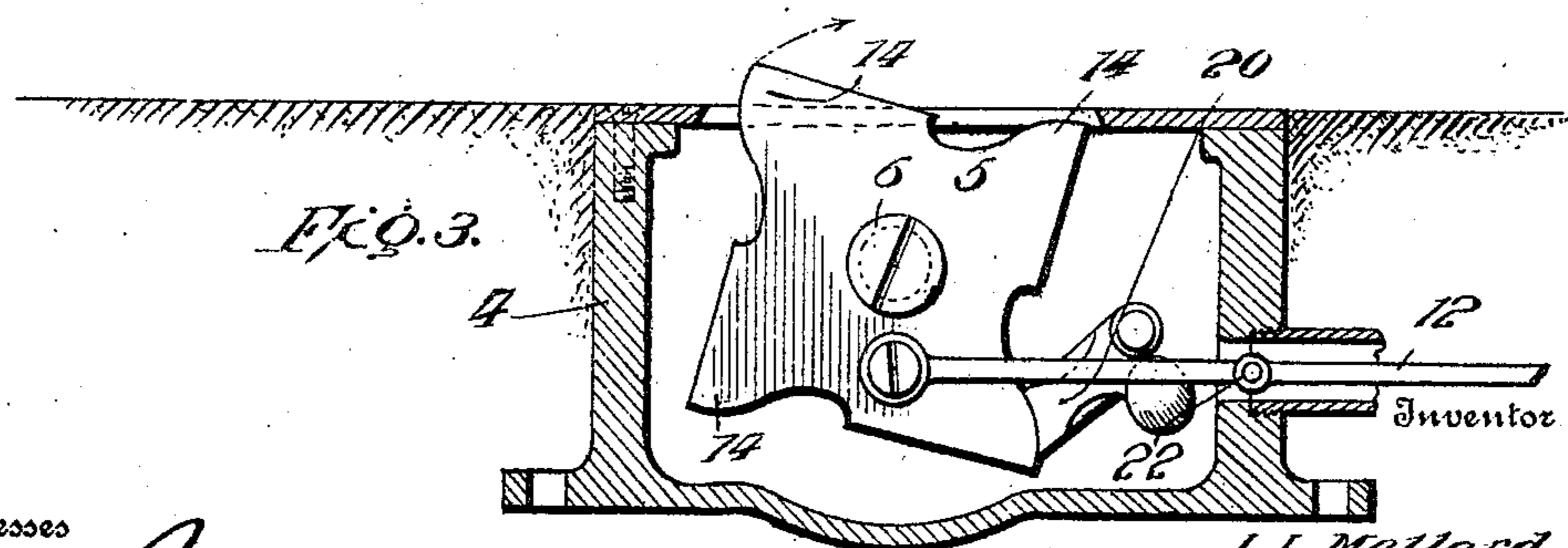
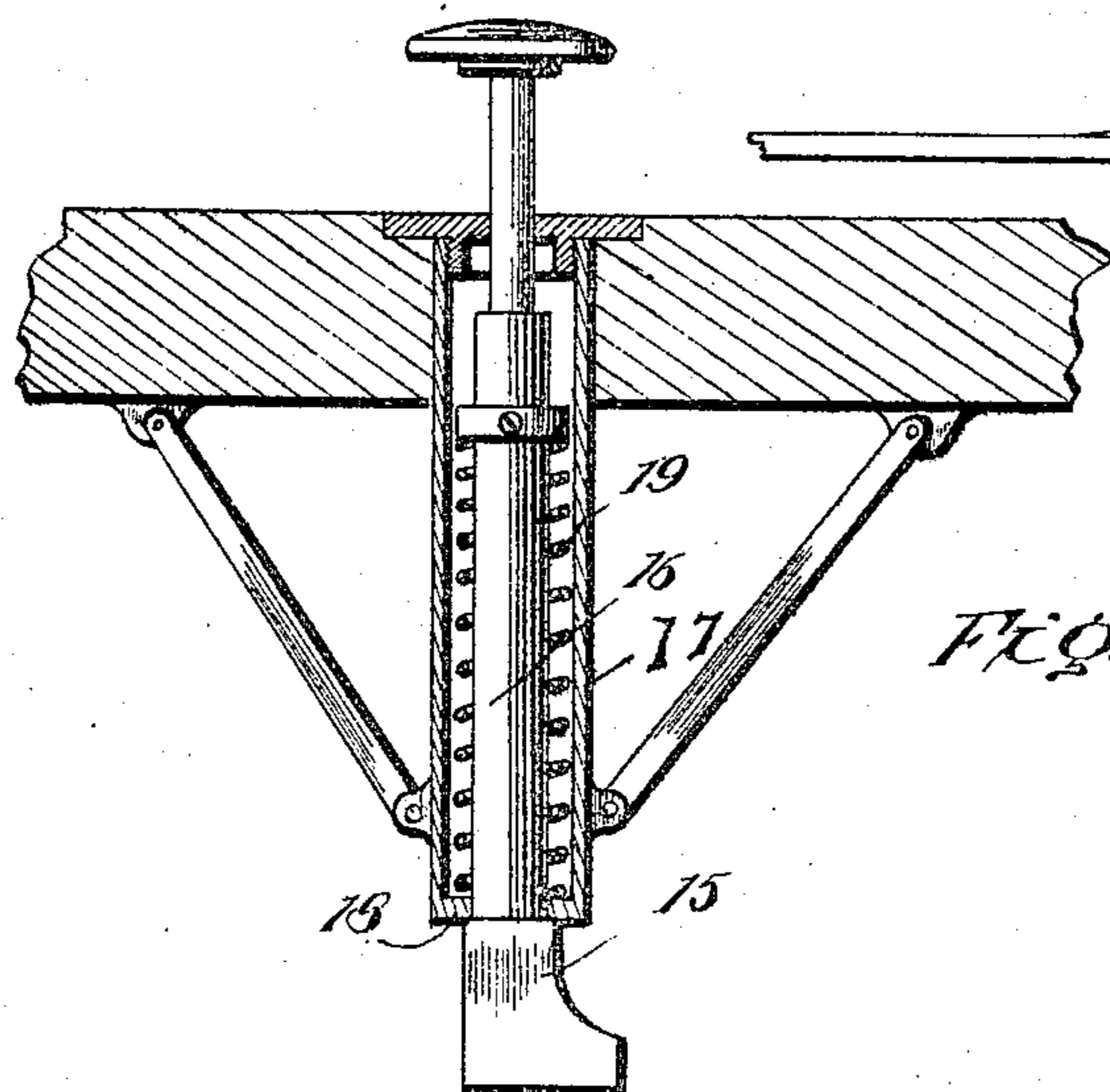
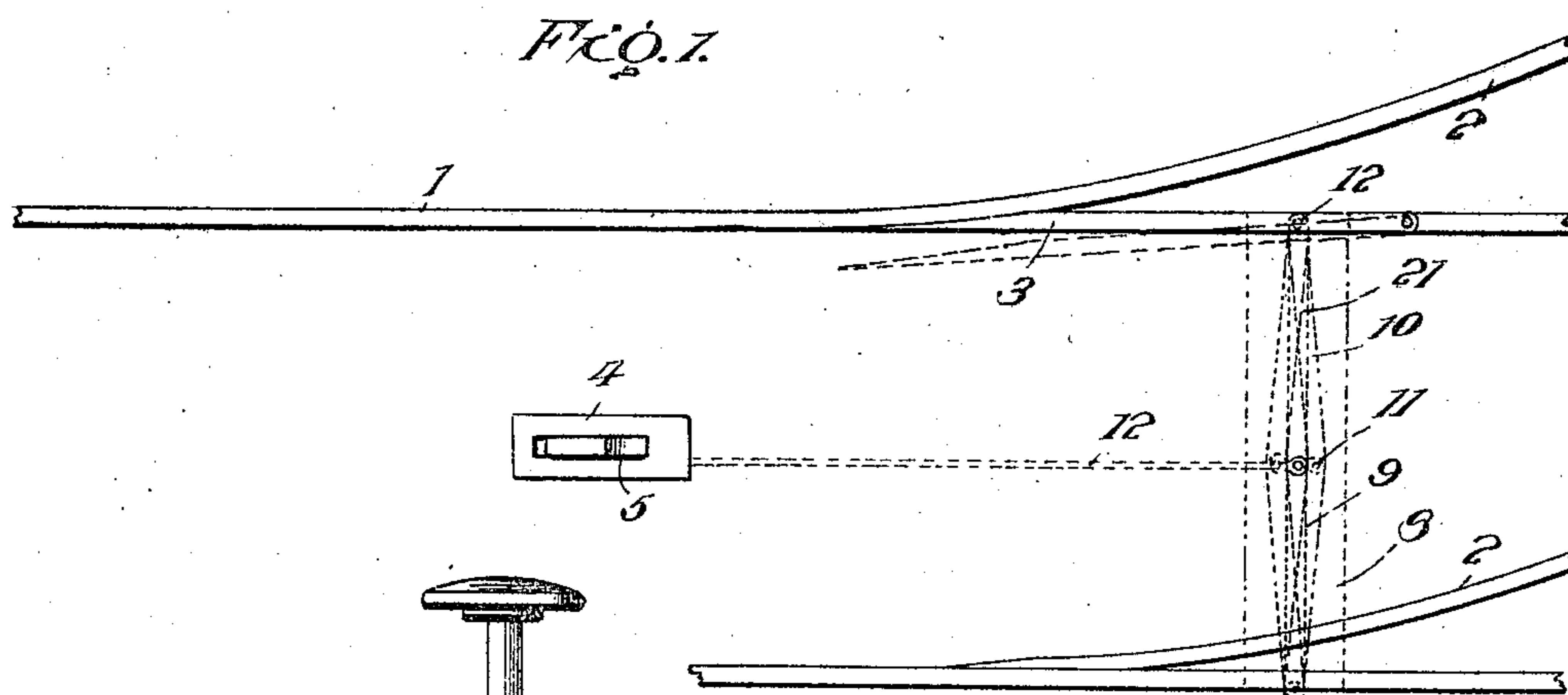


No. 847,349.

PATENTED MAR. 19, 1907.

L. L. MALLARD.
SWITCH MECHANISM.
APPLICATION FILED JULY 6, 1906.

2 SHEETS-SHEET 1.



Witnesses

Witnesses
J. M. M.
J. J. Hoodson.

ਫੋੜ

Ph. Racy, Attorneys

THE NORRIS PETERS CO., WASHINGTON, D. C.

No. 847,349.

PATENTED MAR. 19, 1907.

L. L. MALLARD.
SWITCH MECHANISM.
APPLICATION FILED JULY 6, 1906.

2 SHEETS—SHEET 2.

FIG. 4.

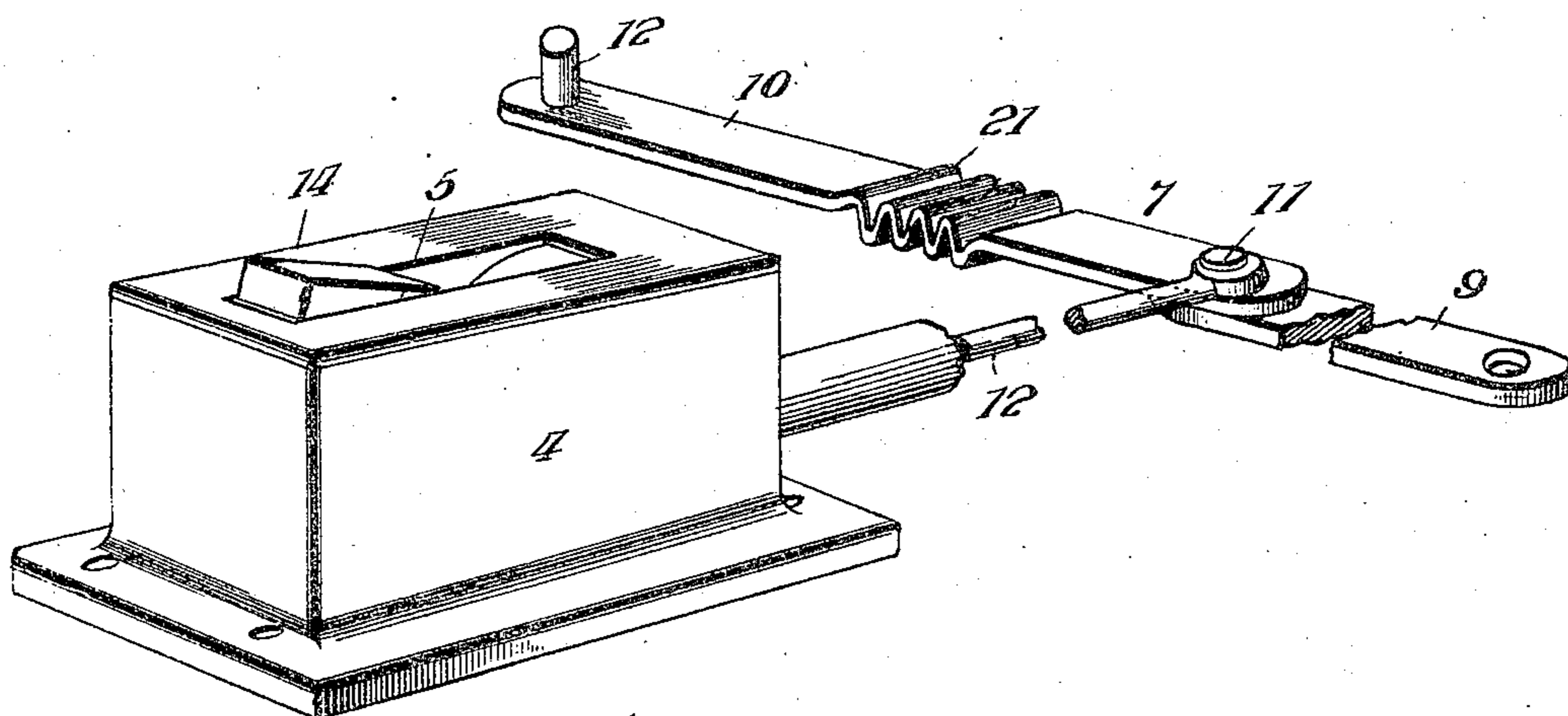
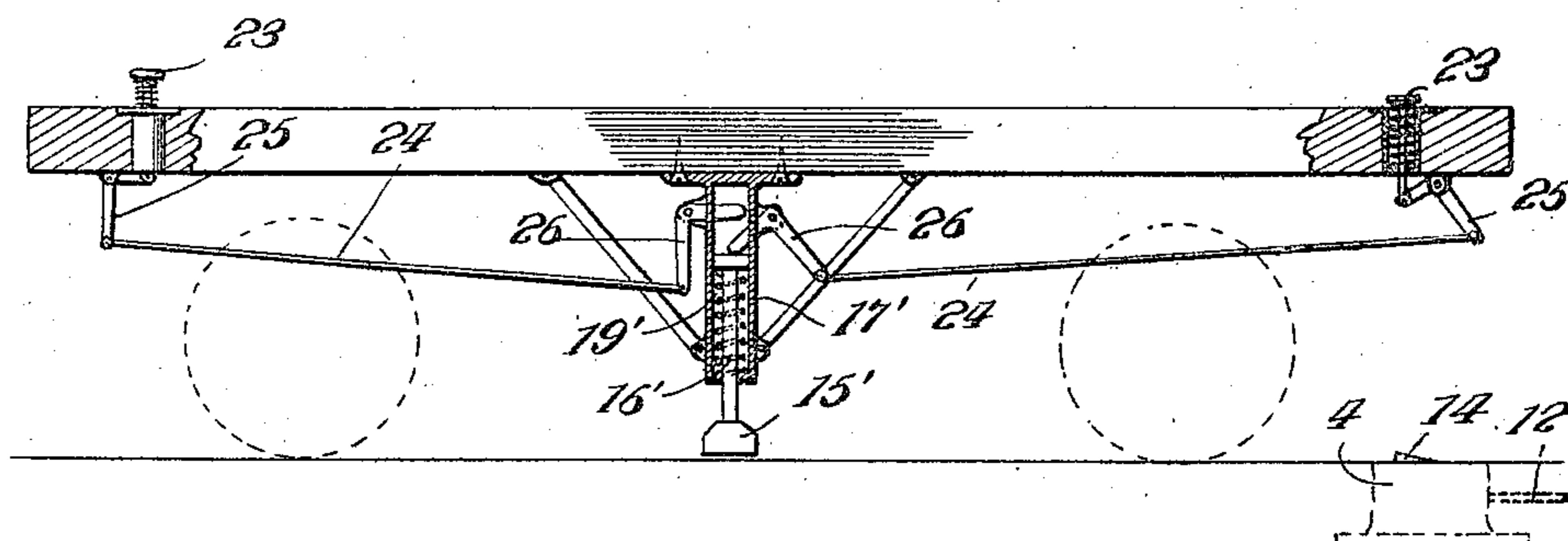


FIG. 5.



Inventor
L. L. Mallard,

Witnesses

J. M. M. M. M.
J. M. M. M. M.

By

L. L. M. M. M.
L. L. M. M. M., Attorney

UNITED STATES PATENT OFFICE.

LOGAN L. MALLARD, OF ATLANTA, GEORGIA, ASSIGNOR OF ONE-HALF TO B. FRANK BELL AND ONE-THIRD TO WM. A. SIMS, BOTH OF ATLANTA, GEORGIA.

SWITCH MECHANISM.

No. 847,349.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed July 6, 1906. Serial No. 325,009.

To all whom it may concern:

Be it known that I, LOGAN L. MALLARD, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Switch Mechanisms, of which the following is a specification.

The present invention relates to an improved switch mechanism which is especially designed for use in connection with street-railways and which is so constructed as to be operated directly from a moving car.

The object of the invention is to provide a switch of this character which is so simple in construction as to require no calculation on the part of the operator.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a plan view of a portion of a railroad-track, showing the position of the switch-point and the operating mechanism. Fig. 2 is a vertical sectional view through the switch-operating mechanism carried by the car. Fig. 3 is a vertical sectional view through the case within which the operating-wheel is mounted. Fig. 4 is a perspective view of the toggle-joint and the means for operating the same, portions being broken away; and Fig. 5 is a sectional view showing a modification of the operating device carried by the car.

Corresponding and like parts are preferred to in the following description and indicated in all the views of the drawings by the same reference characters.

The numerals 1 designate the two rails of the main track, which may be of any conventional construction, while the numerals 2 designate the rails of the branch which intersect the main track. At the intersection of the two tracks there is located the switch-point 3, which is of the usual construction and is movably mounted so as to engage with the flange of the car-wheel and cause the car to move in the desired direction. The casing 4 is placed between the two rails of the main track and serves as a support for the operating-wheel 5, the latter being disposed in the present instance in a vertical position and being mounted upon a stud 6 within the casing 4. A toggle-joint 7 ex-

tends transversely across the track and is preferably protected by a housing similar to that shown at 8. The toggle-joint 7 comprises the two link members 9 and 10, which are pivoted together at 11, the link 9 having its outer end loosely connected to a suitable support, while the outer end of the link member 10 is loosely connected to the switch-point 3. For this purpose an upwardly-projecting stud 12 is formed at the outer end of the link member 10, the said stud fitting within a corresponding socket in the switch-point. With this construction it will be apparent that any lateral thrust of the pivot-point 11 will operate through the toggle-joint to draw the switch-point inward, so that the flange of the car-wheel would be guided around upon the branch track 2. This transverse movement is brought about through the operating-wheel 5, which is connected to the toggle-joint by the rod 13, one end of the rod having an eccentric connection with the operating-wheel, while the opposite end is loosely joined to the toggle at the pivot-point 11. A series of projections or teeth 14 are formed in connection with the operating-wheel 5, the said projections being shown in the present instance as four in number and as having an approximately V-shaped formation. One of these projections 14 is designed to always extend upwardly somewhat above the casing 4, so as to be readily engaged by a shoe 15, carried by the car. These shoes 15 are shown as located at the lower extremities of plungers 16, which are slidably mounted within the tubular casing 17. In the present instance the lower end of the tubular casing 17 is contracted to form the shoulder 18 and a coil-spring 19 is slipped over the plunger 16, the lower end of the coil-spring bearing against the shoulder 18, while the upper end is connected to the plunger. This spring operates to hold the shoe 15 in a raised position where it would pass over the operating-wheel 5 and have no effect upon the switch-point. However, by pushing the plunger 16 downwardly the shoe 15 is lowered and engages with one of the teeth 14 of the operating-wheel 5, thereby causing the latter to turn through a partial revolution and impart a longitudinal movement to the rod 13, which operates through the medium of the toggle-joint 7 to draw the switch-point 3 inwardly. When in this position, the car can pass readily around upon the branch

track. Attention is directed to the fact that the operating-wheel 5 is always in a proper position for engagement with the shoe 15, carried by the car, since as soon as one of the projections 14 is turned so as to lie within the casing 4, another one of the projections is swung upwardly into operative position. As a safeguard against any backward turning of the wheel 5, a pawl 20 may be located within the casing 4, so as to engage with the wheel, and this pawl is shown as of the type which are operated by gravity.

When a car is passing from the branch track to the main track, the wedge action of the flange of the car-wheel is ordinarily relied upon to force the switch-point inwardly. In order to prevent this inward movement of the switch-point from interfering with the toggle mechanism, a spring portion is provided, and in the construction shown in the drawings this result is accomplished by crimping the arm 10 of the toggle-joint, as indicated at 21.

Since the operating-wheel 5 is disposed in a vertical position, the rod 13 has a slight vertical swinging movement with relation to the toggle-joint 7, and, if desired, compensation for this feature may be made by forming the rod 13 in two sections pivotally connected at 22, in which case the section connected directly to the toggle would preferably be mounted within suitable guideways, so as to have only a longitudinal movement. In the majority of instances, however, this vertical swinging movement will be so slight as to have no practical effect upon the operation of the switch and the joint 22 can be omitted.

A modification is shown in Fig. 5, in which the moving car is provided with a single shoe 15', mounted at the central portion of the car and adapted to be operated by means of foot-plungers 23 placed at each end of the car. This shoe 15' has a double formation and can engage with the operating-wheel 5 regardless of the direction in which the car is moved. The plunger 16', by means of which the shoe 15' is carried, is slidably mounted within the casing 17' and is normally held in a raised position by means of the coil-spring 19'. As will be readily apparent from the drawings, the motion is transmitted from the foot-plungers 23 to the plunger 19' through the medium of the link-rods 24 and the bell-crank levers 25 and 26. This construction enables the brake-shoe to be readily operated from either end of the car, and owing to the fact that the plunger 19' is located at the middle portion of the car it will be apparent that when this modification is employed the operating-wheel 5 will necessarily be spaced somewhat farther from the toggle-joint 7 and the connecting-rod 13 lengthened.

In the specific construction of the teeth 14 upon the operating-wheel it will be observed that one of the sides 30 of each of the teeth is

straight, while the opposite side has approximately the contour of an epicycloid, as indicated at 31.

Having thus described the invention, what is claimed as new is—

1. In a device of the character described, the combination of a main track, a branch track, a movable switch-point for guiding the car from the main track to the branch track, a toggle-joint for operating the switch-point, an operating-wheel mounted upon a suitable support and provided with a number of outwardly-projecting teeth, a rod joining the toggle-joint and the operating-wheel and having an eccentric connection with the latter, a plunger adjustably mounted upon the car and provided at its lower end with a shoe, and means for holding the plunger normally in an inoperative position, the said plunger being adapted to be moved so as to throw the shoe into engagement with the teeth of the operating-wheel when it is desired to throw the switch.

2. In a device of the character described, the combination of a main track, a branch track, a movable switch-point for guiding the car from the main track to the branch track, a toggle-joint for operating the switch-point, an operating-wheel mounted upon a suitable support and provided with a series of outward projections, a rod joining the toggle-joint and the operating-wheel and having an eccentric connection with the latter, a pawl for preventing any backward movement of the latter, and a shoe carried by the car and adapted to engage with the teeth upon the operating-wheel in order to throw the switch.

3. In a switch mechanism, the combination of a main track, a branch track, a movable switch-point for guiding the car from the main track to the branch track, a toggle-joint for operating the switch-point, one of the members of the toggle-joint having a spring formation to enable the switch-point to have the required movement when the car passes from the branch track to the main track, an operating-wheel mounted upon a suitable support, a rod connecting the operating-wheel and the toggle-joint, and a shoe carried by the car and adapted to engage with the operating-wheel when it is desired to throw the switch.

4. In a switch mechanism, the combination of a main track, a branch track, a movable switch-point for guiding the car from the main track to the branch track, a toggle-joint comprising two link members extending transversely across the track, the inner ends of the link members being pivotally connected while the outer ends are loosely connected, respectively, to a suitable support and to the switch-point, a casing located between the rails of the main track, an operating-wheel mounted within the casing and having a series of V-shaped projections, a rod joining the toggle-joint and

the operating-wheel and having an eccentric connection with the latter, a plunger adjustably mounted upon the car and provided with a shoe, and means for holding the plunger normally in an inoperative position, the said shoe being adapted to be forced into engagement with the projections upon the operating-wheel when it is desired to throw the switch.

10 5. In a switch-mechanism, the combination of a main track, a branch track, a movable switch-point for guiding a car from the main track to the branch track, a toggle-joint comprising two link members, extending
15 transversely of the track, the inner ends of the link members being pivotally connected together, while the outer ends are loosely connected, respectively, to a suitable support and to the switch - point, an operating - wheel
20 mounted upon a suitable support, a rod connecting the operating-wheel and the toggle-joint and having an eccentric connection

with the operating-wheel, and means carried by a car for turning said wheel, whereby to operate the toggle-joint.

25 6. In a switch mechanism, the combination of a main track, a branch track, a movable switch-point for guiding the car from the main track to the branch track, and means for intermittently moving said switch-point, 30 said means inclosing a spring-retracted plunger carried by a car, other plungers mounted at the respective ends of the car, bell-cranks secured to the last-named plungers, other bell-cranks designed to press upon the first- 35 named plunger to depress the same, and link-rods connecting the respective bell-cranks.

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

LOGAN L. MALLARD. [L. s.]

Witnesses:

GEO. H. HOLLIDAY, Jr.,

GEO. H. HOLLIDAY.