

No. 682,032.

Patented Sept. 3, 1901.

E. B. CLARK.  
SWITCH TURNER.

(Application filed Dec. 18, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 3.

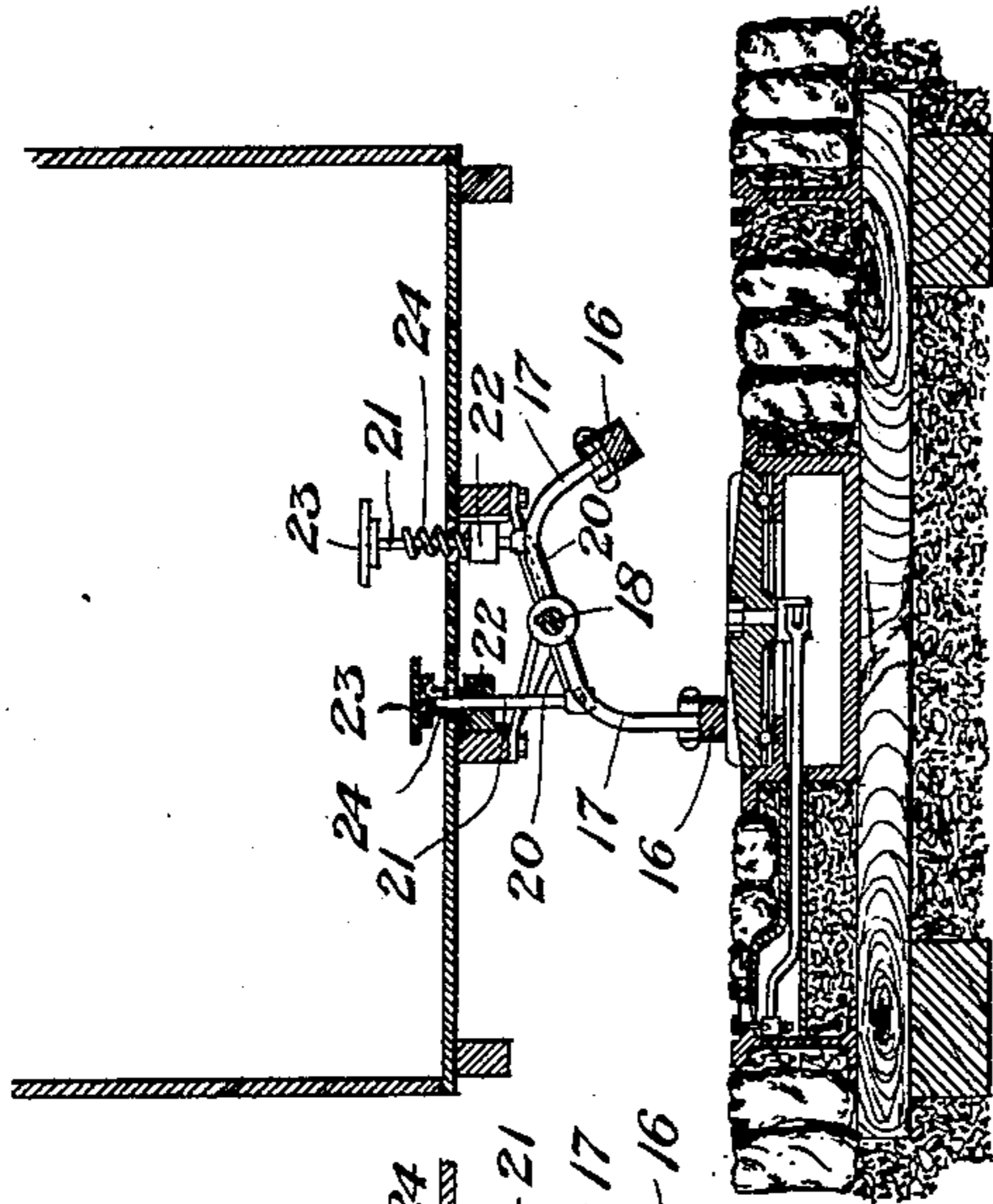


Fig. 4.

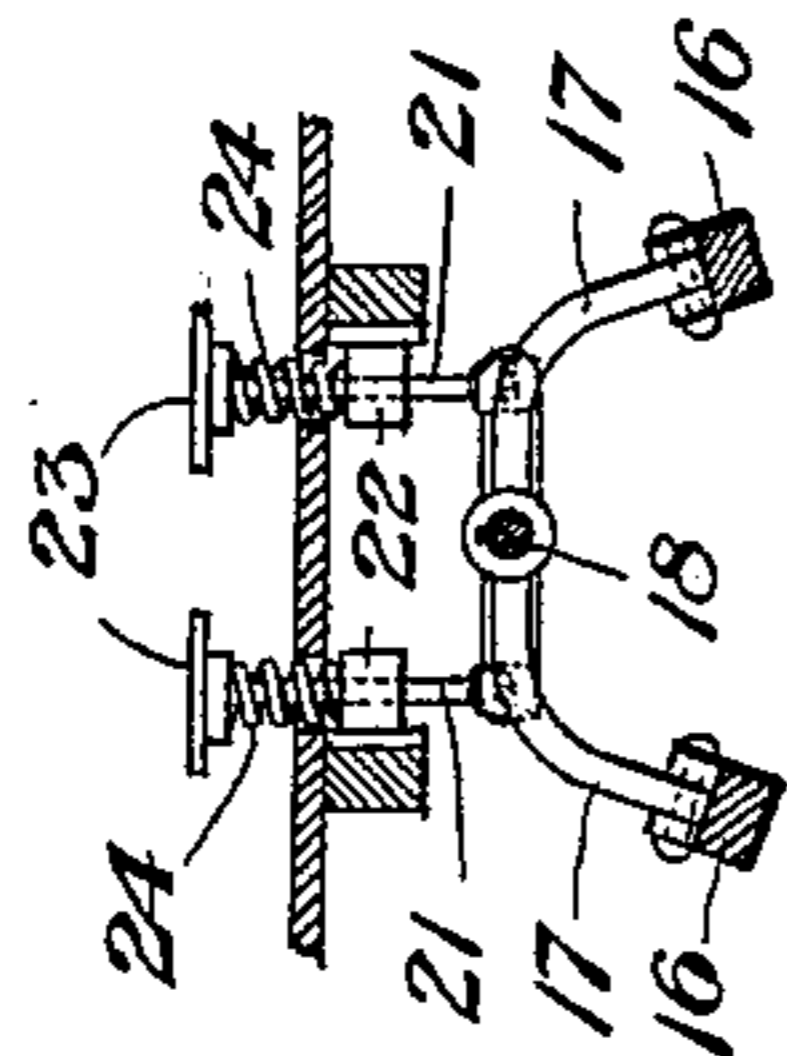
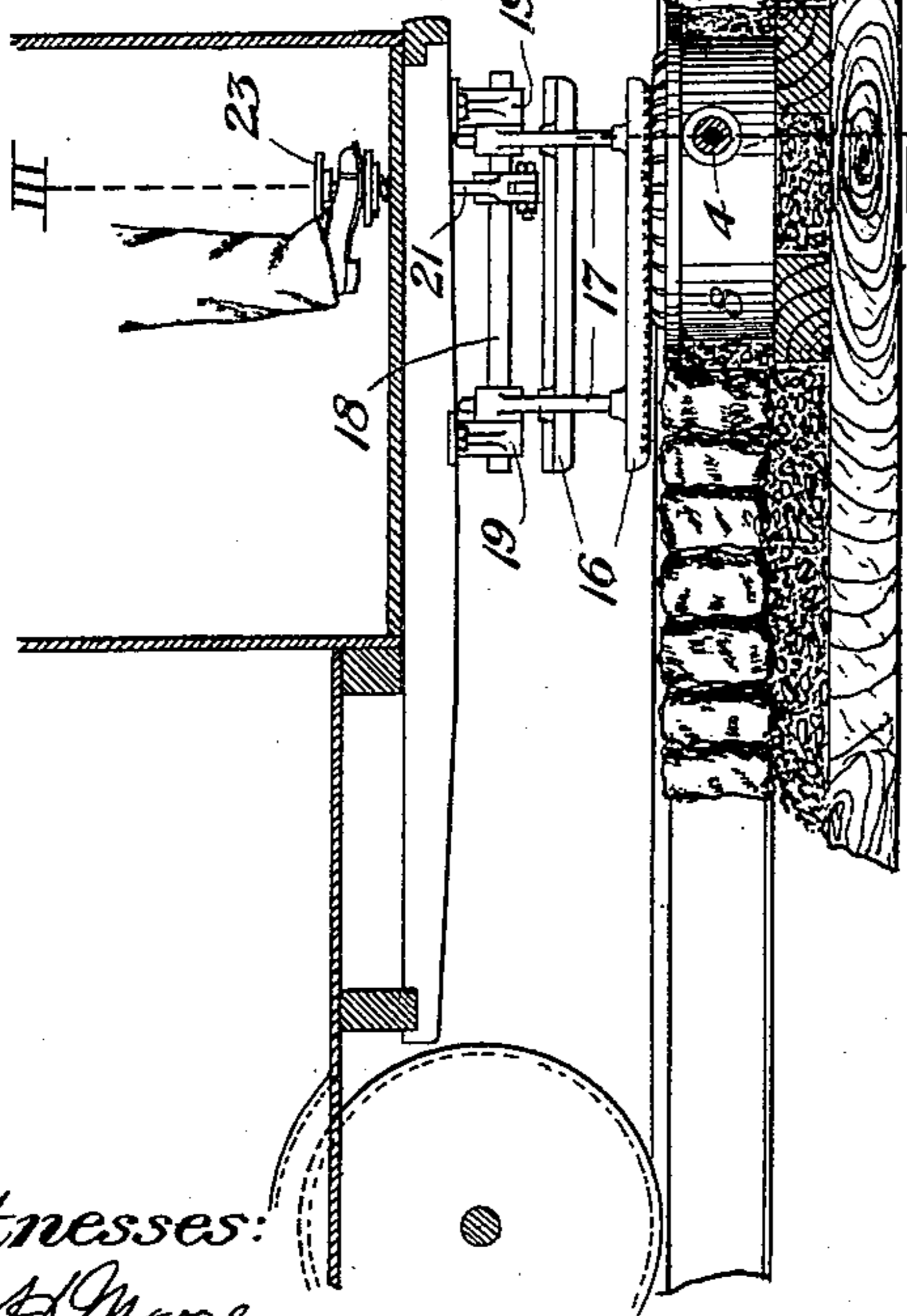


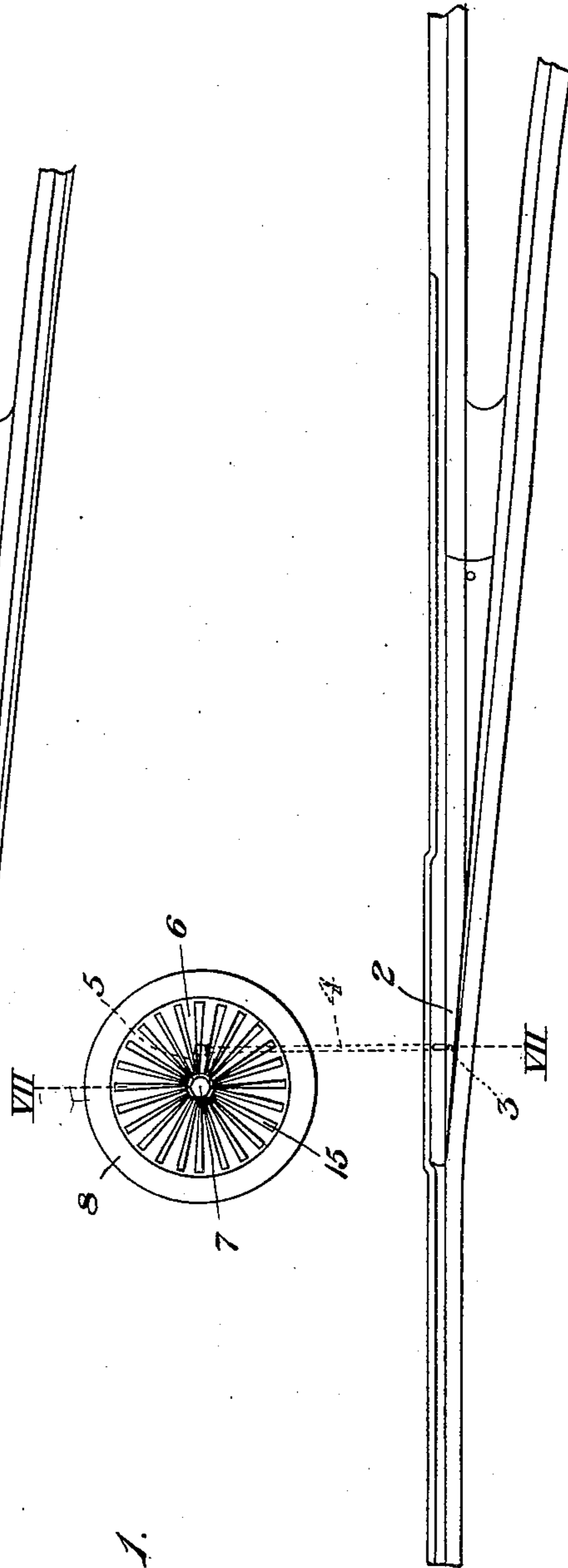
Fig. 2.



Witnesses:

J. H. Moore  
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Fig. 1.



Inventor:  
Edward B. Clark.  
by O. M. Charles  
his attorney.

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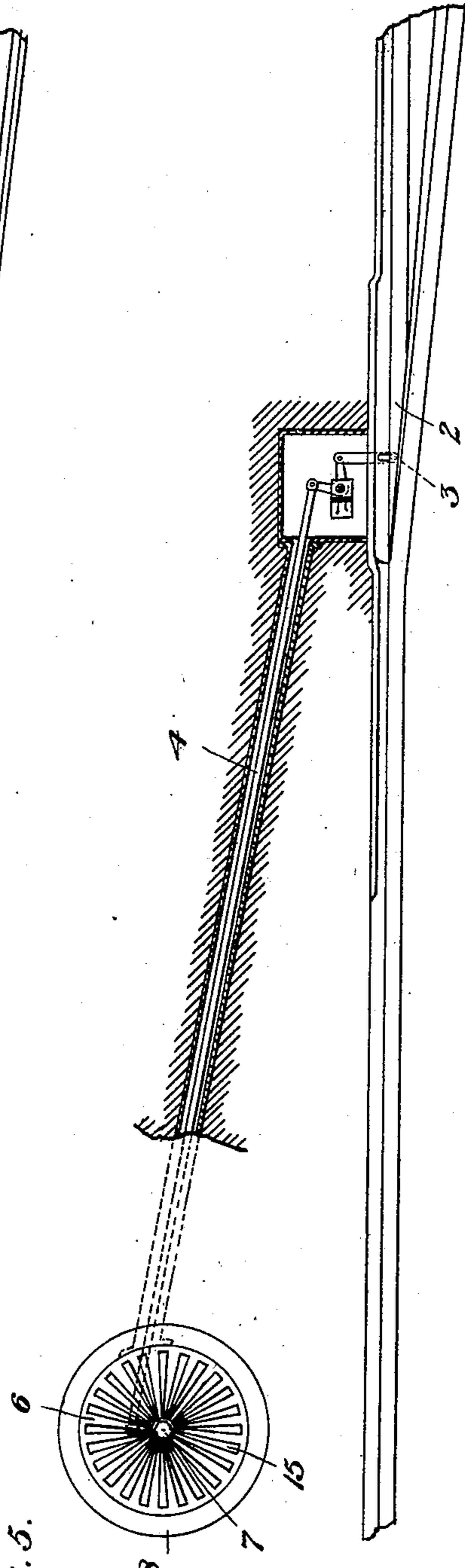
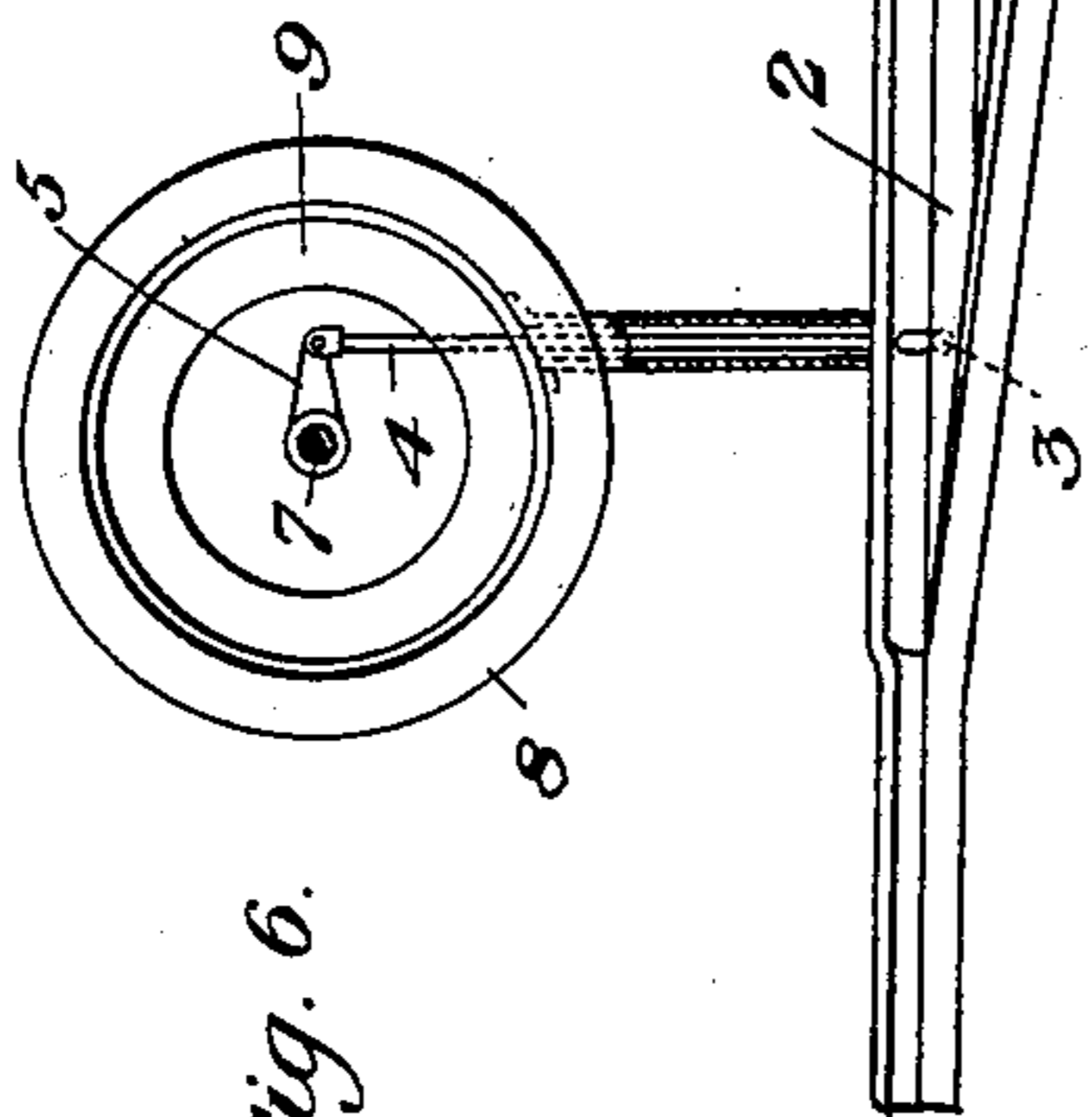
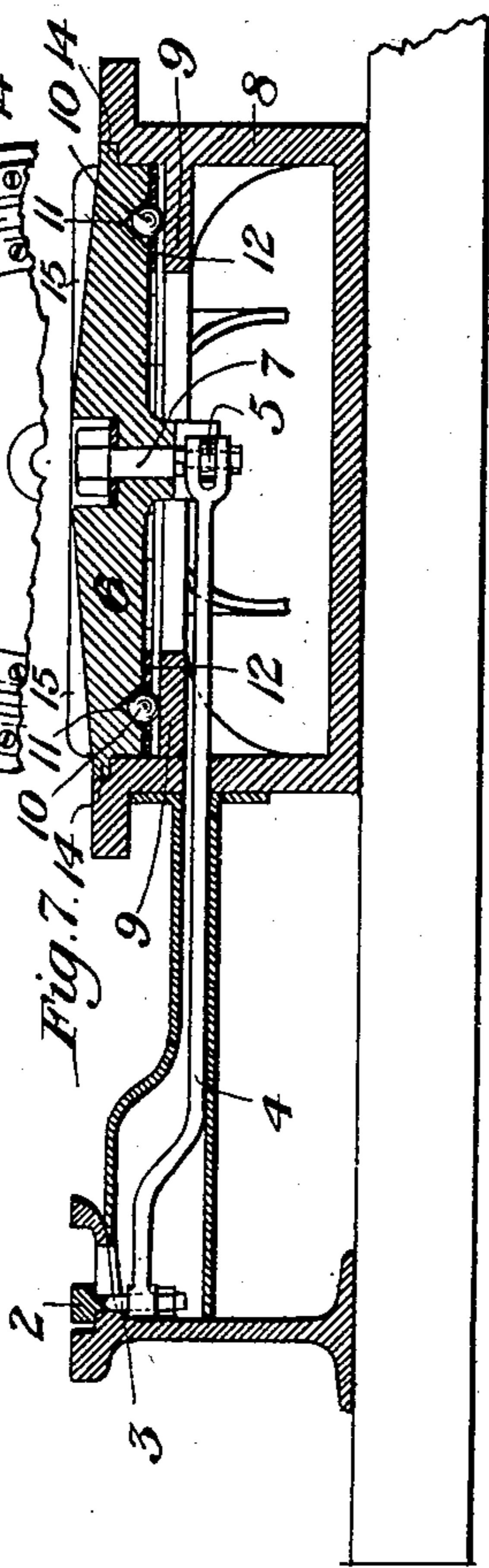
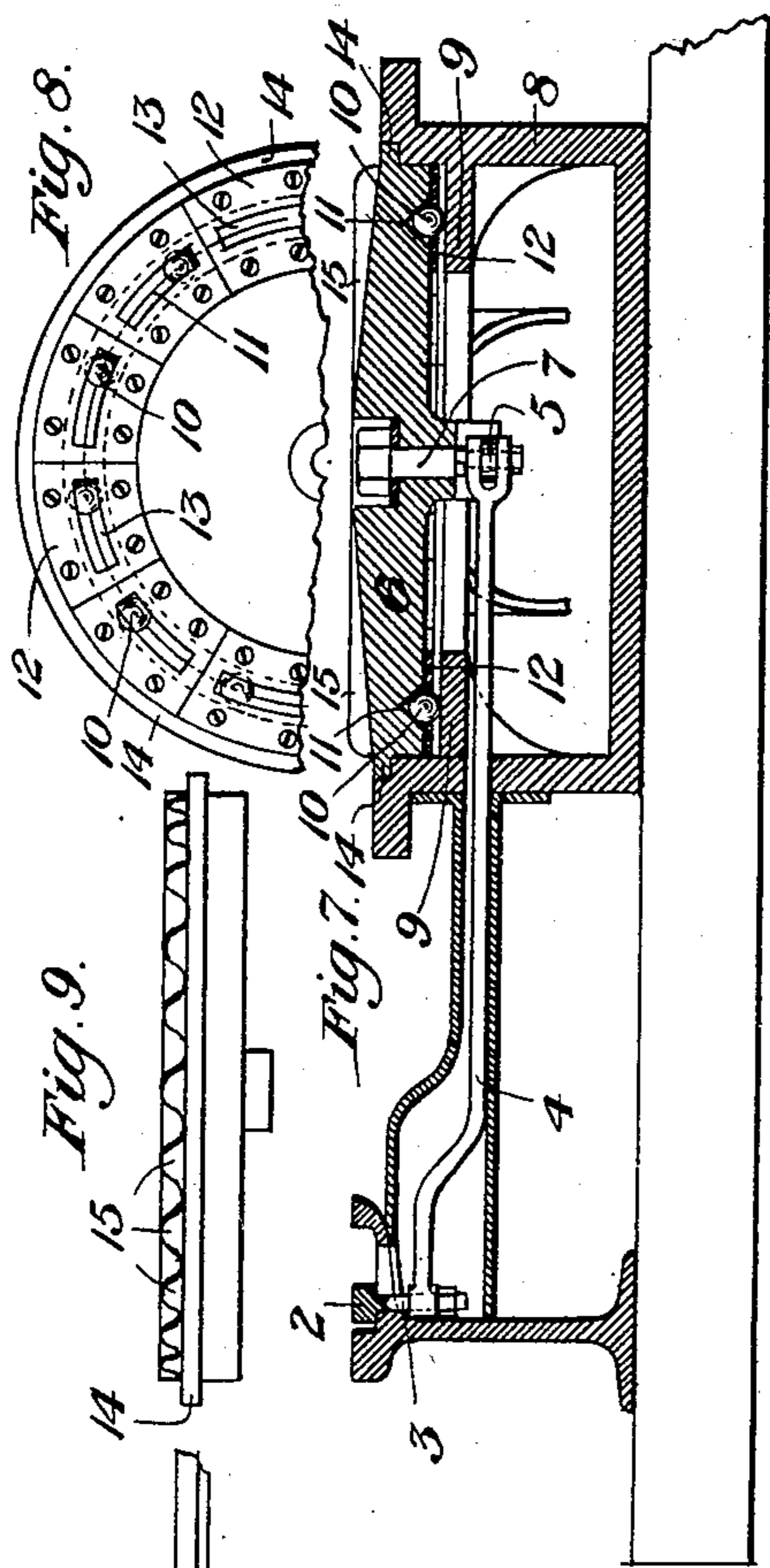
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J. H. Moore  
C. V. Mackenzie

Inventor:  
Edward B. Clark.  
by O. M. Clarke  
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# UNITED STATES PATENT OFFICE.

EDWARD B. CLARK, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF  
ONE-HALF TO HOSEA NAPAY, OF SAME PLACE.

## SWITCH-TURNER.

SPECIFICATION forming part of Letters Patent No. 682,032, dated September 3, 1901.

Application filed December 18, 1900. Serial No. 40,269. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD B. CLARK, a citizen of the United States of America, and a resident of Pittsburg, county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Switch-Turners, of which the following is a specification, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a street-railway-track switch, showing the application thereto of my invention. Fig. 2 is a sectional view, in side elevation, thereof and of a portion of the car equipped with my improved means for operating the switch apparatus. Fig. 3 is a cross sectional view indicated by the line III III of Fig. 2. Fig. 4 is a partial view similar to Fig. 3, showing the operating-shoes in normal position. Fig. 5 is a view similar to Fig. 1, illustrating a modified construction wherein the rotating disk is located at a point more remote from the switch-point. Fig. 6 is a similar view showing the rotating disk removed and exposing the connections to the switch. Fig. 7 is a cross-sectional view, on an enlarged scale, indicated by the line VII VII of Fig. 1. Fig. 8 is a partial under plan view of the rotating disk, showing the ball-bearings.

My invention relates to means for operating railway-switches from the car itself; and it consists in a partially-rotatable disk mounted in suitable bearings and connecting through intervening mechanism with the switch-point, together with means mounted on the car frame or truck adapted to be placed in operative connection with the rotatable disk, as shall be more fully hereinafter set forth.

Referring now to the drawings, 2 is a switch-point, with which by means of a downwardly-projecting pin 3 and suitable connecting-rod 4 the switch-point is connected with an operating-crank 5, which crank-arm is adapted to be partially rotated in conformity with the partial rotating movement of the disk 6. The crank-arm 5 is preferably keyed to a central arm 7, secured in the disk, or such connection may be made with the disk itself either by an integral arm or an ordinary wrist-pin

connection tapped in the under side of the disk at a suitable position and distance from the center. The disk is mounted within a case 8, the upper edge of which is on a level with the roadway-surface, the case having an inner cavity of sufficient size to accommodate the working parts, and provided with an integral flange 9, the upper surface of which provides a bearing-face for the ball-bearings 10, for which purpose the upper surfaces may be turned off or faced. The balls 10 are mounted in suitable grooves 11 in the under face of the disk 6 and are held therein by retaining-plates 12, having elongated slots 13, permitting the free travel of the balls in either direction. The disk, as shown, is provided with a peripheral flange 14, overlapping the upper edge of the case, which is suitably recessed, permitting it to lie flush with the upper edge and effectually preventing the entrance to the interior of the case of foreign matter, such as dirt, stones, &c. The upper face of the disk is provided with radially or other arranged corrugations 15, which extend slightly above the upper surface of the disk and also of the roadway-level, giving opportunity for engagement with the corrugations of the operating-shoe, which is mounted underneath the car. These shoes 16, of which there are preferably two, are shown in Figs. 2 and 3, and consist of elongated narrow skate-shaped pieces of metal, the lower face of which may be corrugated and the forward ends of which are turned up to facilitate riding over the upper surface of the disk. The shoes are mounted in positions corresponding with both opposite sides of the upper face of the disk and are mounted on the outside end of the tilting arms 17, which are keyed or otherwise secured to a central rock-shaft 18, supported from the car-body or from the framework of the truck, midway between the wheels. The rock-shaft 18 is provided with lever-arms 20 at each side, the outer ends of which are pivotally secured to vertical stems 21, mounted in bearing 22, provided with treadles 23 and intervening springs 24. The springs 24 may be employed to equalize the pressure and to maintain the parts in the inoperative position shown in Fig. 4. In case the operating-shoes are mounted midway of the car, upon

the truck-frame, suitable connections (not herein shown) may be made from the rock-shaft 18 in either direction to the front and rear platforms and there connected by bell-crank levers or otherwise to the crank-arm 20. When mounted in such manner, I locate the rotating disk such a distance back from the switch-point as shown in Fig. 5, permitting the point to be shifted before the car-wheels have reached it, and by this construction the motorman is enabled to see the switch-point move before the car runs over the switch. When the shoes 16 are mounted as shown in Figs. 3 and 4, at least one or both of the switch-points are sufficiently far in advance of the wheels to insure such movement in good time.

The operation will be readily understood from the foregoing description, the motorman depressing one or the other of the shoes, as indicated to take a right or left hand track or to throw the switch-point when set for the side to the main track. The shoe being thrown down will come into effective operating contact with the corrugated upper surface of the disk, the corrugations of which are beveled upwardly, as shown in Fig. 9, and the disk, by reason of the ball-bearings, will very easily rotate under such frictional contact, due to the forward movement of the car, and will throw the switch over, after which the shoe will be released by the motorman, or if still held down will slide freely over the upper surface, and it will be observed that by my construction such sliding action is facilitated by reason of the absence of any positive locking engagement with the disk. This feature is of great advantage, as it renders the device practically independent of the necessity of any especial skill on the part of the operator.

It will be observed that the switch-point is free to be operated by the ordinary switch-iron, as the connections to the disk will not lock it or interfere with such operation.

Various changes or modifications may be made in the construction or arrangement of the various parts without departing from my invention within the province of the designing engineer or skilled mechanic, and I do not desire to be limited to the exact construction shown and described, but to include all such changes as within the scope of the following claims.

What I claim is—

1. The combination with a rotatable disk

and connections therefrom to a movable switch-point, of a shoe mounted underneath the car-body, and provided with frictional corrugations on the lower side and means for depressing it into rubbing contact with the upper surface of the disk, substantially as set forth. 60

2. The combination with a horizontal rotatable disk and connections therefrom to a movable switch-point, of a shoe having a corrugated under surface mounted underneath the car-body, and means for depressing it into rubbing contact with the upper surface of the disk, substantially as set forth. 65 70

3. The combination with a rotatable disk, provided with corrugations on its upper surface, and connections therefrom to a movable switch-point, of a shoe mounted underneath the car-body and means for depressing it into rubbing contact with the upper surface of the disk, substantially as set forth. 75

4. The combination of a rotatable disk, a case therefor provided with a bearing-surface, intervening ball-bearings and connections from the disk to a movable switch-point; of a shoe having a corrugated surface mounted underneath the car-body, with means for depressing it into rubbing contact with the disk, substantially as set forth. 80 85

5. The combination of a rotatable disk provided with a corrugated upper surface, a case in which the disk is mounted upon ball-bearings, a connecting-rod secured to the switch and to mechanism adapted to move a switch-point, and a shoe mounted on a rock-shaft with means for throwing the shoe into rubbing contact with the upper surface of the disk, substantially as set forth. 90

6. The combination of a rotatable disk provided with a corrugated upper surface, a case in which the disk is mounted upon ball-bearings, a connecting-rod secured to the switch, and to mechanism adapted to move a switch-point, a rock-shaft centrally mounted to the car-framing, lateral crank-arms secured thereto, longitudinal friction-shoes supported from the ends of the crank-arms, and treadle-rods attached to operating-cranks secured to the rock-shaft, substantially as set forth. 100 105

Signed at Pittsburg this 5th day of November, 1900.

EDWARD B. CLARK.

Witnesses:

PETER J. EDWARDS,  
C. M. CLARKE.