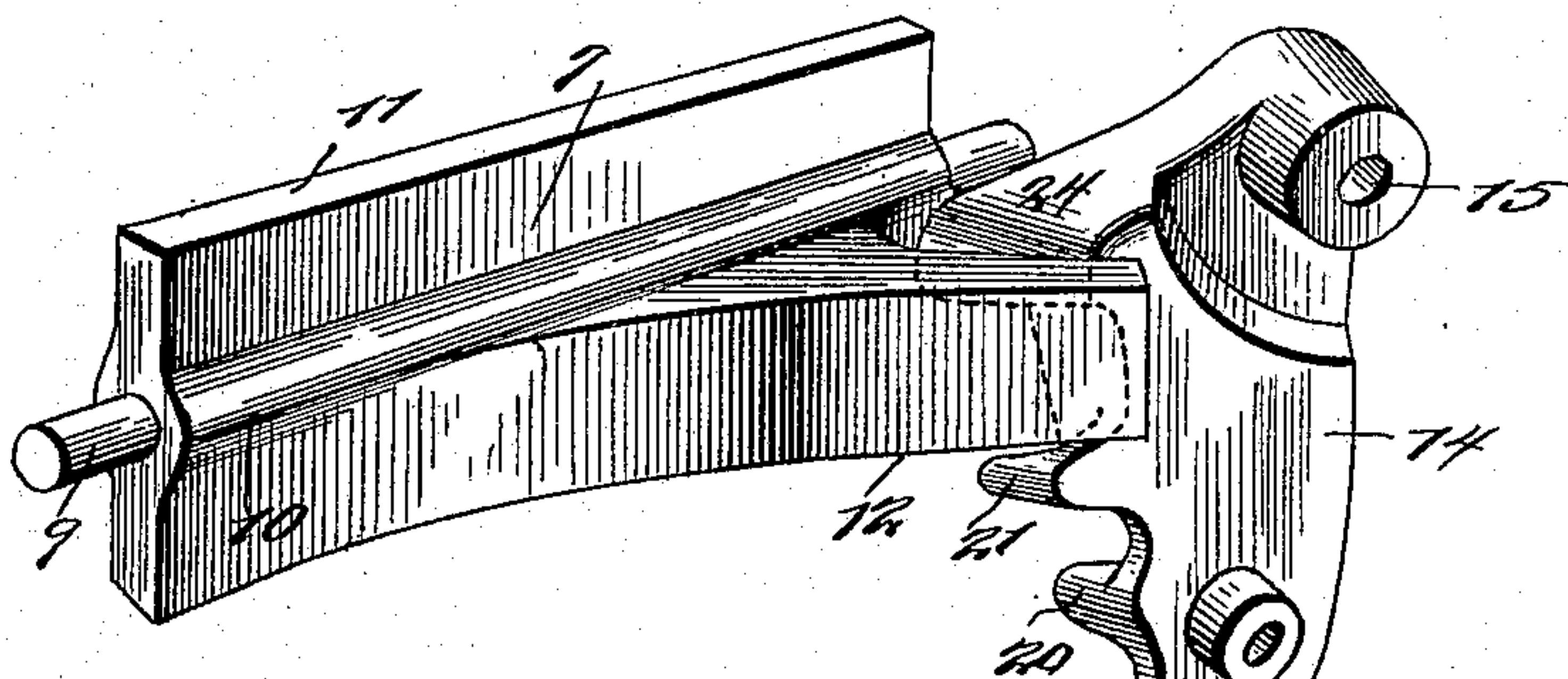


Fig. 8.

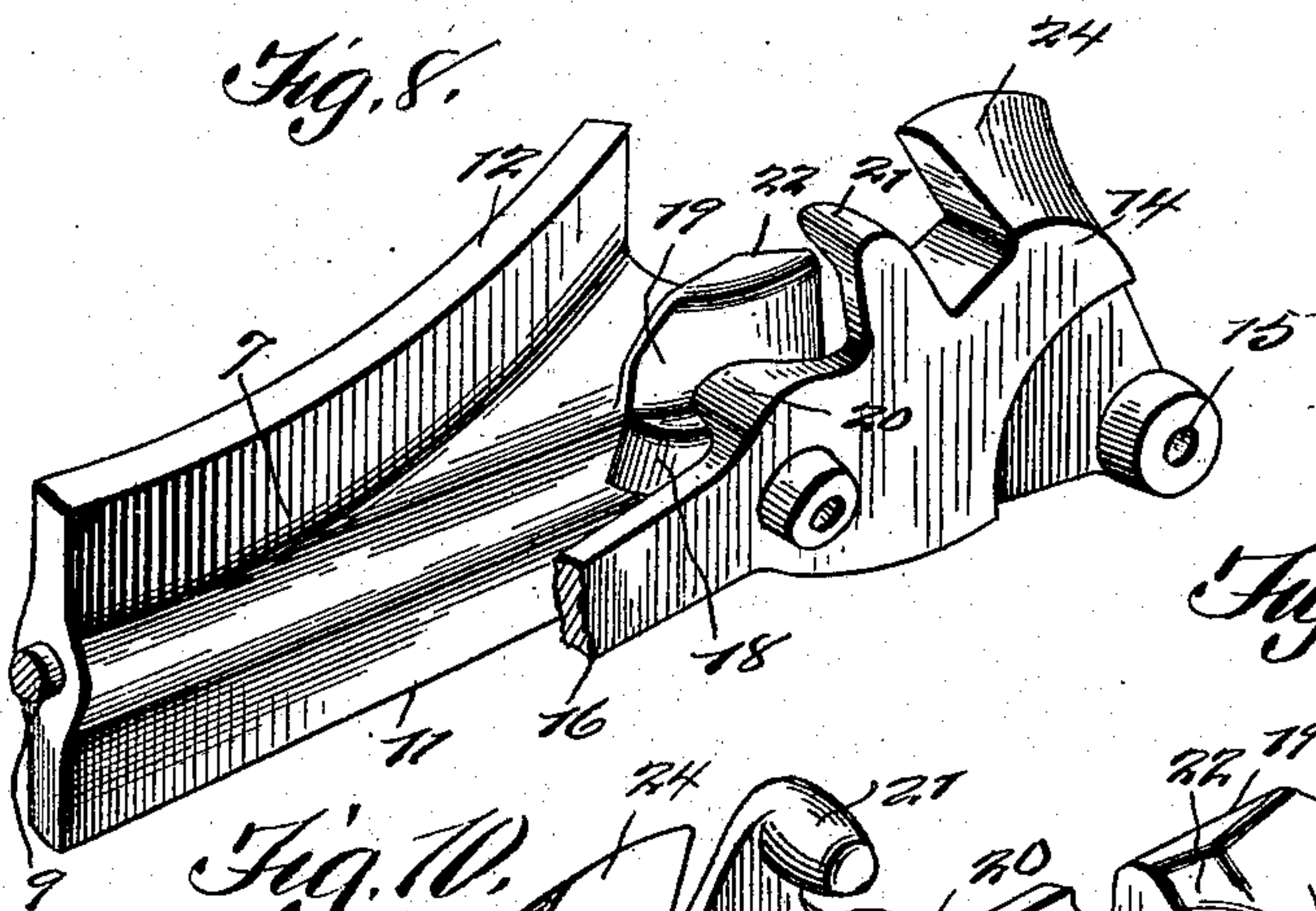


Fig. 9.

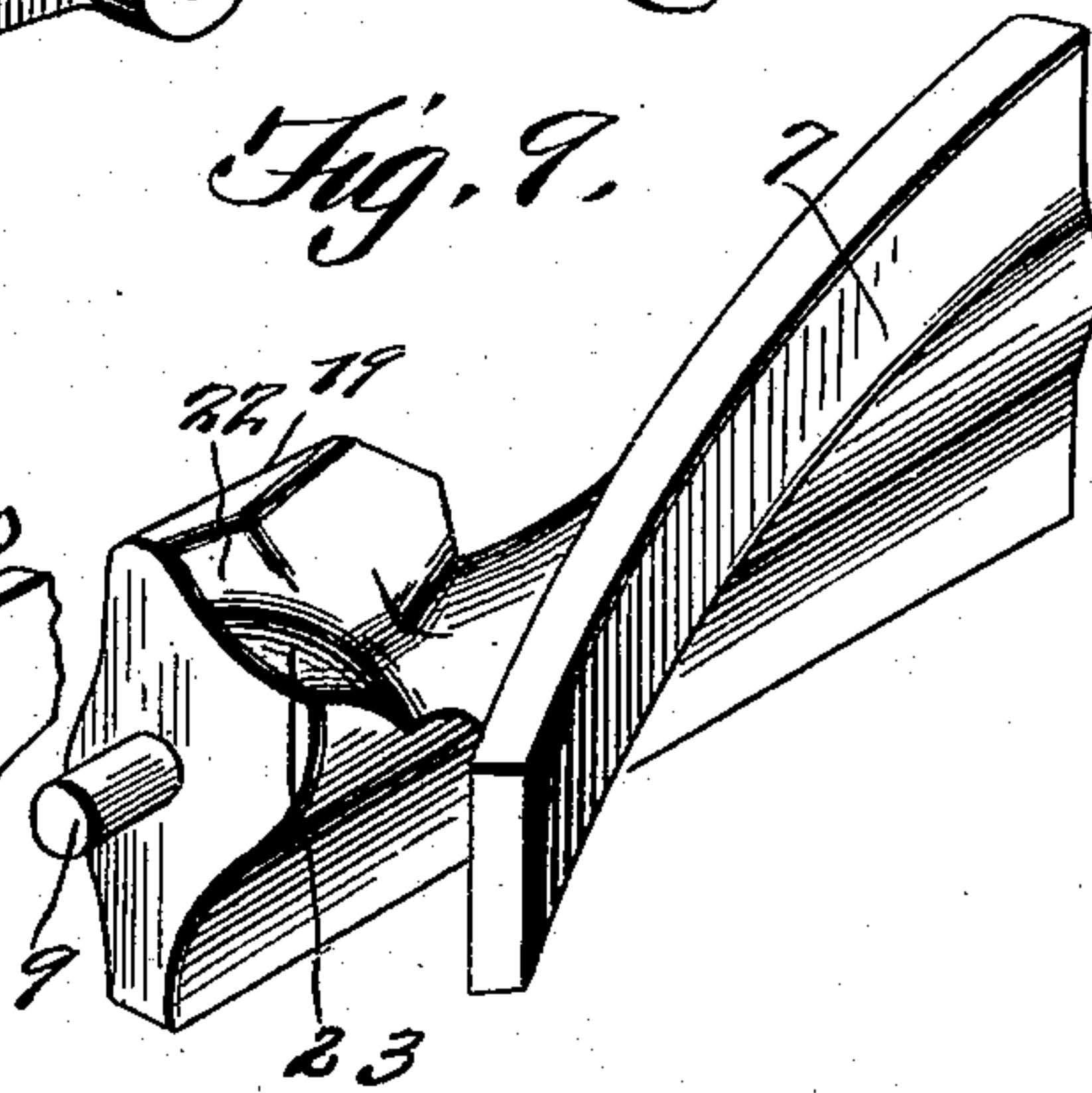
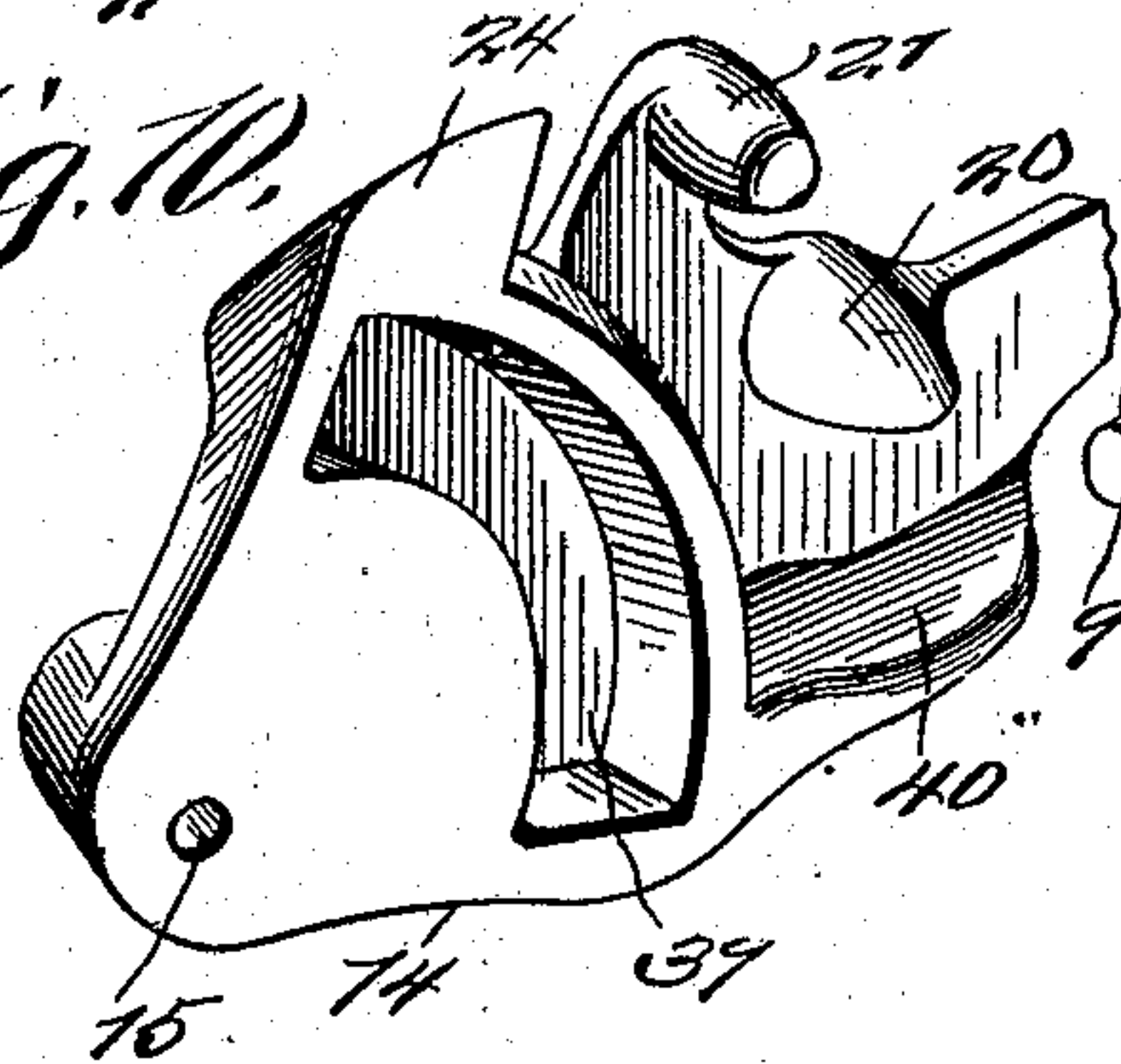


Fig. 10.



Witnesses

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UNITED STATES PATENT OFFICE.

BENJAMIN G. WATKINS, OF NEHAWKA, NEBRASKA, ASSIGNOR OF ONE-THIRD TO JULIAN A. POLLARD, JR., AND ONE-THIRD TO JULIAN A. POLLARD, BOTH OF NEHAWKA, NEBRASKA.

TROLLEY-SWITCH.

No. 899,773.

Specification of Letters Patent.

Patented Sept. 29, 1908.

Application filed January 21, 1907. Serial No. 353,242.

To all whom it may concern:

Be it known that I, BENJAMIN G. WATKINS, a citizen of the United States, residing at Nehawka, in the county of Cass and State of Nebraska, have invented certain new and useful Improvements in Trolley-Switches, of which the following is a specification.

This invention relates to new and useful improvements in trolley switches and it has particular reference to an improved switch adapted for use with load transferring apparatuses and overhead carriers, such as are used in refrigerating plants, beef houses and the like.

In connection with a switch of the above type, the invention aims as a primary object to provide a movable stop opened from and controlled by the switch in its movement to either position, the function of this stop being to prevent any load from leaving the track at the switch by a retrograde movement.

The invention aims as a further object to provide novel means for tripping the switch to either position, the operation of such means being positive and certain and without backlash or play which would tend to set the switch in a non-alined position with disastrous consequences.

The detailed construction will appear in the course of the following description in which reference is had to the accompanying drawings forming a part of this specification, like characters of reference, indicating like parts throughout the several views, wherein:—

Figure 1 is a side elevation of a switch and its associated parts, all constructed in accordance with the present invention and in position for closing a straight track, Fig. 2 is a side elevation thereof seen from the opposite side of Fig. 1 with the parts in the same position, Fig. 3 is an end elevation with parts in section on line 3—3 of Fig. 1, showing the switch in position to close a straight track, Fig. 4 is a similar view, the switch being shown in position to close a curved track. Figs. 5 and 6 are respectively side and plan elevations of the stop to be hereinafter specifically referred to, Figs. 7 and 8 are detailed perspective views of the switch and its actuating means to show the relation therebetween in the respective positions of Figs. 3 and 4. Fig. 9 is a detailed perspective view of the switch seen from the opposite end to that illustrated in Figs. 7

and 8 and Fig. 10 is a detailed perspective view of the actuating means seen from the opposite side to that illustrated in Figs. 7 and 8.

The switch contemplated in the present invention comprises essentially a supporting stationary casting, a switch or switch member rotatably journaled therein, actuating means therefor and an automatically operated stop for the purposes above set forth. In describing the details of the invention the numeral 1 designates the casting which is suspended by hangers 2 depending from a stationary support, such, for example, as the ceiling of the building. The casting 1 at its ends is recessed at 3 to receive the ends of alined straight tracks A, with which said casting has suitable rigid connection. The inner walls of the recesses 3 are afforded by vertical track sections 5, integral with the casting 1 and alined with the tracks A. The central portion of the casting 1 is cut away between the track sections 5 as at 6 to afford a recess within which is received the switch member 7. The track sections 5 are provided with recesses 8 which serve as bearings or journals for axial trunnions 9 projecting from the ends of the member 7 and preferably integral therewith. The member 7 is formed with an enlarged central longitudinal portion 10 which adds weight thereto and insures the momentum necessary to a quick and certain operation thereof. Said member 7 is provided on one of its narrow faces with a straight track section 11 which in its uppermost position is alined with the track sections 5 and on its opposite face with a curved track section 12 which in its uppermost position is alined with one of said sections 5 and with a curved track or siding B. The base of the recess 6, together with lateral extensions or stops 13 on each side thereof, affords a ledge or shelf upon which the switch member 7 is adapted to rest, in either position thereof. By virtue of this arrangement, the strain which is considerable under a heavy load is taken off the trunnions 9 to prevent breaking of the parts. It will be observed from Figs. 1 and 2 that the recesses 8 shown in dotted lines are of greater diameter than the trunnions journaled therein, for the purpose above stated.

The means for rocking the switch member 7 in either direction is constituted of a casting 14 pivoted as at 15 to one end of the

casting 1 and having a lever extension 16. In order to prevent lateral play of the casting 14 on its pivot, the adjacent member 2 has an angular extension 17 overlying the casting 14 in parallelism thereto and to the casting 1. In the accomplishment of its function the casting 14 has an engagement with the switch member 7 somewhat similar to the meshing engagement of miter gears. To this end said member is formed with a horizontal extension 18 on one side thereof having dished upper and lower faces, and adjacent said extension 18 with a vertical extension 19 which is likewise adjacent the curved track section 12 in spaced relation thereto. The casting 14 has a lateral extension or tooth 20 which is designed to engage the extension 18 and a second lateral extension or tooth 21 which is designed to engage the tooth 19. To accomplish the best results the tooth 20 has a dished engaging surface as suggested in Fig. 4 and the tooth 21 a rounded engaging surface as is shown in Figs. 8 and 10. The extension 19 is likewise of peculiar construction, the inner bearing face thereof being angular or beveled as at 22 and gradually merged with a rounded enlarged portion 23 provided at the end of the switch member and shown in Fig. 9. Beyond the tooth 21 the casting 14 has an angular spacing member 24 which is received, in one position of the said switch member and said casting, in the space between the extension 19 and the arcuate portion of the track section 12 and insures rigidity of the parts in their operative engaged position.

In Figs. 3 to 6 is best illustrated an automatically operated stop embodied as one of the component elements of the invention. This stop is designated generally by the numeral 25 and has an angular depending leg 26 which overlies the adjacent tracks A or B in the respective positions thereof. At its rear end said stop is pivoted as at 27 to the hanger 2 adjacent the casting 14, and terminates in an enlarged offset end portion 28 having a vertical curved slot 29 therein. The stop 25 constructed as thus described is operatively connected with the casting 14, and inasmuch as the pivotal movements of said stop and said casting are at substantial right angles, a gimbal joint connection is employed therebetween, which in the preferred embodiment of the invention is constituted of an angular link 30 pivoted at its lower end as at 31 to the casting 14 and at its upper end as at 32 to a second link 33, the pivot 32 extending at substantial right angles to the pivot 31 in accordance with the relative pivotal movement of said stop and said casting as above intimated. The link 33 is in turn at its upper end slidably and pivotally connected with the stop 25 by a pin 34 passing through the slot 29, the movement of said

stop 25 being thus compensated by this mode of connection. To attain the best working results, the link 33 is connected by a pivotal joint with the pin 34. To this end the link 33 is formed at its upper end with a short length slot 35 to receive said pin, a cotter or other device serving as the pivot therefor.

In operation it is assumed that the parts are disposed as shown in Figs. 1, 2, 3, and 7, in which the track section 11 of the member 7 is alined with the tracks A and that it is desired to move said member 7 so as to open the tracks A and aline its track section 12 with one of the tracks A and the track or siding B. This movement of the switch member 7 is effected by raising the casting 14 on its pivot 15 by means of a chain 37 connected to the end of the lever extension 16 and trained over a stationarily supported suspension pulley 38. The pivotal movement of the casting 14 in either direction is restricted by a projecting stud (not shown) provided upon the casting 1 and received within the curved recess 39 provided on the inner face of the casting 14, said stud engaging the ends of said recess as a stop. As the casting 14 is raised on the pivot 15 by the means described the tooth 21 will impinge the enlarged portion 23 of the member 7 and impart sufficient rotatory movement to said member to cause the extension 19 to have a horizontal position. In this relation of parts the tooth 20 engages the outer or underneath surface of the extension 19 and in the continued movement of the casting 14 completes the semi-revolution of the member 7 at which time said member and said casting will have the relative positions shown in Figs. 4 and 8. Displacement of the switch member from the position into which it has thus been moved is prevented on account of the propinquity of the adjacent tooth 20 and a ledge 40 provided on the casting 14, to the extension 18. When it is desired to restore the switch member 7 to the position of Figs. 1, 3, 5 and 7, the casting 14 is rocked downwardly on its pivot by means of a chain 41 connected to the end of the lever extension 16. In the downward movement of the casting the tooth 20 with its dished face engages the upper dished face of the extension 18 and rotates the member 7 approximately one fourth of a revolution or sufficiently to cause the extension 19 to assume a horizontal position in the path of the tooth 21, in which position said tooth will engage the beveled or angular face 22 of said extension and in the continued downward movement of the casting 14, will thereby rock the member 7 to complete its semi-revolution, the parts being then disposed as originally premised.

Referring to Fig. 3, it will be apparent from the coactive relation of the associated parts as shown that when the member 7 closes the tracks A the stop 25 will have its

leg 26 directly above the track B and in the path of any load thereon which might tend to have a retrograde gravitation. On the other hand when the casting 14 is moved to the position of Fig. 4 as has just been described its movement will be correspondingly transmitted through the gimbal joint above set forth to the stop 25 and will move said stop on its pivot 27, so that the leg 26 thereof travels downwardly until it becomes directly above the adjacent track A and in the path of any load thereon capable of a retrograde movement, the tracks A being open and the track section 12 closing the track B. Downward movement of the casting 14 restores the stop 25 to the position of Fig. 3 as will be readily understood.

In the movement of the switch member 7, the track sections 11 and 12 thereof effectually counterbalance one another, and the enlarged portion 10 adds extra weight to the structure with increased momentum in operation. For this reason it will be readily appreciated that the switch member 17 may be actuated by a slight pull upon the casting 14 and that its operation is easy and quick, while the novel and peculiar arrangement of said casting with said member assures an engaged relation of the parts that is positive and certain and that allows of a minimum degree of play or backlash.

From the foregoing description it will be at once seen that the device contemplated in the present invention is exceedingly simple in construction and operation, inexpensive to manufacture, and practical and efficient in use.

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

1. A switch of the type set forth comprising a movable switch member, movable tripping means therefor, and a stop designed to overlie the adjacent tracks and operated upon movement of said tripping means.

2. A switch of the type set forth comprising a movable switch member, tripping means therefor, a stop designed to overlie the adjacent tracks and operated upon the actuation of said switch member and operative connections between said tripping means and said stop.

3. A switch of the type set forth comprising a movable switch member, tripping means therefor, a pivoted stop designed to overlie the adjacent tracks upon the respective movements of said switch member and operative connections between said tripping means and said stop.

4. A switch of the type set forth, comprising a movable switch member, a pivoted casting for tripping the same, a pivoted stop adapted to overlie the adjacent tracks and connection between said casting and said stop.

5. A switch of the type set forth comprising a movable switch member, a pivoted casting for tripping the same, a pivoted stop having movement in a plane at an angle to said casting and a gimbal joint connection between said casting and said stop.

6. A switch of the type set forth, comprising a movable switch member, tripping means therefor, a pivoted stop having a depending leg and operative connections between said tripping means and said stop.

7. A switch of the type set forth comprising a supporting casting, a switch member rotatably journaled therein and having angularly disposed offset extensions and a tripping means for said switch member comprising a pivoted casting having offset teeth designed to engage said respective extensions.

8. A switch of the type set forth, comprising a supporting casting, a switch member rotatably journaled therein and having angularly disposed offset extensions and a tripping means for said switch member comprising a pivoted casting having offset teeth designed to enter between and engage either side of said respective extensions in the corresponding movement of said casting.

9. A switch of the type set forth, comprising a supporting casting, a switch member rotatably journaled therein and having two angularly disposed offset extensions and an enlarged portion between said extensions and tripping means therefor comprising a rotatable casting having offset teeth, one of said teeth being formed to engage said enlarged portion on said extension adjacent thereto, said teeth being designed to enter between and engage either side of said respective extensions.

10. In a switch of the type set forth, combined with spaced straight track sections and a section adjacent one of the straight sections and extending at an angle thereto, a switch member rotatable to close the space between the straight sections or between one of the straight sections and the angularly extending section, a stop having a depending part and movable to bring its depending part over one of the straight sections or the angularly extending section, means for tripping the switch member, and a compensating positive connection between the tripping means and the stop whereby the latter is operated by the former.

11. A switch of the type set forth comprising a movable switch member, a pivoted casting for tripping the same, a pivoted stop, having a part designed to overlie either of the adjacent tracks and means positively connecting the casting and the stop for operating the latter from the former.

12. A switch of the type set forth comprising a hanger, a casting supported thereby, a rotatable switch member journaled in

said casting, and pivoted tripping means therefor, said hanger having an extension parallel to said casting and overlying said tripping means.

5 13. A switch of the type set forth comprising a movable switch member, tripping means therefor, a movable stop having a single depending stop part adapted to overlie either of the adjacent tracks, and means
10 for effecting movement of the stop in either direction upon corresponding movement of the switch member.

14. A switch of the type set forth comprising a supporting casting and a rotatable
15 switch member journaled therein and including a centrally located axially extending weighted portion and track sections projecting on opposite sides of the weighted portion.

15. A switch of the type set forth comprising a rotatable switch member and tripping means therefor including elements which are brought successively into operative engagement with said switch member to partially rotate the same. 20 25

16. A switch of the type set forth comprising a hanger, a casting supported thereby, a rotatable switch member journaled in said casting and movable tripping means therefor, said hanger having an extension
30 parallel to said casting and overlying said tripping means.

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

BENJAMIN G. WATKINS.

Witnesses:

FRED L. NUTZMAN,
HENRY P. STURM.