

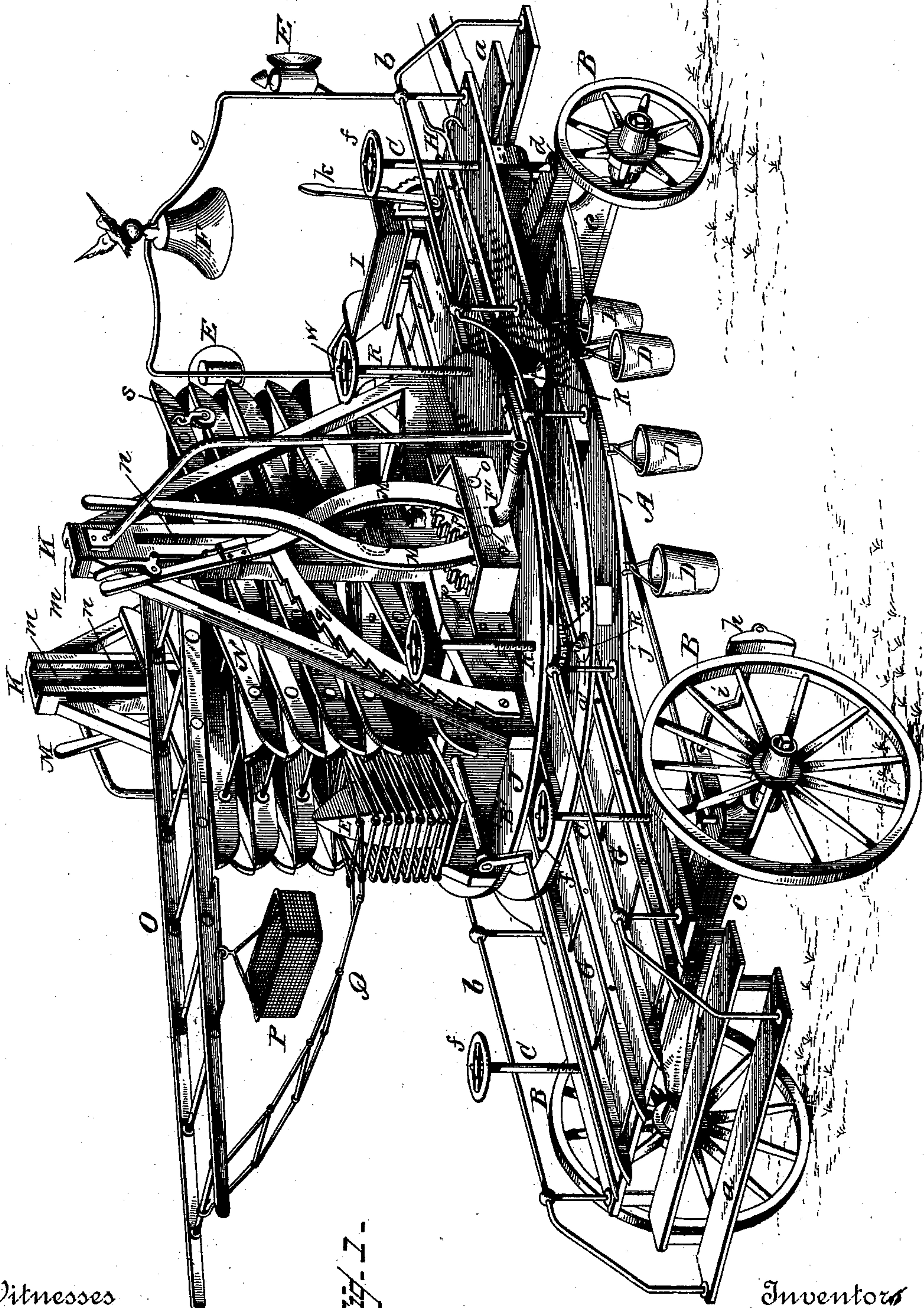
(No Model.)

3 Sheets—Sheet 1.

J. J. HAMILTON & D. BEARLY.  
FIRE EXTENSION LADDER AND TRUCK.

No. 359,603.

Patented Mar. 22, 1887.



Witnesses  
*Wm. Steiden*  
*L. L. Miller*

Inventors  
*James J. Hamilton*  
*David Bearly*  
By their Attorney  
*Chas. H. Fowler*



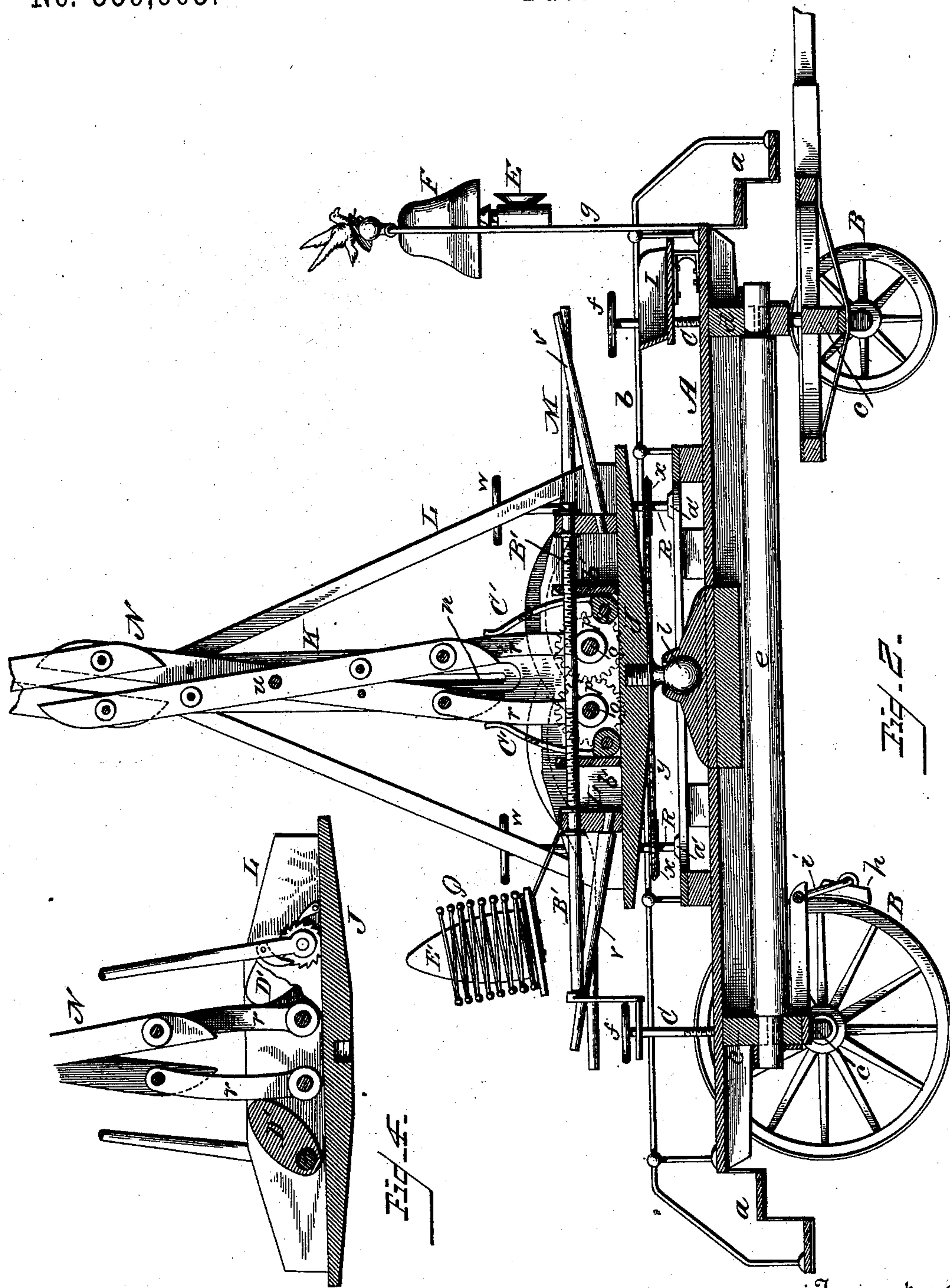
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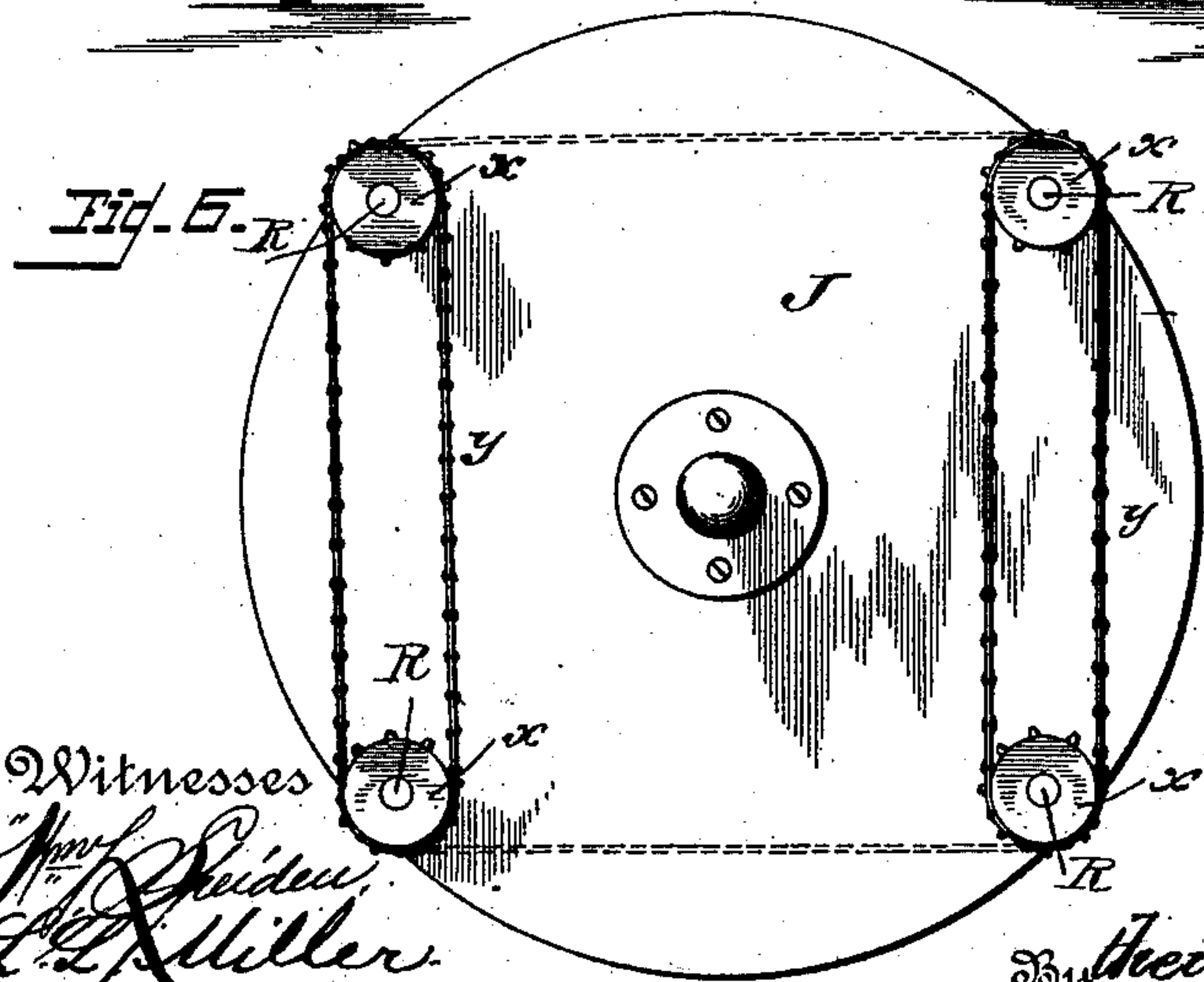
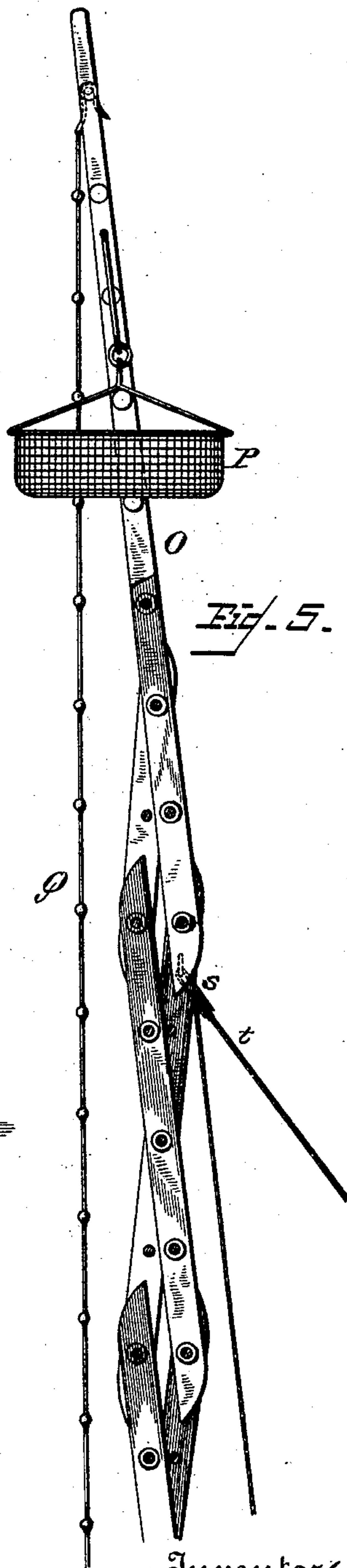
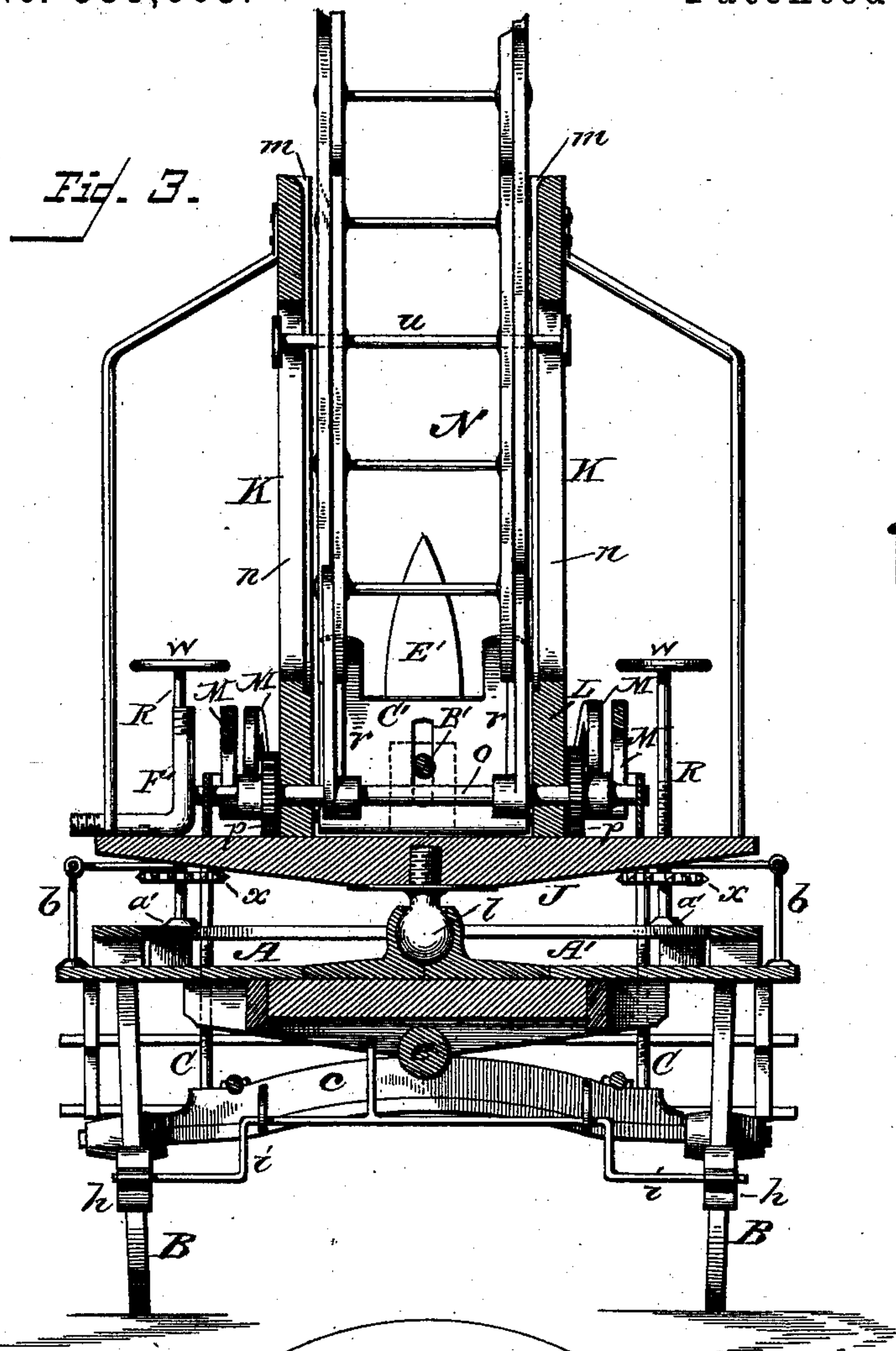
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# UNITED STATES PATENT OFFICE.

JAMES J. HAMILTON AND DAVID BEARLY, OF NEW CASTLE, INDIANA.

## FIRE EXTENSION-LADDER AND TRUCK.

SPECIFICATION forming part of Letters Patent No. 359,603, dated March 22, 1887.

Application filed August 5, 1886. Serial No. 210,122. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES J. HAMILTON and DAVID BEARLY, citizens of the United States, residing at New Castle, in the county of Henry and State of Indiana, have invented certain new and useful Improvements in Fire-Escapes; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a perspective view of our invention; Fig. 2, a longitudinal section thereof; Fig. 3, a transverse section showing a modification of the means for raising and lowering the extension-ladder; Fig. 4, a detail view, partly in section, showing an additional modification thereof; Fig. 5, a detail view of the ladder in an extended position with its several connections; and Fig. 6, an under plan view of the turn-table, showing the sprocket-wheels and chains.

The present invention has for its object to provide a fire extension-ladder and truck with the several appliances necessary to successfully rescue persons from burning buildings; also, to provide means by which the extension-ladder can be quickly raised and adjusted to bring it to the required angle for the convenience of those descending from the building, which objects we attain by the construction substantially shown in the drawings, and hereinafter described and claimed.

In the accompanying drawings, A represents the bed or platform, provided at its rear and front end with steps *a* and side hand-railings, *b*, said bed or platform being supported at its end by axles *c*, upon which are mounted the wheels B. The rear axle, *c*, and bolster *d* are connected to the ends of the reach *e* in any well-known manner that will allow the axle and bolster to be adjusted to an angle from a horizontal by means of the adjusting screw-rods C, which are provided with hand-wheels *f* for operating them, thereby bringing the bed or platform A, as circumstances may require.

The bed or platform A is provided with hooks or other fastenings for suspending therefrom suitable pails or buckets, D, and at the front end are the usual head-lights, E, and

alarm-bell F, these being suitably connected to a rod, *g*, extending over the front end of the bed or platform and attached thereto.

Upon the bed or platform A are placed the usual hand-ladders, G, and fire hook or hooks H, and to the front end of said bed or platform is the driver's seat I. Suitable brakes are provided for the rear wheels of the truck, and consist of the brake-shoes *h*, connected to the ends of a pivoted crank-rod, *i*, the latter being connected in turn to a longitudinal rod, *j*, which is attached at its front end in any well-known manner to a hand-lever, *k*, within convenient reach of the driver on the seat I. Any suitable and well-known brake mechanism may be substituted for that shown, and the several details of construction hereinbefore described may be variously modified without departing from the principle of our invention, and we therefore reserve the right to make such changes as come within ordinary mechanical skill.

Connected to the bed or platform A by a ball-and-socket or universal joint, *l*, is a turn-table, J, and to the upper side thereof are connected guide-posts K, which are formed with grooves *m* and slots *n*. The posts K form a part of a suitable frame, L, through the base of which extend transversely two parallel shafts, *o*, the sides of said frame forming bearings therefor, and upon the extremities of the shaft are keyed or otherwise rigidly connected pinions *p*, which mesh with each other. The ends of the shafts *o* are provided with hand-levers M for operating them, one of said levers having a suitable pawl-connection, as shown in Fig. 1, to engage with a ratchet-segment, *q*, to hold the shafts stationary when the ladder has been extended the desired height, and thereby lock it in its extended position. This extensible ladder, as shown at N, is on the principle of the "lazy-tongs," the lower sections thereof being connected to arms *r*, rigidly attached to the shafts *o*. Thus when the shafts are turned, as hereinbefore described, the ladder will be extended or the sections folded together, as the case may be.

The upper section, O, of the ladder, which is of increased length, is provided with means for connecting and supporting an escape-basket, P, crate, sack, platform, or other device



usually employed for safely landing persons from a burning building. A pulley, *s*, as shown in Figs. 1 and 5, is connected to one of the ladder-sections, near the top thereof, and  
 5 around said pulley passes a rope, *t*, thereby providing means for raising hose or extra ladders for use on roofs of houses.

A rope ladder, *Q*, may be provided, of any of the usual forms, for attachment to the upper round of the ladder-section *O*, so that when  
 10 the ladder is extended it will carry up the rope ladder, and when the former is leaning against the building the rope ladder will hang straight down the side thereof and convenient  
 15 to all windows below, so that persons can come out and down or up to any story window.

The lower sections of the ladder *N* are pivoted together by a rod, *u*, which is of sufficient length to extend through the slots *n* of the  
 20 posts *K*, thereby the posts serving as guides for the lower sections of ladder and preventing them from swaying laterally. The grooves *m* of the posts *K* are to provide a space for the heads on the outer end of the rounds of the  
 25 ladder, so that as little space as possible will be left between the outer sides of the ladder and posts, thereby holding the ladder compactly between the posts without danger of the lateral displacement of the sections.

The manner of connecting the turn-table *J* to the bed or platform *A* enables said table to revolve upon its axis and be oscillated or tipped at any angle. To turn the table upon  
 30 its axis, arms *v* are provided, which may be detachably connected to the base of the frame *L*, thereby bringing the ladder *N* around to the required position for use. By tipping the turn-table *J* at an angle from a horizontal the extension-ladder is brought to a more convenient  
 40 position for the descent thereon of the persons escaping from the building, and to provide means for attaining this end we employ four set-screws, *R*, provided with hand-wheels *w* for turning them. Connected to these  
 45 screws *R*, either above or below the turn-table, are sprocket-wheels *x*, around which pass sprocket-chains *y*. The sprocket-chain may connect each pair of sprocket-wheels independent of the other; or a single endless chain  
 50 may be used to connect the four wheels together, as shown in dotted lines, Fig. 6. Two of the screws therefore would have right-hand threads and the other two left-hand threads, so that when the four screws are turned simultaneously one pair will turn in opposite  
 55 directions to the other, so that the table will be tilted at the desired angle. When two sprocket-chains are employed, each pair of set-screws will be operated independently of the other. The lower end of the set-screws *R* are provided with feet *a'*, which rest upon a circular metal track, *A'*, thereby holding the turn-table firm and stationary in its adjusted position.

65 As an additional means for raising the extension-ladder, a right-and-left-hand screw-rod is provided, as shown at *B'*, said rod pass-

ing through the ends of the base of the frame *L*, and is provided with two followers, *b'*, which operate pivoted levers *C'*, which we term  
 70 "helpers," as they assist the levers *M*, pinions *p*, and shaft *o* to raise the arms *r* when the ladder is to be extended.

As will be seen, when the right-and-left-hand screw-rod *B'* is turned in the proper direction,  
 75 the followers *b'* will travel toward each other and bear with great force against the lever-plates *C'*, which will in turn force them against the arms *r*, to which the lower section of ladder is pivoted, raising them to an upright position, as shown in Fig. 2. In place of the  
 80 right-and-left-hand screw-rod, the followers, and lever-plates, cams *D'* may be substituted, which are connected to suitable shafts operated by levers, pawls, and ratchet, as shown  
 85 in Fig. 4.

To provide means for holding the rope ladder *Q* when not required for use, we employ a keeper, *E'*, over which the several sections of ladder are folded, and attached to the turn-  
 90 table *J* is a water-pipe coupling-section, *F'*, for attaching thereto the hose.

It is evident that the several parts of the device may be constructed of either metal or wood, and the general size and arrangement  
 95 of parts may be modified and changed without affecting their operation.

By means of an apparatus constructed as above described and in accordance with our invention, a very successfully operating fire-escape is provided that can be used to quickly rescue persons from a burning building without danger to life or limb.

Having now fully described our invention, what we claim as new, and desire to secure by  
 105 Letters Patent, is—

1. In a fire-escape, the combination, with a tilting and revolving turn-table provided with an extension-ladder, of means for adjusting said table at the required angle, which consists  
 110 of set-screws provided with hand-wheels for turning them, sprocket-wheels and chains for connecting the set-screws together, and a circular track for supporting the lower ends of said screw, substantially as and for the purpose specified.

2. In a fire-escape, the combination, with a tilting and revolving turn-table provided with set-screws for holding it in its adjusted position, of an extension-ladder and means for operating it, which consists of two parallel  
 120 shafts provided with arms, to which the lower sections of ladder are pivoted, pinions on the outer ends of the shafts, which mesh with each other, and levers, pawl, and ratchet for  
 125 turning the shafts, substantially as and for the purpose described.

3. In a fire-escape, a tilting and revolving turn-table provided with means for tilting it and holding it in its adjusted position, in  
 130 combination with an extension-ladder and means for operating it, consisting of parallel shafts provided with arms, pinions, and levers, and helpers, as shown and described, for op-



erating in connection therewith to assist in raising the ladder, substantially as and for the purpose set forth.

4. In a fire-escape, a tilting and revolving  
5 turn-table provided with an extension-ladder and means for operating it, consisting of parallel shafts provided with arms, to which the lower ladder-sections are pivoted, and pinions, levers, pawl, and ratchet for operating  
10 the shafts, in combination with a helper to assist in raising the ladder, consisting of two lever plates or cams and means for forcing them against the arms of the shafts, substantially as and for the purpose specified.

15 5. In a fire-escape, the combination, with a suitable truck mounted upon wheels and provided with a tilting and revolving turn-table, and means for tilting it and holding it in its

tilted position, of grooved and slotted guide-posts, an extension-ladder located between 20 the same, the lower section of said ladder having a guide-rod passing through the slotted posts, means for operating the ladder, consisting of parallel shafts provided with arms, pinions, and levers, a helper consisting of 25 lever plates or cams, and means for operating them, substantially as and for the purpose set forth.

In testimony that we claim the above we have hereunto subscribed our names in the 30 presence of two witnesses.

JAMES J. HAMILTON.  
DAVID BEARLY.

Witnesses:

JOHN REA,  
SETH H. ELLCOTT.