(No Model.) 3 Sheets—Sheet 1.

P. GOLDMANN.

FIRE ESCAPE.

No. 421,269. Patented Feb. 11, 1890.

Fig. 1.

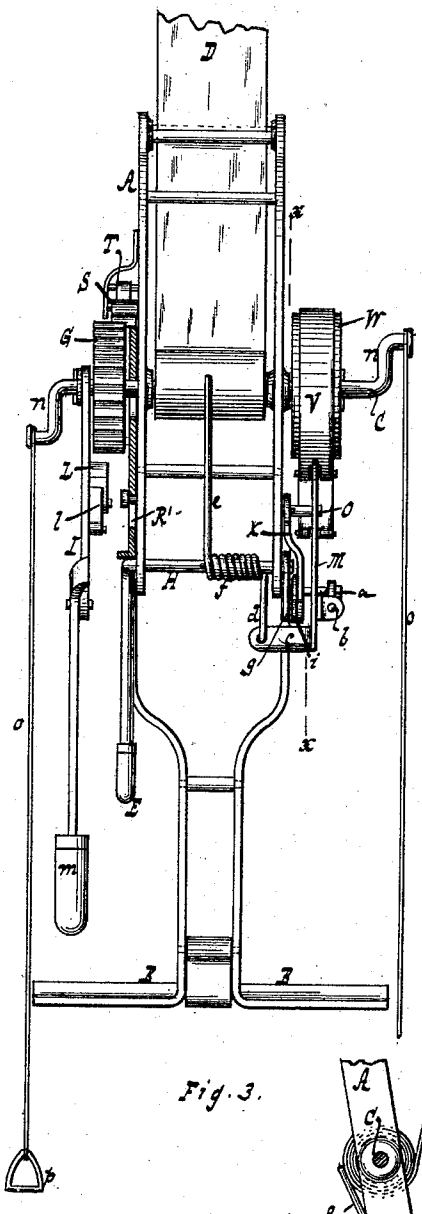


Fig. 2.

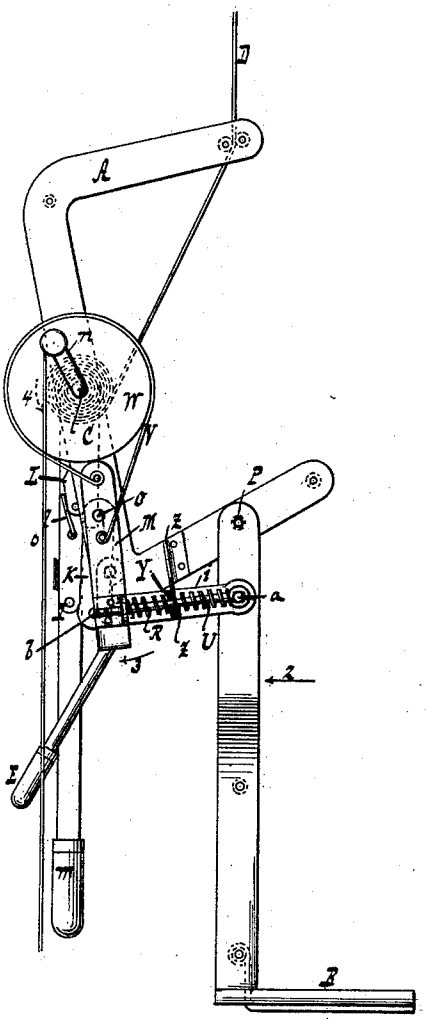
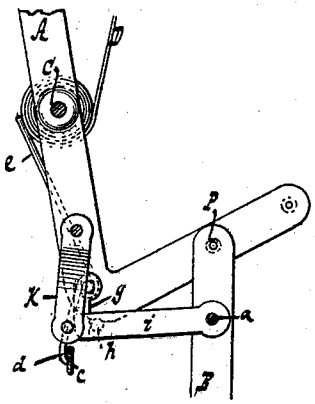


Fig. 3.



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Fig. 4.

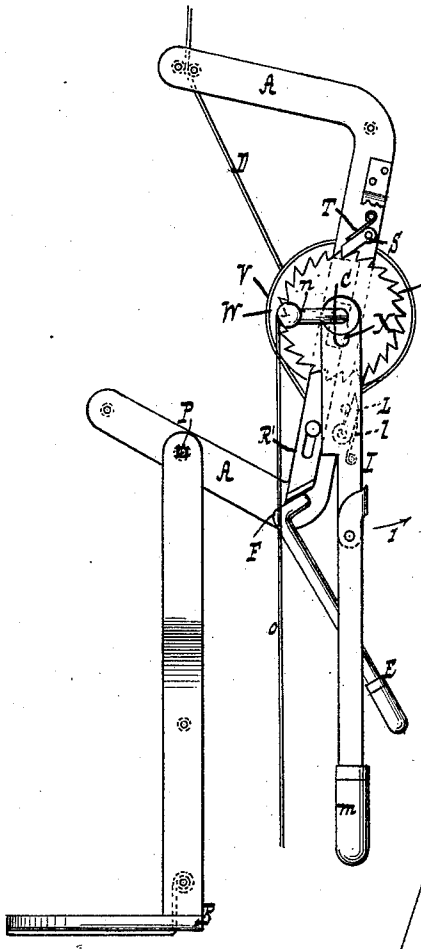


Fig. 5.

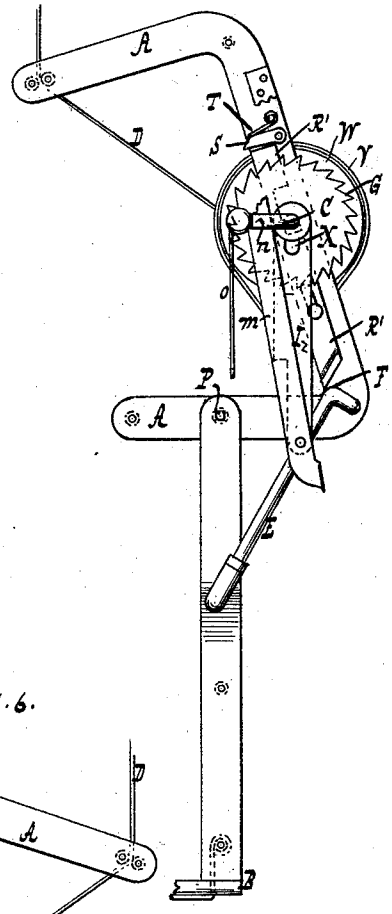
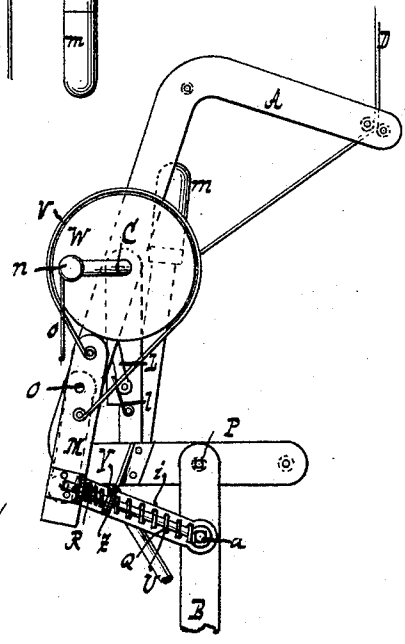


Fig. 6.



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Fig. 7.

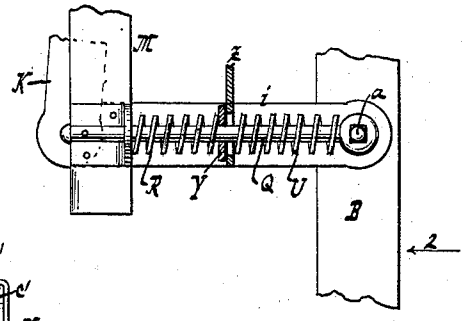


Fig. 11.

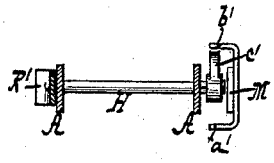


Fig. 8.

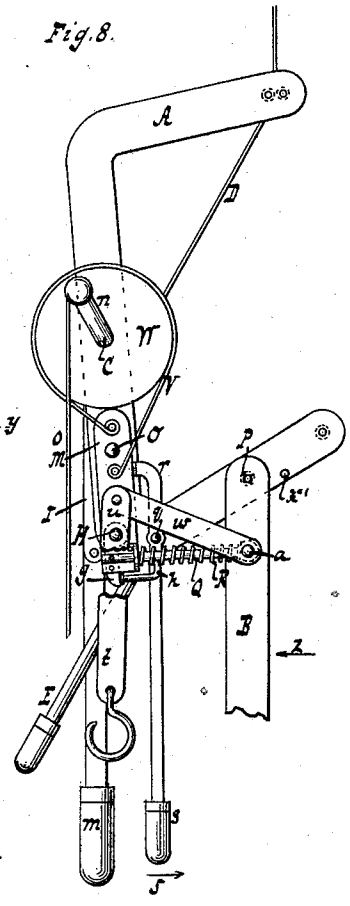


Fig. 9.

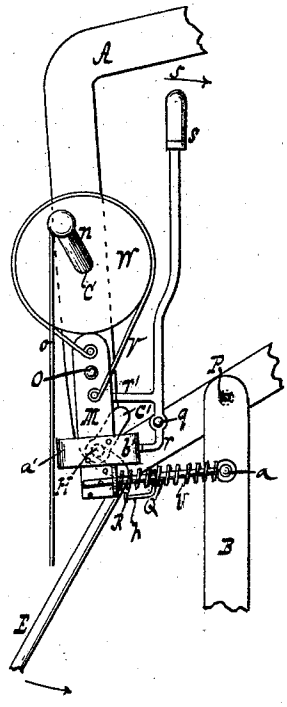
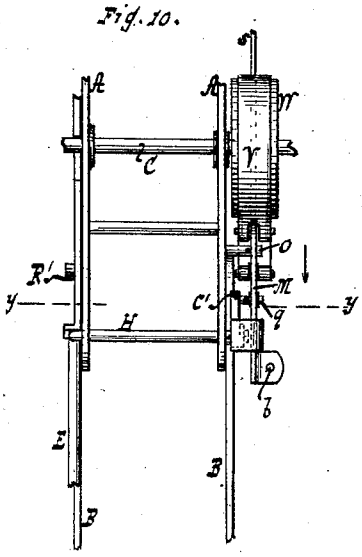


Fig. 10.



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UNITED STATES PATENT OFFICE.

PHILIPP GOLDMANN, OF NEW YORK, N. Y.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 421,269, dated February 11, 1890.

Application filed May 16, 1889. Serial No. 311,002. (No model.)

To all whom it may concern:

Be it known that I, PHILIPP GOLDMANN, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to a device serviceable as a fire-escape or for ascending or descending along any object; and the invention consists in the details of construction set forth in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation, partly in section, of a fire-escape. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is a section along *x x*, Fig. 1. Fig. 4 is a side elevation of Fig. 1 from the opposite side from that exposed in Fig. 2. Fig. 5 is a view similar to Fig. 4, showing parts in a different position than in Fig. 4. Fig. 6 is a view similar to Fig. 2, showing parts in a different position than in Fig. 2. Fig. 7 is a detail view of a spring-connection between the seat and brake. Fig. 8 is a side elevation of a modification. Fig. 9 is a side view of a brake-lever and adjacent parts. Fig. 10 is a front view of Fig. 9. Fig. 11 is a section along *y y*, Fig. 10.

Similar letters indicate corresponding parts.

In the drawings, the letter A indicates a frame having a support or seat B, on which one or more persons can rest. Onto the axle C is wound a cable composed of a rope, chain, or band D, which can be secured at its free end to a suitable support, such as the edge of a roof. To the axle C is fixed a ratchet-wheel G, and when the pawl S is in the position shown in Fig. 4 said pawl engages the ratchet-wheel G and prevents the cable unwinding from the axle. A spring T presses the pawl into engagement with the ratchet-wheel.

When the lever E is swung from the position shown in Fig. 4 to the position shown in Fig. 5, the shoulder F of said lever moves the slide R′, so as to move the pawl S out of engagement with the ratchet-wheel G, thus leaving the axle C free to turn in the direction of arrow 4, Fig. 2, so that the cable D can unwind. The slide R′ is shown secured to the frame by a pin-and-slot connection. The fulcrum H of lever E, Fig. 1, is shown as formed in one piece with said lever, so as to turn therewith, and said fulcrum H extends across the frame A.

To prevent the cable unwinding too fast, a brake is provided for said cable. The brake-wheel W is fixed to the axle C and a brake-band V engages said wheel. The ends of the brake-band V are secured to a lever M, fulcrumed at O. The support B is jointed to the frame at P, and when a person rests on the support said support is swung in the direction of arrow 2, Fig. 2. As said support B is suitably connected to the lever M, the motion of the support in the direction of arrow 2 will swing the lever M in the direction of arrow 3, so as to tighten the brake-band V about the wheel W. The support B communicates motion to the lever M by means of a suitable spring or springs supported by the rod Q. Said rod is jointed to the support B at *a* and slides in a suitable eye *b*, Fig. 1, on the lever M. Two springs R U are shown supported by the rod Q. The spring R has a washer Y, which sits against an arm Z, fixed to the frame A, so that the spring R always tightens the brake-band V to some extent. The arm Z has an eye or hole large enough for the spring U to pass through, but not large enough to allow of the passage of the washer Y. When the support B is swung in the direction of arrow 2, the spring U is pressed against the spring R, so as to increase the pressure of said spring R upon the lever M, thereby increasing the brake-pressure of the band V. One spring R, as seen in Fig. 8, might be put in place of the springs R U and the arm Z dispensed with; but by having two springs arranged as described the spring R can be made to continually exert a pressure upon the brake-band V, so as to prevent too rapid unwinding of the cable.

The lever M has an arm *c*, Fig. 1, engaging the arm *d* of the brake-lever *d e*. When the lever M is swung in the direction of arrow 3, the arm *e* is pressed against the cable D, so as to act as a brake upon said cable. The brake-lever *d e* is fulcrumed on the fulcrum H of lever E, and said lever *d e* has a spring *f*, so

that it can exert a yielding action. The brake *d e* can be used in connection with the brake V, or either of said brakes can be used by itself.

The fulcrum H of lever E has a lug *g*, Figs. 1 and 3, striking against a stud *h* on the rod *i*. The rod *i* is jointed at *a* to the support B, and the free end of the rod *i* is supported by the oscillatory link *k*. When the lever E is moved from the position shown in Fig. 4 to the position shown in Fig. 5, the lug *g* presses the rod *i* and support B in the direction opposed to arrow 2, thus easing the action of the brake and allowing the cable to unwind freely. Instead of having the stud *h* on the rod *i*, said stud *h* can be fixed to the rod Q, as seen in Fig. 8, and the rod *i* and link *k* dispensed with.

On the axle C swings the lever I, a slot X allowing the lever I to swing freely about the axle C, and also to have a certain longitudinal movement on the axle. The longitudinal movability of the lever I allows the pawl L on said lever to be brought into or out of gear with the ratchet-wheel G. By bringing the pawl L into gear with the wheel G and swinging the lever I in the direction of arrow 1, Fig. 4, the axle C is turned so as to wind up the cable. A spring *l* holds the pawl L in position to engage the wheel G when the lever I is moved longitudinally in the proper direction. A handle *m* is secured to the lever I by a spring-hinge or jack-knife hinge, and when the handle *m* is opened, Fig. 4, it can be used to increase the leverage of lever I. When not in use, the handle *m* can be folded out of the way, Fig. 5.

To assist the lever I in winding up the cable, the axle C can be provided with cranks *n*, having links or cords *o*, provided with stirrups *p* within reach of a person on the support B, said cranks being connected to the axle either directly or by means of gears. (Not shown.) Said lever I and cranks *n* can be used to wind up the cable and raise the frame A while a person rests on the support B.

If the brake V should at any time not be under sufficient tension—as, for example, when an extremely heavy weight is supported by the device—the lever *r s*, fulcrumed at *q* on a part of the frame A, can be used to tighten the brake, since by moving the arm *s* of lever *r s* in the direction of arrow 5 the lever *r s* actuates the lever M to tighten the brake V. By releasing the lever *r s* the brake V is slackened. In case more persons are to be accommodated than can find room on the support B a supplemental support can be hooked or attached to the lever *t u*, Fig. 8, fulcrumed at H and connected by a link *w* to the support B. When the lever *t u* is weighted, as by a person hanging therefrom, the lower part of said lever *t u* is swung toward the support B, thus causing the link *w* to draw said support B in the direction of arrow 2, and the support B by the rod Q and spring R moves the lever M and tightens the brake V in the same manner as hereinbefore described with reference to the action of the rod and spring. A stop *x'*, Fig. 8, can be secured to frame A to prevent excessive retrograde motion of the support B.

When the axle C is being turned to wind up the cable, the brake V should be loosened, so as to allow easy turning of the axle. For this purpose the brake-lever M has a fork *a' b'*, Figs. 9 and 11, and the lever E has a lug *c'*. By turning the lever E away from the support B a sufficient distance the lug *c'* will come to rest against the branch *b'* of fork *a' b'*, thus turning the lever M about its fulcrum, so as to loosen the brake-band V.

To prevent excessive loosening of the brake-band V during the unwinding of the cable by the lever E being turned too far toward the support B, the lug *c'* on the fulcrum H of said lever E is provided. When the lever E is turned too far toward the support B, the lug *c'* strikes against the branch *a'* and moves the lever M, so as to tighten the brake.

With regard to the lever *r s*, it is to be noted that the arm *r* of said lever can be made to extend either downward, as seen in Fig. 8, or upward, as seen in Fig. 9. In place of having only one arm *r* striking against the lever M, the lever *r s* may have two arms *r r'*, Fig. 9, striking against lever M, so that when the arm *s* is moved either in the direction of arrow 5 or in the opposite direction one of the arms *r r'* will always strike against the lever M to tighten the brake.

This device is serviceable not only as a fire-escape, but also to support workmen—such as painters or masons—when operating on a house-wall, since the device can be raised or lowered, as desired, and a person can readily be supported on the device without said device descending until the pawl S is moved out of engagement with the wheel G, and as by the entrance of a passenger into the device the brake is tightened the device is prevented from descending too rapidly, thus preventing injury and fright to the passenger. The pawl S and the brake, being both readily put into action, offer security to the passenger, since the device can be readily stopped or checked by the pawl or brake being brought into action, and when the lever E lifts the pawl S out of action the brake is not at once loosened, so that the device descends gradually and frightening of timid passengers is avoided.

In Fig. 8 the stud *h* is shown secured to the rod Q; but said stud *h*, as seen in Fig. 9, may be placed on a sleeve or slide *d'*, placed on the rod Q between the springs R U. The two springs R U abut against the slide *d'*, and as the slide moves one way or the other the tension of the spring R is either increased or diminished.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a fire-escape, of a frame A, an axle C, journaled therein, a cable

D, a brake-wheel W, fixed to the axle, a brake-band encircling said brake-wheel, a seat or support B, oscillating on the frame and connected to said brake-band, and a lever E, for regulating the action of the seat upon the brake, substantially as described.

2. The combination, in a fire-escape, of a frame A, an axle C, journaled therein, a cable D, a ratchet-wheel G and a brake-wheel W, both fixed to the axle, a brake-band V, encircling said brake-wheel, a seat or support B, oscillating on the frame and connected to said brake-band, a pawl S, for engaging said ratchet-wheel, and a lever E, for regulating the action of the seat upon the brake, said lever having an arm or connection R′ extending to the pawl, substantially as described.

3. The combination, in a fire-escape, of a frame A, an axle C, journaled therein, a cable D, a brake-lever *d e* for said cable, a seat or support B, oscillating on the frame and connected to said brake-lever, and a lever E, for regulating the action of the seat upon the brake-lever, said brake-lever having a common fulcrum with the lever E, substantially as described.

4. The combination, in a fire-escape, of a frame A, an axle journaled therein, a cable D, a brake for said cable, and a seat or support B, oscillating on the frame and having a spring-connection with said brake, substantially as described.

5. The combination, in a fire-escape, of a frame A, an axle journaled therein, a cable D, a brake for said cable, a seat or support B, oscillating on the frame, a spring R, acting upon the brake, and a spring U, connected to the seat B for increasing the action of the spring R upon the brake, substantially as described.

6. A fire-escape combining in its structure a frame A, a support or seat B, a brake mechanism connected with and operated by the support or seat, an axle C, journaled in the frame, a cable D, a ratchet-wheel G, secured to the axle, a detaining-detent S for the ratchet-wheel, a lever E, for releasing the detent and regulating the action of the support or seat on the brake mechanism, and actuating crank or cranks *n* for said axle, substantially as described.

7. The combination, in a fire-escape, of a frame A, an axle journaled therein, a cable D, a brake mechanism for said cable, and a primary seat or support B and secondary support *t u*, said secondary support being connected to the brake, substantially as described.

8. The combination, in a fire-escape, of a frame A, an axle journaled therein, a cable D, a brake for said cable, a seat or support B, connected to said brake, and a lever *r s*, for increasing the action of the brake, substantially as described.

9. The combination, in a fire-escape, of a frame A, an axle journaled therein, a cable D, a brake-wheel W and brake-band V for said axle, a brake-lever M, having a branch or finger *b′*, and a lever E, for engaging said branch *b′* to loosen said brake-band, substantially as described.

10. The combination, in a fire-escape, of a frame A, an axle journaled therein, a cable D, a brake-wheel W and brake-band V for said axle, a brake-lever M, having a fork *a′ b′*, and a lever E, for alternately engaging the branch *a′* or *b′* of said fork for tightening or loosening the brake, substantially as described.

11. The combination, in a fire-escape, of a frame A, an axle journaled therein, a cable D, a double check for said axle, consisting of a ratchet and detent or pawl and a continuously-tightened brake made to act on said axle, a support B, connected to the brake for increasing its action, a slide R′, for releasing the detent or pawl, and a lever E, for operating the slide and loosening the brake, substantially as described.

12. The combination of the frame A, the axle journaled therein, a cable D, a brake for said axle, a support B, made to act on the brake, a lever for increasing the action of the brake, and two arms *r r′*, for transmitting motion from the lever to the brake when said lever is swung in one direction or the other, substantially as described.

13. The combination, in a fire-escape, of a frame A, an axle C, journaled therein, a cable D, a brake-wheel W, fixed to the axle, a brake-band encircling said brake-wheel, a seat or support B, oscillating on the frame and connected by a spring to said brake-band, and a lever E, for regulating the action of the seat and spring upon the brake, substantially as described.

14. The combination of a frame A and axle C, journaled therein, a cable D, a brake-wheel W, fixed to the axle, a continuous spring-tightened brake-band for said brake-wheel, a ratchet-wheel G and pawl S for said axle, a rest or support B, oscillating on the frame and connected to said brake-band, and an actuating-lever E, communicating with the spring and brake, as also with the pawl and rest, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

PHILIPP GOLDMANN.

Witnesses:

WILLIAM C. HAUFF,

E. F. KASTENHUBER.