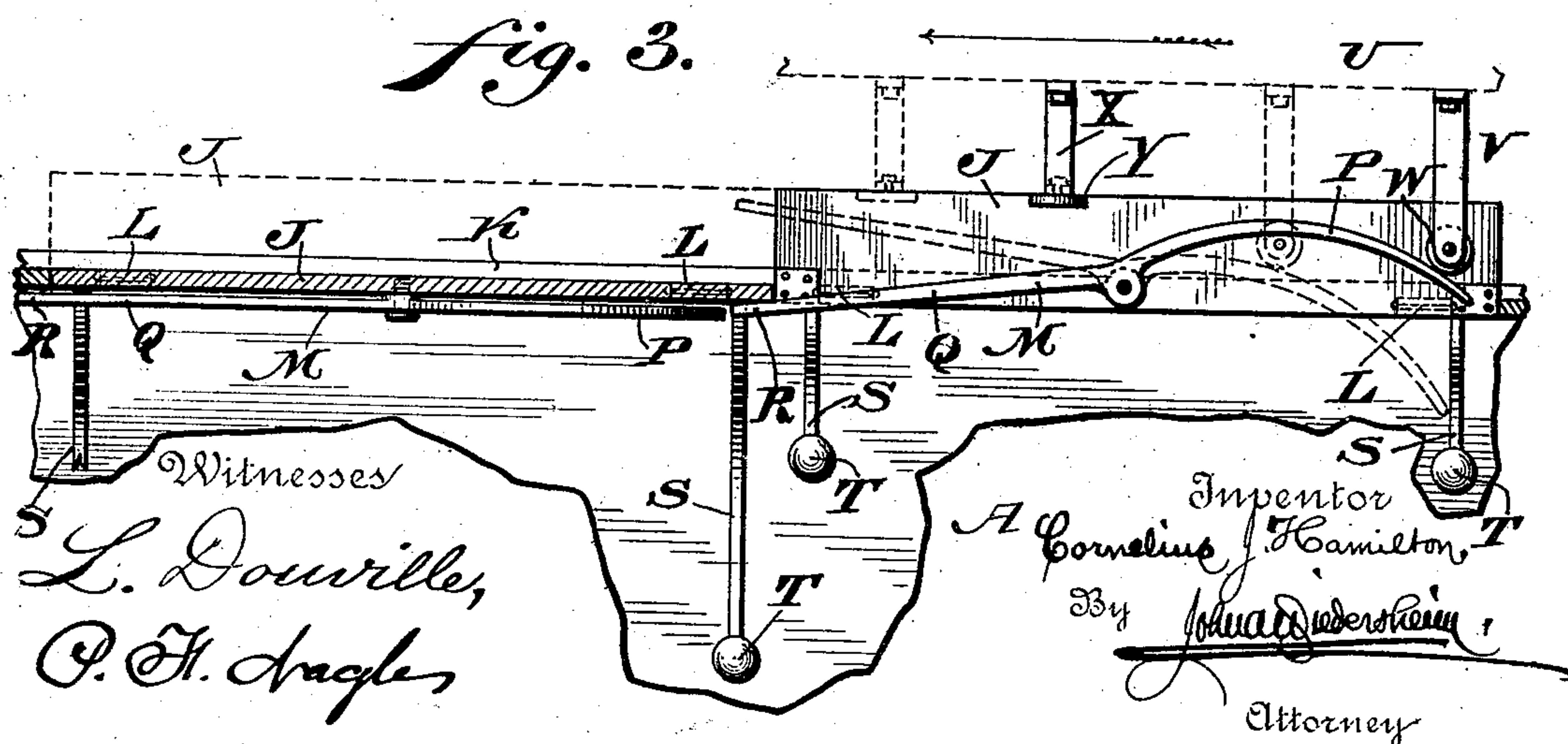
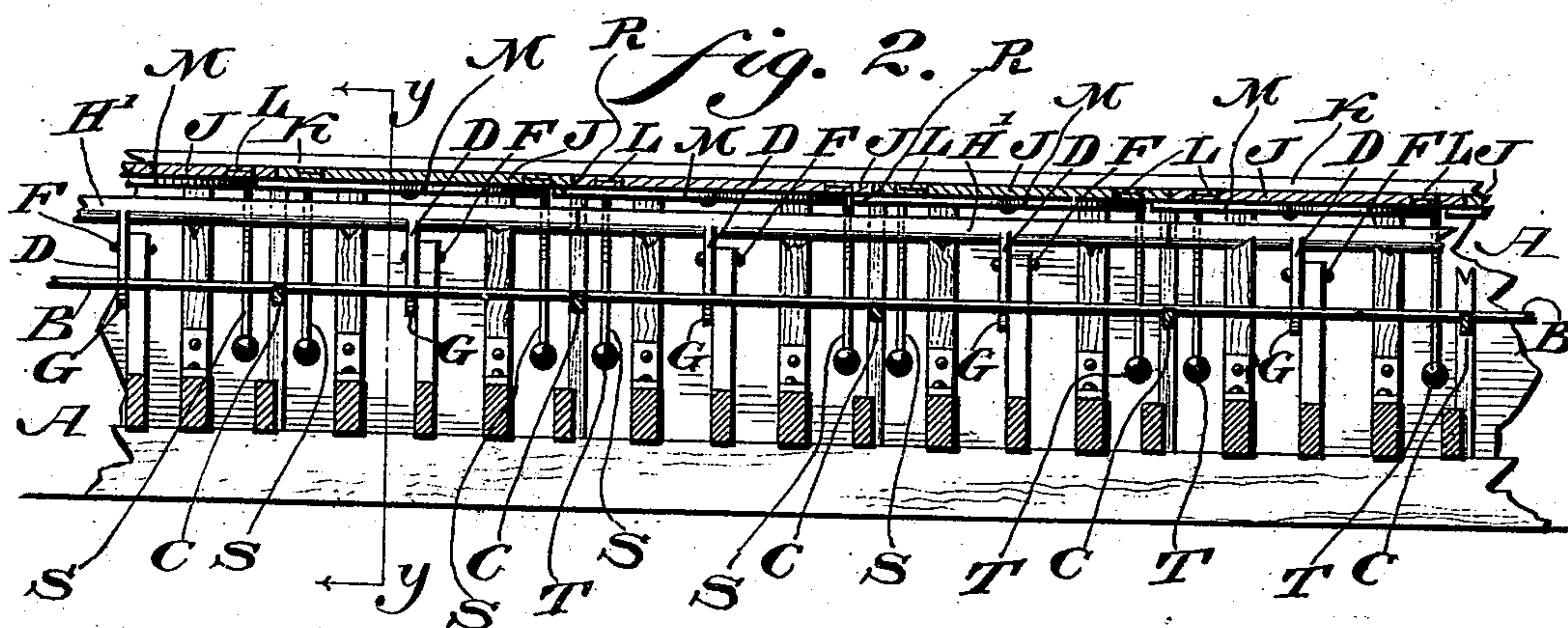
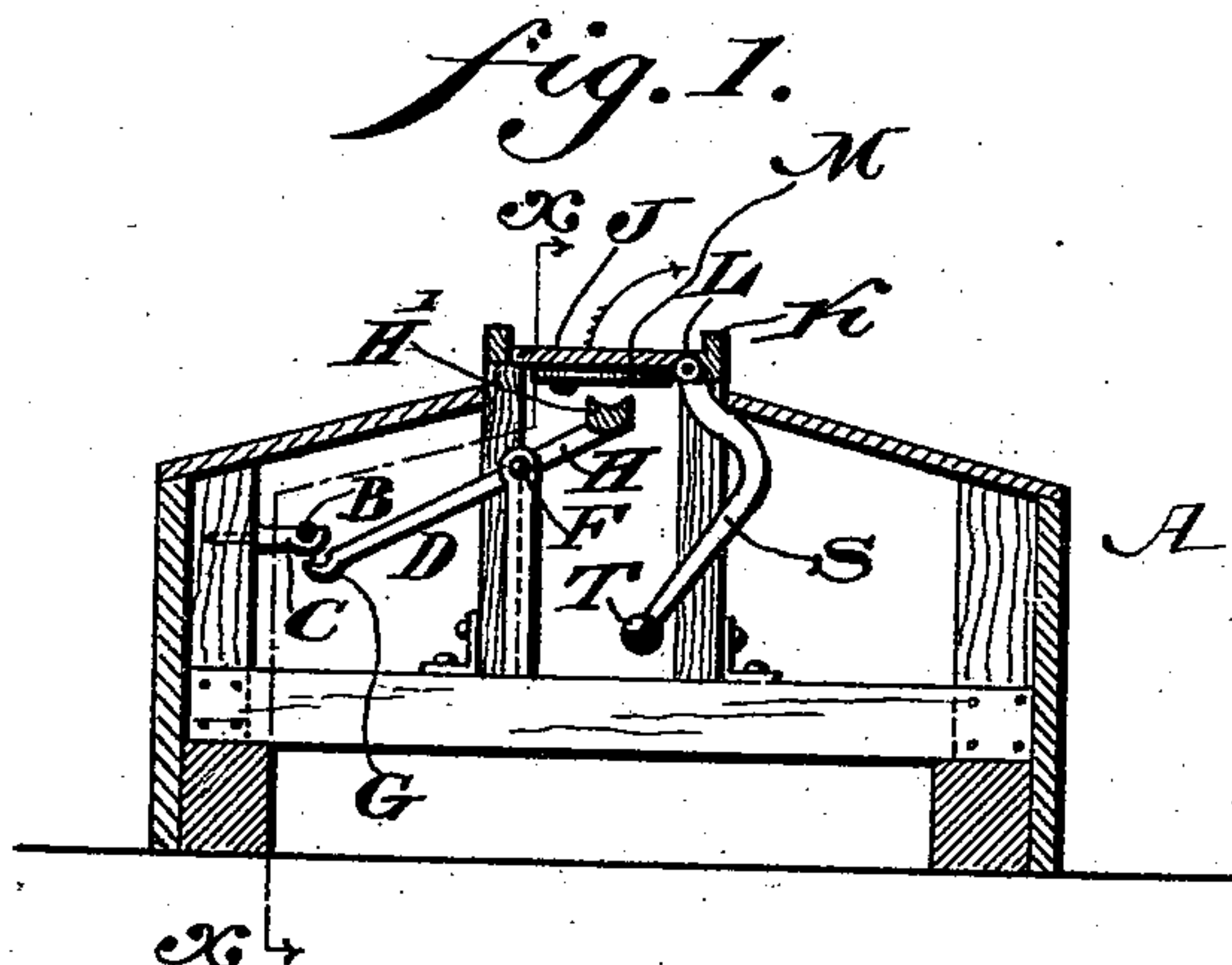


(No Model.)

C. J. HAMILTON.
UNDERGROUND TROLLEY SYSTEM.

No. 550,102.

Patented Nov. 19, 1895.



UNITED STATES PATENT OFFICE.

CORNELIUS J. HAMILTON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
OF ONE-HALF TO JAMES LILLEY, OF SAME PLACE.

UNDERGROUND-TROLLEY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 550,102, dated November 19, 1895.

Application filed April 26, 1895. Serial No. 547,219. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS J. HAMILTON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Underground Trolleys, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to underground trolleys; and it consists of a novel construction and arrangement of conductors and a conduit therefor by means of which the free wire can be sustained below the surface of the ground, provision being made for automatically opening and closing suitable doors as the trolley-car progresses, which prevent tampering with the feed-wire.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a transverse sectional view of an underground-trolley system embodying my invention, the section being taken on line *y y*, Fig. 2. Fig. 2 represents a longitudinal sectional view of the same, the section being taken on line *x x*, Fig. 1. Fig. 3 represents a partial longitudinal section showing the manner of operating the covers of the conduit, one of said covers being shown open and the other closed.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates an underground-trolley system which is provided with a suitable housing or casing, within one side of which is situated the feed-wire B, which is supported in suitable brackets C.

D designates a lever which is pivotally mounted at F to a suitable support, and which has an end G slightly concaved and adapted to contact at intervals with said feed-wire B, while the other end H of said lever is provided with a longitudinally-extending trough-shaped bar H', with which a trolley-wheel is adapted to contact, as will be explained, said bar or contact device H' being located at substantially the central portion of the conduit in the present instance.

J designates a suitable lid or cover which is normally closed, as shown in Figs. 1 and 2,

and at the left-hand portion of Fig. 3, said cover being hinged to suitable supporting devices at L, having a shoulder K, by means of which its upward movement is limited.

M designates a lever which is attached to the under side of said cover J, said lever having a curved portion P and a straight portion Q, and said cover having attached thereto arms and counterbalances S and T, respectively, the preferred shape of said arms being seen in Fig. 1, the end R of said straight portion Q of said lever projecting normally under the end of the adjacent lid or cover J, as will be understood from Fig. 3.

U designates the body of a trolley or other car, to the under side of which is attached the hanger V, which has the roller W journaled in its extremity, said roller being adapted to contact with the curved portion P of the lever M when the cover J is raised, as shown at the right of Fig. 3, said cover J being sustained in its open position by means of the roller Y, whose plane of rotation is substantially horizontal, said roller being journaled in the hanger X, which is attached to the under side of the said car U in advance of the aforesaid roller W, it being of course understood that the under portion of said car has a trolley-arm attached thereto, carrying a trolley-wheel which may be mounted thereon at a suitable point adjacent to the rollers W and X, so as to readily contact with the conductor H' as the car progresses.

The operation is as follows: Assuming the parts to be in the position shown in Fig. 3 and the roller W in contact with the curved portion P of the lever M, the cover J being sustained in its open position by the roller Y, it will be evident that if the car U progresses in the direction of the arrow, the contact of the roller W with the curved portion of the lever M will cause the latter to assume the position seen dotted, the curved portion P being depressed while the end R is elevated, thereby raising the cover J in advance thereof into the position seen dotted, said cover being held in open position by means of the roller Y, which it will be understood is continuously advancing and is always ahead of the roller W, and when the latter has advanced a short distance it will engage the

curved end P of the lever M ahead, the door to which said lever is pivoted being now opened, as will be understood from Fig. 3, it being understood that the trolley-roller which
5 is attached to any suitable portion of the car-body is in contact with the hollowed-out portion of the conductor H', said conductor being made in sections, so that when it is depressed the end G of the lever D is elevated
10 into contact with the feed-wire B, each section thus having electric fluid conducted thereto by reason of the contact of said end G with the feed-wire B, the parts being normally in the position seen in Fig. 1, and the
15 contact between the wire and lever D being caused by the trolley-wheel successively riding up on the said conductors H' as the car progresses, the covers J automatically closing by means of the counterbalances S and
20 T, as is evident.

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

1. In an underground trolley system, a
25 cover hinged to a suitable support, a lever mounted on the under side of said cover, and

suitable weights or counterbalances attached to said cover, substantially as described.

2. In an underground trolley system, a cover hinged to suitable supports, and a lever
30 pivoted to the under side of said cover, said lever having curved and straight portions respectively, an end of said straight portion being adapted to project under the end of an adjacent cover, said covers having weights
35 attached thereto, substantially as described.

3. In an underground trolley system, a casing, a feed wire therein, pivoted levers, each having an end adapted to contact with
40 said feed wire, and on its other end a longitudinally extending bar, adapted to be engaged by a trolley wheel, hinged doors on said casing, and levers carrying weights attached to said doors for closing the same,
45 said levers having curved portions for contact with rollers on a car, for opening the said gates, said parts being combined substantially as described.

CORNELIUS J. HAMILTON.

Witnesses:

JOHN A. WIEDERSHEIM,
WM. C. WIEDERSHEIM.