(No Model.)

2 Sheets—Sheet 1.

R. M. WILSON.

FIRE ESCAPE LADDER.

No. 289,876. Patented Dec. 11, 1883.

Fig. 1.

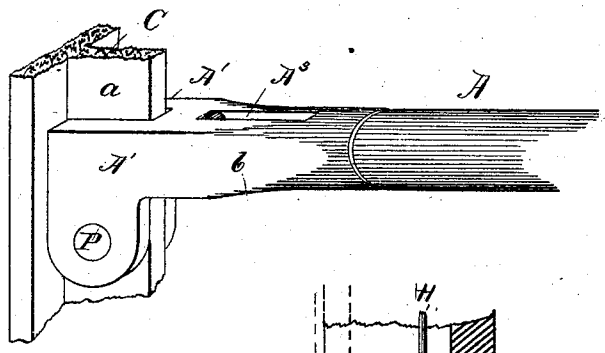


Fig. 2.

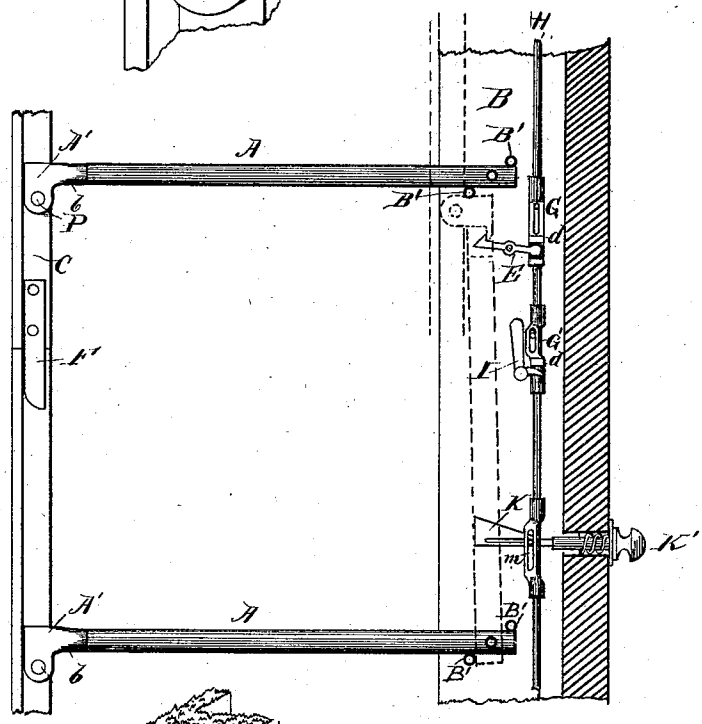


Fig. 3.

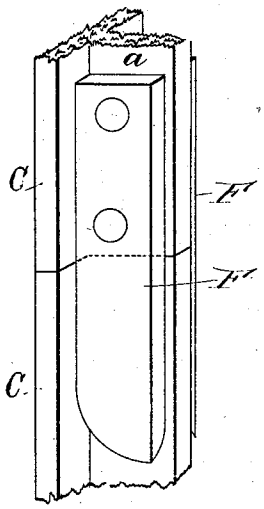
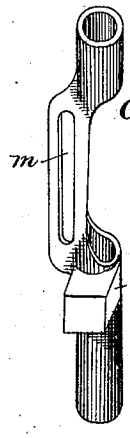


Fig. 4.



Witnesses.
Alb. Steiger.
G. H. Spencer

Inventor.
Robert M. Wilson
By David A. Burr
Attorney.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

R. M. WILSON.

FIRE ESCAPE LADDER.

No. 289,876. Patented Dec. 11, 1883.

Fig. 5.

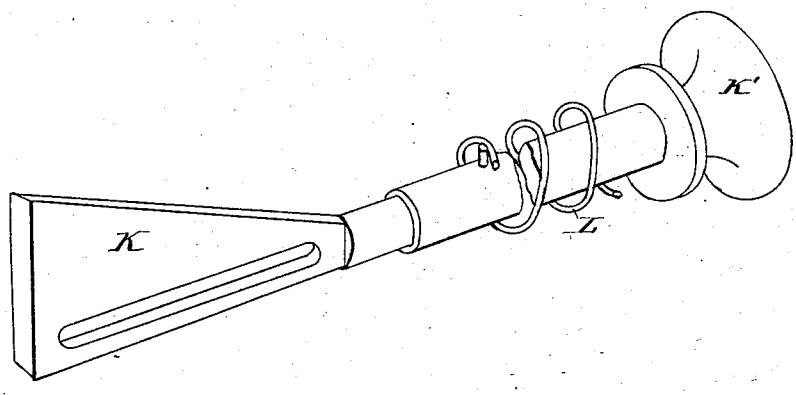
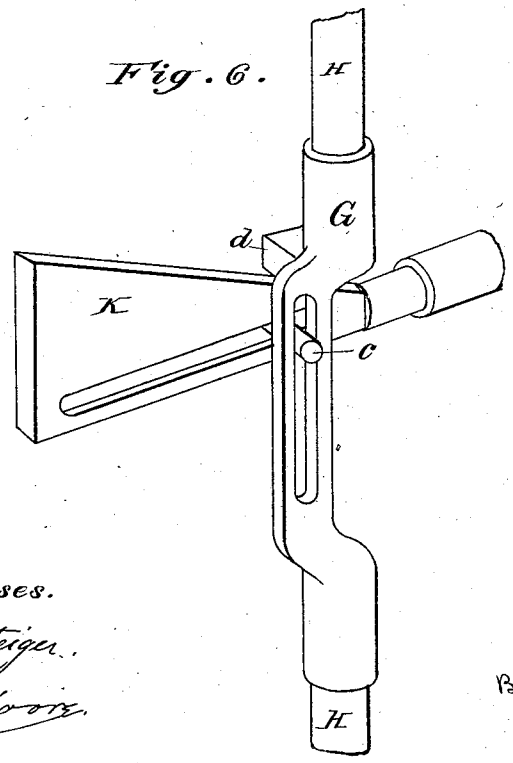


Fig. 6.



Witnesses.
A. W. Steiger.
A. B. Moore.

Inventor.
Robert M. Wilson
By David A. Burr
Attorney.

N. PETERS, Phot.-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ROBERT M. WILSON, OF BROOKLYN, NEW YORK.

FIRE-ESCAPE LADDER.

SPECIFICATION forming part of Letters Patent No. 289,876, dated December 11, 1883.

Application filed October 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. WILSON, residing in Brooklyn, county of Kings, State of New York, have invented a new and useful Improvement in Fire-Escape Ladders; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to an improvement in fire-escape ladders of that class adapted to be folded into a recess in the face of the building when not in use, and has for its object, primarily, the formation of stronger and more durable joints than those heretofore in use.

It consists in an improved method of pivoting the rounds to the rail forming the support for their outwardly-projecting ends when the ladder is in use, and in the formation of a self-adjusting joint between the abutting ends of the different sections of the rail; and it consists, furthermore, in improved devices for "tripping" the catches which retain the ladder in its folded position when not in use.

In the accompanying drawings, Figure 1 is a perspective view of my improved pivot-joint between the round and the rail. Fig. 2 is a side elevation of a part of a ladder having my improved pivot-joint, and illustrating the tripping devices. Fig. 3 is a perspective view of two abutting ends of the rail constructed and fitted to form a self-adjusting joint, and Fig. 4 is a detached view of one of the devices fitted to the tripping-rod to facilitate its engagement with the catches and levers of the apparatus. Fig. 5 is a detached view in perspective, on an enlarged scale, of the wedge-shaped slide by which the tripping-rod is lifted from within the house; and Fig. 6 is a similar detached view of the slide in its engagement with the tripping-rod.

A A represent the rounds of my improved fire-escape ladder. These are pivoted at their inner ends, in the ordinary manner, within a suitable recess or casing, B, formed upon the surface of the building, and provided with stop-pins B′ B′ to limit their movement, as required. At its outer or free end each round A is pivoted to the central flange of a rigid bar or rail, C, made of T-iron, adapted to form the support for the outer end of the rounds when the ladder is in use by means of two parallel longitudinally-projecting ears or lugs, A′ A′, formed of a suitable length to receive and embrace between them the central projecting flange, *a*, of the T-shaped rail C. The outer ends of the ears or lugs A′ A′ are prolonged at a right angle to the length of the round A, to present an extended bearing for each lug against the face of the T-shaped bar on each side of the flange. The pivot-pin P is passed through the lower ends of the two L-shaped lateral lugs A′ A′, and through the flange *a* of the T-shaped bar, the distance of the pivot-pin from the axis of the round being so proportioned as that the latter may be swung upward to assume a position very nearly parallel to the rail C, as shown in dotted lines in Fig. 2. As the rounds of these ladders are usually made of hollow rods or tubes, the pivot-lugs A′ A′ are preferably forged out of solid metal, terminating in a shank, *b*, adapted to be screwed or swaged into the end of the round to form a continuation thereof, as shown in Fig. 1.

Through the central part or body of the solid section of the round I form an opening, A^3, (see Fig. 1,) adapted to receive and to engage the free end of a latch, E, Fig. 2, which is pivoted within the casing B, immediately under the round next above that to be engaged by it, and which operates to hold the round engaged thereby in its folded position. (See dotted lines, Fig. 2.) Where the ladder reaching from the bottom to the top of a building is divided in sections—one for each story—so that each section may, if desired, be lowered independently of that above it, in common with the sections below it, I provide an automatically-adjusting joint between the adjacent ends of the outer rails or bars by cutting the two abutting ends square or in a plane perpendicular to their length, and securing to the lower end of the upper rail two downwardly-projecting arms, F F, which are fitted and firmly secured on either side of the central flange of the rail in the angles formed by the juncture of the flange and rail. The ends of these arms, projecting beyond the end of the upper rail, will embrace the flange of the rail below it; and in order to secure automatically and positively their embracement of the flange, and to guide the latter into the recess or interval be-

tween the arms as the latter descend toward the flange, the inner faces of the lower ends of the arms are beveled or cut away outwardly, to form a V-shaped guide to lead the abutting ends of the rails together. (See Fig. 3.) As the ends of the rails in the several sections from top to bottom of the ladder, when it is open, rest squarely one upon the other, and are locked to prevent them from sliding away one from the other by means of the overlapping arms F F, one on either side of the central flange, *a*, the outer side of the ladder is solid and secure from top to bottom, notwithstanding its divisions into separate sections.

The latches or catches E, which, severally engaging each round of the ladder, serve to confine and retain it within the casing B when its outer rail is folded up therein, (see dotted lines, Fig. 2,) are tripped simultaneously by the movement of a vertical longitudinally-reciprocating rod, H. The inner end of each latch is engaged by means of a device, G, consisting of a tubular sleeve adapted at each end to receive and confine the ends of interposed sections of the rod H, and which is provided upon one side with a lug, *d*, to engage the end of the catch, and is slotted centrally and longitudinally to receive a guide-pin projecting from the casing; or, if preferred, the device may be constructed with tubular ends and an intermediate offset, *m*, in which the longitudinal slot is formed for the guide-pin, as is illustrated in Fig. 4, the offset permitting the rod H to be led in an unbroken length through the tubular ends, the device thus threaded upon the rod being secured in its appropriate place therein by a transverse rivet. In either case the lateral lug or ear *d*, by engaging the inner free end of the centrally-pivoted latch, will serve to trip it when the rod H is moved longitudinally. To effect this longitudinal movement of the rod, a sliding bar, K, (see Figs. 2, 5, and 6,) may be employed, said bar being mounted to traverse in suitable guides or upon a pin, *c*, projecting through a longitudinal slot therein in a direction at a right angle to the length of the rod, and fitted with a wedge-shaped or beveled surface adapted to work against a shoulder upon a trip-plate, G or G′, secured to the rod, as above described. The end of the sliding bar may be carried through the wall of the building and made to terminate in a knob, K′, so that by pulling the knob K′ inward the vertical rod will be lifted upward and the ladder made to drop and open out into position, as shown in Fig. 2. The sliding bar K is returned automatically to its normal position by means of a spring, L.

The vertical tripping-rod is operated from outside of the building by means of a bent lever, I, pivoted to the side of the recess or casing B, inclosing the folded ladder, one arm of said lever being made to engage a shoulder upon the rod or one of the devices, G or G′, secured thereon, (see Fig. 2,) and the other arm adapted to serve as a handle by which to move the lever and so lift the rod.

I am aware that a folding ladder has been made wherein the outwardly-projecting ends of its rounds are hinged to a T-rail, as described in Letters Patent to J. P. Dunn, dated November 14, 1882; but in that case the flange of the rail is turned outwardly away from the rounds, and separate pieces are attached to the back of the rail to form ears, to which the rounds are pivoted, which, apart from the extra expense and labor thereby involved in its construction, are extremely liable to break off, and thus destroy the efficiency of the ladder. The abutting ends of the sections of the outer supporting-rail have also been made, as in said patent, to interlock by cutting them to form a V-shaped joint; but this device fails to give the required stability to the joint. By my improvement these objections are entirely overcome and a stronger, simpler ladder is obtained.

I claim as my invention—

1. In a folding fire-escape ladder, the combination, with its pivoted rounds and with an outer T-shaped supporting-rail, of an L-shaped longitudinally-slotted hinge-block secured to the outer end of each round, and adapted to embrace the central flange of the rail and be pivoted thereto, and to abut with an extended bearing on either side of said flange against the inner face of the rail, substantially in the manner and for the purpose herein set forth.

2. The combination, with the abutting ends of the T-shaped rails supporting the outer ends of the rounds of a folding fire-escape ladder, of lateral guide and stay pieces secured against each side or face of the central flange of the one rail, to project beyond the end thereof and embrace the end of the flange of the adjoining rail, substantially in the manner and for the purpose herein set forth.

3. The combination, with the vertical tripping-rod, pivoted latches, and swinging rounds of a folding fire-escape ladder, of a transverse wedge-shaped bar, adapted, by its longitudinal movement in one direction, to engage and lift the rod, and in the other to permit the same to drop, substantially in the manner and for the purpose herein set forth.

4. The combination, with the vertical tripping-rod, pivoted latches, and swinging rounds of a folding fire-escape ladder, of the devices for tripping the latches, consisting each of a metallic piece provided at either end with tubular sockets or collars to embrace the tripping-rod or its sections. and with a lug or shoulder to engage one end of the latch-lever, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT M. WILSON.

Witnesses:
A. B. MOORE,
A. W. STEIGER.