(No Model.)

N. J. POWELL.

FIRE ESCAPE.

No. 306,520. Patented Oct. 14, 1884.

Fig. 1.

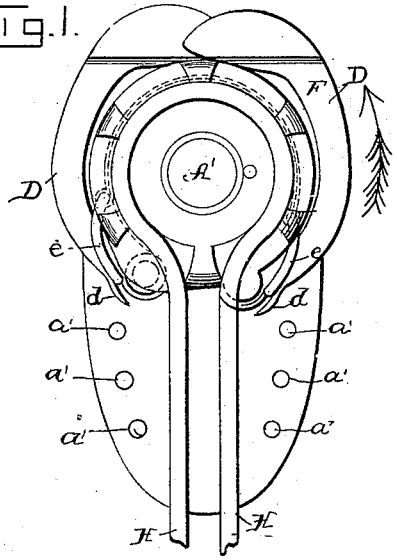


Fig. 2.

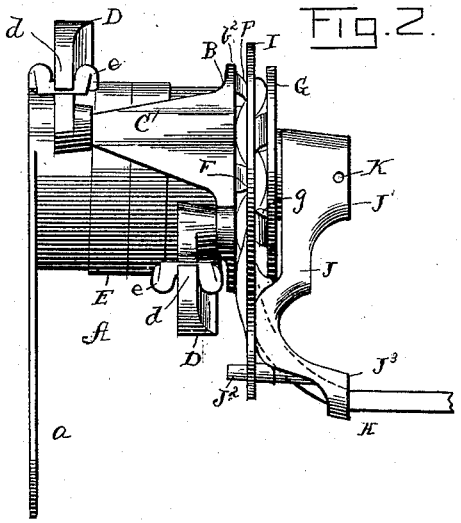


Fig. 3.

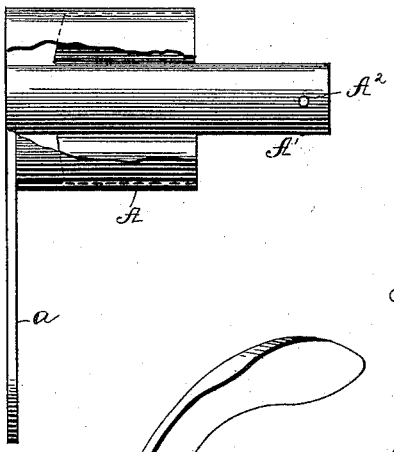


Fig 4

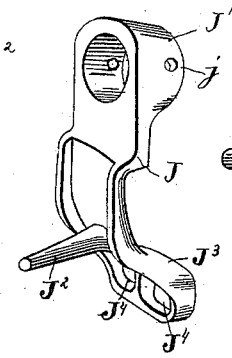


Fig 5

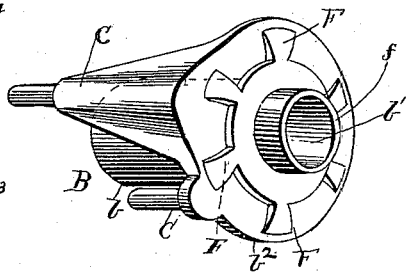


Fig 6

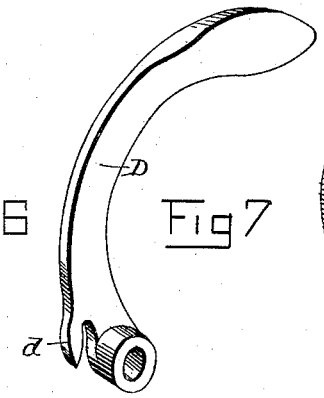


Fig 7

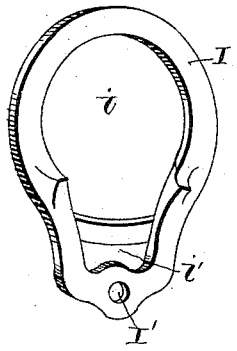
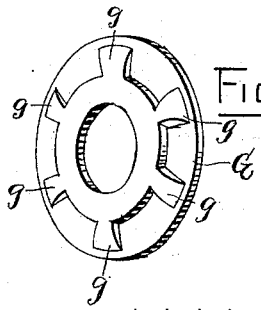


Fig 8



WITNESSES.

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UNITED STATES PATENT OFFICE.

NEWMAN J. POWELL, OF PONTIAC, ILLINOIS.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 306,520, dated October 14, 1884.

Application filed June 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, NEWMAN J. POWELL, a citizen of the United States, residing at Pontiac, in the county of Livingston and State of Illinois, have invented certain new and useful Improvements in Fire-Escapes; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to fire-escapes of the class to which belongs the escape shown in my Patent No. 291,001, granted December 25, 1883; and it consists in the novel construction, combination, and arrangement of parts, as will be hereinafter more fully described and claimed.

In the drawings, Figure 1 is an end view of my escape, the retaining-ring, clutch-disk, and guide-bracket being removed. Fig. 2 is a side view of the device. Fig. 3 is a detail view of the fixed drum; Fig. 4, a detail view of the guide-bracket; Fig. 5, of the brake-carrier; Fig. 6, of the governor-arm; Fig. 7, of the rope-retaining ring; Fig. 8, of the clutch-disk.

The fixed drum A is adapted to be secured at one end to a suitable support, and may, when desired, have a plate, *a*, at such end perforated by screw-holes *a'*, to facilitate the securing of the device to such support. A shaft or spindle, A', is extended beyond the outer end of the drum sufficiently far to receive and support the brake-carrier hereinafter described. I by preference make the drum hollow and extend the spindle into same to its end, so as to furnish a longer bearing for the brake-carrier and to more firmly support same. The brake-carrier B is formed with the tubular box *b*, provided with opening *b'* and fitted on the spindle. At the outer end of this box-flange b^2 is extended radially beyond the said box and slightly beyond the fixed drum when the parts are in position, as will be understood from Fig. 1. From the outer edge of this flange pivot-pins *c c'* are extended inward in the direction of the boxing *b*. These pins are designed to serve as pivots for the brake-arms, and one of the pins is made longer than the other, so the arms will be held in different vertical planes. Where desired, however, the pins may be made the same length, and the arm is held in the same plane under conditions more fully explained hereinafter; or the pins might be dispensed with and the arms pivoted directly to the end plate. In either case they would be pivotally supported to the flange, as will be understood more clearly in the light of the following description. The arms D are pivoted at their inner ends to the pins *c c'*, and may have their outer ends weighted in order to increase their centrifugal force. Near the inner or pivoted ends of these arms are formed hooks *d* or other construction, whereby the friction-band may be secured thereto. This band E is preferably a narrow strip of spring metal, secured at its opposite ends to the arms D, near the pivot of said arms. This connection may be made in various ways; but in practice I prefer to provide the extremities of the brake-band with loops or eyes *e*, which are caught over the hooks *d*, as will be understood from Figs. 1 and 2. The band is wound several turns around the fixed drum, so that when the arms are thrown out by the centrifugal force as the brake-carrier is revolved, the band is tightened on the fixed drum and the brake action is applied to the extent of the degree of speed at which the carrier is revolved, as will be understood. If the brake-arms be attached directly to the flange of the carrier and in the same plane, the friction-band will only pass partly around the fixed drum.

In operation, if the carrier is revolved in the direction indicated by full line shown in Fig. 1, the arm adjacent thereto will be thrown out and cause the band to tighten on and brake the device, and, if revolved in the opposite direction, the other arm will be thrown out, as will be readily understood. Thus the direction of rotation of the carrier can be alternated without affecting the brake of same, rendering the device reversible in the manner hereinafter more fully described. The outer end of the carrier is provided with teeth F, separated as shown, and a short tubular extension, F', which serves to support the clutch-disk. This disk G is placed and keyed on the part *f*, and has on its inner face teeth *g*, which alternate with teeth F, and project between said teeth in such manner, as shown in Fig. 2, that the rope H will cause said parts to re-

volve when drawn from either end. The parts G and F, it will be noticed, form the pulley which is revolved by the escape-rope; and while I prefer to form these parts separately, as shown and described, it is manifest they might be formed integral when so desired. The teeth are preferably beveled, as shown in Figs. 5 and 8, so that the rope will readily pass off tangentially therefrom. The ring I is fitted over and between the teeth F *g*, and holds the cord or rope H in contact with said teeth except at the bottom, where the opening *i* of the ring is extended radially at *i'*, and permits the rope to escape therefrom and pass downward. It will be noticed that the rope is held by the construction described in contact with the brake for almost the entire circumference thereof, so that the revolution thereof and the attendant automatic braking is assured. The lower end of the ring I is provided with an aperture, I', through which a brace-stud is projected, as will be presently described. The outer end of the spindle A' is extended beyond the carrier B, and the guide-bracket J is sleeved, at J', thereon, and keyed thereto preferably by a pin, K, passed through openings *j* A^2 in, respectively, parts J' and A'. This bracket J extends downward, and is provided near its lower end with an inwardly-projected stud, which is carried through the opening I' in ring I, and serves to hold said part down in position proper to retain the rope in contact with its clutch-pulley, as is desirable. The lower end, J^3, of the bracket J is extended outward, as shown in Figs. 2 and 4, and is provided with rope-openings J^4 J^4, through which the opposite ends of the rope are passed, as shown in Fig. 2. This is preferred, because thereby a greater friction is given to the rope; but, where desired, the rope may be allowed to depend vertically from the pulley.

It will be understood that instead of journaling the brake-carrier provided with the rope-pulley on a shaft extended from the fixed drum, as is preferred, the said carrier and attachment might be separately supported adjacent said fixed drum, so the band E would encircle and engage thereagainst in the operation of the device. It will also be understood that the form of brake-arms before described will give good results if the rope be wound on and secured at one end to the pulley, which in such case might be made smooth; but I prefer to use the construction shown, because when one end of the rope has been carried to the ground by an escaping person and other end is near the escape, this latter end may be used for the next person, thus avoiding the necessity of winding the rope onto the pulley, and enabling a number of persons to escape in less time than where such rewinding is necessary.

By making the friction-band of spring metal it prevents the governor from applying the brake with too great force to the fixed drum, and also obviates the binding of the rope on the drum, and the suspension of the escaping person in mid-air, as when this revolution of the carrier ceases the expansive tension of the band draws the brake-arm inward and releases the brake, as will be understood. I prefer to use both governors, because thereby the device may be reversed, as before described; but it is manifest that one would give good results, in which use it would be necessary to secure one end of the band to the carrier. By extending the outer ends of the two brake-arms in opposite circumferential direction one is brought into play with each direction of rotation of the rope-pulley, and it will be appreciated that instead of using a single brake-band and securing its opposite ends to said arms a separate band might be used for each arm without involving a departure from the broad principles of my invention, though the single band, as shown and before described, is preferred.

In practice I prefer to secure the plate *a* against the under side of a ceiling, window-sill, or other suitable support, with the fixed drum and carrier depending vertically. In this case the deflected part J^3 of the bracket J guides the rope to a vertical position, as will be understood.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the fixed drum, a revolving carrier provided with a rope-pulley, a governing-arm pivotally supported on said carrier, and a brake-band of spring metal adapted to engage on the fixed drum and having an outward tension, substantially as set forth.

2. The combination, with the fixed drum and the carrier provided with a rope-pulley and the brake-band, of the two governing-arms pivotally supported on the carrier and having their outer ends extended in opposite circumferential directions, whereby the descent may be regulated with either direction of rotation of the carrier, substantially as set forth.

3. A fire-escape comprising a fixed drum, a brake-carrier provided with a rope-pulley, the governing-arms pivotally supported on said carrier in different vertical planes and having their outer ends extended in different circumferential directions, and the brake-band wrapped several times around the fixed drum and secured at its extremities to the governing-arms, substantially as set forth.

4. The combination of the fixed drum, the revolving carrier provided with a pulley having rope-engaging surfaces F *g*, the retaining-ring placed over said pulley and adapted to hold the rope in contact with said surfaces, and the governing-arms supported on said carrier, substantially as set forth.

5. The combination of the fixed drum, the carrier provided with a rope-pulley, the governing-arms pivotally supported on said carrier and extended in opposite circumferential

directions and provided with hooks *d*, and the brake-band wound on the fixed drum and provided at its extremities with loops or eyes *e* and engaged with the hooks *d*, all substantially as and for the purposes specified.

6. The combination of the fixed drum having a shaft, A′, extended from its outer end, the carrier journaled on said shaft and provided with a rope-pulley, the governing-arms pivotally supported at their inner ends on said carrier and having their outer ends extended in opposite circumferential direction, and the brake-band, substantially as set forth.

7. The combination, with the carrier having the governing-arms and brake-band supported at its inner end, and provided at its outer end with separate teeth F, of the disk G, having teeth *g*, corresponding with teeth F and secured alternately thereto, and the ring I, substantially as set forth.

8. The combination of the fixed drum, the carrier provided with a rope-pulley, the governing-arms, the brake-band, and the guide-bracket having its lower end extended below the rope-pulley and provided with lateral openings for the passage of the rope, substantially as set forth.

9. The combination of the fixed drum, the revolving carrier provided with a pulley having rope-engaging surfaces, the retaining-ring placed over said pulley and adapted to hold the rope in contact with said surfaces, and the guide-bracket connected with the retaining-ring, substantially in the manner described, whereby the said ring is held firmly in desired position, substantially as set forth.

10. The herein-described fire-escape, consisting of the hollow fixed drum, the shaft A′, extended outward from within said drum, the carrier having boxing *b*, journaled on the shaft A′ and extended within the boxing, the teeth F, formed on the outer end of the carrier, and the extension *f*, projected therefrom, the brake-arms D D, having hooks *d*, the band E, having loops or eyes *e*, the disk G, having teeth *g*, the retaining-ring I, having eccentric depending extension provided with opening I′, and the guide-bracket provided at its lower end with lateral extension J^2, having openings J^4 J^4, and with stud J^3, projected through opening I′, all arranged substantially as set forth.

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

NEWMAN J. POWELL.

Witnesses:
S. P. BRANSON,
W. J. CULLOM.