

(No Model.)

2 Sheets—Sheet 1.

H. STEIMANN.
FIRE ESCAPE.

No. 580,961.

Patented Apr. 20, 1897.

Fig. 1.

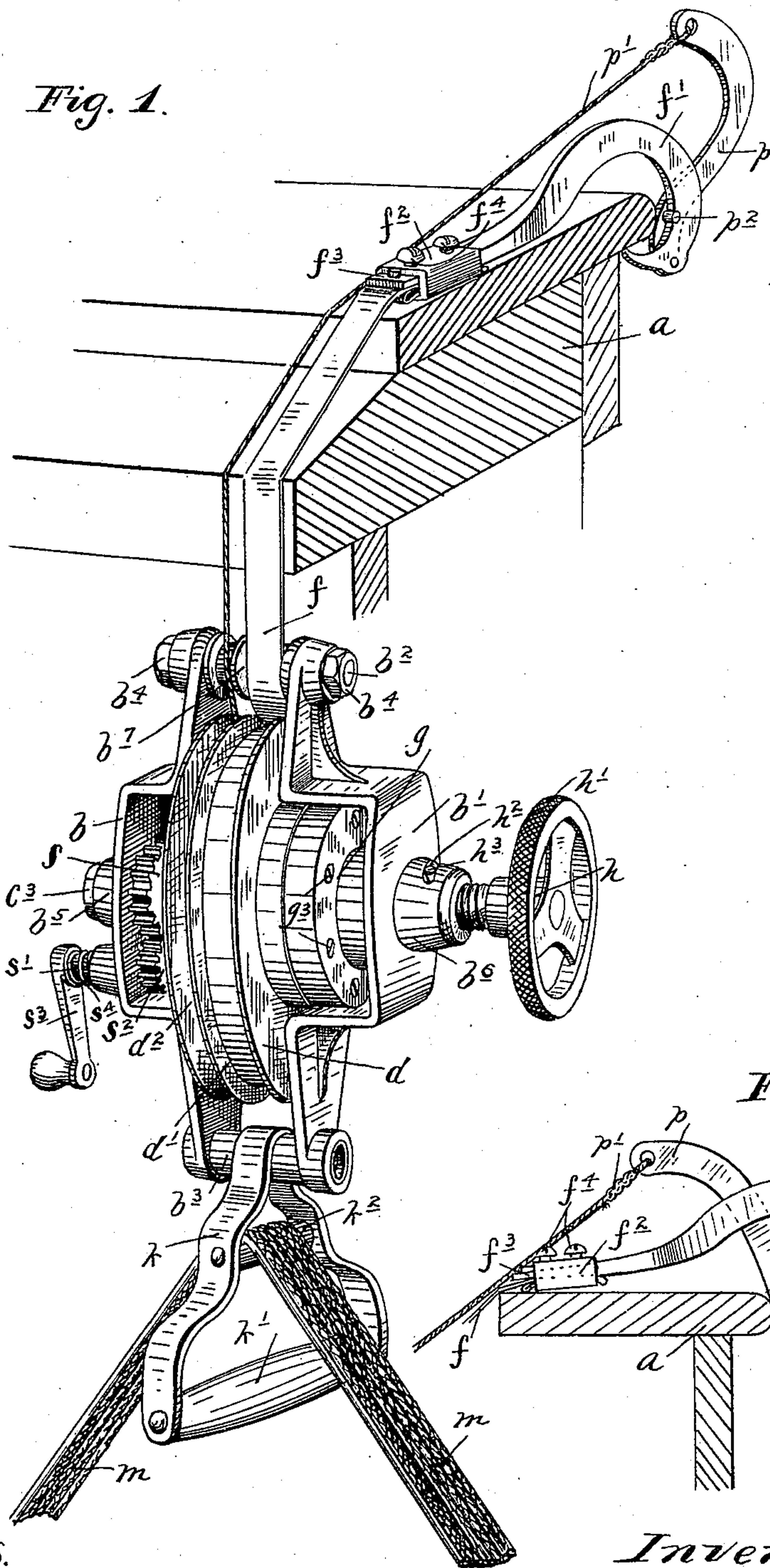
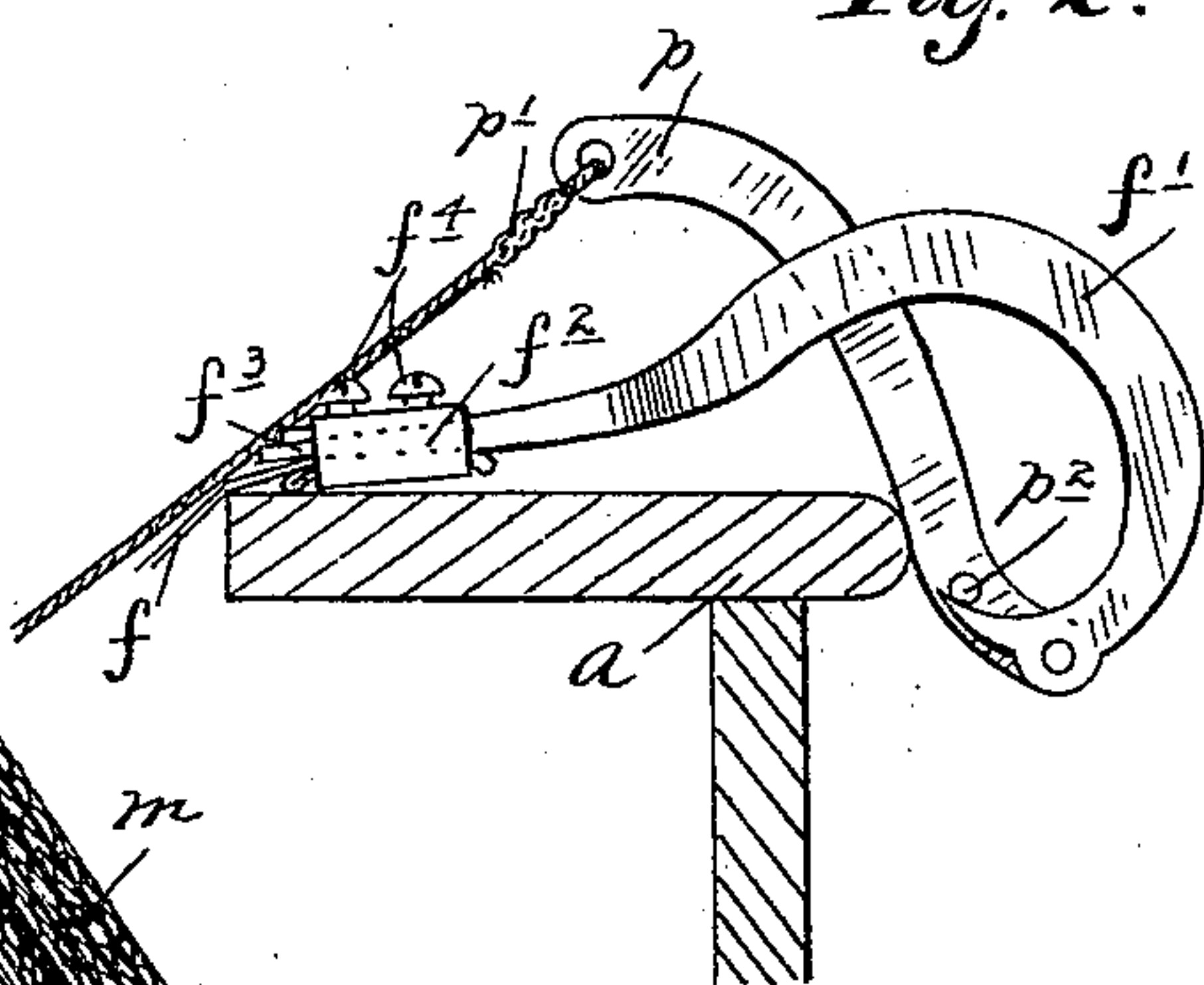


Fig. 2.



Witnesses.

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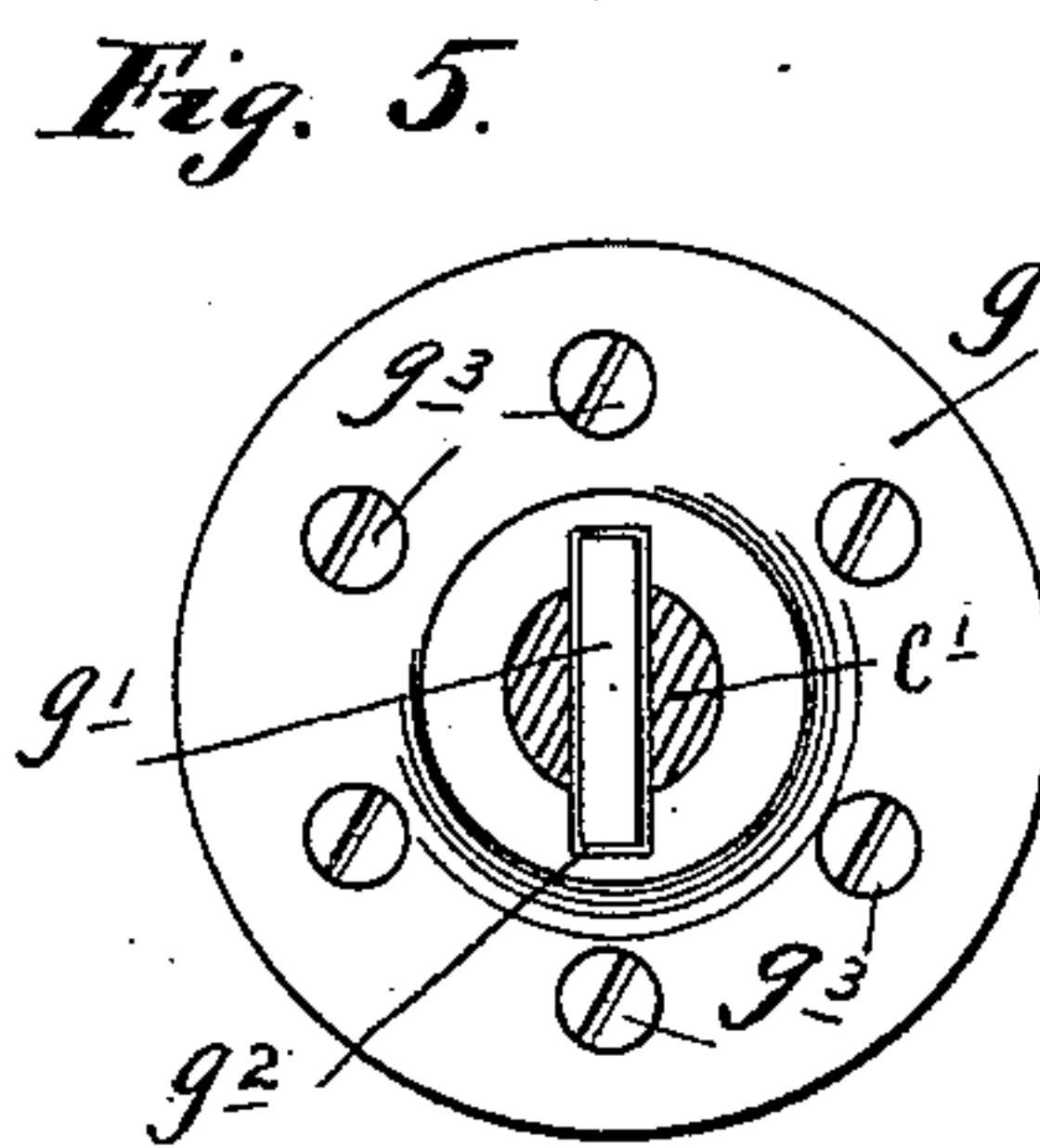
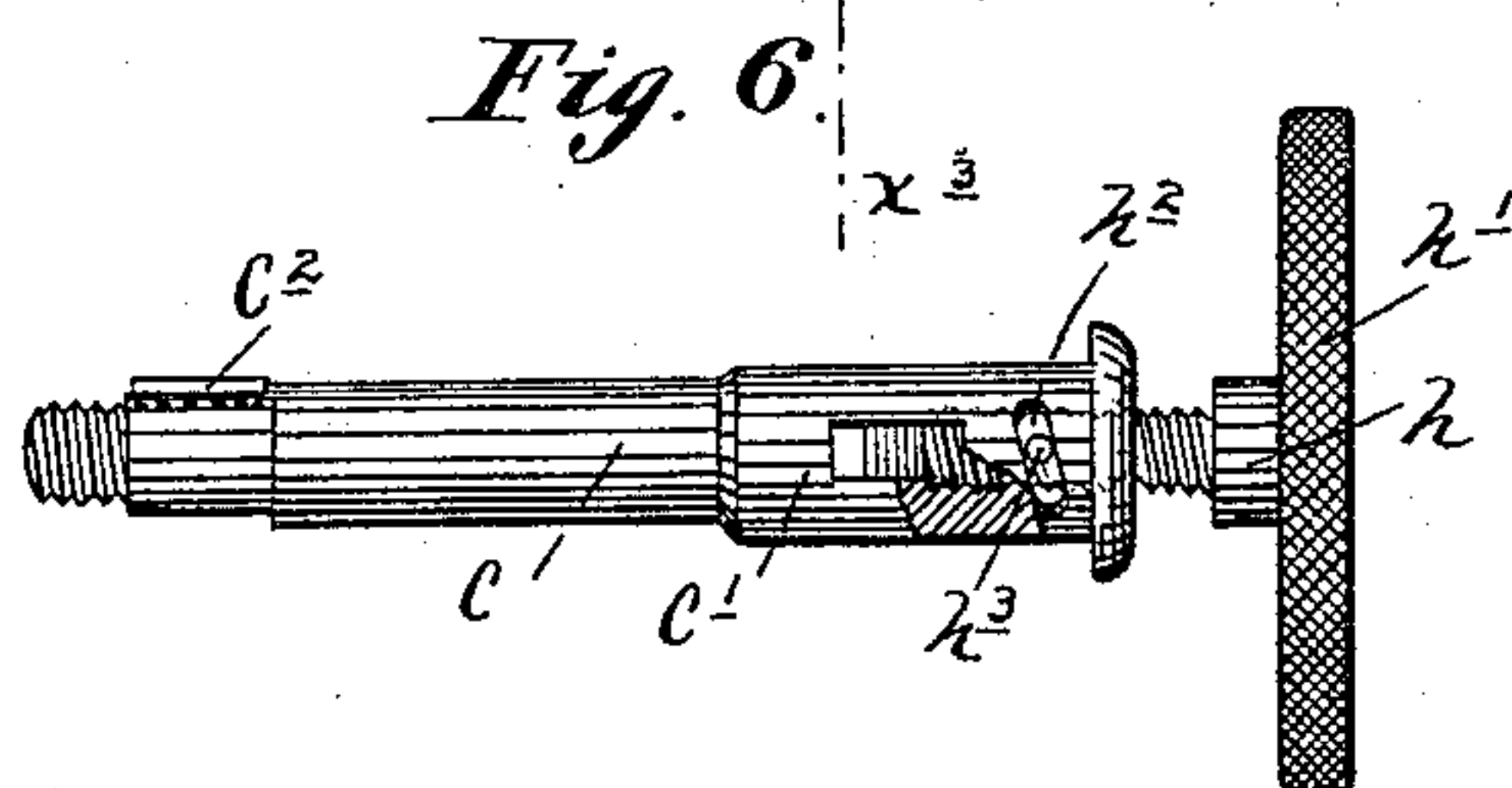
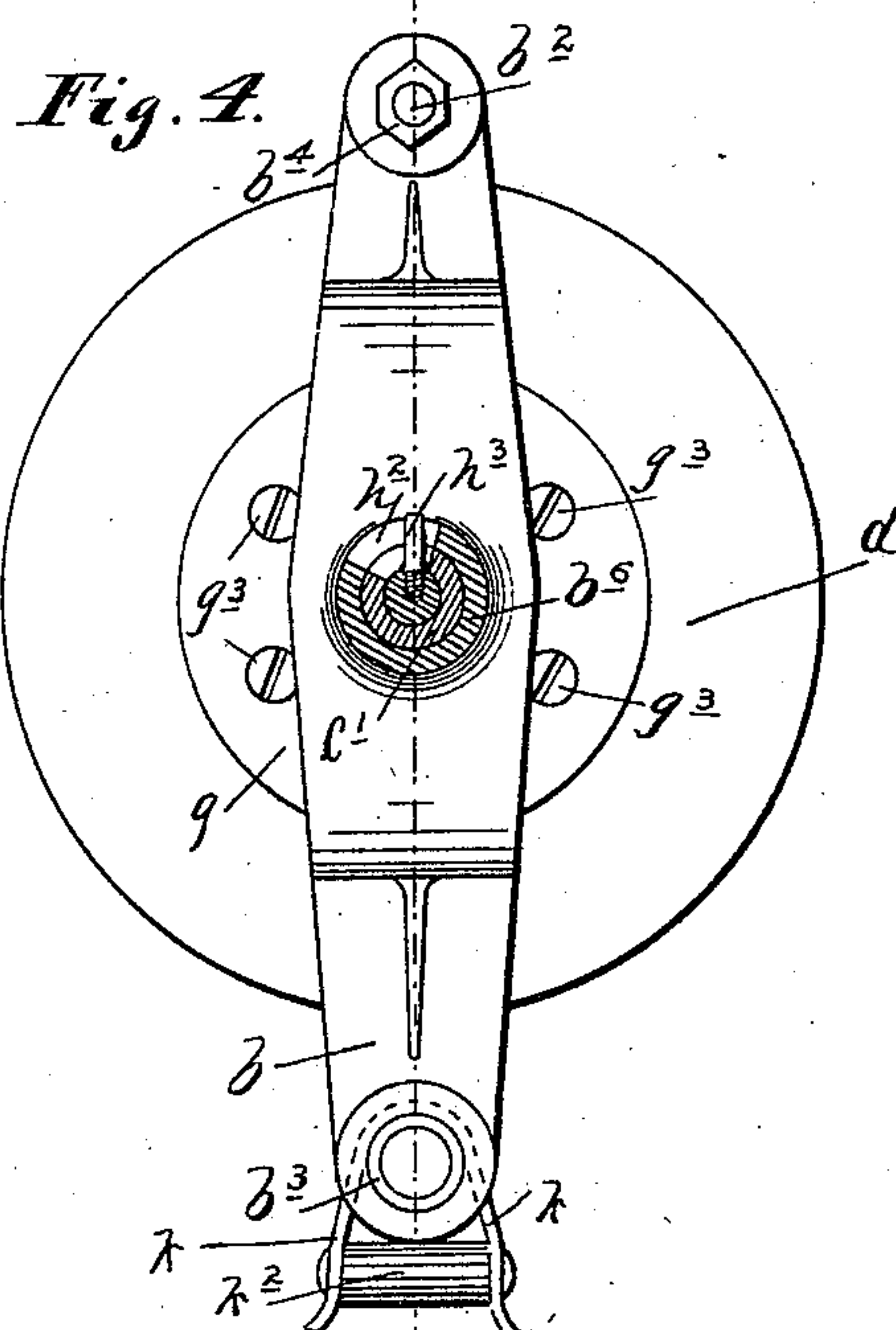
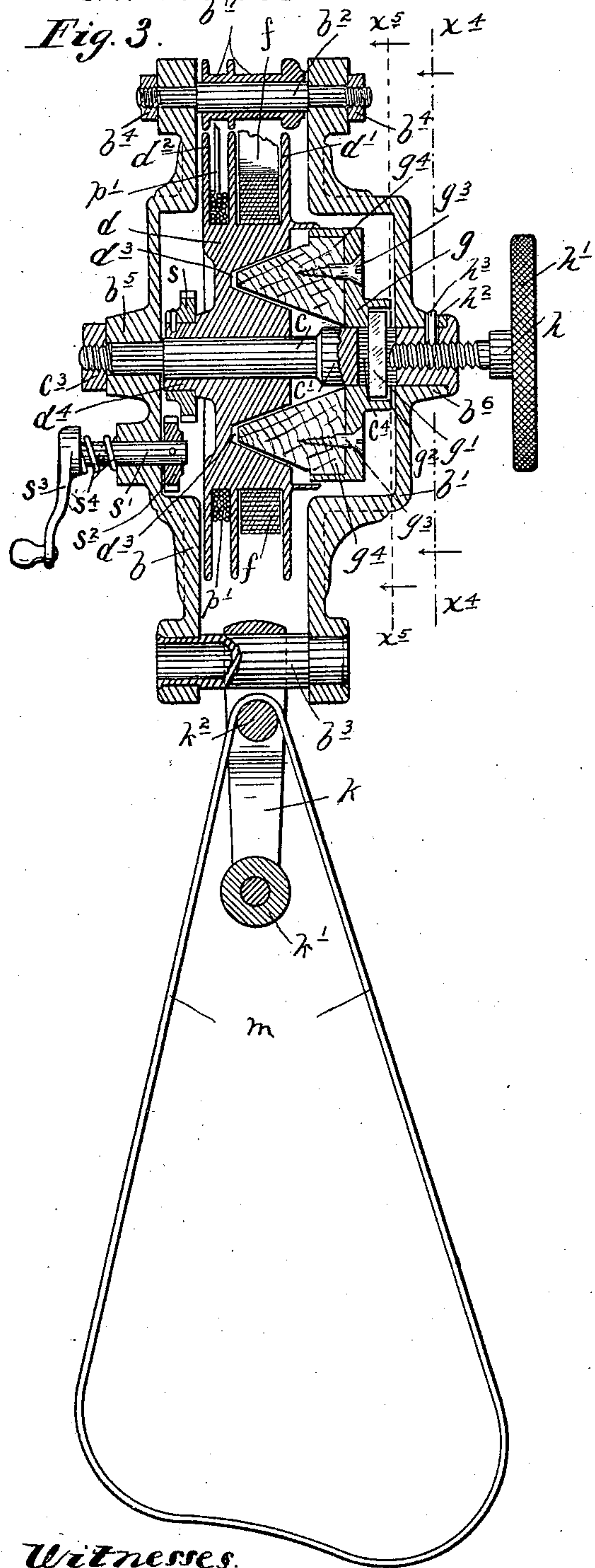
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2 Sheets—Sheet 2.

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FIRE ESCAPE.

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Witnesses.

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Inventor.

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UNITED STATES PATENT OFFICE.

HENRY STEIMANN, OF MINNEAPOLIS, MINNESOTA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 580,961, dated April 20, 1897.

Application filed May 22, 1896. Serial No. 592,576. (No model.)

To all whom it may concern:

Be it known that I, HENRY STEIMANN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved fire-escape.

To this end my invention comprises the novel devices and combinations of devices hereinafter described, and defined in the claims.

In my invention I employ a bracket or head-piece, a reel or windlass mounted on said bracket, a friction device for limiting the speed of the unwinding movement of said reel, and a cable wound on said reel and provided at its free end with a hook or grapple adapted for application to a window-sill or other suitable portion of the building from which a person wishes to descend.

The friction device for controlling the unwinding movement of the reel is preferably in the form of a sliding friction-clutch, which is operated by the hand-controlled clamp, and the reel-cable above referred to is preferably in the form of a metallic tape or spring-steel ribbon.

The device which is to hold the person is secured to the bracket or head-piece and may take various forms, but is preferably in the form of a body-loop or body-strap.

The hook or grapple at the free end of the cable or tape is preferably provided with a tripping or releasing lever, which has a flexible connection adapted to be extended to the ground and by means of which said trip-lever may be actuated to release said hook or grapple from its hold on the support to which it has been attached. This releasing device above described is a valuable adjunct to the fire-escape in that it enables the same to be readily removed from the building after it has done its work, and thus to save the same from destruction with the burning building. In the preferred form of my fire-escape the cable or flexible connection from the trip-lever is also wound in a sheave portion, which is

either formed on or secured with the main reel or windlass above described. In this case, however, the trip-lever cable is given a sufficient amount of slack, so that when the main or supporting cable or tape is drawn taut by the weight of the person descending the trip-lever will not be rendered operative.

My invention also comprises other novel features of construction which will also be hereinafter described, and defined in the claims.

The preferred form of my invention is illustrated in the accompanying drawings, wherein, like letters referring to like parts throughout the several views—

Figure 1 is a view in perspective with some parts broken away, showing my improved fire-escape in working position. Fig. 2 is a view, partly in section, with some parts broken away, showing the hook at the free end of the main or supporting cable and the trip-lever for releasing the same, said parts being shown as just released from the window-sill. Fig. 3 is a vertical central section taken substantially on the line $X^3 X^3$ of Fig. 4. Fig. 4 is a vertical transverse section taken on the line $X^4 X^4$ of Fig. 3, some parts being broken away. Fig. 5 is a transverse vertical section taken through a portion of the device substantially on the line $X^5 X^5$ of Fig. 3; and Fig. 6 is a plan view, with some parts broken away, showing the spindle on which the reel and frictional clutch are mounted, together with a handpiece by means of which the friction-clutch is controlled.

a indicates the sill of the window of a building to which the fire-escape is applied and from which the same is suspended.

As shown, the bracket or head-piece is formed by a pair of side pieces b and b' , which are rigidly connected at their ends by means of a pair of tie-bolts $b^2 b^3$. As shown, the upper tie-bolt b^2 is held in place by suitable nuts b^4 , while the lower bolt b^3 , which, by the way, is shown as hollow and of considerably greater diameter than the bolt b^2 , is secured in place by having its ends riveted.

In suitable seats formed in the central hub portions $b^5 b^6$ of the side pieces b and b' is rigidly secured a spindle $c c'$. At one end the spindle $c c'$ is provided with a head which bears against the outer face of the hub b^6 , and at its other end is provided with a key c^2 ,

which fits a suitable seat in the hub b^5 and prevents the spindle from turning, while at its extreme outer portion the spindle is screw-threaded and provided with a nut c^3 .

5 As shown, the reel or windlass d is provided with two peripheral channels or sheave portions d' and d^2 , adapted to receive, respectively, the main or suspending cable or tape and the trip-lever cable or connection. This
10 reel d is loosely mounted on the reduced portion c of the spindle $c c'$ and is provided on its right face with a V-shaped annular groove d^3 and on its left face with a hub d^4 , which bears against the inner face of the side piece b when
15 pressed by the friction-clutch.

f indicates the main or supporting cable in the form of a steel tape, which is adapted to be wound in the groove or sheave portion d' of the reel d . One end of this tape f is secured
20 to the reel d by some suitable means, (not shown,) and to the free end of the same is secured a hook or grapple f' . As shown, the stem end of this hook f' is provided with a socket f^2 , into which the free end of the tape
25 f , together with the clamping-plate f^3 , is inserted, and the parts are thus held together by means of clamp-screws f^4 , which work through said socket f^2 and impinge on said plate f^3 .

30 Referring now to the friction-clutch device, g indicates a sliding cap or plate, the hub of which is mounted on the portion c' of the fixed spindle $c c'$. This cap or plate g is thus mounted for sliding, but fixed against rotary motion
35 on the spindle-section c' by means of a key g' , which is passed diametrically through the longitudinally-elongated slot c^4 in said spindle-section c' and engages suitable seats g^2 in the hub of said cap g with its extended ends. Se-
40 cured to the inner face of this sliding cap g , by means of screws g^3 , is an annular facing g^4 , of wood, which in cross-section is V-shaped, corresponding to and adapted for engagement with the V-shaped groove d^3 in the face of the
45 reel d .

The frictional action of the friction-clutch just described is controlled by means of a screw h , which works through the end of the shaft-section c' centrally thereof and is adapted
50 to impinge on the central portion of the key g' . The outer end of this screw h is provided with a knurled head h' , adapted to be gripped by the operator's hand. It will thus be seen that by screwing in on the screw-rod
55 h the friction-clutch may be forced inward, so that the annular facing g^4 will frictionally engage the groove d^3 in the reel d , and that the intensity of this frictional engagement may thereby be varied at will, so as to vary the
60 speed at which the rider will descend.

The threaded portion of the spindle-section c' and the adjacent portion of the bracket-hub b^6 are provided with coincident slots h^2 , which extend on a line corresponding to the
65 thread of the screw-bolt h , and said screw-bolt h is provided with a radially-projecting pin h^3 , which works in said coincident slots.

These coincident slots h^2 have such length, that, in coöperation with the pin h^3 , they will permit the screw h to be turned inward to
70 such an extent that the friction-clutch will be forced against the reel with a strong enough friction to stop the movement of the reel when the person is descending on the device, but will serve as a stop to prevent said screw
75 h from being turned outward sufficiently to permit the friction of the friction-clutch on the reel from being entirely relieved. This latter feature is, as will later more clearly
80 appear, very important, as it serves to prevent the too-rapid descent of the person using the fire-escape.

On the lower tie-bolt b^3 of the bracket or head-block is mounted a yoke k , which, as shown, is provided with a handpiece k' and
85 an intermediate cross-piece k^2 , over which is passed a body-strap m .

The tripping or releasing device shown comprises a tripping or releasing lever p , pivoted at one end to the hook f' at a point a
90 short distance inward of the point of said hook and a light cable or flexible connection p' , attached to the free end of said trip-lever p . The lower end of the cable or connection
95 p' is secured by some suitable means (not shown) to the reel d and is wound in the groove or sheave portion d^2 of said reel. It will be noted that both of the cables f and p' are, when the device is in working position, adapted to engage and run over the double-
100 grooved antifriction-sleeve b^7 , loosely journaled on the upper bracket tie-rod b^2 . It will also be noted that the tripping or releasing lever p is provided with stop-pin p^2 , which is adapted to engage the hook f' , and thereby
105 to limit the movement of said lever in both directions. It will also be noted, by reference to Fig. 2, that when the tripping-lever is moved into its tripping or releasing position the point of the hook f' will be with-
110 drawn from the support to which it is attached and rendered inoperative by said lever.

On the hub d^4 of the windlass d is rigidly secured a small spur-gear s . In the bracket-piece b , just below the hub b^5 , is mounted,
115 with freedom for both endwise and rotary movements, a short shaft s' , provided on its inner end with a spur-pinion s^2 and on its outer end with a crank-lever s^3 . The pinion s^2 is adapted, when moved inward, to engage
120 the gear s on the reel-hub d^4 , but is normally held out of engagement therewith by means of a spring s^4 , coiled on the shaft s' between the crank-arm s^3 and the plate b .

After the fire-escape has been used and the
125 cables f and p' unwound from the reel the cables may be again rewound by the device just described simply by pressing inward on the crank-arm s^3 , so as to engage the gears s and s^2 and then turning said crank. In or-
130 der to permit the rewinding of the cables, as just described, some provision must of course be made for relieving the friction of the clutch on the reel during the time of rewinding.

This might of course be accomplished by making stop-pin h^3 in the screw-rod h removable, so that the screw h may be turned outward to an extreme position, and thereby permit the complete disengagement of the friction-clutch from the reel.

It must be obvious from the foregoing description that my improved fire-escape may be quickly and securely applied to almost any sort of a structure from which a person desires to descend—as, for instance, to the sill of a burning building. The person desiring to descend can slip the body-strap m around his body just below the arms. By gripping the handpiece k' with one hand he may steady himself and prevent his body from swinging, while by gripping the knurled head h' of the screw-rod h with the other hand he may vary the speed at which he will descend or may bring the device to a standstill at will.

As already described, the hook or grapple f' may be released from its hold after a person or persons have descended to the ground by means of the tripping or releasing device.

It will be understood, of course, that while I have described the above device as especially adapted for a fire-escape the same might be used wherever persons may desire to descend from an elevation.

It will also be understood that various alterations in the details of construction above described may be made without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a fire-escape or similar device, the combination with a bracket or head-piece movable with the person, of a reel or windlass mounted on said bracket, a cable wound on said reel, a friction-clutch working against the face of said reel, a hand-operated screw working against said friction-clutch, and a stop device which permits a limited rotary movement of said screw, but prevents the same from being released to such an extent that the friction of said clutch on said windlass will be entirely removed, substantially as described.

2. In a fire-escape or similar device, the combination with a bracket or head-piece movable with the person, of a reel or windlass mounted on said bracket, a cable wound on said reel, and a friction-clutch device involving a friction-head working against said

reel, the hand-screw h working against said friction-head, and the stop-pin h^3 carried by said screw h and working in the slot h^2 , substantially as described.

3. In a fire-escape or similar device, the combination with a bracket or head-piece movable with the person, of a reel or windlass mounted on said bracket and provided with a pair of peripheral grooves or sheave-surfaces, a main or supporting cable wound in one of said sheave-surfaces and provided with a hook at its free end, a tripping or releasing lever pivoted to said hook, a flexible connection from said trip-lever, wound in the other of said sheave-surfaces, and a friction device for controlling the speed of the unwinding movement of said reel, substantially as described.

4. In a fire-escape or similar device, the combination with a bracket or head-piece movable with the person, of a reel or windlass mounted on said bracket and provided with a pair of peripheral grooves or sheave-surfaces, a main or supporting cable wound in one of said sheave-surfaces and provided with a hook at its free end, a trip or releasing lever pivoted to said hook, a flexible connection from said trip-lever wound in the other of said sheave-surfaces, a friction device for controlling the unwinding movement of said reel, and a winding device for rewinding said cables or flexible connections on said reel, substantially as described.

5. In a fire-escape or similar device, the combination with a bracket or head-piece movable with the person, of the reel or windlass provided with the pair of sheave-surfaces and the V-shaped face-groove, the tape-like suspending cable and the light tripping-cable wound on said reel, a hook at the free end of said suspending-cable, a tripping-lever pivoted to said hook and attached to the free end of said tripping-cable, the clutch provided with a wooden annular facing working in the face-groove of said reel, the hand-operated screw-rod for setting said clutch, the body-strap carried by said bracket, and the rewinding device for rewinding said cable on said reel, substantially as described.

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

HENRY STEIMANN.

Witnesses:

JAS. F. WILLIAMSON,
F. D. MERCHANT.