

(No Model.)

3 Sheets—Sheet 1.

J. H. ROBERTSON.

MEANS FOR RELEASING GRIPS ON CABLE CARS.

No. 424,619.

Patented Apr. 1, 1890.

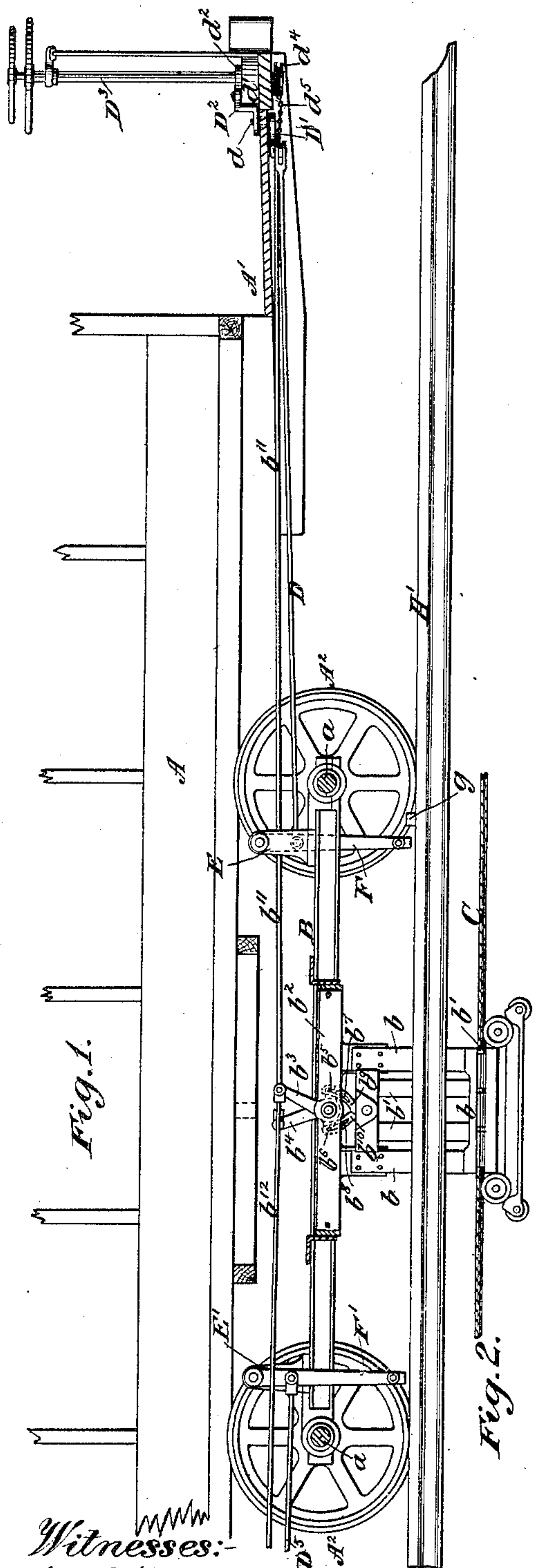
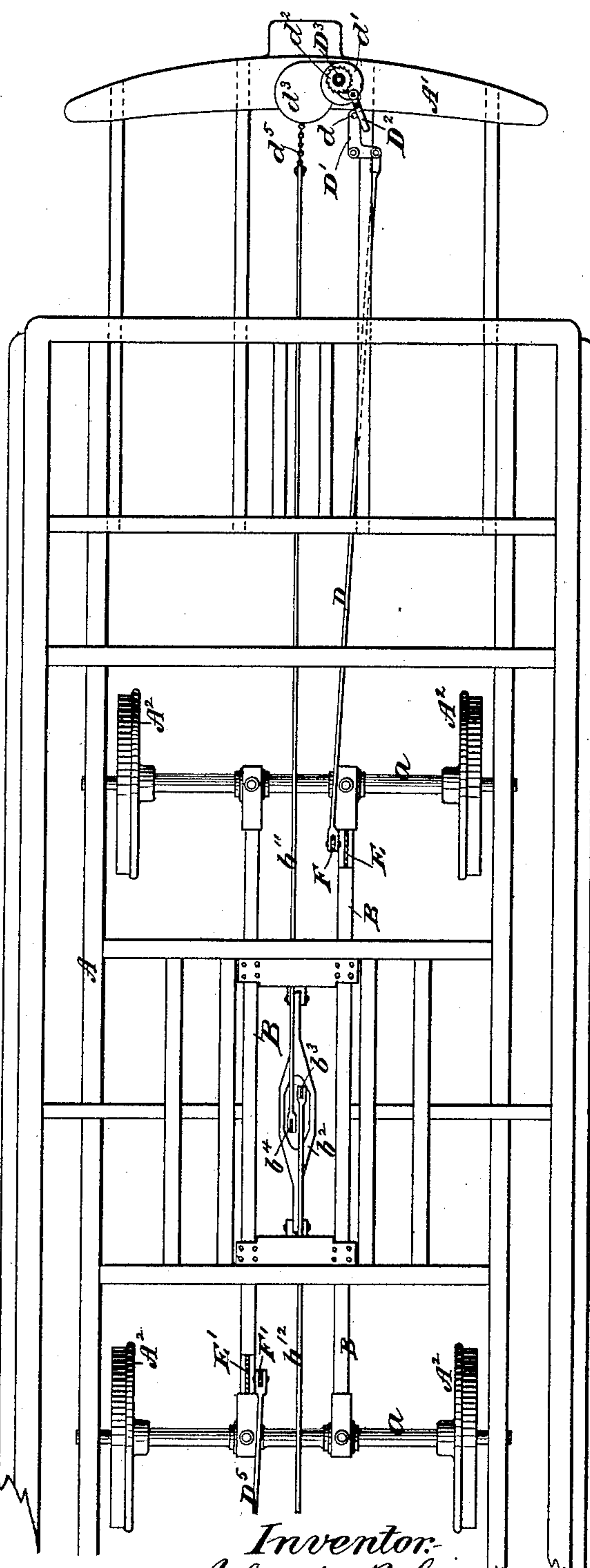


Fig. 2.



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Fig. 3.

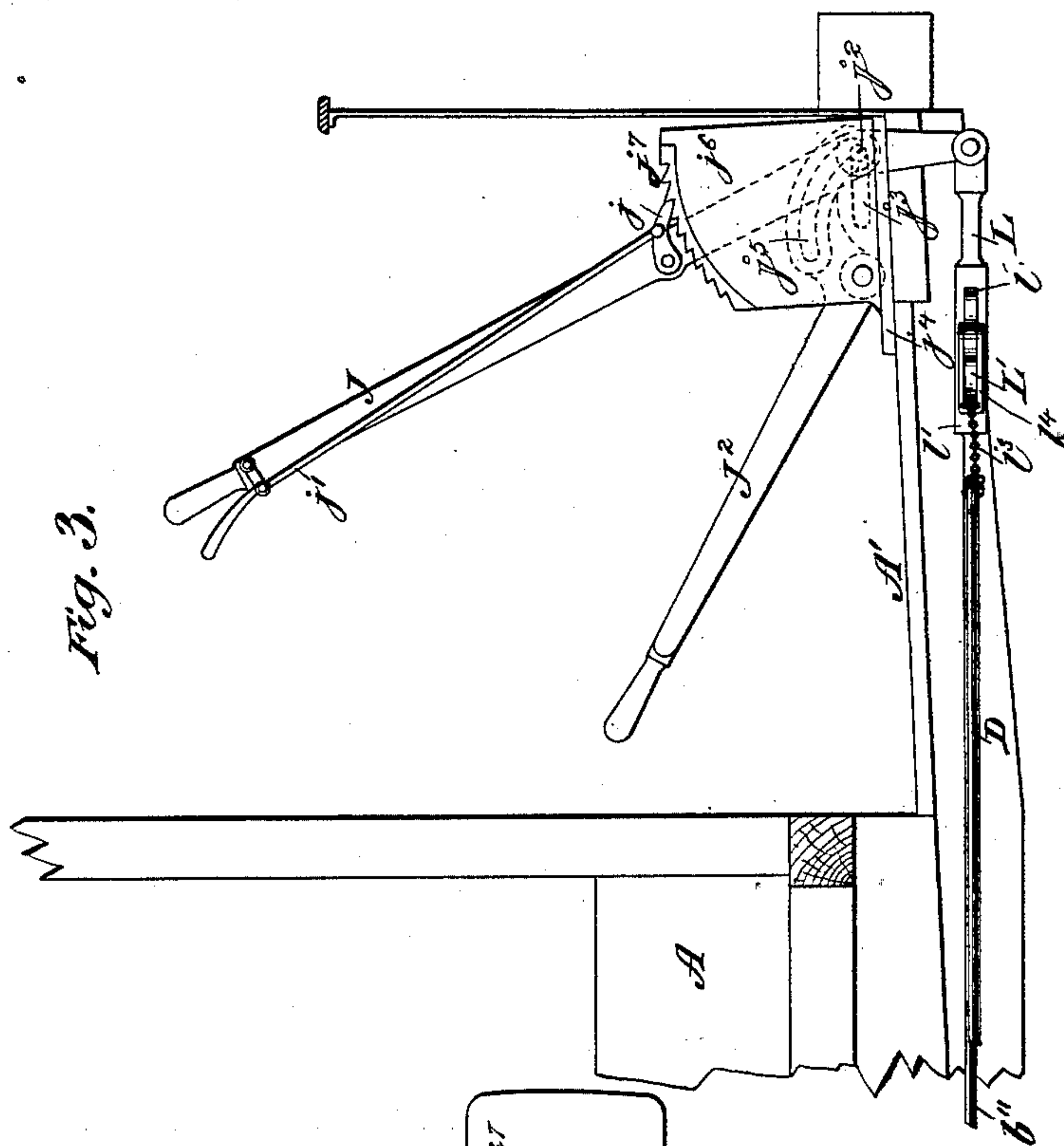
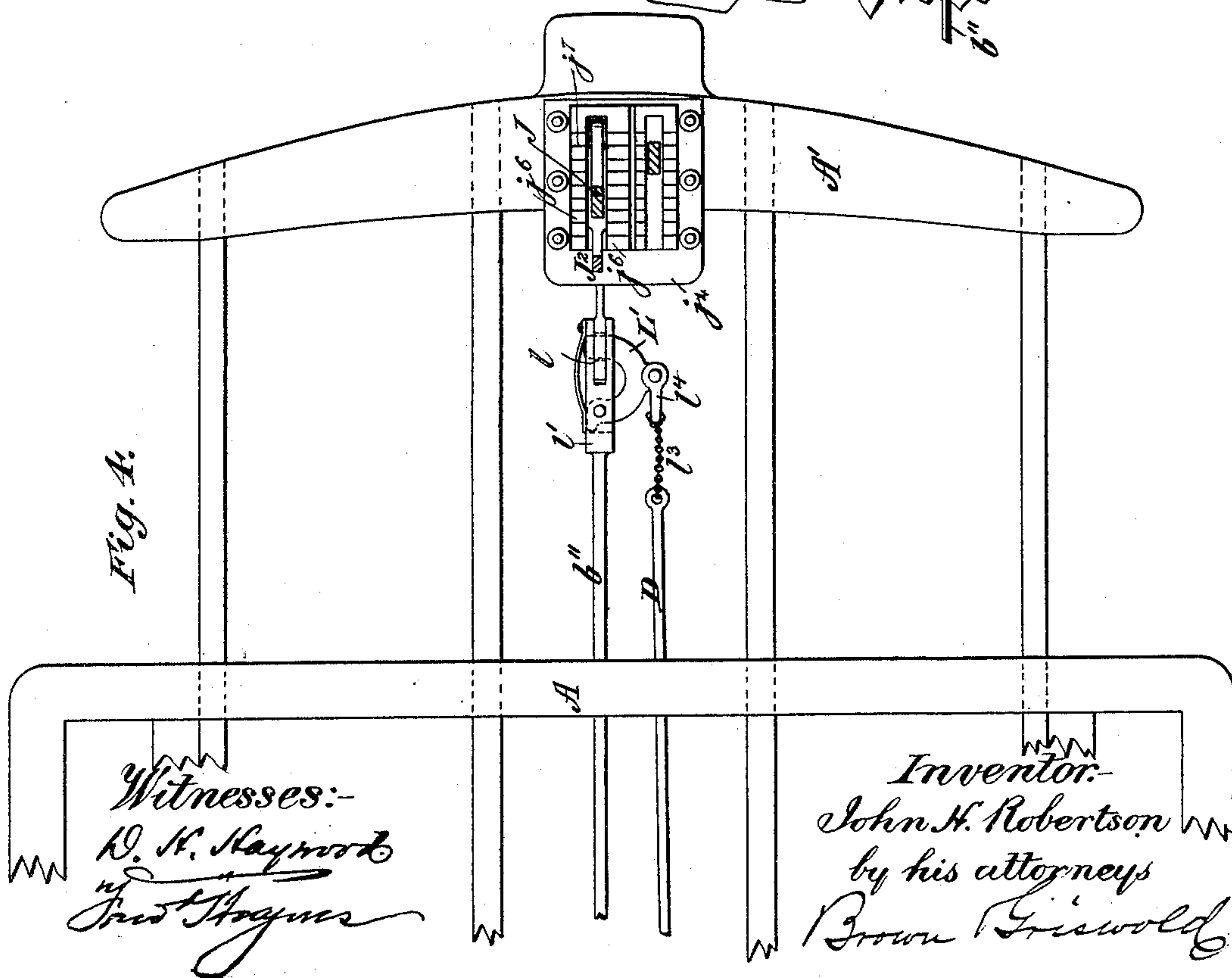


Fig. 4.



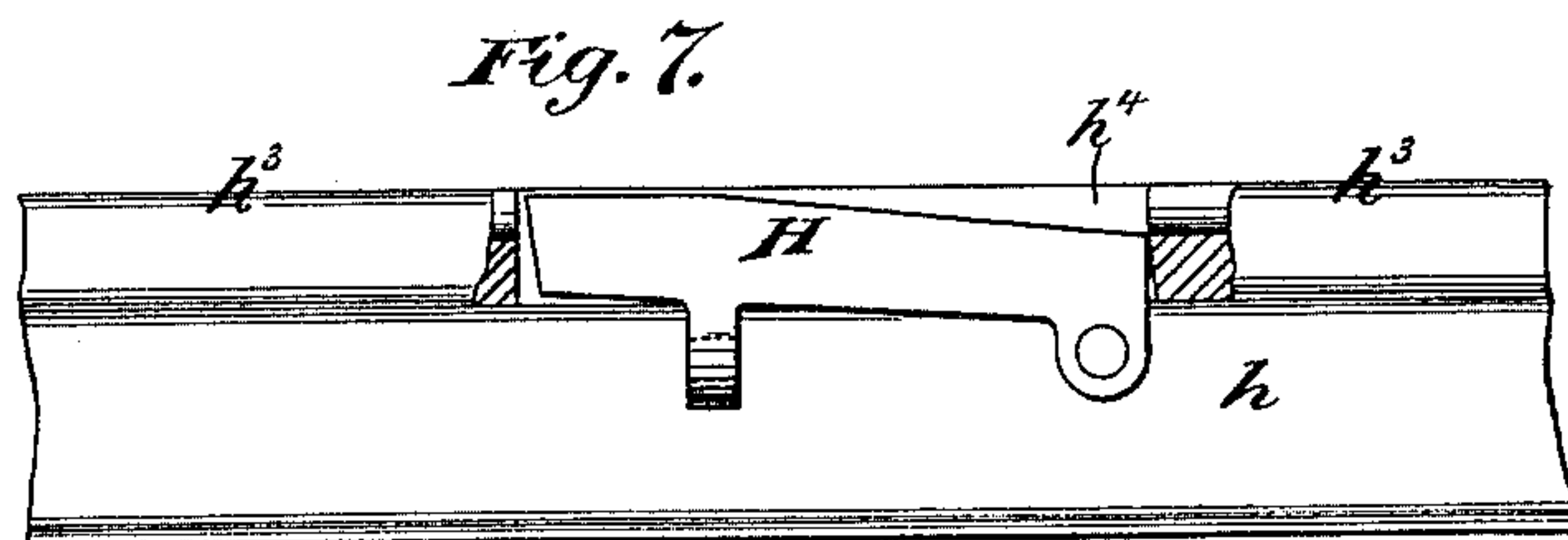
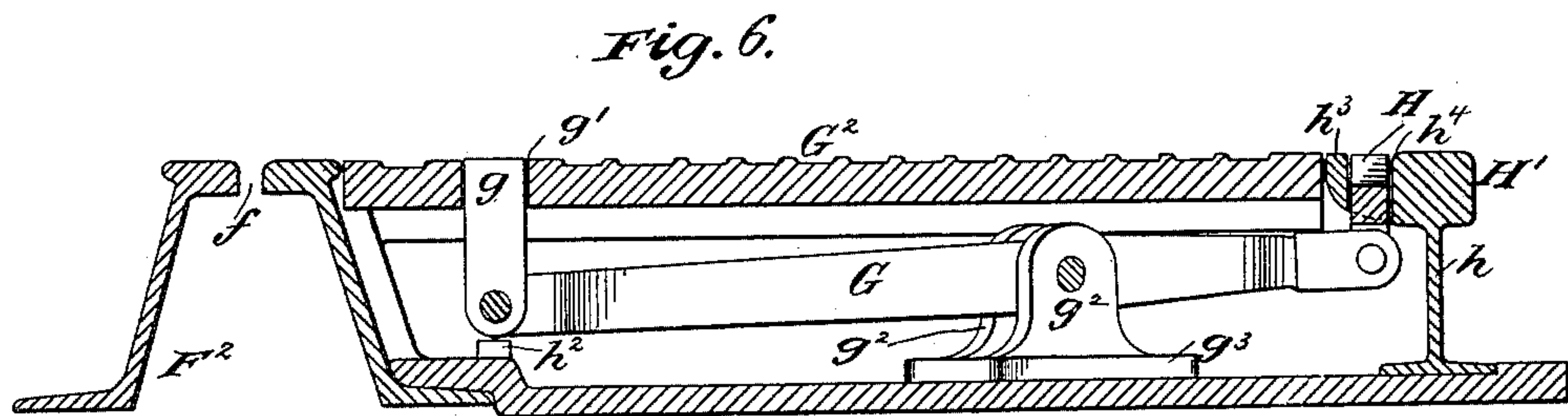
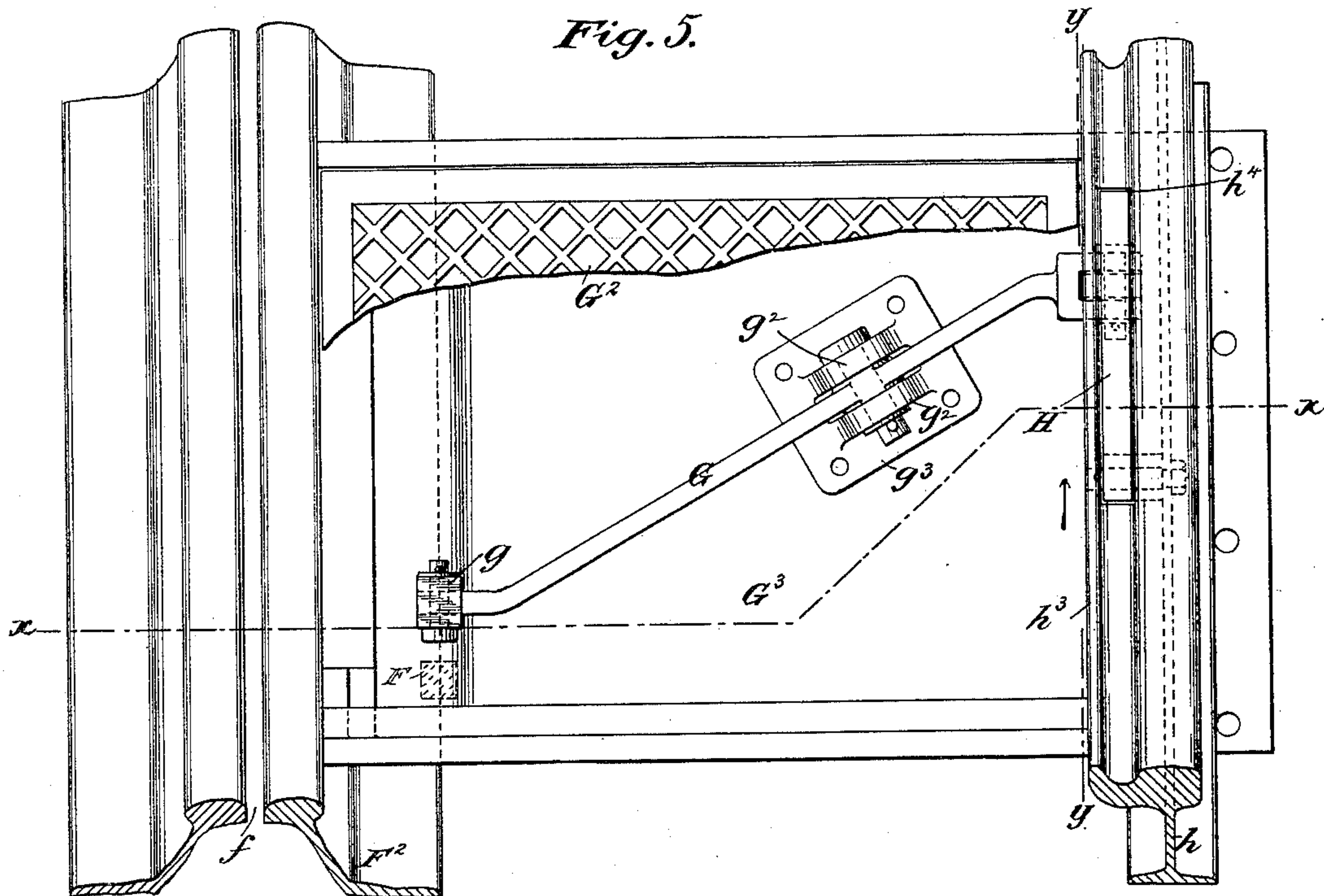
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3 Sheets—Sheet 3.

MEANS FOR RELEASING GRIPS ON CABLE CARS.

Patented Apr. 1, 1890..



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MEANS FOR RELEASING GRIPS ON CABLE CARS.

SPECIFICATION forming part of Letters Patent No. 424,619, dated April 1, 1890.

Application filed January 29, 1890. Serial No. 338,523. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. ROBERTSON, of the city and county of New York, in the State of New York, have invented a certain new and useful Improvement in Means for Releasing Grips on Cable Cars, of which the following is a specification.

Drivers of cars operated by endless cables sometimes neglect to release the cable from the grip when such should be done—as, for instance, where it is desired to pick up another cable; and my improvement relates to means for automatically releasing the grip at such times, so that such releasing will not be dependent upon the care of the driver.

I will describe my improvement in detail, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a sectional elevation of a portion of a railway-car, showing means for releasing the grip embodying my improvement. Fig. 2 is a plan of the same. Fig. 3 is a sectional elevation of a portion of the car, illustrating modified means for accomplishing the releasing of the grip. Fig. 4 is a plan of the same. Fig. 5 is a detail showing a means for operating a dog by which a trip to release the grip is operated. Fig. 6 is a vertical section of the same, taken on the line xx , Fig. 5. Fig. 7 is a vertical section of the same, taken on the line yy , Fig. 5.

Similar letters of reference designate corresponding parts in all the figures.

A designates a portion of framing for a car, and A' a platform therefor.

A² designates wheels, which wheels are mounted upon axles a , in the usual manner. From the axles a is hung a grip-frame B. The grip-frame B supports a cross-piece b^2 , to which an upper jaw b of the grip is rigidly secured. The lower or movable jaw b' is adapted to be moved vertically in suitable guides upon the upper portion of the fixed jaw b . Upon the cross-piece b^2 are fulcrumed two bell-crank levers $b^3 b^4$, the lower arms of which are provided with pins $b^5 b^6$, extending into slots $b^7 b^8$, formed in upwardly-extending portions $b^9 b^{10}$ upon the top of the movable jaw b' . The upper arms of the levers $b^3 b^4$ are pivotally connected to grip-rods $b^{11} b^{12}$. The cable C is gripped between the jaws $b b'$

by elevating the jaw b' , and is released by the dropping down of said jaw.

All the parts thus described are of ordinary construction and do not require further detail description.

Referring now to the example of my improvement shown in Figs. 1 and 2, D designates a rod, which rod is pivotally connected near one end to one of the arms of a bell-crank lever D', which lever is fulcrumed upon the platform of the car. The other arm of said lever bears a pin d , which pin is in contact with a dog D², mounted in this instance upon a case or shell d' , inclosing a gear-wheel. (Not shown.) This gear-wheel is mounted upon a grip-spindle D³. Upon the grip-spindle D³ is a ratchet-wheel d^2 , with which the dog D² is in engagement when the lower jaw of the grip is elevated to grip the cable. The rotation of the grip-spindle D³ in one direction causes the rotation of the gear-wheel referred to in the same direction, which gear-wheel meshes with a gear-wheel, also not shown, in a case or shell d^3 , upon the shaft of which is a peripherically-grooved wheel d^4 , located below the platform A'. A chain d^5 is adapted to be wound upon the wheel d^4 by the rotation of the said wheel. Such chain is connected near its other end to the grip-rod b^{11} . Therefore when the grip-spindle D³ is rotated in the direction referred to the chain d^5 will be wound up upon the wheel d^4 , longitudinal motion will be imparted to the grip-rod, and the lower jaw b' of the grip will be raised. The dog D², acting in conjunction with the ratchet-wheel d^2 , operates to maintain said lower jaw in its raised position. When the dog is released, the weight of the lower jaw b' of the grip will cause it to drop, thus imparting a longitudinal movement to the grip-rod b^{11} in the reverse direction to that described, whereby the chain d^5 will be unwound from the wheel d^4 , and the cable will of course be released. Mechanism similar to that just described is arranged upon the other end of the car, and operates through the grip-rod b^{12} in a similar manner. The other end of the rod D is pivotally connected to a trip F, which latter is, as shown, pivotally hung above said connection upon an upright E, extending from the grip-frame B. A rod D⁵, similar to the rod D and extending to

the other end of the car, is pivotally connected to a trip F' , which latter is also, as shown, hung upon an upright E' , extending from the grip-frame B . Should either of these
 5 trips be rocked in one direction they will impart rearward longitudinal movement to the rods $D D^5$, as the case may be, which movement will cause the rocking of the bell-crank lever D' . The rocking of such lever will cause
 10 the pin d thereon to force the dog D^2 over and throw it out of engagement with the ratchet-wheel d^2 . The lower jaw of the grip will thus be released and will at once drop, thereby releasing the cable. I have shown convenient
 15 means for causing the swinging of said trips in the direction just described, consisting of toes or projections g , which are adapted to be thrown up into the path of the trip F or F' , according to the direction in which the car
 20 is moving, so that said trip will contact with the toes or projections and cause the swinging of the trips in the manner and for the purpose described.

It will be observed that the trips $F F'$ extend downwardly into close proximity to the road-bed, so that but a slight elevation of the toes or projections g will be necessary in order to cause the two to contact with each other. The toes or projections g do not normally extend above the level of the road-bed. They
 30 are mounted upon one of the arms of levers G , near the outer ends of said levers—in this instance through suitable openings g' , formed in metallic plates G^2 , set into the road-bed.

I have shown one of the levers G and its attachment more clearly in Figs. 5 and 6; but it is to be understood that there may be one co-operating with each of the trips $F F'$. The plates G^2 form tops or covers for boxes G^3 ,
 40 preferably made of metal and sunk to the level of the road-bed. The levers G are arranged in these boxes and are fulcrumed in uprights g^2 , extending from a plate g^3 , which latter is secured upon the bottom of the boxes G^3 . The toes or projections g are, as shown,
 45 pivotally connected to the levers G , and extend upwardly upon one side and in close proximity to the slit or opening f , formed in conduits F^2 for the cable, of which I have
 50 shown but one, and through which slit or opening f the grip-shank extends. They are used with two tracks, upon one of which the car passes in one direction and upon the other of which it passes in the other direction, and
 55 one of said levers and toes will of course be used with each track. The other arms of the levers G are pivotally connected to levers H , which levers are fulcrumed near one of their ends upon the webs h of rails H' of the car-track. The weight of the arms of the levers
 60 G bearing the toes or projections g is greater than that of the arms to which the levers H are connected, and consequently when the toes or projections g occupy their normal position or
 65 are substantially level at their upper ends with the road-bed the levers H will have been raised at their free end portions, so that they

will occupy a somewhat angular position, as shown more clearly in Fig. 7.

Stops h^2 , extending upwardly from the bottom of the boxes G^3 and beneath the toes or
 70 projections g , operate to prevent a too extended downward rocking of the portion of the levers G to which the toes or projections
 75 g are connected. Sufficient movement is allowed to the levers in this direction, however, to cause the rocking of the free end portions of the levers H upwardly into a position where the upper sides of said end portions will be substantially on a level with the tops of the
 80 rail-heads.

I have shown the rails H' as provided upon their inner edges with trough-shaped flanges h^3 . In the bottoms of the troughs of said flanges are formed, in the example of my im-
 85 provement shown, longitudinally-extending slots or openings h^4 . The levers H extend for a portion of their lengths at least through said slots. Said levers H , when in their elevated position or in that position shown more
 90 clearly in the drawings, will be struck by the flanges of the car-wheels approaching from the inclined sides of said levers and rocked downwardly, thereby causing the rocking of the levers G , so as to throw the toes or pro-
 95 jections g upwardly.

It will be observed that the levers G extend diagonally. This is for the purpose, assuming that the car is moving in the direction of the arrow, Fig. 5, of causing the front wheel
 100 to strike the lever H and depress it, so as to elevate the toe or projection g before the trip F or F' , as the case may be, has reached said toe or projection. Said trips occupy positions relatively to the tread of the wheel which
 105 will admit of this. The lever H , it will be observed, is flattened upon its top for a distance, so that the wheel will remain in contact therewith and depress it a sufficient length of time to enable the trip F or F' , as the case
 110 may be, to strike the toe g and be swung thereby. Such swinging of the trips will cause the automatic releasing of the grip, as previously described.

In Figs. 3 and 4 I have shown a modified
 115 form of mechanism to be operated either by hand or by the trips in order to release the grip. As in the other example described, I have shown the mechanism as arranged upon one end of the car only. Such mechanism
 120 consists of a lever J , upon which is mounted a locking-pawl j , operated by a pull-rod j' . This lever is provided upon one side with a pin j^2 , which pin extends through a slot j^3 in a plate j^4 , secured upon the platform of the
 125 car. It also extends through an arc-shaped slot j^5 , formed in one of the arms of a bell-crank lever J^2 , which lever is fulcrumed upon upwardly-extending plates or projections j^6 . Upon the upper edges of the plates or projec-
 130 tions j^6 are ratchets j^7 , with which the pawl j may be engaged. All these parts are old and of well-known construction.

By rocking the lever J^2 downwardly the le-

ver J is bodily carried toward the dash-board of the car and is locked in such position by the lever J². The lever J may then be rocked upon the pin j² as a fulcrum. The lower end of the lever J below the platform of the car is pivotally connected to a bar L. When the lever J is rocked, longitudinal movement will be imparted to the bar L. The other end of the said bar is provided with a transversely-extending aperture l. (Shown more clearly in Fig. 4.)

Upon the rod b¹¹ or b¹², as the case may be, and at the ends thereof adjacent to the ends of the car, are fixed heads l'. The heads l' are bifurcated at their forward or free ends, and the bar L may be slid in between said bifurcations. Through said bifurcations extend transversely suitable apertures, which, when the bar L occupies a proper position between the bifurcations, will coincide with the apertures l in the bar L. Fulcrumed upon the head l', near the rear end of the latter, is a bent lever L', the free end portion of which lever is so shaped that when the bar L occupies a position between the bifurcations in the head l' said end portion may be passed through the apertures in said bar and the bifurcations, thus forming a lock which unites the bar and the head l' together. Longitudinal movement imparted to the bar L will therefore be transmitted to the rod b¹¹ or b¹². The grip-rod D or D⁵, as the case may be, is connected to the lever L' at about midway between the ends of the latter. Such connection is shown as formed by a chain l³, secured near one end to the rod D or D⁵ and at its other end to a link l⁴, pivotally connected to the lever.

When the grip is in operation, or, in other words, is gripping the cable, the chain l³ is taut.

When the grip is released by hand by the operation of the lever J, the connection between the lever L' and the head l' will not be broken, and the chain l³ may slacken during the rearward movement of the lever L'. The grip being in operation, however, and the chain l³ being taut, as the trip F or F' strikes the toe g, rearward longitudinal movement will be imparted to the rod D or D⁵, which will cause the lever L' to be rocked upon its fulcrum, thus releasing its free end portion and disconnecting the rod L from the head l'. The weight of the lower jaw of the grip will then cause the said jaw to drop and release the cable. The head l' can only be again connected to the rod L by hand, as it will be necessary for the driver of the car to get under the car and rock the lever L, so as to again pass its free end portion through the apertures in the bifurcated portions of the head l' and the rod L. It will thus be seen that by my improvement very simple and effective means is provided whereby carelessness on the part of

the driver in releasing the grip at the proper times is automatically and effectively guarded against.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a car, of a grip adapted to grip a cable, mechanism, substantially such as described, for opening and closing said grip, a swinging trip extending downwardly from the car, a connection between said trip and said grip opening and closing mechanism, and a movable toe or projection operated by the car during its movements, so as to be brought into position to be struck by the trip and cause the automatic opening of the grip, substantially as specified.

2. The combination, with a car, of a grip, mechanism, substantially such as described, for opening and closing said grip, a swinging trip upon the car, a connection between said trip and said opening and closing mechanism, a movable toe or projection, and a lever upon which said toe or projection is mounted, arranged beneath the road-bed and rocked by the car during the movements of the latter to elevate said toe or projection into a position to be struck by the trip, substantially as specified.

3. The combination, with a car, of a grip, mechanism, substantially such as described, for opening and closing the grip, a swinging trip extending downwardly from the car, a connection between said trip and the opening and closing mechanism, a movable toe or projection, an angularly-extending lever, upon one arm of which said toe or projection is mounted, and a second lever connected to the lever first named and extending upwardly into close proximity to the railway-rail, whereby a wheel of the car will be caused during the movements of the latter to contact with said second-named lever and cause the rocking of the first-named lever to elevate the toe or projection into a position where it will be struck by the trip, substantially as specified.

4. The combination, with a car, of a grip, mechanism for opening and closing the grip, comprising two rods, a lock for securing said rods together, a trip, a connection between said trip and the lock, and a movable toe or projection adapted to be moved by the car during the movements of the latter, so as to be brought into position to be struck by the trip, substantially as described, whereby when said toe or projection is struck by the trip said lock will be unlocked and the connection between said two rods severed, substantially as specified.

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