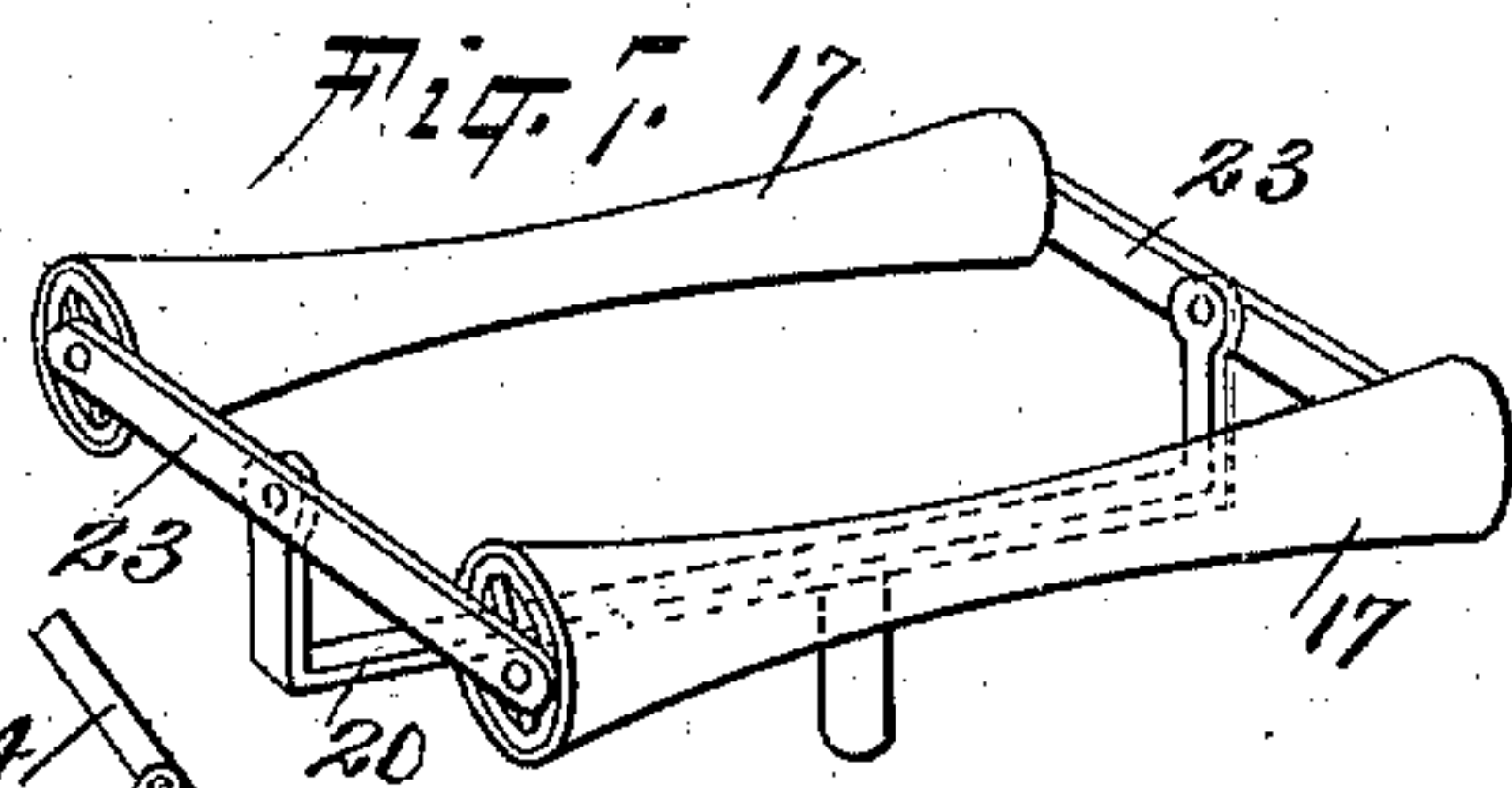
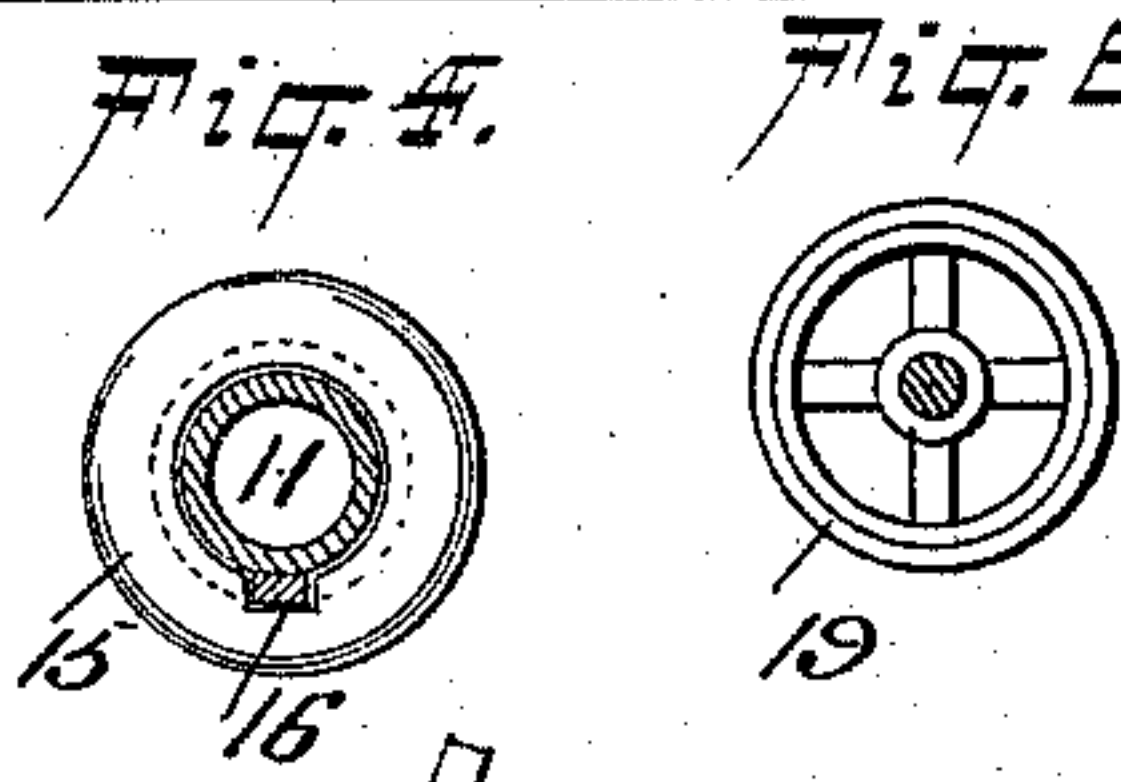
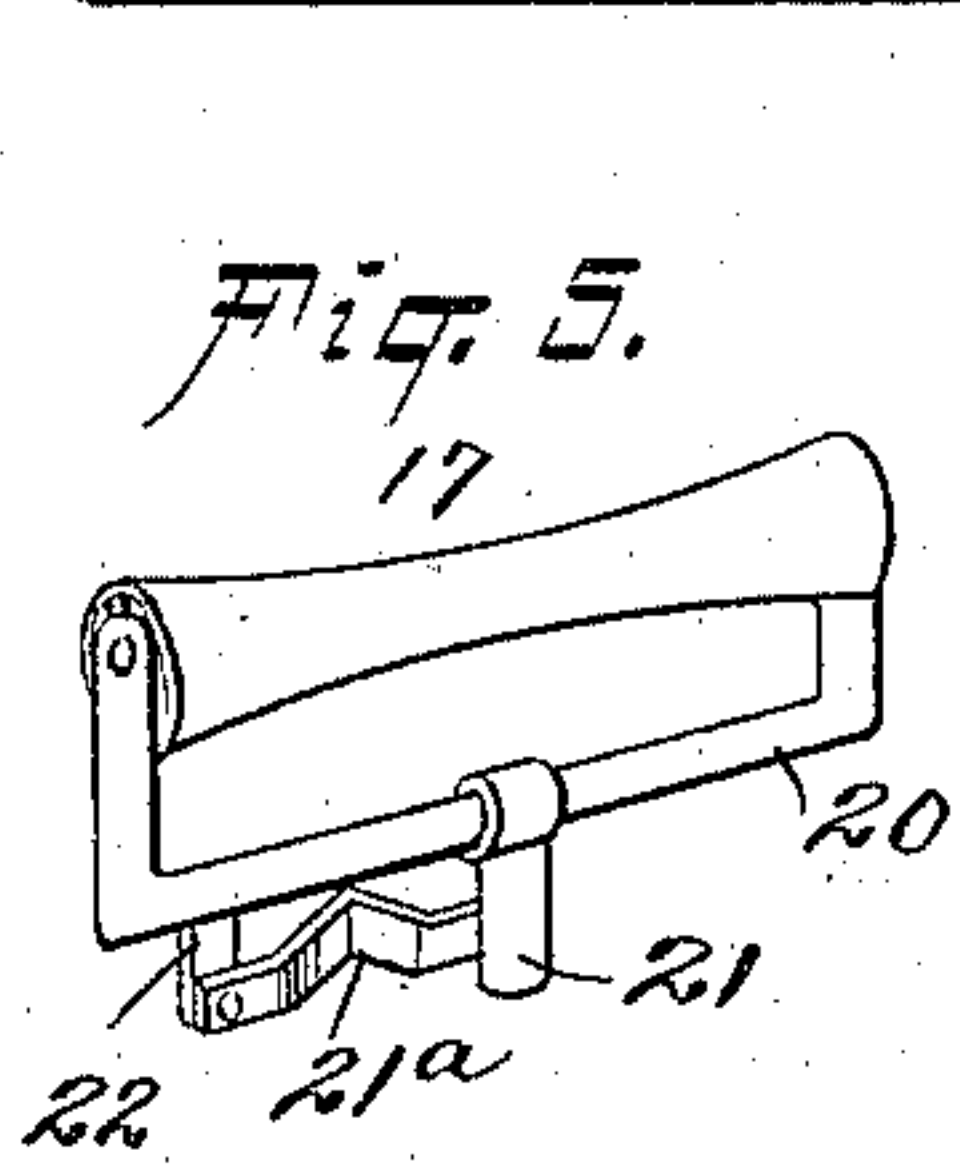
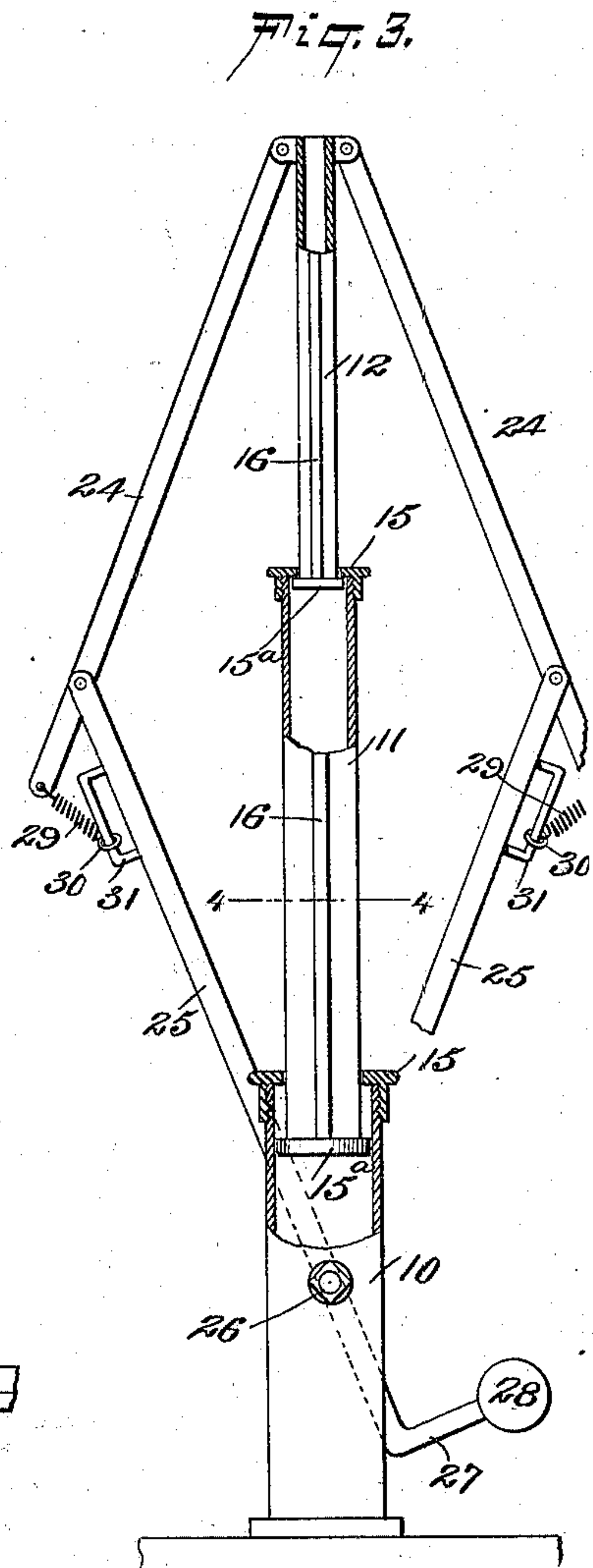
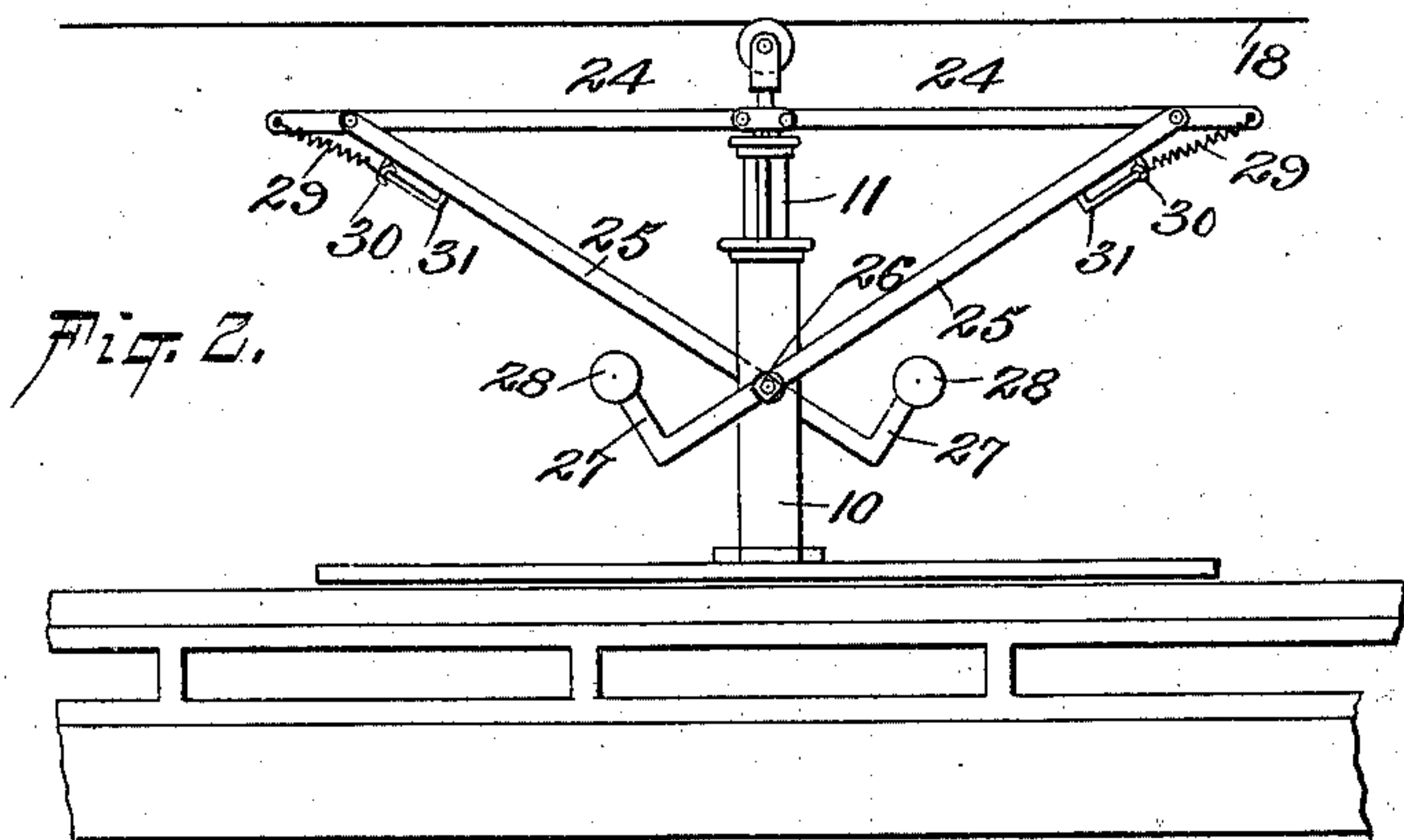
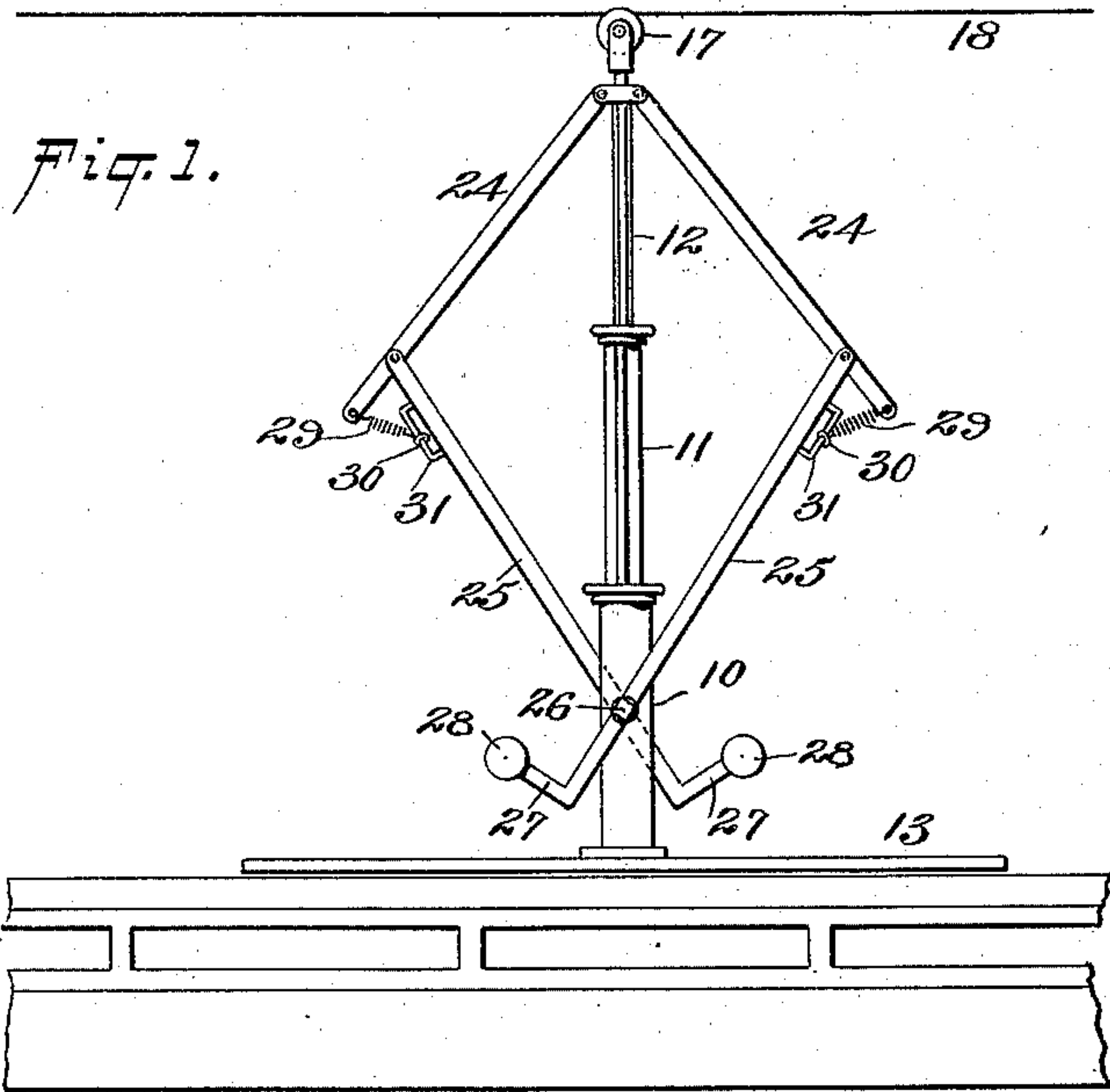


(No Model.)

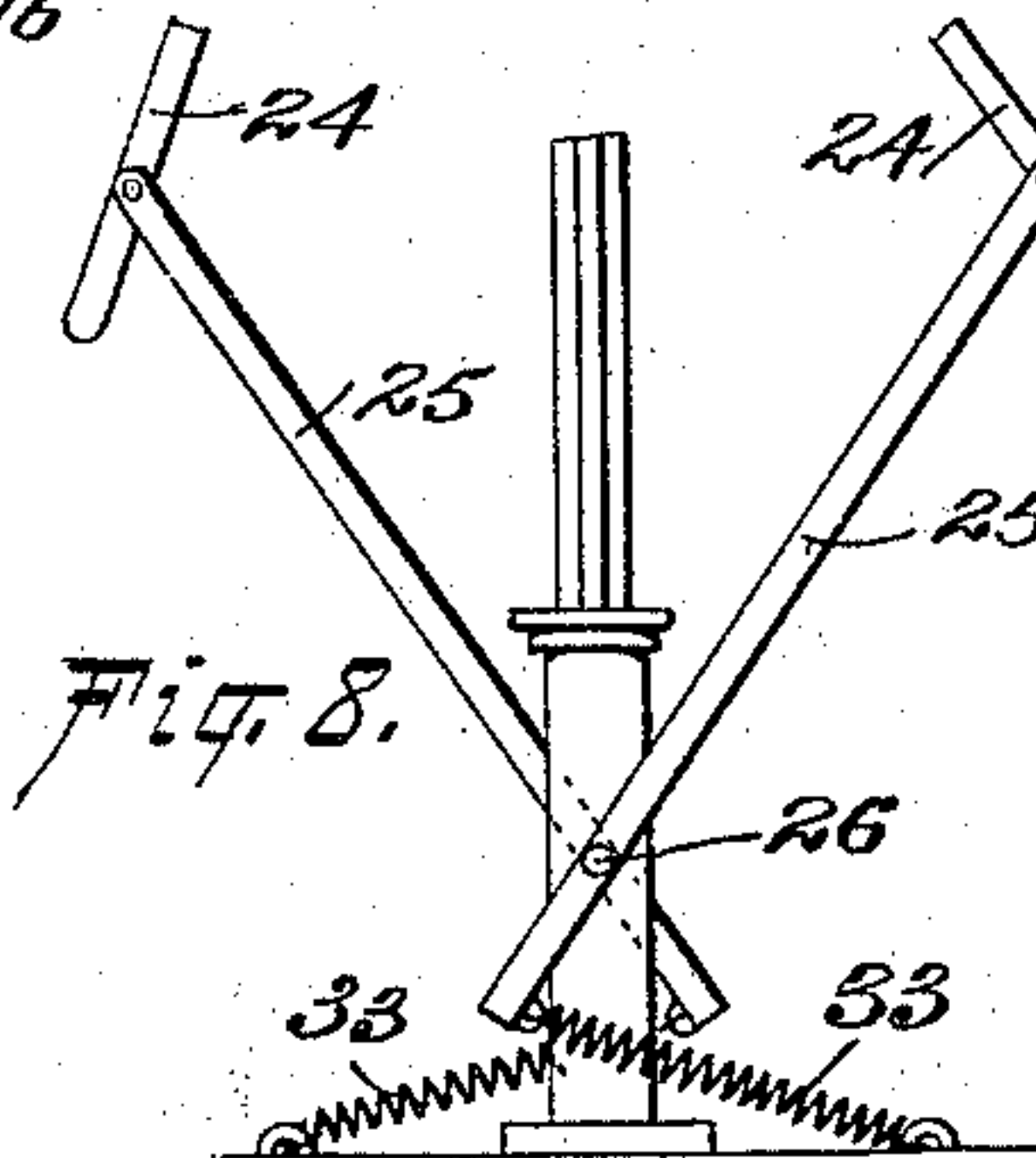
W. L. PEPPER.
TROLLEY AND TROLLEY POLE.

No. 547,283.

Patented Oct. 1, 1895.



WITNESSES:
William Gaebel.
Chas. R. Wright



INVENTOR
Wilbur L. Pepper.
BY Munn & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILBUR L. PEPPER, OF PHILADELPHIA, PENNSYLVANIA.

TROLLEY AND TROLLEY-POLE.

SPECIFICATION forming part of Letters Patent No. 547,283, dated October 1, 1895.

Application filed December 29, 1894. Serial No. 533,256. (No model.)

To all whom it may concern:

Be it known that I, WILBUR L. PEPPER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Trolley and Trolley-Pole, of which the following is a full, clear, and exact description.

My invention relates to improvements in trolleys and trolley-poles such as are used on electric cars in connection with an overhead wire; and the object of my invention is to produce a simple and comparatively cheap apparatus of this kind which may be applied to any overhead system and which employs a vertical pole adapted without change to permit the car to run with equal facility in both directions, and to produce an automatic device which permits the pole to yield vertically, so that it may compensate for the varying distance between the wire and car, but which holds the trolley with an even pressure against the trolley-wire.

A further object of my invention is to produce a trolley-wheel which is adapted to make a good contact with the wire during all the oscillations of the car, notwithstanding the customary changes in the wire, the trolley being also adapted, by reason of its good connection, to prevent excessive sparking.

To these ends my invention consists of certain features of construction and combinations of parts which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of my improved apparatus as applied to a car and trolley-wire. Fig. 2 is a similar view showing the parts in a different position. Fig. 3 is an enlarged elevation, partly in section, of the trolley-pole, the trolley being removed. Fig. 4 is a sectional plan on the line 3 3 of Fig. 2. Fig. 5 is a detail perspective view of the trolley. Fig. 6 is a detail perspective view of one of the end wheels forming a part of the trolley-wheel proper. Fig. 7 is a detail perspective view of a modified form of trolley adapted to prevent sparking, and Fig. 8 is a detail view of a modification of the pole in which springs

are used instead of weights to maintain the vertical extension of the pole.

The pole is made up of telescoping tube-sections 10, 11, and 12, any necessary number of these being used, the number of the tube-sections and the length of them depending on the distance between the car and trolley-wire and also on the height of bridges along the line. The base-tube 10 is mounted on a plate 13, which is secured to the car 14. Each tube or section 10 and 11 has at the top a cap 15, which serves the purpose of a collar, and the sections or tubes 11 and 12 are provided with longitudinal keys 16, which fit in grooves in the caps 15 and are thus prevented from turning. The tubes 11 and 12 have heads 15^a at their lower ends to engage the caps 15 and prevent the tubes from being displaced. The trolley-pole carries a trolley-wheel 17, which is adapted to contact with the trolley-wire 18, this wheel being elongated, so that if the wire is not directly above the center of the car the trolley will still follow it, and to provide for a good contact the face of the trolley-wheel is concave, as shown in Fig. 5. The trolley-wheel may be made in any approved manner, but it is preferably tubular with stiffening end-wheels 19.

The trolley-wheel is journaled in a U-shaped frame 20, which has a central shank 21, adapted to enter the top of the trolley-pole, so that the frame may turn slightly to enable it to the better round a curve; but in order that the frame and trolley-wheel may not turn too far a regulating bent-spring 21^a is used, one end of which is fixed to a lug 22 on the under side of the frame 20, while the other end is adapted to be fastened to the trolley-pole. The trolley-wheel 17 may be supported on the pole in any other suitable manner without affecting the principle of the invention.

The trolley-pole is extended or contracted by means of the connecting-rods 24, which are pivoted to opposite sides of the tube 12 near the top, and near the bottom the connecting-rods are pivoted to levers 25, which are fulcrumed on the tube 10, as shown at 26, and these levers have bent lower ends 27, to which are secured weights 28 of sufficient heft to tilt the levers 25 and cause them to push up on the rods 24 and so hold the trolley-wheel in

contact with the wire 18. If desired, a double trolley may be used, as shown in Fig. 7, in which case the frame 20 is provided with end-bars 23, between the opposite ends of which
5 are pivoted trolley-wheels 17 like the one already described, and thus in case the car passes over an uneven place and causes one trolley-wheel to leave the wire the other will be pressed more firmly in contact with the
10 wire, and so there will be no break in the circuit and hence no sparking.

On the upper ends of the levers 25 are elongated staples 31, on which slide rings 30, which are secured to the lower ends of springs
15 29, the upper ends of the springs being secured to the rods 24. The springs have no function except when the pole has been depressed to such an extent as to cause the rods to assume a horizontal position, as shown in
20 Fig. 2. When the parts are in this position, the weights, instead of acting upon the rods 24 to raise or extend the pole, tend to hold them in their horizontal position, and it is then that the springs—they having been put
25 under tension by the parts moving to this position—exert pressure upon the outer ends of the said rods and overcome the force of the weights and raise their inner ends slightly, when the levers 24 will be moved to such a
30 position that the weights will act to extend the pole.

Instead of using weights 28 for maintaining the pressure of the trolley-wheel on the wire, springs 33 may be substituted, these being se-
35 cured to the car-top and to the lower ends of the levers 25, as shown in Fig. 8, in which

case the bends 27 in the levers are dispensed with.

Having thus described my invention, I claim as new and desire to secure by Letters 40 Patent—

1. A trolley pole, comprising telescoping sections, rods pivoted to the sections, pivoted levers pivoted to the said rods, and means for tilting the said levers to cause the upper sec- 45 tion to be extended, substantially as described.

2. A trolley pole, comprising telescoping sections, rods pivoted to the upper sections, pivoted angular levers having their upper 50 ends pivoted to the said rods, and weights on the said levers, substantially as described.

3. The combination, with the extensible trolley pole, of the levers fulcrumed on the foot of the pole, the connecting rods extend- 55 ing from the levers to the upper part of the pole, and the sliding springs connecting the levers and rods, substantially as described.

4. In a trolley pole, the combination with telescoping sections of rods pivoted to the up- 60 per section, pivoted levers having their upper ends pivoted to the rods a short distance from the lower ends of said rods and their lower ends weighted, elongated staples on the upper ends of the levers, and springs having one 65 end secured to the ends of the rods and their other ends loosely connected with the staples of the levers substantially as described.

WILBUR L. PEPPER.

Witnesses:

WILLIAM H. BOVARD,
NEWTON H. BOVARD.