

No. 663,857.

Patented Dec. 18, 1900.

T. F. BROWDER.
FIRE ESCAPE.

(Application filed Sept. 4, 1900.)

(No Model.)

FIG. 1

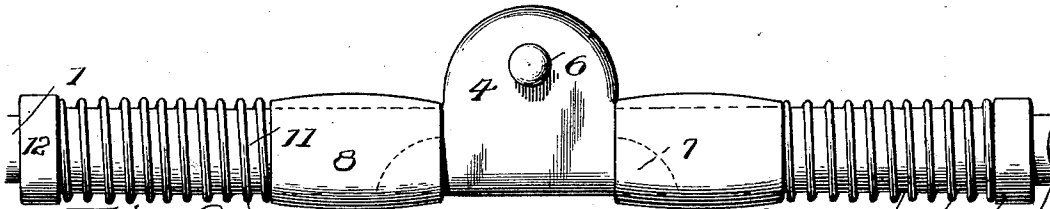


FIG. 2

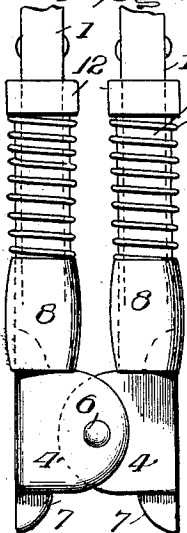


FIG. 3

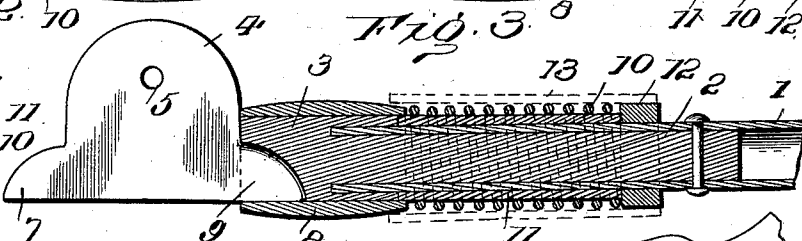


FIG. 4

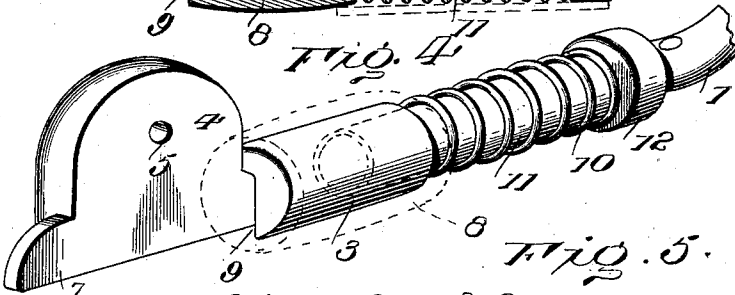


FIG. 5

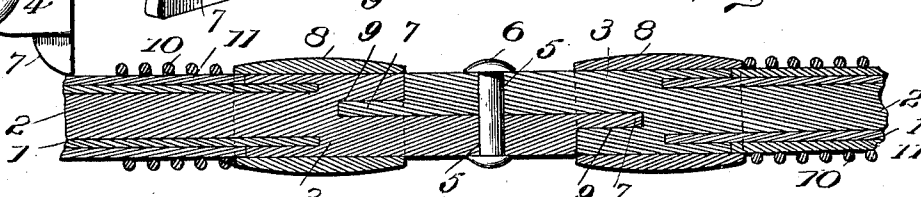


FIG. 6

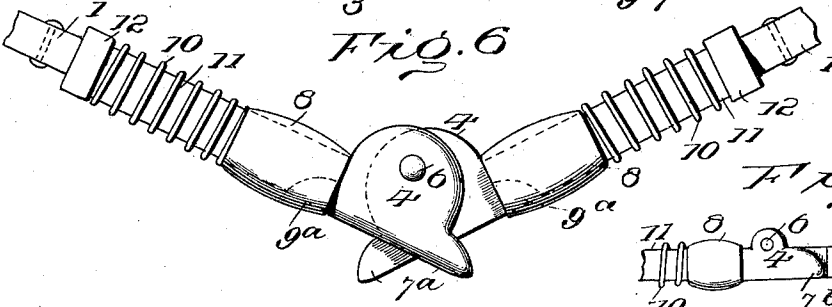


FIG. 8

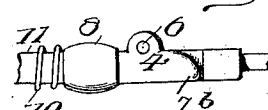
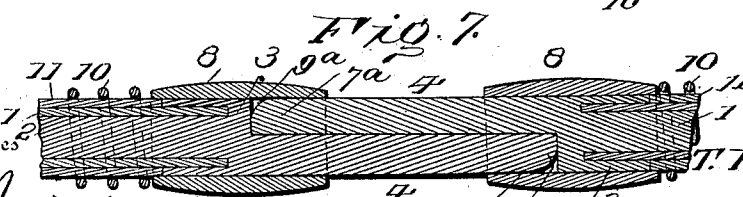


FIG. 7



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Witnesses

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FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 663,857, dated December 18, 1900.

Application filed September 4, 1900. Serial No. 28,984. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. BROWDER, a citizen of the United States, residing at Greenfield, in the county of Highland and State of Ohio, 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.

Means to provide an escape for the inmates of a burning building by jumping are necessarily of large diameter or size to insure catching the falling body. To make this class of appliances portable and adapted to be carried by the truck of a fire department, the frame is constructed in sections, usually hinged together, to admit of the size of the device being materially reduced by folding the frame.

This invention deals more particularly with the hinge-joint between the frame-sections, and has for its object to stiffen, strengthen, and stay said joint when the frame is extended and prevent any possible give in the joints, which would have serious results. Inasmuch as the frame may have any outline and the joint is susceptible of a broad application, the illustration has been confined to the joint and conjunctive parts. Despatch with which the frame may be extended for use with the joints properly stiffened is a potent factor in the efficiency of this class of devices. Hence the joints are constructed so as to be self locking and bracing.

For a full description of the invention and the merits thereof, and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are necessarily susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the joint extended. Fig. 2 is a view similar to Fig. 1, showing the joint folded. Fig. 3 is a longitudinal section of a member of the joint. Fig. 4 is a perspective view of the part shown in Fig. 3. Fig. 5 is a longitudinal section of the joint,

showing the relative disposition of the parts when the joint is extended. Fig. 6 is a detail view in elevation, showing the joint partially broken and illustrating a modification. Fig. 7 is a longitudinal section of the form of joint illustrated in Fig. 6. Fig. 8 is a detail view of a modification.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The complementary members of the joint are similarly constructed, and a detailed description of the one will suffice for a clear understanding of both parts and their coöperation. The section 1 of the frame to be jointed is preferably tubular, although this is not essential as long as the terminal portion is longitudinally bored to receive the stem 2 of the member 3. The outer portion of the member 3 is enlarged and formed with an ear or lug 4, which is pierced, as shown at 5, to receive the pivot-fastening 6. An interlocking projection 7 is provided at the outermost end of the member and is curved upon its upper and front edge to provide a cam portion for the coupling-sleeve 8 to ride upon when extending the section of the frame, so as to admit of automatic action of the joint with respect to self locking and bracing. The part of the member adjacent to the ear or lug 4 is only about half the thickness or diameter of the central portion of the said member, thereby admitting of the overlapping parts unitedly being of a like diametrical extent to the main portion of the hinge member. A groove 9, corresponding in outline to the interlocking projection 7, is formed in the shouldered end of the member 3 adjacent to the outer reduced part and is designed to receive the said projection 7, which snugly fits therein. The part 7 is of less thickness than the lug 4, so as to enter the groove 9 and leave sufficient metal on the outer side of the interlocking projection to prevent lateral displacement thereof. This is shown most clearly in Fig. 5.

The shank 2 of the hinge member 3 is reduced, and an annular groove is formed in the shouldered part of the member 3 at the base of the shank 2 to receive the end portion of the frame 1. A sleeve 10 is fitted upon

the end portion of the frame 1 and comes flush with the outer surface of the member 3, so as to provide a smooth surface for the coupling-sleeve 8 to move upon. A coil-spring 11 encircles the sleeve 10 and exerts an outward pressure against the coupling-sleeve 8 and is confined by means of a collar 12, secured to the frame 1 a proper distance from the joint.

When the complementary members of the joint are properly assembled, they occupy the relation substantially as shown in Fig. 5, and when the joint is extended the interlocking projections 7 enter the grooves or seats 9 and are confined therein by the coupling-sleeves 8, as indicated most clearly in Fig. 5. When the frame is folded, the parts occupy the position substantially as shown in Fig. 2, and when the frame is extended the coupling-sleeves 8 ride upon the curved edges of the interlocking projection 7 and spring forward under the tension of the springs 11 the instant the projections 7 are completely housed by entering the grooves or seats 9. The joint when thus formed has a self locking and bracing part each side of the pivotal connection between the hinge members, and as a result the joint is as strong, if not firmer, than any part of the frame.

In the form of joint shown in Figs. 6 and 7 the interlocking projections 7^a are the full width of the adjacent part of the hinged member, and the seat 9^a extends through the outer side of the main portion of the member 3. The outer side and end of the interlocking projections 7^a are beveled, as indicated most clearly in Figs. 6 and 7, to obviate the formation of a projecting part for the coupling-sleeves to engage with when extending the frame and detracting from the effectiveness of the automatic operation of the self locking and bracing feature of the invention. In all other respects the parts are substantially the same as illustrated and described in connection with Figs. 1 to 5, inclusive.

It is contemplated to house the spring 11, and this is effected by a casing or sleeve 13, secured to the frame and encircling the spring, as shown most clearly in Fig. 3, the casing 13 being of such diameter as to not interfere with the free movements of the spring and coupling-sleeve 8. While the joint is specially designed for the frames of fire-escapes of the character aforesaid, it is to be understood that it is not the intention to restrict its use in this particular, since it can be employed wherever it is desired to connect parts by hinge-joint capable of self locking and bracing.

In the construction shown in Fig. 8 the projections 7^b are equal in width to the diameter of the body portions of the respective hinge members, and the lugs 4 are larger to

admit of the pivot-fastening 6 coming to one side of the plane of the frame when opened. The construction is otherwise substantially the same as herein set forth.

Having thus described the invention, what is claimed as new is—

1. In a hinge-joint, interlocking projections and cooperating seats therefor on opposite sides of the pivotal connection between the hinged members, and coupling-sleeves automatic in operation for locking and bracing the joint at diametrically opposite points, substantially as set forth.

2. In a hinge-joint, interlocking projections and cooperating seats therefor, the said projections being rounded upon one edge to provide a cam portion and spring-actuated coupling-sleeves adapted to ride upon the curved portions of the interlocking projections when extending the joint, substantially as set forth.

3. In a hinge-joint, rounded ears and interlocking projections forming a part of the hinge members, the latter having corresponding seats for the interlocking projections, and spring-actuated coupling-sleeves adapted to ride upon the rounded edges of the said projections when extending the joint to admit of the automatic action of the parts to lock and brace the joint, substantially as specified.

4. In a hinge-joint, hinge members having their meeting portions reduced in thickness and provided with interlocking projections and corresponding seats therefor, coupling-sleeves slidably mounted upon the hinge members and springs exerting a pressure against said coupling-sleeves to render them automatic in action in effecting a self-locking and bracing of the joints when extended, substantially as specified.

5. In a hinge-joint, hinge members having their outer end portions reduced, and annular grooves formed in the shouldered parts of the members at the base of the reduced portion, frame-sections fitted upon the reduced end portions of the hinge members and having their terminals entering the annular grooves of the respective hinge members, sleeves fitted upon the parts of the frame and coming flush with the main portion of the hinged members, coupling-sleeves slidably mounted upon said hinged members, coiled springs exerting a pressure against the said coupling-sleeves, and interlocking projections and seats therefor upon opposite sides of the pivotal connections between the hinge members, substantially as set forth.

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

THOMAS F. BROWDER. [L. S.]

Witnesses:

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HARRY V. SELLERS.