

No. 719,081.

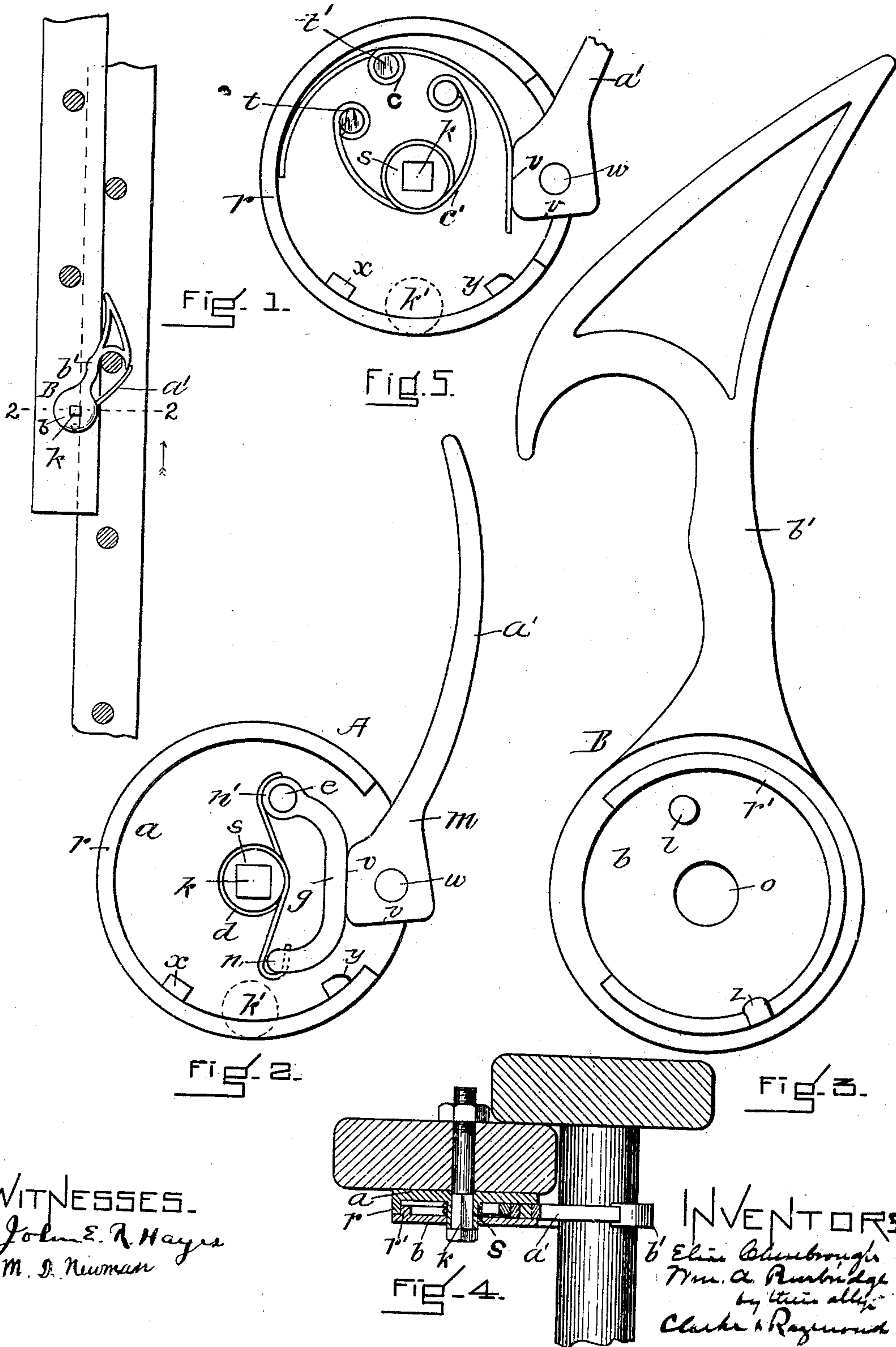
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EXTENSION LADDER HOOK.

APPLICATION FILED AUG. 7, 1901.

NO MODEL.



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EXTENSION-LADDER HOOK.

SPECIFICATION forming part of Letters Patent No. 719,081, dated January 27, 1903.

Application filed August 7, 1901. Serial No. 71,125. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. BURBRIDGE and ELIAS CHESEBROUGH, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Extension-Ladder Hooks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to an improvement in the construction of an adjustable hook for extension-ladders where one length or section is raised above or slides along the other while the hook attached to the bars of the sliding ladder engages or disengages with the rounds of the stationary ladder, thus connecting or disconnecting the two, as occasion requires.

The object of the invention is to produce an economical hook combining strength, durability, and compactness with attendant simplicity, ease of application, and practicability of adjustment, characteristics most essential to the making of a successful ladder-hook yet but rarely found combined. These characteristics are mainly attained by the predominating feature of my invention, which consists of a hook cast integral with the outer shell of the casing containing the means for adjustment and so hung upon the same that it can be bolted directly to the ladder side, and yet be capable of free rotation about a circular edge forming the rim to the casing. This rim is integrally joined to the inside plate to the casting from which it gets its fixedness, inasmuch as this inside plate is bolted fixedly to the ladder side and by the same bolt which passes through the outer plate on which is hung the hook, but so bolted as to leave the outer plate and hook free to rotate as described. By this construction we are enabled to make a very strong hook having the additional advantage of direct attachment to the ladder. Simplicity and resultant durability come from the hook being so combined with the casing that many of the elements which go to make up the ordinary ladder are eliminated. This feature alone is of the utmost importance in a hook of this

nature, for any unnecessary multiplication of parts is attended only with looseness and breakage. This simplicity is noticeably shown in the casing, for instead of a hook with the attendant fastenings hung between two plates, with their attendant fastenings together with that which attaches the whole to the ladder side, we have the simple combination of but two plates joined together and to the ladder side by a single bolt. Besides this, the case made as it is affords the best possible protection to the adjusting parts, at the same time permitting a ready access should occasion require; but this, together with other superior features in construction and combination of parts, can be more clearly seen and understood by a special reference to the drawings, in which—

Figure 1 represents a vertical sectional view of two ladders, showing the completed hook in the act of supporting one ladder by engaging with the rounds of the other. Fig. 2 is a view of the inside of the casing looking to that side which is firmly attached to the side of the ladder, also a view of the adjusting apparatus. Fig. 3 is an inside view looking to that part of the casing which rotates and upon which is hung the hook. Fig. 4 is a cross-sectional view along the line 2 2 in Fig. 1. Fig. 5 shows a variation in the method of adjustment.

Referring to the drawings as represented, the adjustable hook consists mainly of the two parts which go to make up the circular box or casing inclosing the adjusting mechanism. The one part which we may designate A is seen in Fig. 2 and is the inside plate of the casing firmly held to the side of the ladder by the bolt *k* passing through the center of the same and against any possibility of rotation by a stud entering the side of the ladder from the plate at the point *k'*. This part A consists mainly of the back plate *a*, the circular plate *r*, cast integral therewith and constituting the side or rim to the casing, and the part *s*, also integrally joined to the back *a* and forming a jacket or thimble through which the bolt *k* passes, the function of which will be described later.

The part B is shown in Fig. 3, and consists

not only of the outside shell *b* to the casing, made slightly concave on its inside surface, but also of the hook *b'*, integrally attached to the side plate *b*. Part B is fixed to the side of the ladder by the same bolt *k* which passes through A, but is so affixed that B is capable of free rotation about A. This is accomplished by means of the cubular thimble or jacket *s*, forming a part of A, as described, coming through the aperture *o* in the side *b*, so that its end is even with the outside surface of B after B is placed upon A in position for rotation. The bolt *k* is then thrust through the thimble *s*, so that its head comes up flush against the end of the thimble *s*, and so even with the surface *b*. This head of course is slightly larger in diameter than the opening *o*, and so prevents the side *b* from slipping off. By this arrangement the hook has not only a free frictionless rotation, but also the advantage of being bolted directly to the ladder side, thus insuring a maximum amount of strength as well as simplicity in operation. Rotation is assisted by the rim *r* fitting about the guard *r'*, which rises from the side *b*. This fixed rim *r*, acting as it does in conjunction with the guard *r'*, not only gives a tightness and compactness to the whole casing, but also gives support to the hook itself by distributing along its inner edge the supporting strain which would otherwise come upon the hook at the point *o* where it encircles the thimble *s*, thus giving the hook comparative freedom of rotation at this point.

As a means for adjusting the hook so that it may rotate back to its original position after interfering with the rounds of the ladder or into the position shown in Fig. 1 we have the adjusting-spring *d* set on the thimble or jacket *s*. (See Fig. 2.) This spring acts in conjunction with the dog *g*, which at one end is hung by the opening *e* upon the lug *l*, which is attached to the inside of casing B. The other end of the dog *g* is attached to the spring *s* at the point *n*, while the other end of the spring *s* at the point *n'* bears with forward tension against the dog *g*. By this adjustment the natural result would be to throw the hook forward—that is, of course, after part B was placed upon A in position for rotation, the lug *l* passing down through the opening *e*; but this forward rotation is prevented by the lug *z* on the inside of B alongside the guard *r'* coming in contact with the lug *x*, inserted just inside the rim *r*, thus limiting the forward rotation of the hook and holding it as in its natural position in Fig. 1 ready to attach itself to or avoid the rounds of the ladder. Now as the hook moves up and down, coming in contact with the rounds of the ladder, it is thrown backward, so that tension is brought to bear upon this spring *d*, and it also is turned back; but when the hook has cleared the round of the ladder the spring then springs back, rotating the hook to its original position. Excessive backward rotation is prevented by

the lug *z* coming in contact with the lug *y*, so that the rotation of the hook is limited to the arc prescribed by the arc *z* between the limiting-lugs *x* and *y*—in other words, just enough to allow the hook to easily clear the rounds of the ladder as it moves along.

The latch *a'* is attached to part A of the casing at the point *w*, performing a function similar to latches in other hooks of this kind. Its superior and differentiating feature consists in the angular nature of its base, which forms two surfaces *v v*. These surfaces bear up against the dog *g* and are held by the same spring which rotates the hook relatively in but two positions, corresponding with the two positions which the latch should assume to insure a ready manipulation. The latch also by reason of its construction and placement aids to a greater or less degree in the adjustment and manipulation of the hook.

In Fig. 5 we have shown a variation in the means of adjustment employing two springs instead of one, as in Fig. 4. Spring *c'* is joined to the lug *t*, attached to the inside of casing A. It is then twisted about the thimble of jacket *s* and attached at its other end to the lug *l*. (See Fig. 3.) The latch is controlled by spring *c*, joined to lug *t'*, one end of which rests against the rim *r*, the other offering a yielding support to the latch *a'*, with whose surfaces *v v* it comes in contact as the latch is moved in varying positions. The surfaces are necessarily made grooved in order to accommodate themselves to a spring of this nature. These springs furnish a ready adjustment; but we much prefer the combination shown in Fig. 2, where but one spring is employed, and there is shown a combination of the greatest ingenuity and whose feasibility is only exceeded by its simplicity of construction.

The circular formation of the casing is essentially a distinguishing feature of the invention, for with such formation a circular bearing is best provided for its rotary side carrying the hook. Accordingly by "circular casing" would be meant a casing providing a circular bearing by which the rotation of the side carrying the hook may be obtained.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. An extension-ladder hook consisting of a circular casing and combined hook, one side of which casing is fixed to the ladder side, the other of which carries the hook and has a rotational play relatively to the fixed side sufficient to permit of the adjustment of the hook, means for securing the said casing to the ladder side that the side of the casing carrying the hook may have such rotational play, and means for adjusting and manipulating the hook, thus made rotational, substantially as described.

2. An extension-ladder hook comprising a circular casing and combined hook, one side of which casing is fixed relatively to the

ladder side, while the other side of the casing carrying the hook turns or rotates relatively to the fixed side, means for securing the said casing to the ladder that the side of
5 said casing carrying the hook may have such rotational play, means for limiting the said rotational play of the hook, means for holding it in forward, normal placement, and a latch for pressing it back, as and for the purposes set forth.
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3. An extension-ladder hook comprising a circular casing and combined hook, one side of which casing is fixed to the ladder side, the other of which carries the hook and has
15 a rotational play relatively to the fixed side, an axial pin or bolt for supporting said hook and casing, lugs projecting from inside the casing for limiting by their interference the rotational play of the hook, means for holding
20 said hook at a normal bearing, a latch, and means for its adjustment.

4. An extension-ladder hook comprising a circular casing and combined hook, one side of which casing is fixed to the ladder side,
25 the other of which carries the hook, and has a rotational play relatively to the fixed side,

means for so combining the two sides of the casing that they will bear the supporting stress of the hook along their outer edge, an axial pin or bolt directly secured to the ladder side for supporting said casing and combined hook that the side thereof carrying the hook may have the rotational play aforesaid, lugs limiting by their interference the rotational play of the hook, a combined
30 spring *d*, dog *g*, and latch *a'* for the adjustment of the hook, and means for combining them, substantially as described.

5. An adjustable-ladder hook comprising a circular casing and a rotary hook integrally
40 connected therewith and forming direct attachment with the ladder side, means for making such attachment, a spring and latch for regulating the rotation of the hook, said latch having the angular sides *v v*, and means
45 for regulating the adjustment of the said latch substantially as described.

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