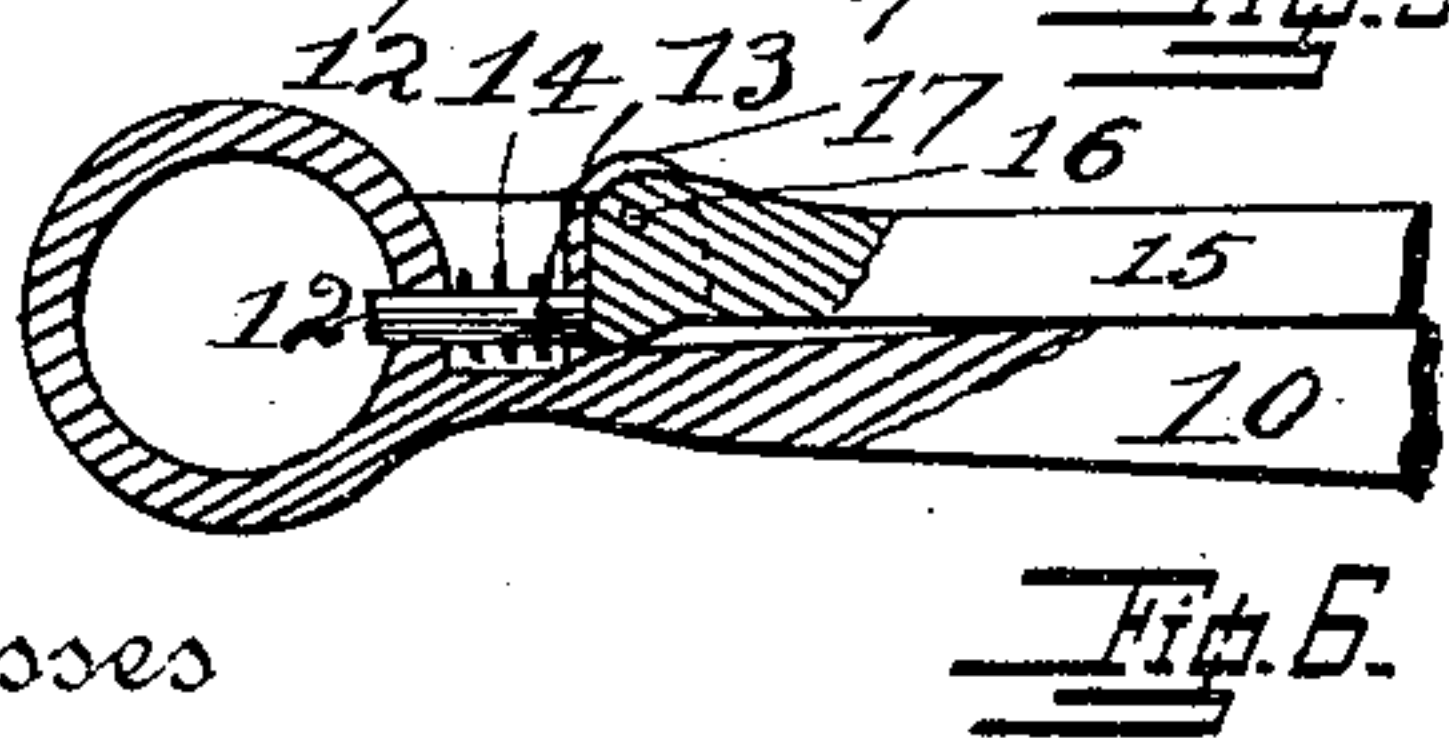
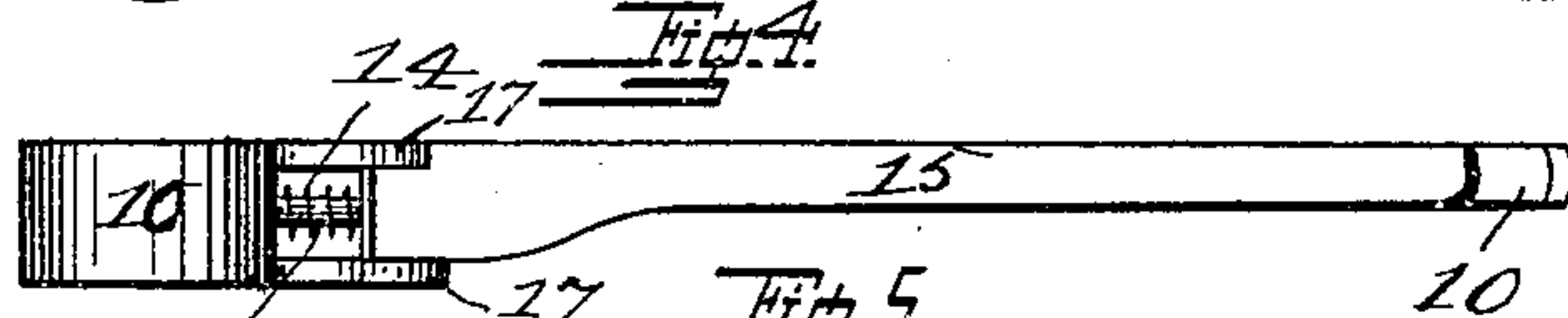
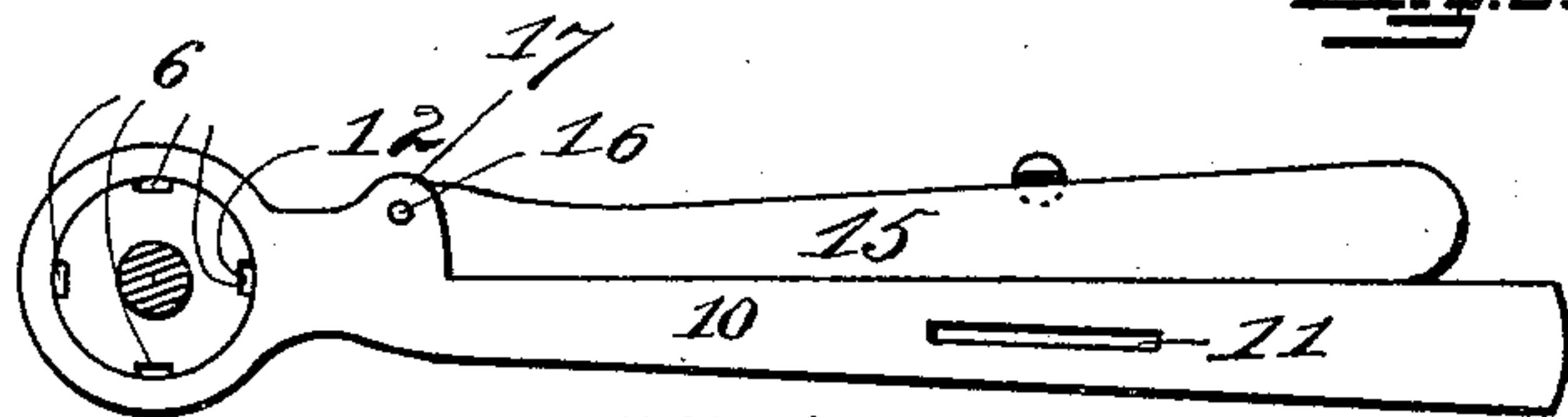
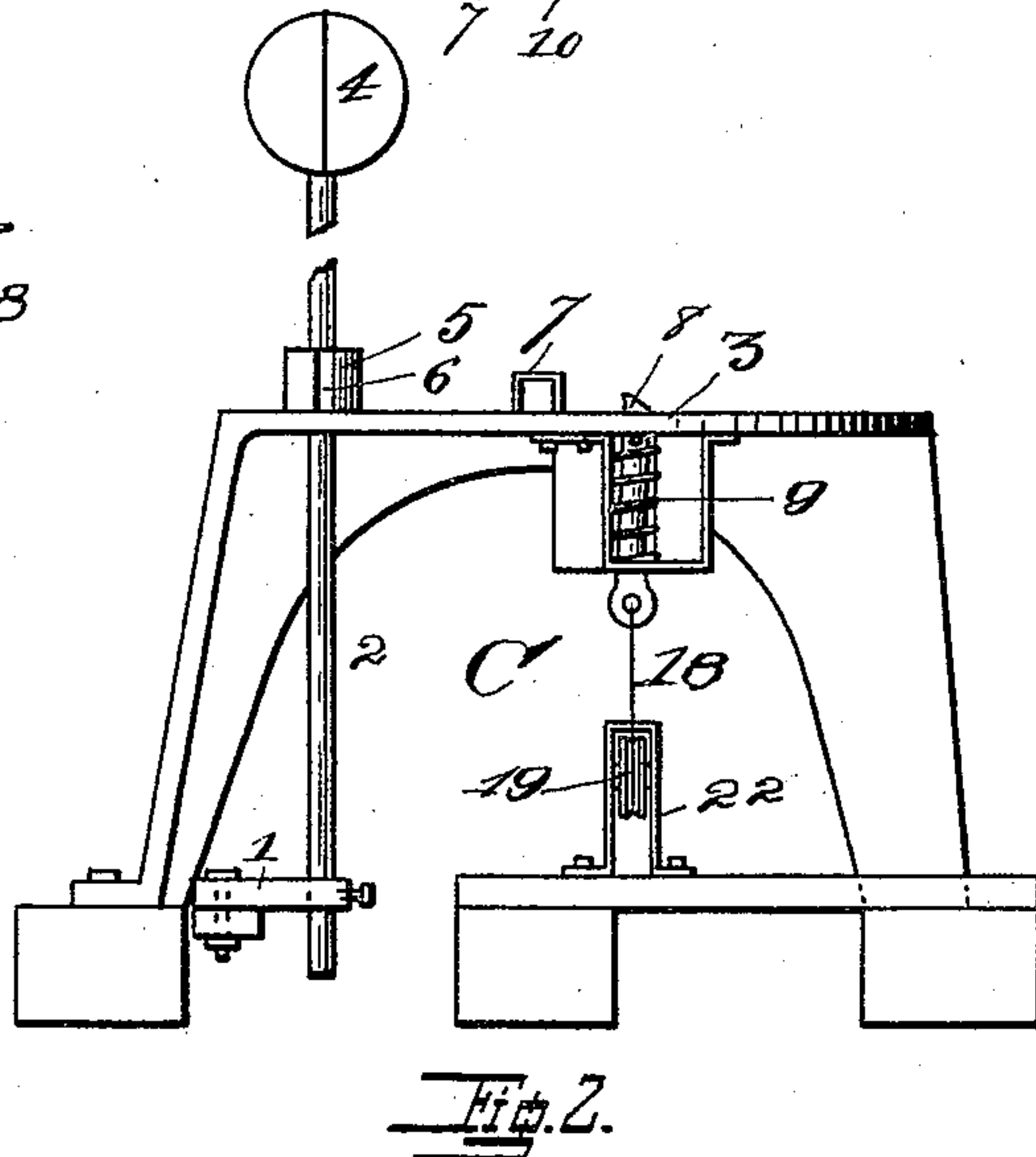
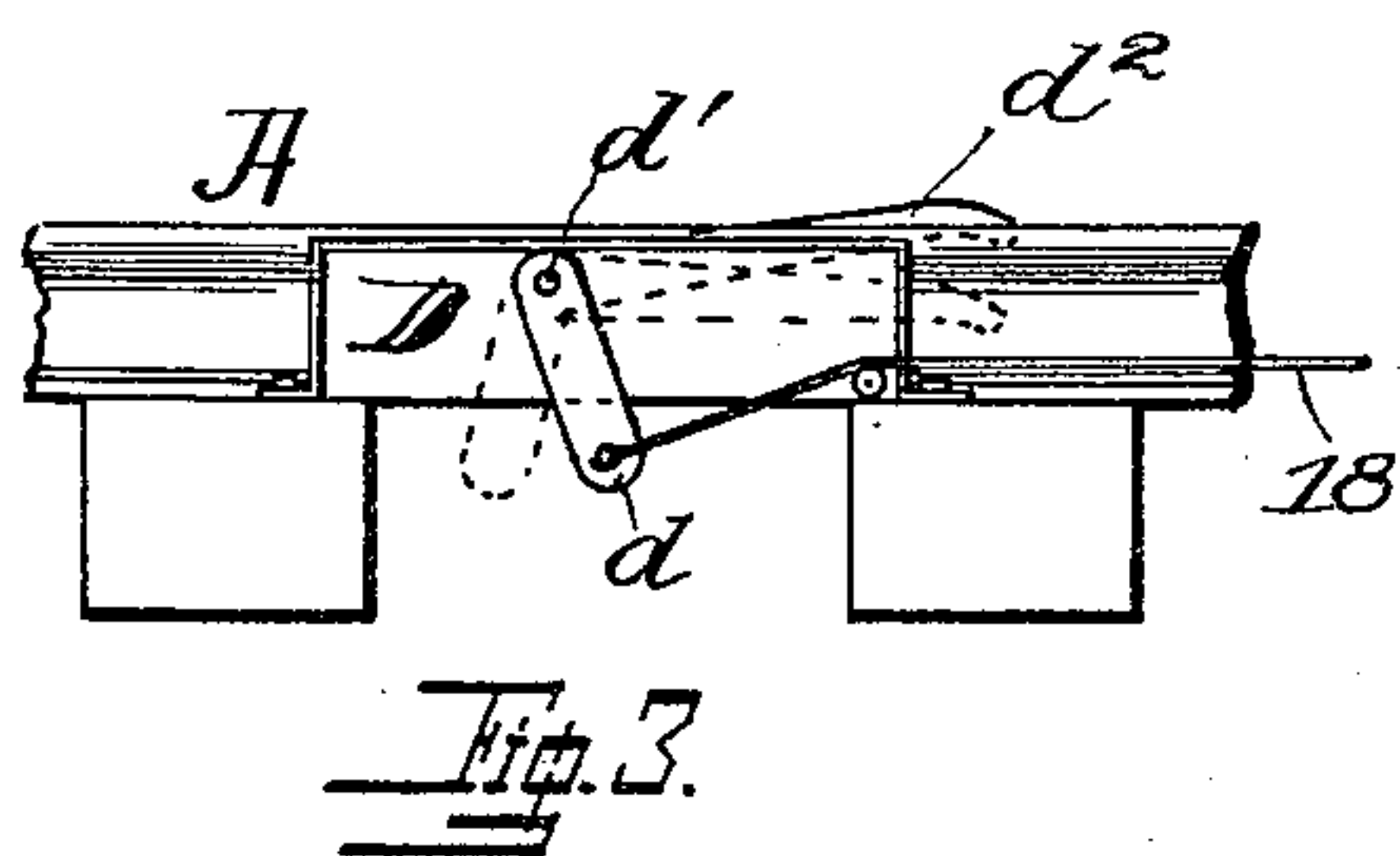
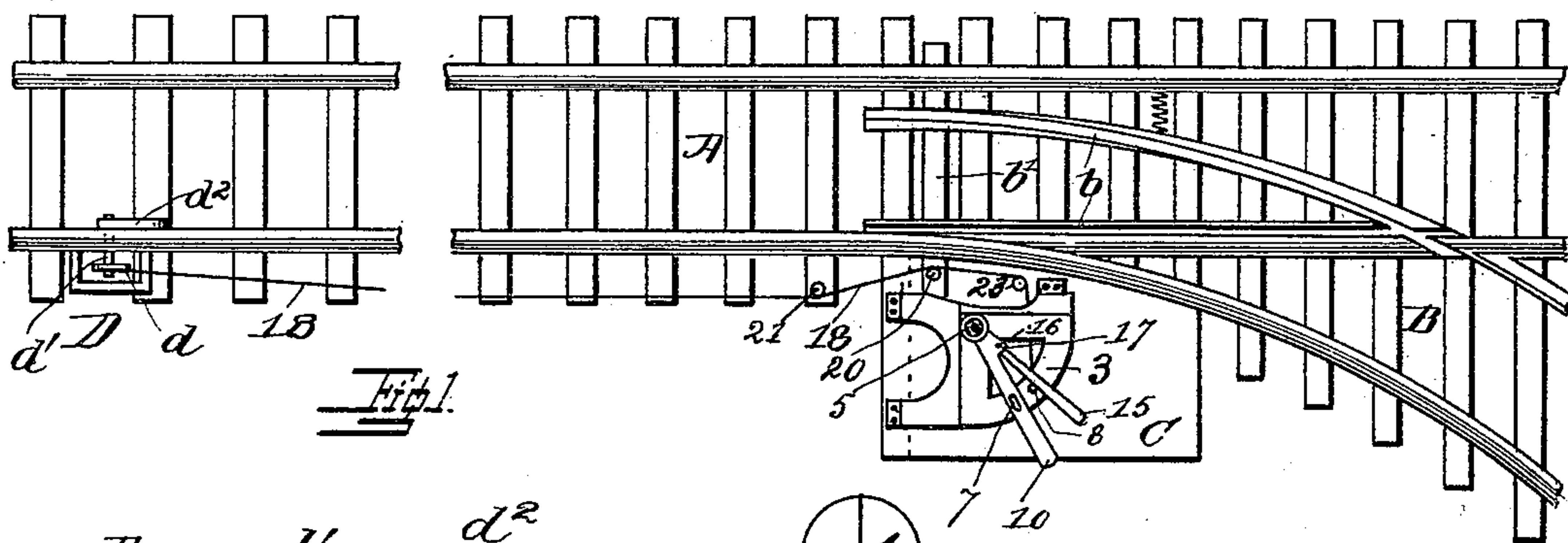


(No Model.)

McDONALD M. TURNER & I. H. GRANT.  
SAFETY SWITCH.

No. 481,153.

Patented Aug. 16, 1892.



Witnesses

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# UNITED STATES PATENT OFFICE.

MCDONALD M. TURNER AND IRBY H. GRANT, OF ATLANTA, GEORGIA.

## SAFETY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 481,153, dated August 16, 1892.

Application filed August 17, 1891. Serial No. 402,989. (No model.)

*To all whom it may concern:*

Be it known that we, MCDONALD M. TURNER and IRBY H. GRANT, of Atlanta, in the county of Fulton and State of Georgia, have  
5 invented certain new and useful Improvements in Safety-Switches; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-  
10 pertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

This device, as above stated, is a switch,  
15 especial reference being had therein to the element of safety, and therefore several devices have been incorporated whereby the switch automatically sets to main track, the details of all of which will be hereinafter fully  
20 specified and are shown in the accompanying drawings, in which—

Figure 1 is a plan of the track, showing the gate-rails set to main track. Fig. 2 is an end elevation of the switch-stand, showing the  
25 elements of construction thereof. Fig. 3 is a detail in side elevation of the track, showing the track-instrument. Fig. 4 is a view of the lever and switch-drum, showing said lever gripping said drum. Fig. 5 is a side elevation of said lever, said view being of the lower  
30 side of Fig. 4. Fig. 6 is a detail in section of the lever, showing its operative elements not disclosed by the other figures.

In the figures like reference-marks indicate  
35 corresponding elements of construction in all the views.

A is the main track; B, the siding; C, the switch-stand, and D the track-instrument by means of which the switch is automatically  
40 turned to the main track. The switch is the same as ordinarily used and may be of any construction desired; but in any case the gate-rails should be spring-pressed to hold them normally in a position to throw the rolling-  
45 stock along the main track. The gate-rails *b* are secured together by a long tie-bar *b'*, which extends to the crank 1 of the shaft 2, suitably journaled in a vertical position in the switch-stand C, which is provided with a num-  
50 ber of legs for securing to the ties. A semaphore 4 and a drum 5 are suitably fitted to

the shaft 2, the said drum 5 having cut in its circumferential surface the proper number of notches 6, there being the same number of these notches as there are throws to the switch,  
55 and same are spaced in it in circumferential series the proper distance to cause the gate-rail to move the proper distance upon the movement of the lever through the requisite  
60 arc of a circle, as will be presently described.

A quadrant 3 is carried on the switch-stand, in which is a staple or eyebolt 7, and near it at the proper distance is the bolt 8, having  
65 play vertically in a hole therein, the spring 9 holding it normally elevated. This bolt or catch 8 is withdrawn by a connection with the track-instrument, as will be hereinafter de-  
scribed. The lever 10 has its end enlarged and perforated to pass loosely over the drum  
70 5, and a slot 11 is made in its other end to pass over the staple 7. Movable longitudinally in suitable holes is the pin 12, which has a stop-pin 13 and is normally held withdrawn  
75 from within the opening in the enlarged portion of the lever by a spring 14, as shown in Figs. 5 and 6. A lever 15 is pivoted by the  
pin 16 between the lugs 17 and is extended to near the handle end of the lever 10. This le-  
80 ver in its short end bears upon the back end of the pin 13 and, obviously, when in the position shown in Figs. 4 and 6 presses the pin within the opening in the lever, and hence causes said pin to engage one of the notches  
85 6, while when said lever 15 is in the position shown in Fig. 1 the pin will evidently be free to be withdrawn by its spring. This spring  
14 should be sufficiently strong to cause all necessary action of the pin and lever.

Secured to the lower end of the bolt 8 in any desired manner is a rope 18 of wire or  
90 wire with a fibrous core, which extends downwardly over a sheave 19, revolvably held in a stand 22, secured to the frame, whence it extends to a pulley 23 on the frame, and thence  
95 to a pulley 20 on the long tie-bar *b'*, after which it passes to the pulley 21 on an adjacent tie, and from there passes into a suitable conduit consisting of metallic pipe or tile and to the lever *d* of the track-instrument D. Said  
100 lever *d* is secured on a shaft *d'*, carried in a suitable frame secured to the track and at a distance equal to a train-length or more, as



desired, from the free ends of the gate-rails, so that a train or trains running from the siding onto the main track will not disarrange said switch previous to the proper time. A  
 5 depression-lever  $d^2$  of such form and size as will insure its being struck by the wheel of a passing train and be depressed is also secured to said shaft  $d'$ , as shown. The operative elements, with the exception of the depression-  
 10 lever, are all incased and the conduit will be screwed into or otherwise secured to opening into said casing.

The operation of this device is as follows: The train to be side-tracked, approaching from  
 15 the right, Fig. 1, passes so that its back end clears the gate-rails when the operator unlocks the lever 10 from the staple, the switch having been left by the train previous in the position shown in Fig. 1, and partially revolves the said  
 20 lever back until the pin 13 registers with the proper one of the notches 6, after which the lever 15 is brought into the position shown in Fig. 4 relative to the lever 10, which causes the engagement of the pin 12 and notch 6.  
 25 The lever is then turned so as to register with the staple pressed down thereover and the padlock inserted and secured, said depression being allowed by the looseness with which the lever is secured to the upright shaft. The  
 30 bolt 8 prevents the lever 15 from moving away from the lever 10 and so holds the pin in the proper notch, thus securing the upright shaft and connected parts stationary with said lever 10. The train may then back into  
 35 the siding. The other train, approaching from the direction to the left in Fig. 1, will strike and depress the lever  $d^2$ , pull the rope 18, and withdraw the bolt 8, which frees the lever 15, and the spring 14 then withdraws the pin 12,  
 40 forcing the lever 15 back in the operation. This obviously allows the drum 7 and its shaft to revolve, which it is caused to do by the movement of the spring-pressed gate-rails. Owing to the fact that the pulley 20 is offset  
 45 from between the pulleys 19 and 21, carrying the rope 16, the spring operating the bolt is brought into play to assist in moving the gate-rails so long as the depression-lever is held in its depressed position. The second train may  
 50 then pass along the main track, after which the switch is again set to side track by one of the crew of the side-tracked train and the said side-tracked train may again proceed on

its way, setting the switch to main line as it passes over the instrument D. 55

If desired, a semaphore of suitable design and construction may be placed at said instrument D to indicate to the engineer the exact condition of the switch a train-length or more ahead and possibly around a curve. 60

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class specified, the combination of the upright crank-shaft, an  
 65 operating-lever pivoted thereon and having a sliding bolt engaging said shaft on bringing it into forcible contact therewith, a lever pivoted on said operating-lever having its short arm bearing on said sliding bolt when de-  
 70 pressed, and means for holding said lever depressed when the switch is set, for the purpose specified.

2. In a device of the class specified, the combination of the gate-rails held normally  
 75 closed to the main track, the crank-shaft connected therewith, a main lever loosely pivoted upon said shaft, a pin set in said lever and adapted to forcibly contact with said shaft but held normally out of contact therewith, a  
 80 lever pivoted to said main lever and connected with said pin and operating to press said pin into engagement with the shaft, a segment carried on the frame, a projection adapted to engage the main lever, and a spring-pressed  
 85 latch adapted to engage and hold said lever stationary relative to the main lever and to disengage same on its depression, substantially as and for the purpose specified.

3. In a device of the class specified, the  
 90 gate-rail and a tie-bar connecting same, a pulley secured to each of the two adjacent ties, a pulley on said tie-bar offset from between said pulleys on the ties, a rope passing in contact with said pulleys, and a depression-  
 95 lever connected to said rope and operating to strengthen same upon its depression by increasing its tension, substantially as and for the purpose specified.

In testimony whereof we hereunto affix our  
 signatures in presence of two witnesses. 100

MCDONALD M. TURNER.  
 IRBY H. GRANT.

Witnesses:

A. P. WOOD,  
 S. M. WOOD.