

I. F. TAYLOR.
CRANE, FIRE ESCAPE, AND SIMILAR APPARATUS.
APPLICATION FILED MAR. 30, 1908.

919,393.

Patented Apr. 27, 1909.
2 SHEETS—SHEET 1.

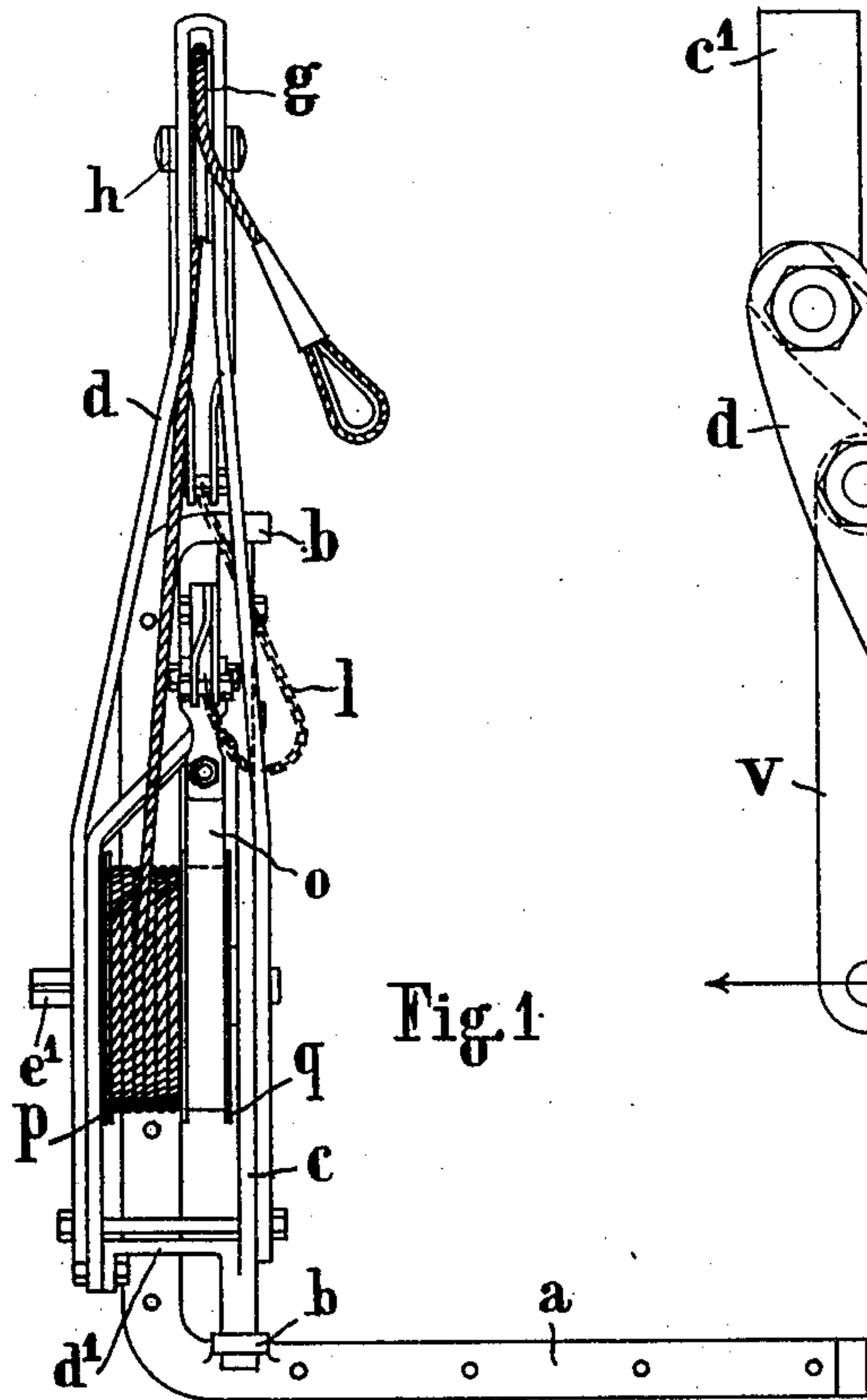


Fig. 1

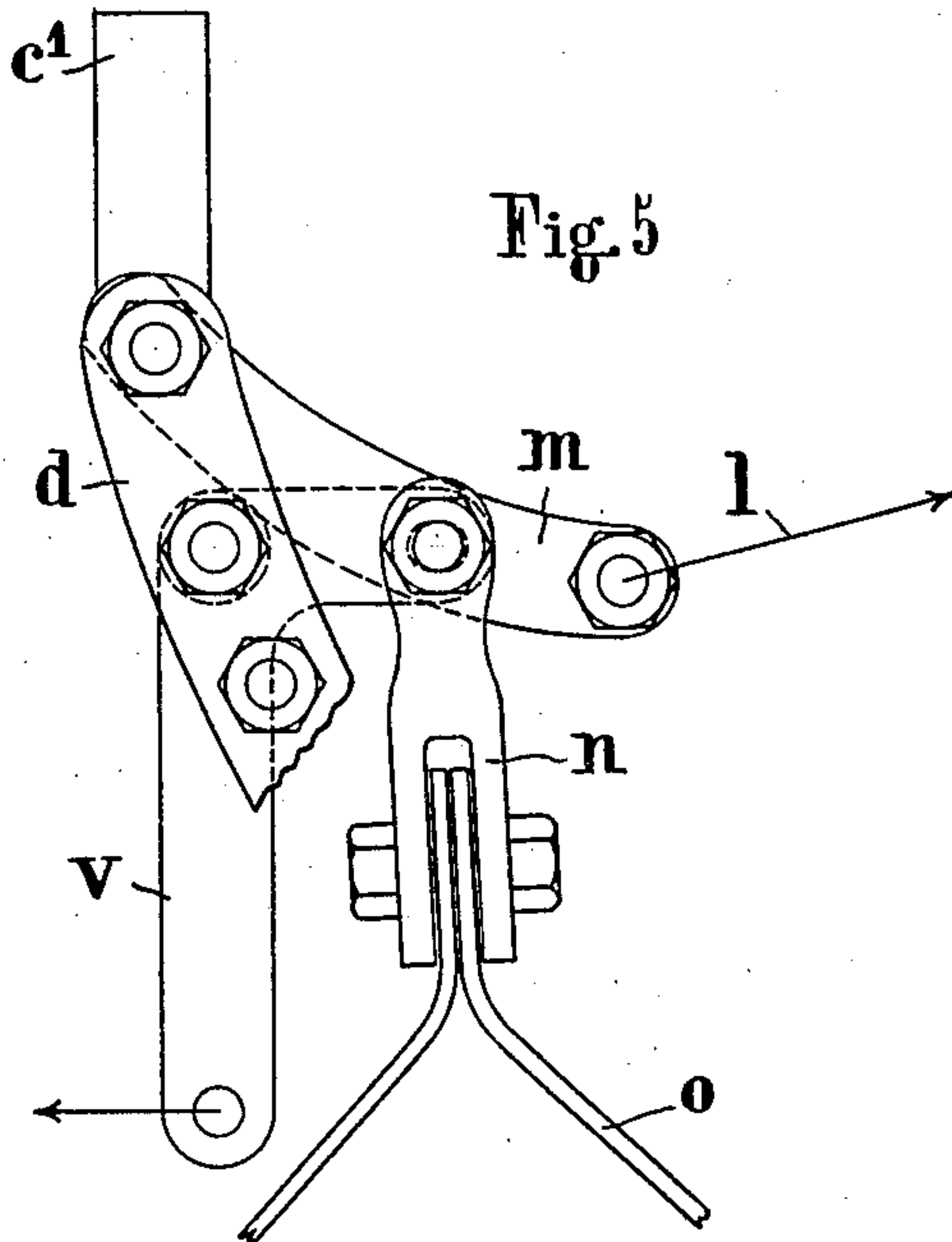


Fig. 5

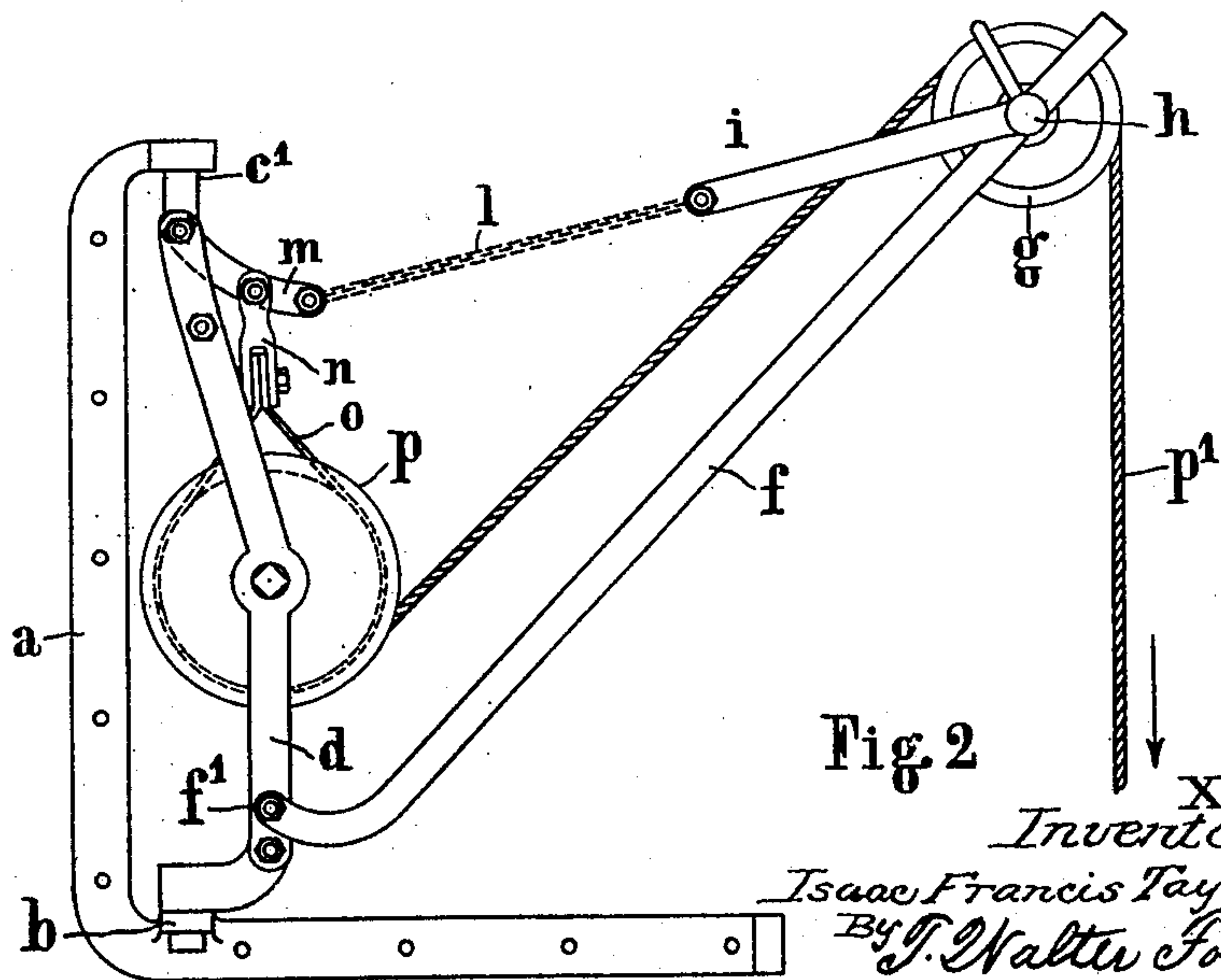


Fig. 2

Witnesses;
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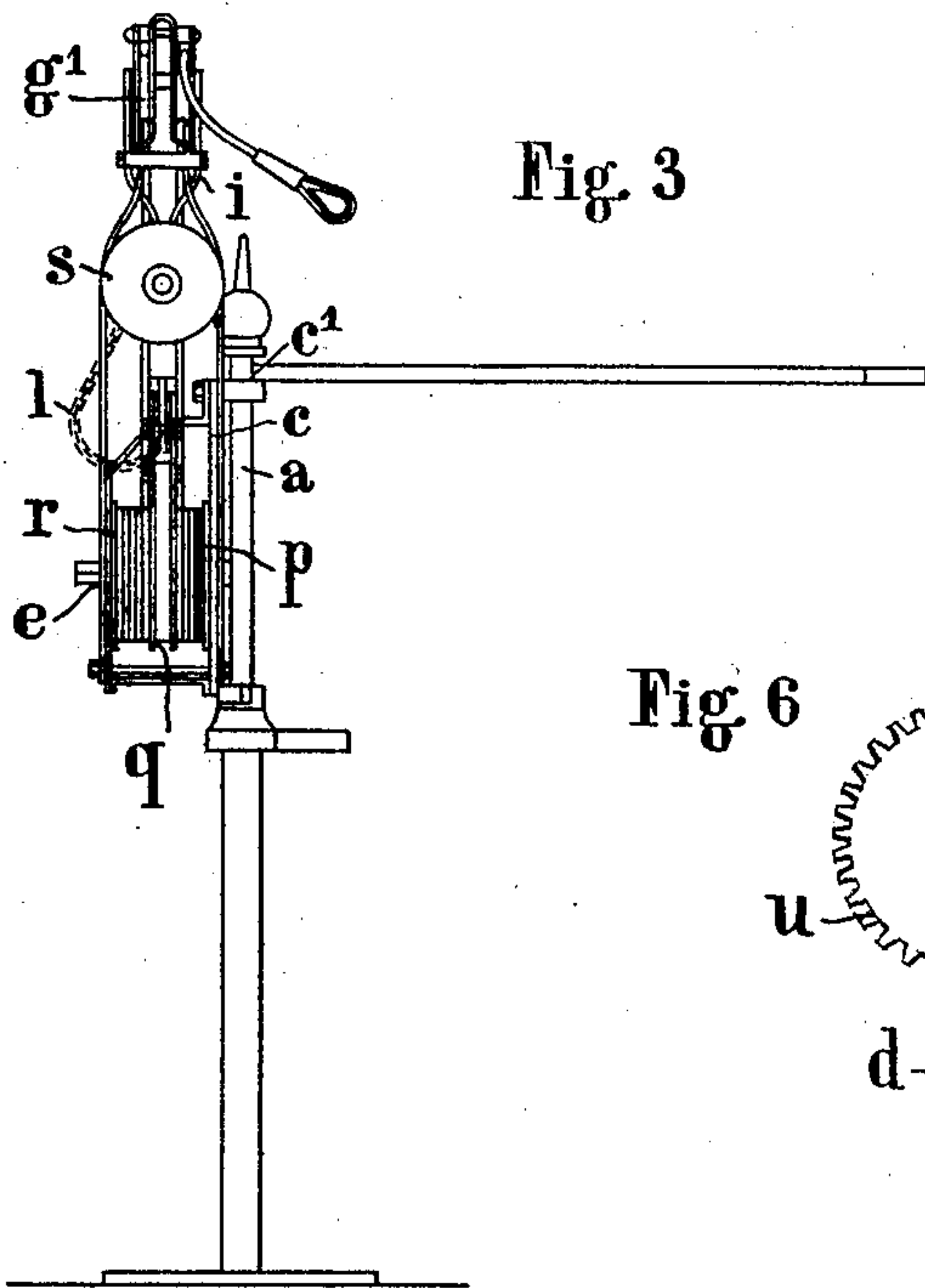


Fig. 3

Fig. 6

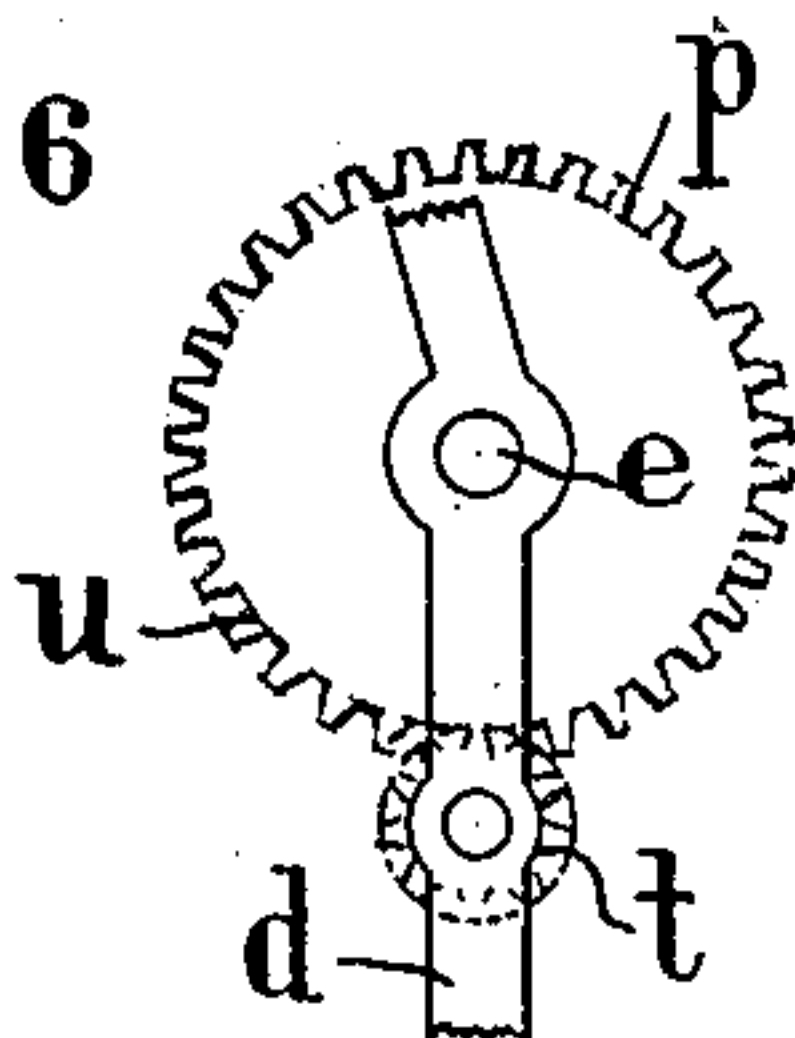
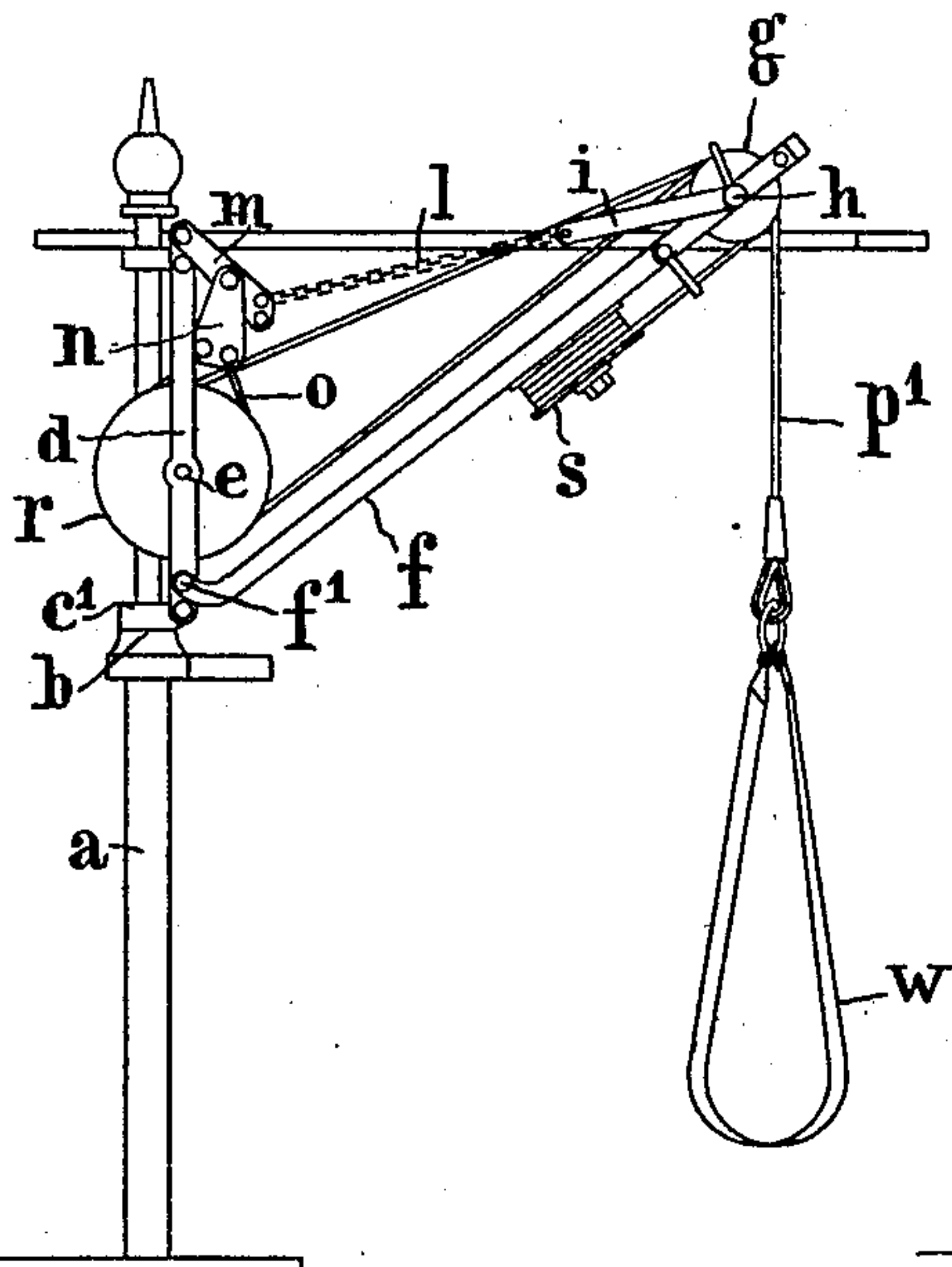


Fig. 4



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

ISAAC FRANCIS TAYLOR, OF EAST DULWICH, LONDON, ENGLAND.

CRANE, FIRE-ESCAPE, AND SIMILAR APPARATUS.

No. 919,393.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed March 30, 1908. Serial No. 424,247.

To all whom it may concern:

Be it known that I, ISAAC FRANCIS TAYLOR, of 5 Upland road, East Dulwich, in the county of London, England, van-builder, have invented certain new and useful Improvements in Cranes, Fire-Escapes, and Similar Apparatus, of which the following is a full, clear, and exact description, and for which application for patent has been made, No. 20,664 of 1907, dated September 17, 1907.

This invention has reference to improvements in cranes, fire-escapes and similar apparatus, and has for object to provide an apparatus which is readily adaptable to any window or opening and when fitted but out of use not obstructive yet ready for immediate use. A small winch is pivoted to a fixed stanchion inside the window or opening so that the winch can be revolved around the stanchion to be completely inside and, say, behind shutters or curtains, or can be revolved so that the jib is outside and clear of the wall. The stanchion is fitted with adjustable brackets or other means so that it can readily be attached to any window or opening, or be inclined in case of a dormer window. The winch rope is automatically braked by the load, the power of the brake varying according to the weight of the load. Upon the accompanying drawings, I have shown two forms of carrying out the invention.

Figures 1 and 2 are respectively a front and a side elevation of the device fitted with a single rope. Figs. 3 and 4 are similar views of a double rope device. Fig. 5 is an enlarged view in side elevation of the brake support and operating mechanism. Fig. 6 is an elevation of a geared spindle sometimes employed.

The stanchion *a* in Figs. 1 and 2 is shown suited for affixing to the inside of a window frame and provided with sockets *b b*. Into these sockets fit pivots *c'* secured to or formed on a post *c* which is duplicated at *d*, these members *c d* being riveted together at top and connected at bottom by a cross bar *d'* to form a frame. This frame formed of the members *c d* can thus swing around the pivots *c'* and it carries intermediate of its height a transverse spindle *e* suitably journaled in position and having a squared end projecting beyond the member *d* as shown at *e'* so that this spindle may be rotated by means of any suitable crank handle. The jib *f* which is also a double member is pivoted

at *f'* to the lower part of this frame *c d* and carries at its outer end a pulley *g* revoluble on a cross pin *h*. This pin *h* also secures a shackle *i* in place, the other end of the shackle being connected by a flexible connection such as a chain *l* to one end of a lever arm *m* the other end of which is pivoted in the frame *c d*. Intermediate of its length this lever *m* is pivoted to a forked link *n* which carries a loop of strip metal forming a band brake *o*. This loop may be lined with wearing material if desired, in the ordinary manner of band brakes.

Upon the spindle *e* is keyed or otherwise mounted a drum or pulley *p* on which may be wound a wire rope *p'* and by the side of the pulley *p* is a drum *q* around which is passed the band brake *o*. The arrangement is such that when the weight of the load represented at *x*, see Fig. 2, tensions the connection or chain *l* the lever *m* is raised thereby lifting the lever *n* and the band brake is consequently applied to and tightened about the drum; the braking action imparted to the drum *q* spindle *e* and rope-pulley *p* is directly proportionate to the load. In Figs. 3 and 4, a second rope-pulley *r* is illustrated which is mounted on the spindle *e* and the brake drum *q* is shown arranged between the two pulleys. A rope is provided on each pulley and these ropes are wound in opposite directions so that, the spindle *e* being revolved in the same direction, as one rope is wound up the other is unwound. In this case a second pulley *g'* is provided at the end of the jib. More than two pulleys or winches *p r* may be used if desired, a corresponding guide pulley at the end of the jib being provided for each. A third pulley *s* is shown pivoted upon the underside of the jib; this pulley serves to store one of the ropes when the apparatus is closed up and out of use and the rope from this pulley *s* is not connected to the pulley *r* until the rope *p'* has been fully wound on its pulley *p*. Then the rear end of the second rope is secured to its pulley *r* and that rope is wound on pulley *r* as the rope *p'* on pulley *p* is unwound. Thus while the apparatus remains in use one rope may always be wound up as the other is unwound.

If desired, I may of course gear the spindle *e* to the pulleys *p r* and drum *q* so that one revolution of these pulleys will occur to more than one revolution of the spindle *e*; such arrangements in cranes and hoisting tackle are well known and a suitable form is shown

in Fig. 6, the pinion *t* mounted on the spindle *e* meshing with a larger pinion *u* formed with or secured to one of the pulleys *p r*.

I also provide means whereby when desired, as for instance in using a single rope to raise goods, the automatic braking action of the band brake may be avoided. Thus I have shown in Fig. 5 a lever *v* which when operated in the manner indicated will remove the tension from the link *n* and cause the brake drum to be freed from the brake. Other equivalent devices might be employed for releasing the brake, as for instance by removing the tension from the connection *l*. The ends of the ropes are provided with hooks, slings or other suitable devices dependent upon the particular purpose or purposes for which the apparatus is designed or used. Thus the improved crane can be used for raising and lowering goods from windows, for use with brewers' drays, launching lifeboats and similar purposes. The device may also be used as a fire-escape in which case the sling or a basket, carriage or the like is utilized. I have shown a suitable form of sling *w* in Fig. 4 of the drawings. The eye of the sling may be provided with a guide line so that instead of falling vertically the rope may be drawn out away from the vertical, and this line may be passed around a pulley fixed to the ground or other similar support.

The support shown in Figs. 3 and 4 is more particularly suited for use where no uprights are available for the socket frame, or for use where a balcony intervenes between the window and the ground.

When not in use the jib may be folded up against the frame, this being possible by reason of the operative connection between the jib end and the pivoted lever *m* being made flexible.

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

1. An apparatus of the character described, comprising a jib, a frame to which said jib is pivoted so that it may swing in a vertical plane, a flexible connection between the free end of said jib and the frame, a rotatable member mounted in said frame, a rope passing from said member over the end of said jib and adapted to support a weight, and a brake connected to a part of the said flexible connection and adapted to automatically brake said pulley by said weight.

2. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted, a connection between the free end of said jib and said frame, a rotatable member revoluble in said frame, a rope passing from said member extending along said jib and adapted to carry a load, a brake for said rotatable member, means connected to and operated by said connection for applying

said brake to said member, said means operated by the weight of the load, and means for freeing said rotatable member from the action of the brake.

3. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted at bottom, a connection between the free end of said jib and said frame, a rotatable member on said frame, a rope passing from said member over the end of said jib and supporting a load from said jib, means connected to and operated by said connection for braking said member against rotation, and means for applying said brake operated through the connection between said jib and said frame.

4. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted at bottom, a flexible connection between the free end of said jib and said frame, a rotatable member carried by said frame, a rope adapted to be wound upon said member and passing over the end of said jib, the free end of said rope capable of supporting a load, means connected to and operated by said connection for imparting a braking action to said rotatable member, said means operated by the weight of the load and said braking action being proportionate to the weight of the load.

5. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted at bottom, a flexible connection between the free end of said jib and said frame, a rotatable member carried by said frame, a rope adapted to be wound upon said member and passing over the end of said jib, the free end of said rope capable of supporting a load, means connected to and operated by said connection for imparting a braking action to said rotatable member, said means operated by the weight of the load, and means for freeing said rotatable member from the braking action.

6. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted at bottom, a flexible connection between the free end of said jib and said frame, a rotatable member carried by said frame, a rope adapted to be wound upon said member and passing over the end of said jib, the free end of said rope capable of supporting a load, means connected to and operated by said connection for imparting a braking action to said rotatable member, said means operated by the weight of the load, said frame being mounted in a support so as to allow said frame and jib to be swung around.

7. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted at bottom, a flexible connection between the free end of said jib and said frame, said connection including a pivoted lever arm, a spindle carried in said frame, a pulley mounted on said spindle, a rope wound on

said pulley and passing over the end of said jib, a brake to hold said pulley against rotation, and means connected with said lever arm for operating said brake, said means being actuated by the weight of a load carried by said rope.

8. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted at bottom, a flexible connection between the free end of said jib and said frame, a spindle carried in said frame, a pulley mounted on said spindle, a rope wound on said pulley and passing over the end of said jib, a brake to hold said pulley against rotation, means attached to said connection intermediate of its length for operating said brake, said means being actuated by the weight of a load carried by said rope, and means for removing such braking action from the pulley.

9. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted, a connection between the end of said jib and said frame, said connection including a pivotally mounted lever, a spindle carried by said frame, a rotatable member mounted on said spindle, means for winding on said member a plurality of ropes, said ropes being wound in opposite directions and passing over the free end of said jib to support loads thereby suspended from said jib, and means connecting with the lever arm at one side of the pivot for applying a braking action to said rotatable member, said means operated by the weight suspended from the free end of the jib.

10. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted, a connection between the end of said jib and said frame, a spindle carried by said frame, a rotatable member mounted on said spindle, means for winding on said member a plurality of ropes, said ropes being wound in opposite directions and passing over the free end of said jib to support loads thereby suspended from said jib, a brake capable of being applied to said rotatable member, said brake being attached to said connection at a point between opposite ends thereof, and means for actuating said brake, said means being operated through the aforesaid connection by the weight of the load suspended from said jib.

11. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted, a connection between the end of said jib and said frame, a spindle carried by said frame, a rotatable member mounted on said spindle, means for winding on said member a plurality of ropes, said ropes being wound in opposite directions and passing over the free end of said jib to support loads thereby suspended from said jib, a brake capable of being applied to said rotatable member, and means for actuating said

brake, said means being attached to said flexible connection at a point between the opposite ends thereof and being operated through the aforesaid connection by the weight of the load suspended from said jib, and a device for removing the action of the weight-operated connection from the brake-actuating means.

12. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted, a connection between the end of said jib and said frame, a spindle carried by said frame, a rotatable member mounted on said spindle, means for winding on said member a plurality of ropes, said ropes being wound in opposite directions and passing over the free end of said jib to support loads thereby suspended from said jib, and means for applying a braking action to said rotatable member, said means being attached to the flexible connection at a point between opposite ends thereof and being operated by the weight suspended from the free end of the jib, said frame being mounted in a support by means of vertical pivots whereby said jib may be swung around horizontally.

13. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted, a lever pivoted at one end to said frame, a flexible connection between the other end of said lever and the free end of said jib, a rotatable member mounted on said frame, a rope adapted to be wound on said member, said rope passing over the end of said jib and capable of supporting a load thereby suspended from the jib, said jib and load adapted to tension said flexible connection, a brake applicable to said rotatable member, said brake operated and applied to said member by the tensioning of the flexible connection.

14. An apparatus of the class described, comprising a jib, a frame to which said jib is pivoted at its lower end, a spindle mounted on said frame, a rotatable member carried by said spindle, means for revolving said spindle and member, a connection between the free end of said jib and said frame, a brake arranged adjacent to the rotatable member, means connecting with the flexible connection at a point between opposite ends thereof, for applying said brake to said member, a rope from said member passing over the end of said jib, a pulley mounted upon the underside of said jib, a second rope adapted to be wound on said pulley and to be transferred therefrom to said rotatable member, said ropes being wound on said member in opposite directions, said ropes adapted each to carry a load, and said operative means for the brake being actuated by the rope-carried load.

15. In an apparatus of the character described, a frame, a jib pivoted at bottom to said frame, a support, pivotal bearings be-

tween said frame and said support, so that said frame can revolve in said support and swing the jib around horizontally, a transverse rotatable member carried by said frame, means for rotating said member, a brake drum secured to said member, a band-brake encircling said brake drum, a link carrying said band brake, a lever pivoted at one end to the frame and carrying said link intermediate of its length, a flexible connection between the other end of said lever and the top of said jib, a rope adapted to be wound on said rotatable member, said rope passing over the top of said jib and capable of carrying a load thereby suspended from said jib, the weight of said load tensioning said flexible connection and applying the brake to the brake drum.

16. In an apparatus of the character described, a frame, a jib pivoted at bottom to said frame, a support, pivotal bearings between said frame and said support, so that said frame can revolve in said support and swing the jib around horizontally, a transverse rotatable member carried by said frame, means for rotating said member, a brake drum secured to said member, a band-brake encircling said brake drum, a link carrying said band brake, a lever pivoted at one end to the frame and carrying said link intermediate of its length, a flexible connection between the other end of said lever and the top of said jib, ropes adapted to be wound on said rotatable member in opposite directions,

said ropes passing over the free end of the jib and carrying suspended weights, said weights acting on the jib to tension the connection and apply the brake to the brake drum.

17. In an apparatus of the character described, a frame, a jib pivoted at bottom to said frame, a support, pivotal bearings between said frame and said support, so that said frame can revolve in said support and swing the jib around horizontally, a transverse rotatable member carried by said frame, means for rotating said member, a brake drum secured to said member, a band-brake encircling said brake drum, a link carrying said band brake, a lever pivoted at one end to the frame and carrying said link intermediate of its length, a flexible connection between the other end of said lever and the top of said jib, a rope adapted to be wound on said rotatable member, said rope passing over the top of said jib and capable of carrying a load thereby suspended from said jib, the weight of said load tensioning said flexible connection and applying the brake to the brake drum, and a bell-crank lever pivoted to the frame and adapted when actuated to hold said link against the operative action of the tensioned flexible connection.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ISAAC FRANCIS TAYLOR.

Witnesses:

VICTOR F. FEENY,
CYRIL J. FEENY.