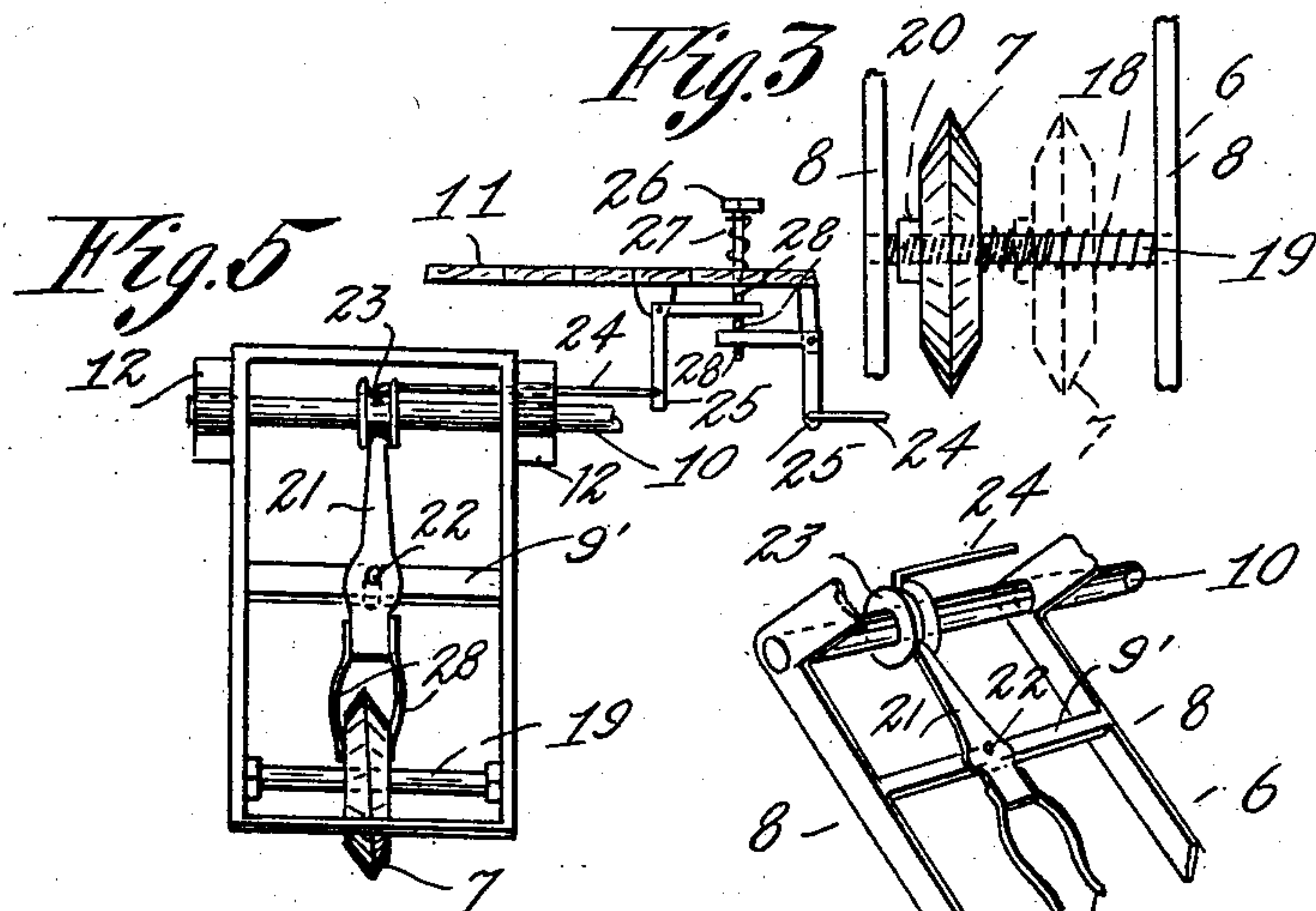
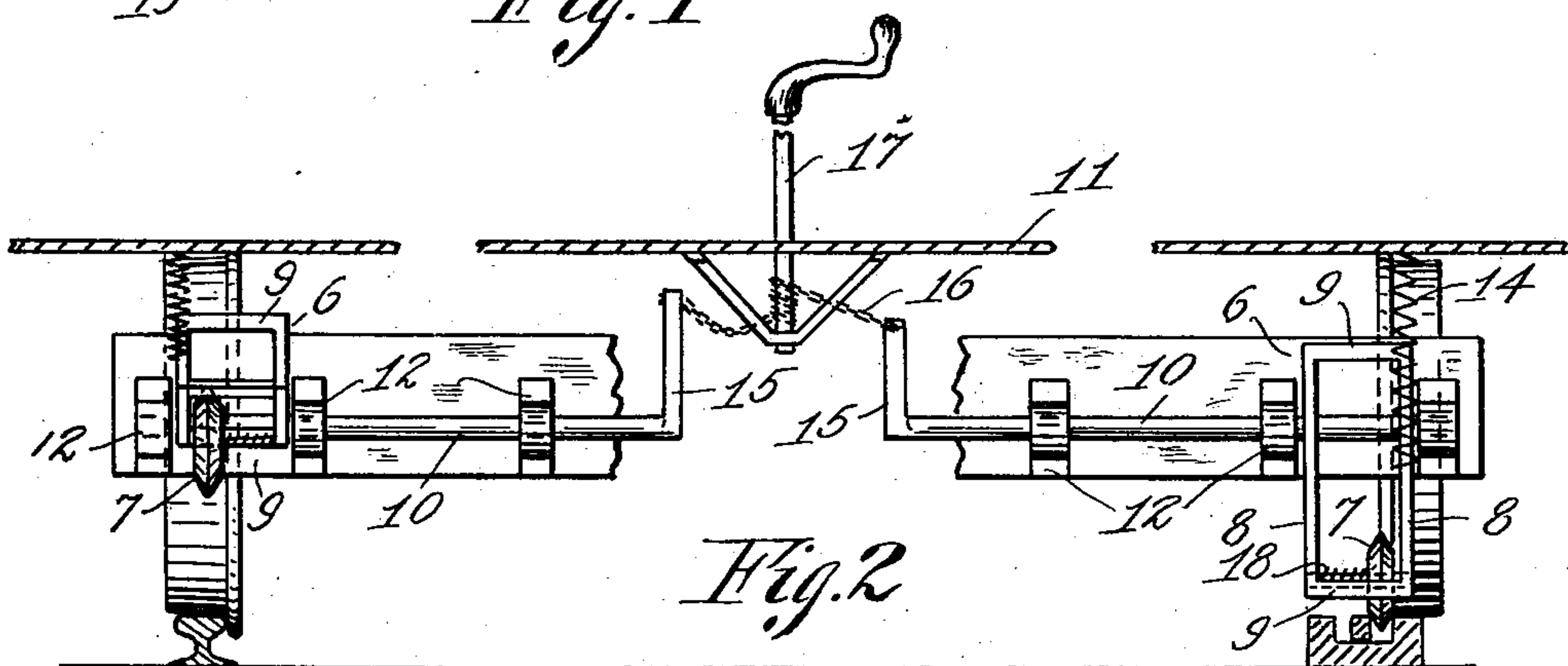
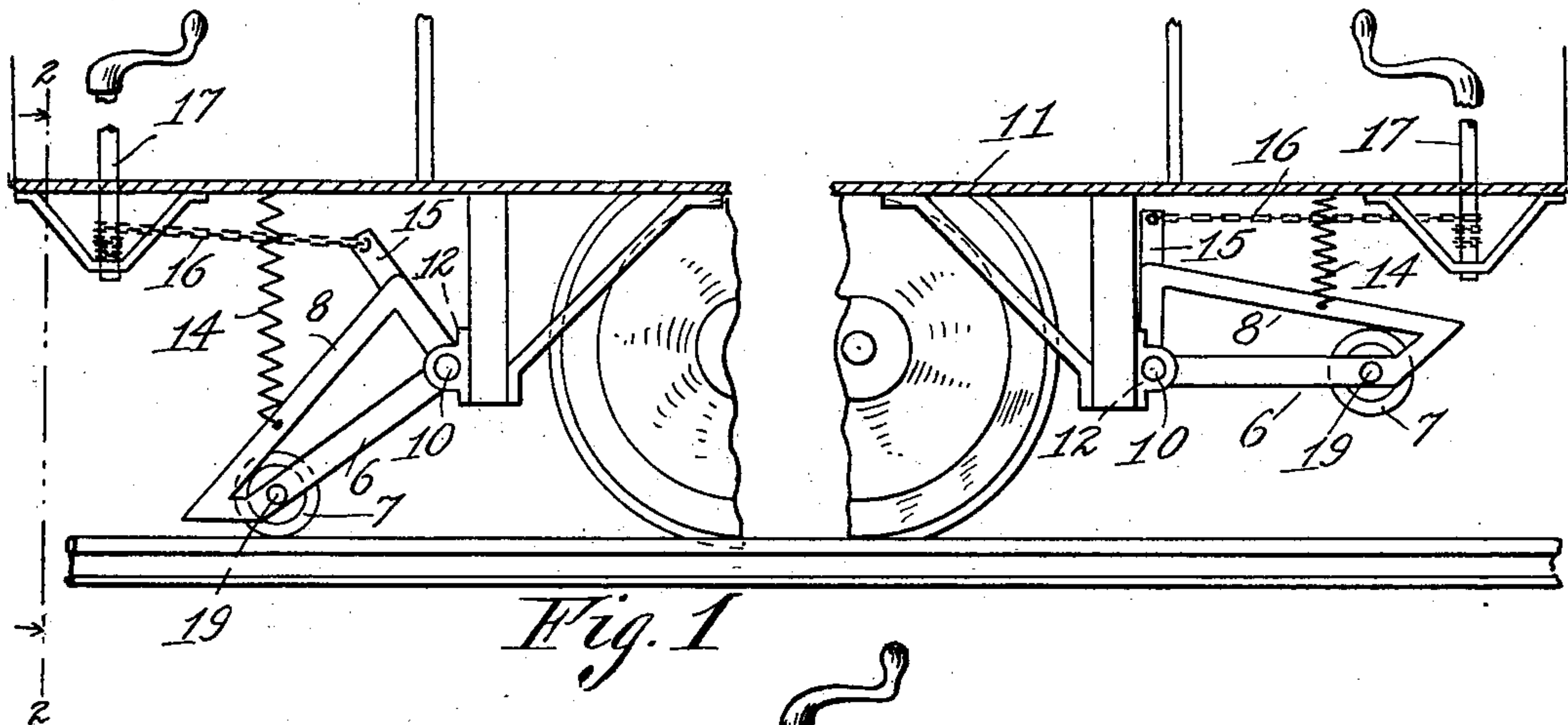


No. 744,159.

PATENTED NOV. 17, 1903.

L. L. BIGELOW.  
SWITCH TURNING DEVICE.  
APPLICATION FILED JAN. 31, 1903.

NO MODEL.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

LEWIS LADD BIGELOW, OF SEATTLE, WASHINGTON.

## SWITCH-TURNING DEVICE.

SPECIFICATION forming part of Letters Patent No. 744,159, dated November 17, 1903.

Application filed January 31, 1903. Serial No. 141,370. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS LADD BIGELOW, a citizen of the United States of America, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Switch-Turning Devices, of which the following is a specification.

My invention relates to improvements in means adapted to operate a track-switch from a moving car, and has special reference to a device of this class which is especially useful on street-cars or the like.

Among numerous objects attained by this invention and readily understood from the following specification and accompanying drawings included as a part thereof is the production of a simple and inexpensive switch-operating device which embodies essential features of adaptability, utility, and general efficiency and includes preferred structural features whereby the device is rendered useful as a safety-guard.

The above-mentioned and numerous other objects equally as desirable are attained by the construction, combination, and arrangement of parts as disclosed on the drawings, set forth in this specification, and succinctly pointed out in the appended claims.

With reference to the drawings filed herewith and bearing like reference characters for corresponding parts throughout, Figure 1 is a vertical longitudinal section of the deck of a car supported in position on a railway-track with the center portion broken away and shows one of my improved switching devices attached at each end of the car. Fig. 2 is a vertical transverse section of the car and track, taken on line 2 2 of Figs. 1 and 4, viewed as the arrows fly, and indicates my improved switching devices in relative position. Fig. 3 is a plan view of the free end of the swinging arm of the device on enlarged scale and indicates the switch-engaging roller mounted therein. Fig. 4 is a plan view of an ordinary split switch and shows the roller engaged therewith. Fig. 5 is a view in end elevation of a portion of a car-deck and shows one of the switching devices of modified construction in relative position; and Fig. 6 is

a perspective view of a portion of one of the switching devices, showing some of the modifications.

This invention includes an arm, as 6, which is adapted to carry a switch-engaging part or roller, as 7, and this arm is suitably movably mounted on a car or the like for movement relatively to the track, so that the roller can be brought to engage the rail at will. As now considered, this arm comprises oppositely-disposed side pieces, as 8, which are rendered substantially in the form of a triangle as viewed in side elevation, and these side pieces are fastened together by cross-bars 9 and 9' or the like of requisite length to secure the sides at the desired separation to receive a roller 7 therebetween and permit same to play or move laterally. In the present embodiment arm 6 is fixedly mounted at the intersection of the base and perpendicular on one end of a horizontally-disposed rock-bar, as 10, which is rendered of suitable length to extend from one side of the car, as 11, to a point adjacent the center thereof. This bar is rotatably supported at one end of the car in boxes, as 12, which are secured to the body thereof in any convenient manner and are properly disposed to carry the bar in a horizontal position with the arm 6 over one rail of the track, and a spring, as 14, is connected to said arm and car-body to normally yieldingly hold the arm in a raised or retracted position. At the inner end of bar 10 a crank-arm 15 is fixed thereto, and a draft-line 16 is fastened by one end to this crank and wrapped about a vertically-disposed spindle 17, which is suitably rotatably mounted on the car-body within reach of the driver, whereby the switching-arm can be operated to throw the free end down by operating said spindle to take up a portion of line 16. As now considered two oppositely-disposed swinging arms 6 and a spindle 17 are mounted at each end of the car, and a single line 16 serves to operatively connect the cranks 15 of each pair of arms to a respective spindle, the line being connected at the ends to the cranks with a portion of the center part wrapped about the spindle. In this manner one of the swinging arms will be left free



for retraction by a respective spring 14 as the spindle is rotated to force the other arm to swing downwardly.

In the present instance the roller 7 is formed with outwardly-converging side surfaces, which meet at the periphery in a sharp edge and render the perimeter of the roller substantially V-shaped as viewed in cross-section, whereby it is better adapted to engage in the switch and acts as a wedge to force the tongue thereof to swing. As preferably constructed roller 7 is formed with the sharp edge or periphery thereof disposed in a plane pitched slightly from a true right angle measured from the axis of the roller, Fig. 5, so that this entering wedge will wobble as the roller rotates, and thus insure a full opening of the switch with but a slight entrance of the roller below the tread of the track. The roller is bored to rotatably and slidably fit on a suitable axle, as 19, consisting of a pin or the like secured in the side pieces of arm 6, and, if desired, a spring, as 18, is mounted on the pin between one side piece and the roller to yieldingly hold the latter in normal position against a nut 20, which has screw-threaded engagement with the pin, so that it can be adjusted on the axle to set the roller relatively to the rail.

From the foregoing it will be understood that the spindle 17 at the forward end of the car is operated to swing the proper arm 6 downwardly as the car is approaching the switch if it be desired to continue on the main track, thus bringing the outer beveled surface of the respective roller into frictional contact with the rail of the track, which causes it to rotate, and thereby enter more freely between the tongue and main rail of the switch, Fig. 3.

If desired, the spindles 17 may be adjusted to secure respective arms 6 at a suitable point intermediate their extreme raised and lowered positions to cause the outer ends to normally lie close to the rails of the track, and thereby cause the arms to act as safety-guards, as the sides of the pieces representing the hypotenuse of the angle will serve as the striking-surfaces of the guard thus formed, as they then rest with a forward downward incline, Fig. 1.

As now considered, the roller 7 is preferably placed under the control of a suitable shifting device, consisting of a lever, as 21, which is pivotally mounted on the cross-bar 9' by a suitably-disposed pivot 22 and is formed with forwardly-projecting prongs 28, oppositely disposed on the forward end and consisting of suitable sections of resilient material, which embraces the said roller. This shifter is operated through the medium of a collar 23, which is slidably mounted on the rock-bar 10 between the side pieces of the arm 6 and is formed with a peripheral groove adapted to receive loosely the power end of said shifting-lever, so that the shifter and arm are free to swing with the rock-bar.

This collar is operatively connected to a vertically-disposed pedal, as 26, mounted on the car-deck and yieldingly held in raised position by a suitable spring, as 27, through the medium of a bell-crank 25, which is suitably pivotally mounted on the deck of the car, and a connecting-bar 24, pivotally engaged with the vertical arm of said crank and engaged with the collar. In the present instance the pedal 26 is operatively connected with the bell-crank by means of suitable laterally-projecting pins, as 28, which are secured to the stem of the pedal in a suitable manner to cause them to embrace the free end of the horizontal arm of said crank, and, if desired, a second bell-crank can be connected to the pedal in a similar manner and a rod 24 engaged therewith and connected with the collar of the shifter for the roller on the opposite arm, Fig. 5.

The operation of a device constructed as above described would occur substantially as follows: Granting that the car is approaching the point of the tongue of a switch that it is desired to open, the spindle 17 is rotated in the proper direction to swing the relative arm 6 down and bring the periphery of the roller 7 thereon level with the rail, whereupon if a roller-shifting device is embodied with the switching device pedal 26 is depressed to shift the roller against the rail, and thereby cause it to rotate by frictional contact with the head of the rail and to enter between said rail and the tongue of the switch as the car passes same.

This device is positive in action, simple of construction, has few parts likely to get out of order, and can be produced at little cost. Furthermore, it can be readily installed and employed to either open or close switches.

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

1. The combination with a car or the like; of an arm comprising oppositely-disposed triangular side pieces pivotally mounted at the base of the perpendicular on said car, a switch-engaging part mounted on the arm adjacent the apex, and means to swing said arm.

2. The combination with a car or the like; of oppositely-disposed arms comprising oppositely-disposed triangular side pieces and pivotally mounted at the base of the perpendicular on said car, a switch-engaging part mounted on each arm adjacent the apex thereof, and means to swing said arms relatively to the track.

3. The combination with a car or the like; of arms comprising oppositely-disposed triangular side pieces and pivotally mounted at the base of the perpendicular on said car, a switch-engaging part mounted on each arm adjacent the apex thereof, means to yieldingly hold said arms in raised position relatively to the track, a spindle rotatably mounted on the



car, and a draft-line operatively connected with said arms and wound about said spindle.

4. The combination with a car or the like; of an arm movably mounted on the car relatively to the track, a switch-engaging roller rotatably mounted on the arm and having outwardly-converging side surfaces meeting in a sharp edge disposed in a plane inclined from a true right angle to the axis of the roller, and means to raise and lower said arm.

5. The combination with a car or the like; of oppositely-disposed arms pivotally mounted on the car and adapted to swing relatively to the rails of the track, a spindle, cranks fixed to the pivots of said arms, and operably connected to said spindle, a retracting-spring for each arm and a switch-engaging roller rotatably mounted on each arm.

6. The combination with a car or the like; of an arm pivotally mounted on the car and adapted to swing relatively to the track, an axle mounted on the arm, a switch-engaging roller rotatably and slidably mounted on said axle, means to shift the roller longitudinally on said axle, and means to swing said arm.

7. In a device of the nature indicated; an arm comprising oppositely-disposed triangular side pieces, a rock-bar secured to said arm at the base of the perpendicular, an axle mounted on the arm at the apex, a roller rotatably and slidably mounted on said axle between said side pieces, means to shift said roller on the axle longitudinally and means to move said rock-bar reciprocally.

8. The combination with a car or the like; of oppositely-disposed arms 6, rock-bars 10 mounted on the car and secured to said arms and having cranks 15, axles 19 mounted on the arms at the free ends, rollers 7 rotatably and slidably mounted on said axles, means to shift said rollers longitudinally on said axles, and means to move said rock-bars reciprocally.

Signed at Seattle, Washington, this 17th day of December, 1902.

LEWIS LADD BIGELOW.

Witnesses:

GEO. B. COLE,  
CARL KLEMSCHMIDT.