

(No Model.)

2 Sheets—Sheet 1.

M. S. LODEWICK, Dec'd.

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FIRE ESCAPE.

No. 594,259.

Patented Nov. 23, 1897.

Fig. 1.

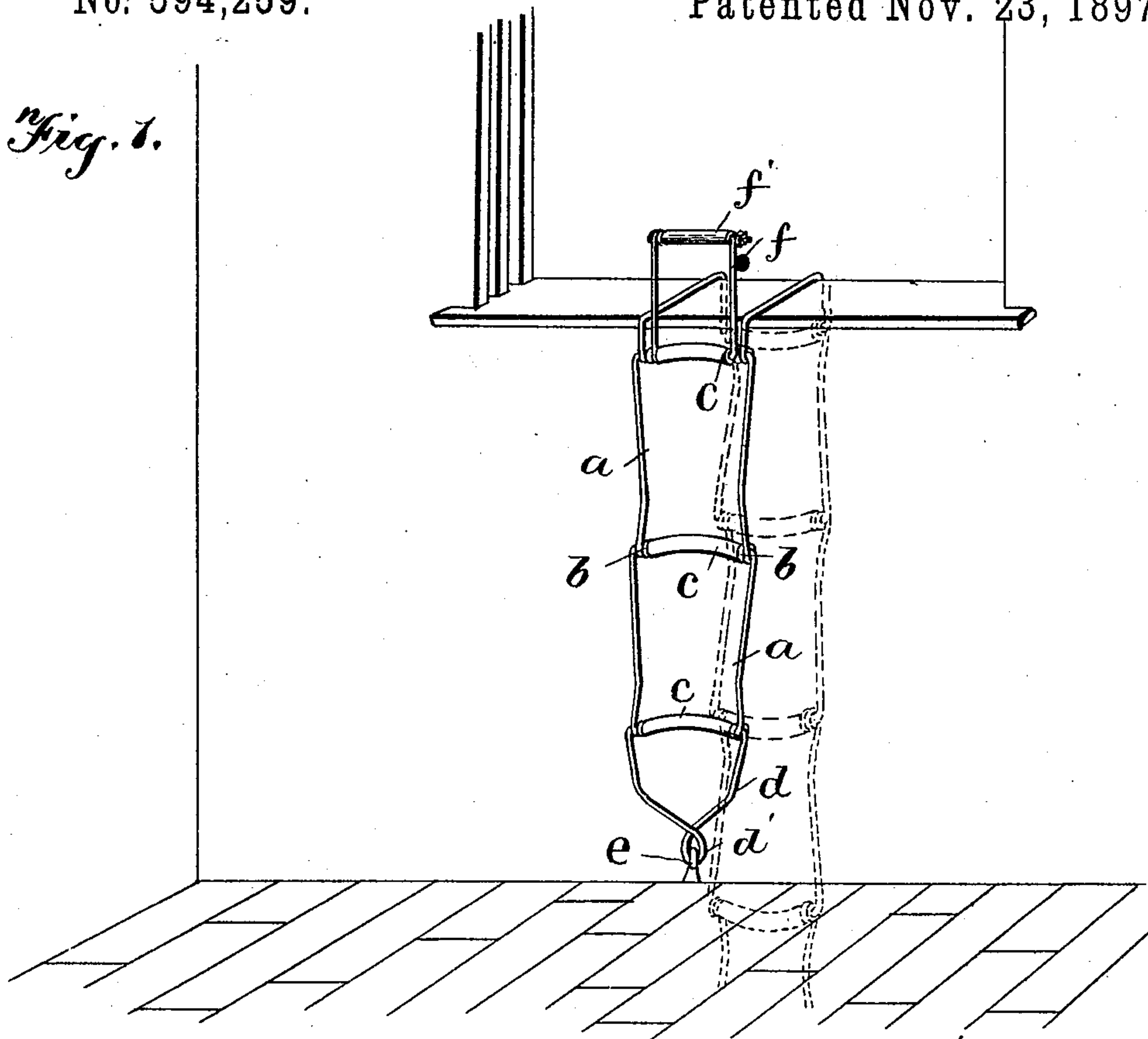


Fig. 2.

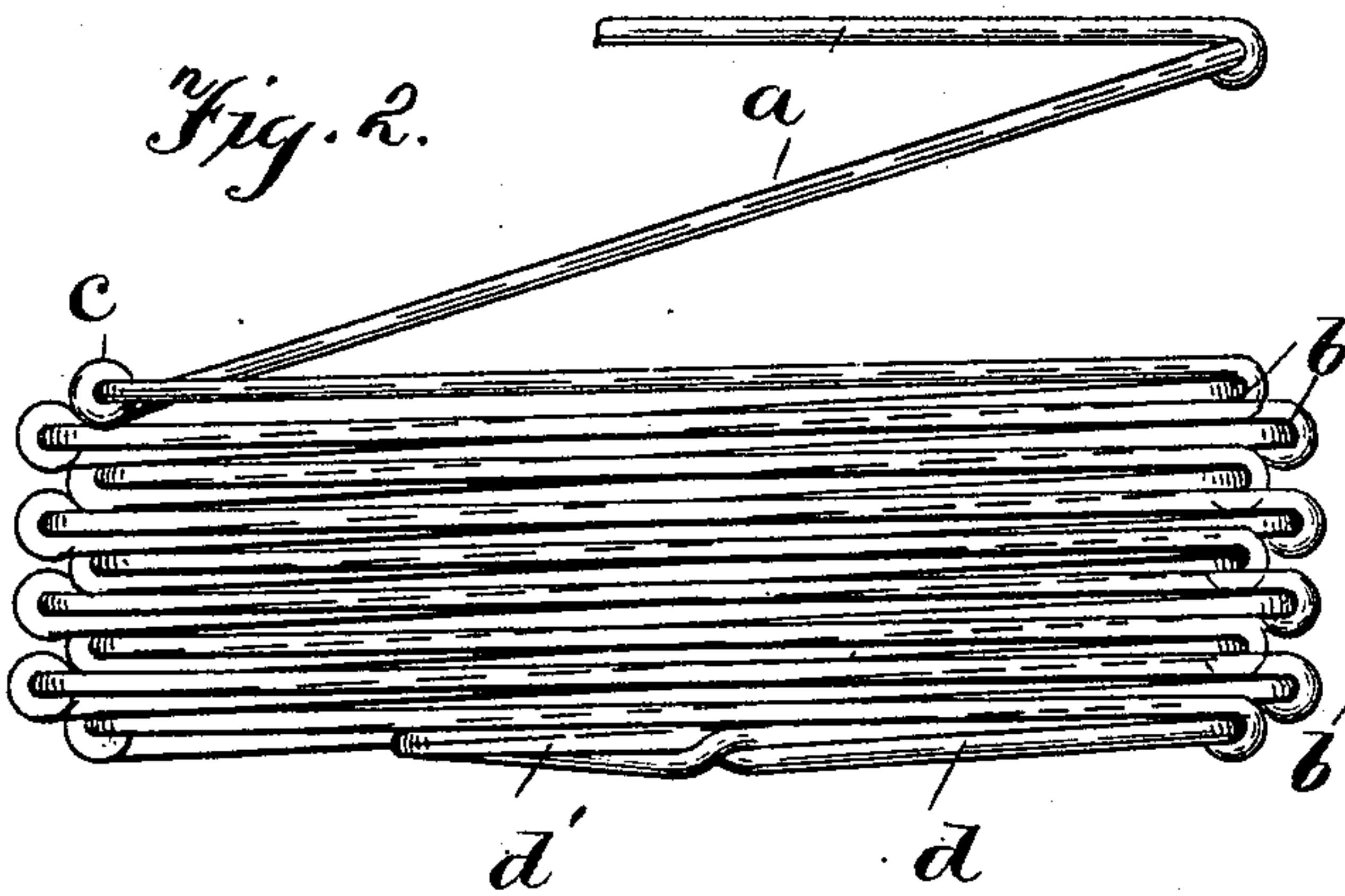
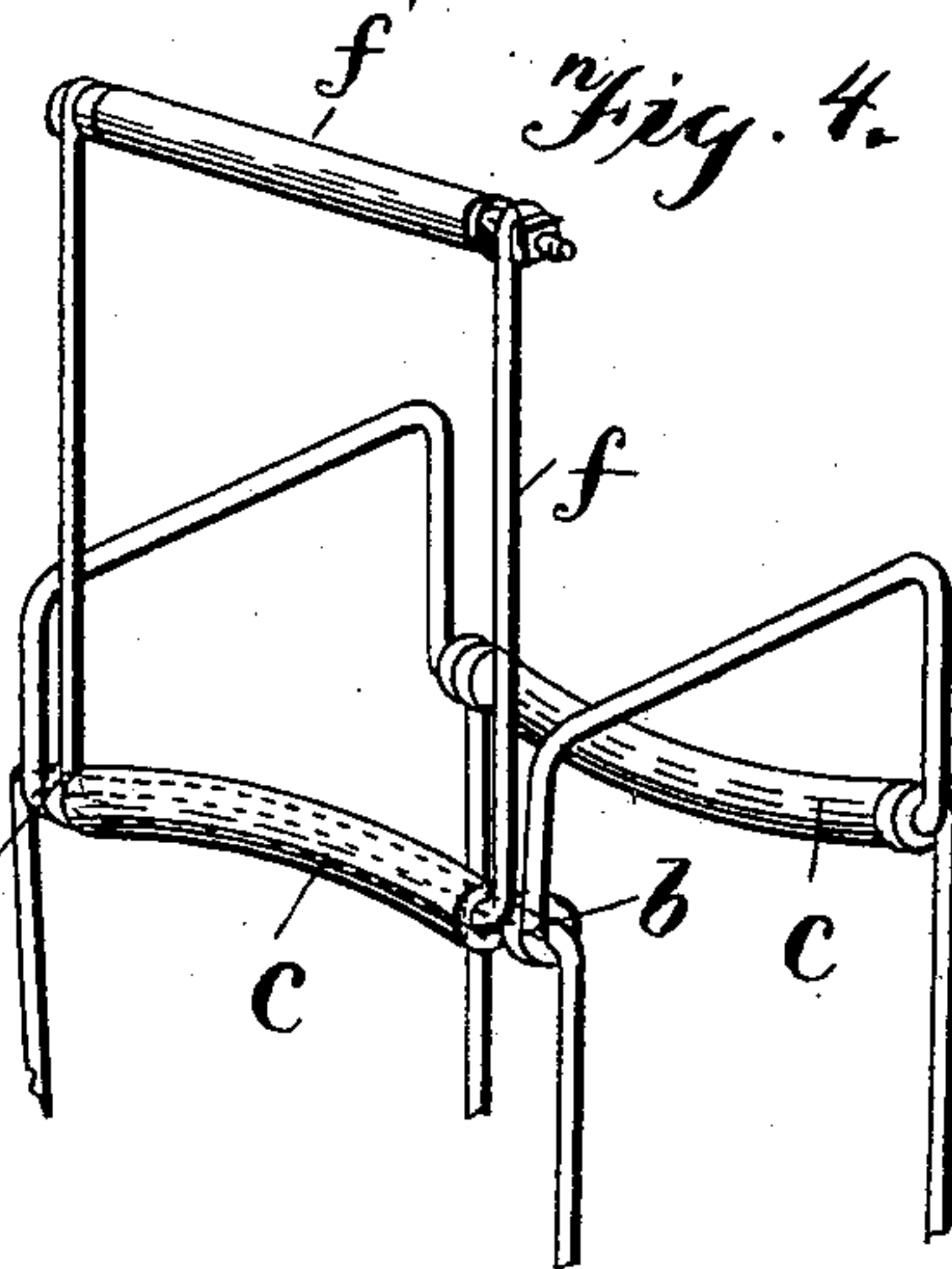


Fig. 4.



Witnesses

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Fig. 3.

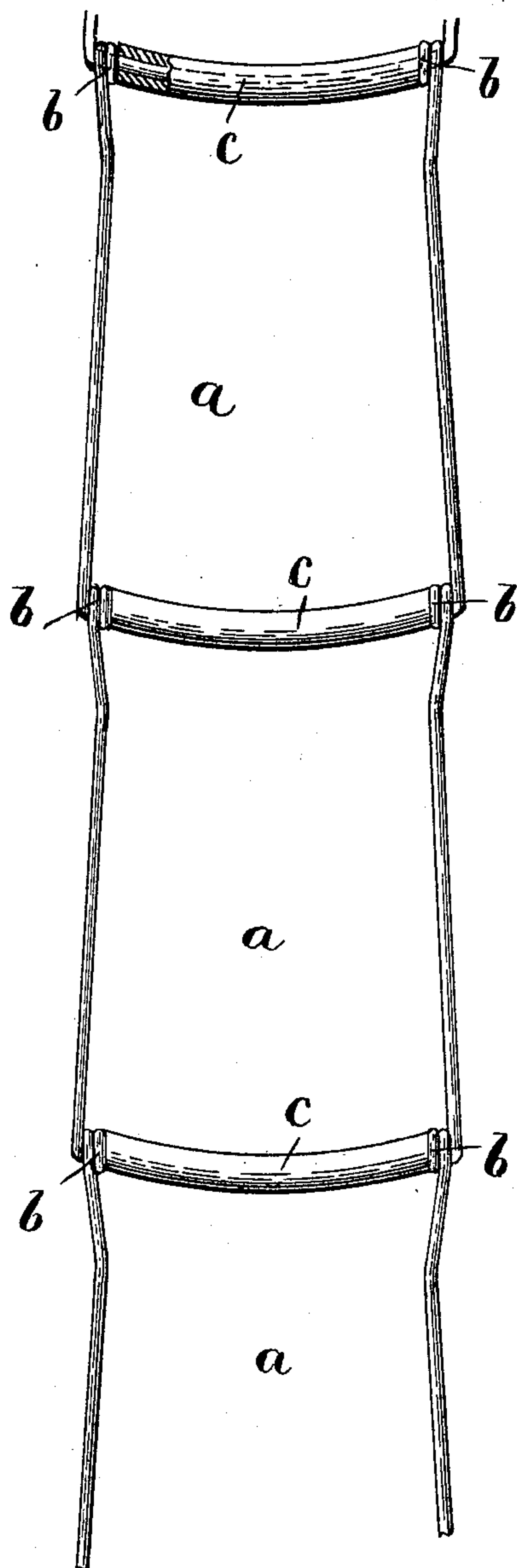


Fig. 6.

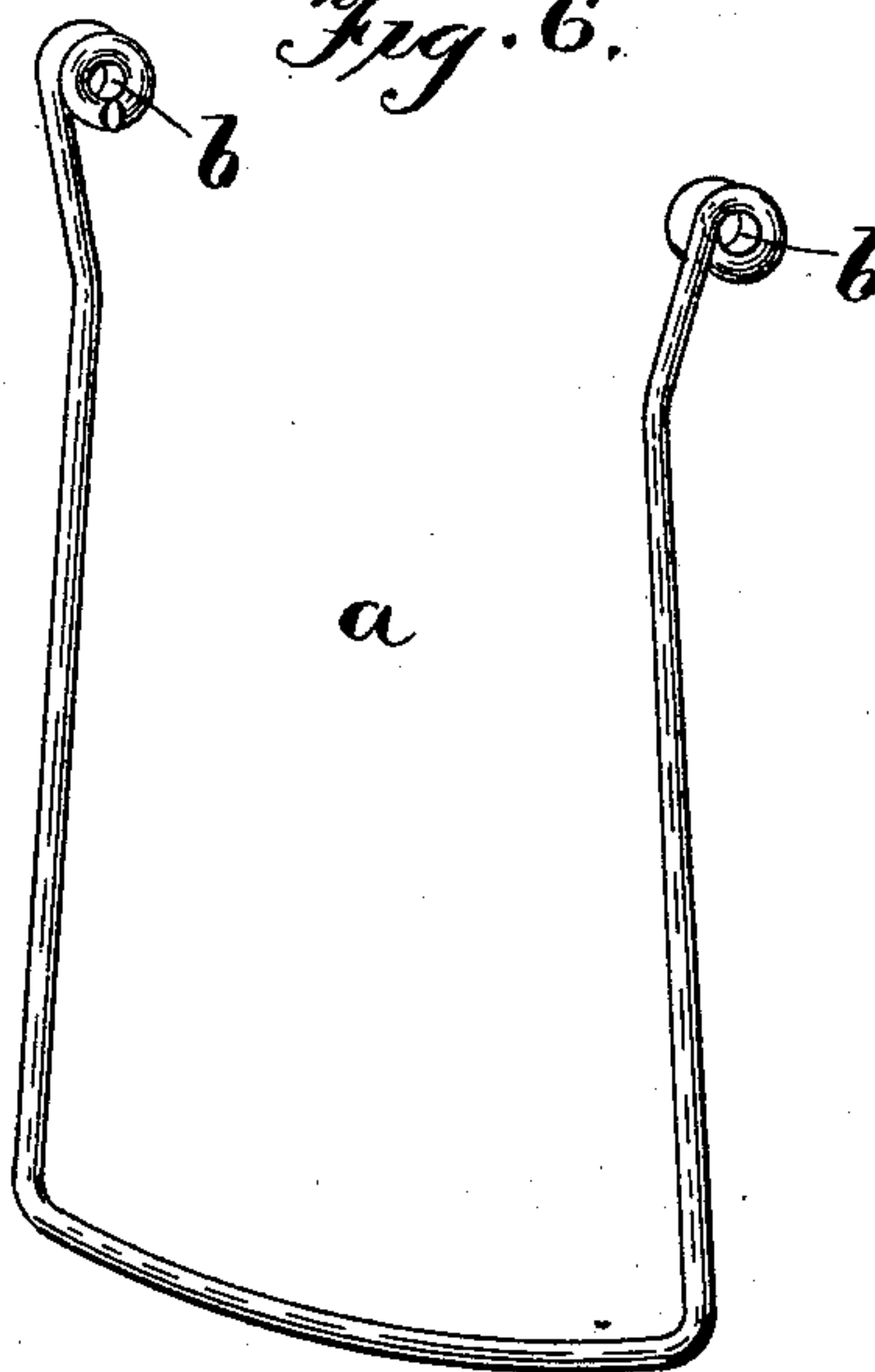
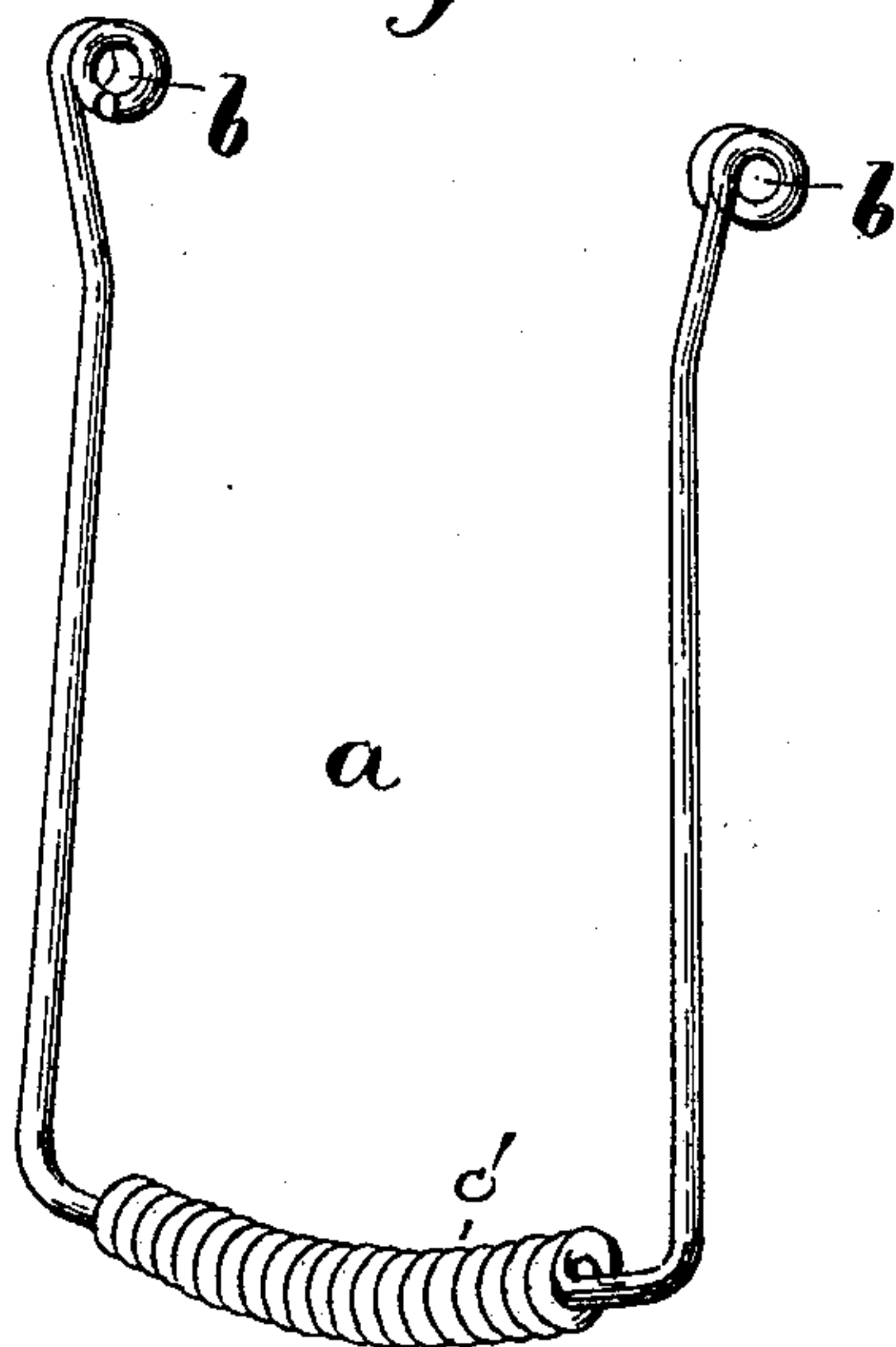


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 594,259, dated November 23, 1897.

Application filed February 8, 1897. Serial No. 622,534. (No model.)

To all whom it may concern:

Be it known that I, MARSHALL S. LODEWICK, a citizen of the United States, residing at Saratoga Springs, in the county of Saratoga and State of New York, 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.

This invention relates to certain improvements in fire-escapes.

An object of the invention is to provide a folding metallic fire-escape ladder of an improved and efficient construction and capable of attachment to a rigid part of a building near a window, so that the ladder can be suspended from the window and safely carry one or more persons to and fro between the window and ground and of being folded within the room at or near the window ready for instant use by throwing out the window when occasion requires and which will be most durable, economical in construction, fire-proof, and will not deteriorate because of the action of the elements or of insects, as is the case with the rope escapes so commonly employed, which require knowledge, skill, or presence of mind to operate, and which will be so constructed as to carry a maximum load with a minimum weight of material in the construction of the ladder and with perfect safety to the user.

The invention consists in certain novel features of construction and in combinations and in arrangements of parts, as more fully and particularly described and pointed out hereinafter.

Referring to the accompanying drawings, Figure 1 is a perspective taken from the interior of a room, showing a method which can be employed in fastening the end of the escape and one link bent over the window-sill and the auxiliary handhold extending upwardly. Fig. 2 is a small side elevation showing the escape folded. Fig. 3 is a detail elevation of several links. Fig. 4 is a detail view showing the manner of connecting the auxiliary handhold-link. Fig. 5 is a detail view of a modification. Fig. 6 is a detail per-

spective view of the preferred form of link, such as shown in Figs. 1 and 3, the link being shown without the tube on the lower end thereof to clearly show how the lower closed end of the link is bent.

The escape is composed of a suitable series or number of approximately U-shaped links properly joined together and of a length to reach from a certain window to the ground below. In practice each escape is fitted to and adapted for a certain window, so that each window has its own escape conveniently folded at the interior of the room adjacent to the window and in instant readiness for dropping from the open window to the ground in case of necessity. Each separate escape and each link therein are properly tested to carry any weight deemed expedient and proper. For instance, it has been found in practice that each escape might be built and adapted to carry one thousand pounds, which is more than sufficient for any emergency.

Each link *a* is formed U-shaped, of suitable wire or light rods, with a closed end, and the two opposite legs or sides extending therefrom with their extremities coiled around the closed end of the link immediately above and where the wire thereof is bent upwardly to form the two sides or legs. The extremity of each side is coiled, preferably, several times (see *b*) around the closed end of the next link, so as to form several complete convolutions, freely turnable on the closed end of the next link. These coils are also usually so formed as to extend inwardly from the sides of the links, with the extremity or end of the wire at the inner end of the coil. However, this peculiar arrangement is not absolutely essential, nor do I thus limit my invention.

It has been found preferable in practice to so arrange the links that the closed ends are at the lower end of each link when the escape is arranged for use, with the sides extending up from the closed ends.

To form enlarged rungs and a proper and safe foot-bearing and handhold and to separate the upright sides of the link, it has been found to be of great advantage to provide means at the closed ends of the links which prevent the ladder collapsing under strain and rigidly hold the sides of the links apart

and receive the inward strain thereof. To attain this object, tubes *c* can be placed on the closed ends of the links between the coiled ends *b b* of the upwardly-extending sides of each link to form the enlarged rungs. When the ladder is carrying weight, the coiled ends press inwardly toward each other and against the ends of the tube, which thus receives the strain and prevents collapse of the ladder and renders the same of great rigidity and weight-carrying capacity and permits the employment of comparatively light wire; also, by having the coils *b* extending inwardly against tubes and between the upright sides of the links and the ends of the tubes the inward pressure of the sides of the links tends to tightly lock the coils against the ends of the tube and thus firmly hold them against untwisting under great strain. The closed ends of the links and the tubes thereon are also curved, concaved, or deflected downwardly between their ends to prevent turning of the tubes on the closed ends of the links, to afford a firm and safe foot-bearing and handhold, and to cause the sides of the links to press inwardly against the ends of the tubes and to increase the strength and rigidity of each link of the escape. By thus having each rung of the escape centrally depressed a more pleasant and convenient hand and foot hold is afforded and the foot of the user is always thrown to the center of the escape and the strain and weight on the escape more evenly and generally distributed, while where the loose tubes are employed all danger of the tubes turning and throwing off the foot or hand is avoided.

If desired, the intermediate portion of each link's closed end can be tightly coiled between the coiled ends *b b* of the next link below, as shown at *c'* in Fig. 5, to form the enlarged rungs. Where thus arranged, the tubes will not be employed, but the tightly-coiled closed ends of the links will be centrally deflected, as before, so as to receive the full inward pressure of the coiled ends *b b* and to form a stop separating said coiled ends *b b* and giving the escape the rigidity against collapsing before described and also affording the safe and convenient hand and foot hold.

The means employed in securing the end of the escape in the room at or near each window must necessarily depend in a measure on the peculiar conditions or arrangements at each individual window; but the upper or inner end of the escape is usually in each case provided with a somewhat shorter end wire link *d*, having the closed end passing through the tube and its sides twisted to form the strong and durable end eye *d'*.

In many cases a strong hook *e* is most rigidly and strongly secured in the floor of the room below the window, so as to receive and retain the eye *d'* of the escape, which when in use or in operative position extends up from the floor and within the room to the window-sill, and then one of the wire links is bent so

as to fit and pass over the window-sill, permitting the remainder of the escape to hang therefrom at the exterior of the building to or nearly to the ground.

By forming the peculiar U-shaped links of wire it is possible to shape a link most easily and conveniently to pass over a window-sill, and thus carry on the window-sill the weight of the escape and a person or persons thereon without requiring the hook and eye within the room to carry all the weight. This is a most advantageous feature of material importance. The link bent over the sill is usually so bent that its closed end is arranged at the outer side of the sill and the two coiled ends of its sides within the room at or near the inner side of the sill, although of course my invention is not limited to such precise arrangement.

In order to afford a firm handhold above the sill for the convenience and safety of a person passing through the window onto the escape outside of the window, I can arrange an auxiliary link *f*, having its closed end passing loosely through one of the tubes *c* on a link within the room and below the sill, so that when the escape is in place said auxiliary tube will extend upwardly a distance above the plane of the sill, with its upper ends suitably connected by a rod surrounded by a tube *f'* or otherwise suitably constructed to form an end handhold above the sill. A person desiring to pass down the escape from the window is thus afforded a handhold above the sill which can be grasped as the person passes through the window and retained until the person passes a distance down the escape and can hold on by the rungs of the escape itself. The window-sill limits the outward swing of the handhold-link *f*, as it engages at an intermediate point the inner side of the sill and extends upwardly a distance above the same or can be bent at its sides, so that its outer end is directly above the sill. This swinging handhold-link is narrower in width than the main links of the escape, so that when the escape is folded it lies between the links of the escape and does not add to the bulk or space occupied by the escape when folded.

The links can be formed to fold, as shown in Fig. 2, in position to be quickly seized and dropped from the window and so as to unfold as the ladder falls without tangling, the links swinging on each other when folding or unfolding, and each link preferably having its sides inclined toward each other from its closed end, so that the links can cross each other when folded.

When folded, the escape can have its eye on the hook in the floor or can be arranged separately therefrom with instructions how to apply in a conspicuous position in the room.

It is evident that various changes might be made in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the exact constructions herein set forth.

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

1. A folding fire-escape ladder comprising the U-shaped wire links, the ends of the two
5 sides of each link coiled around the extremities of the closed end of the adjacent link so as to turn thereon, each link having the enlarged curved rung at its closed end and between and separating and receiving the inward thrust of the coiled ends of the link
10 sides of the adjacent link, said ladder formed for securing at or near a window and having a link formed for bending over a window-sill, and a swinging handhold loosely coupled to
15 the inner portion of the ladder below the sill and arranged to swing against the sill, substantially as described.

2. The folding fire-escape ladder comprising the plurality of pivotally-joined U-shaped
20 wire links arranged to swing on one another when folded, the ends of the sides of each link coiled around the extremities of the closed end of the next adjacent link to turn thereon, and means forming an enlarged rung at the
25 closed end of each link between said coiled ends of the sides of the next link and by which said coiled ends are held separated and which receives the inward thrust of said coiled ends, said enlarged rungs centrally deflected or
30 curved, for the purpose stated.

3. A folding fire-escape ladder comprising the pivotally-joined U-shaped wire links, the

ends of the two sides of each link coiled loosely around the extremities of the closed end of the next adjacent link with the extremity of
35 each coil at the inner side thereof, and a metal tube on the closed end of each link between said coiled ends of the sides of the next adjacent link and against the ends of which said
40 coils abut, for the purpose stated, said tubes held against turning and the links formed to cause said coiled ends of the sides to press inward against the ends of the tubes, substantially as described.

4. A fire-escape made up of loosely-joined
45 wire links capable of folding one on the other, the end link having a strong eye adapted for securing in a room beneath a window, an intermediate link formed to bend over the window-sill and depend therefrom at the inner
50 side of the sill, a tube at the inner depending end of said link, and a handhold or grip passed through said tube and extending upwardly therefrom with the cross-piece at its free end
55 so that in use the lower portion of the handhold will bear against the inner edge of the sill with said cross-piece arranged a distance above the sill, substantially as described.

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

MARSHALL S. LODEWICK.

Witnesses:

DANIEL A. AYERS,

TIMOTHY HARRINGTON.