2 Sheets—Sheet 1.

J. S. COCHRAN.

FIRE-ESCAPE.

No. 182,061. Patented Sept. 12, 1876.

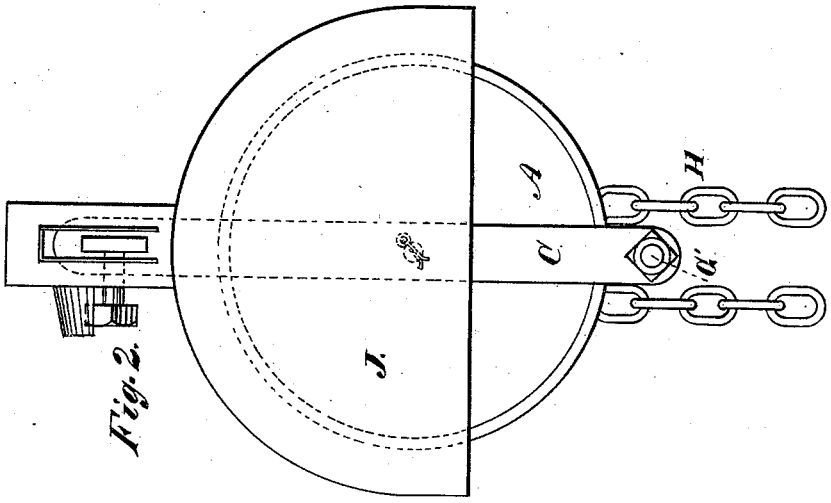

Fig. 2.

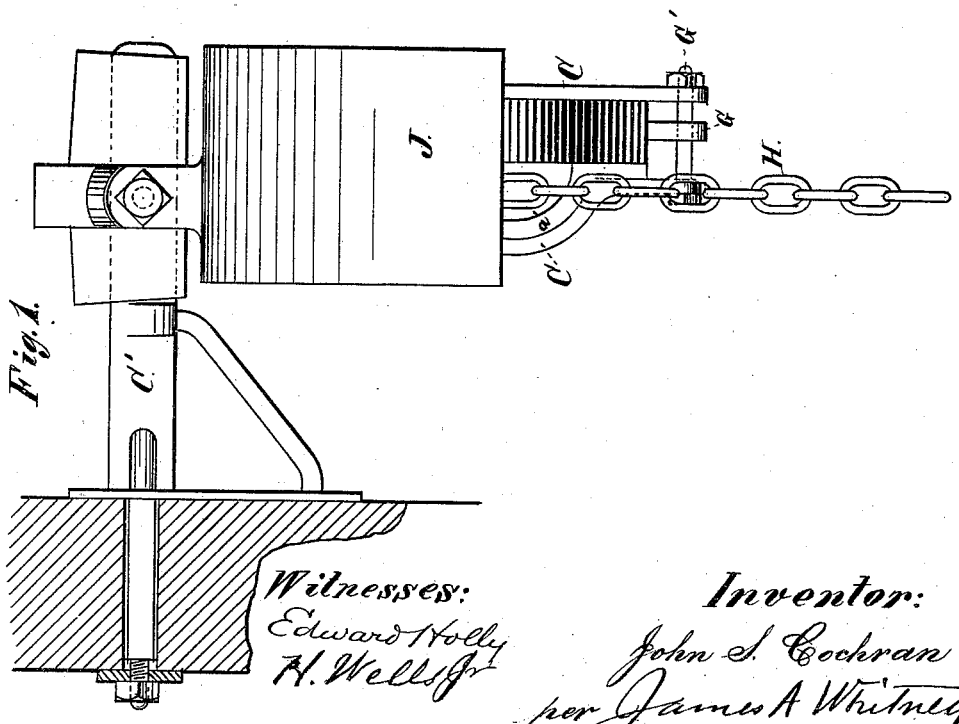

Fig. 1.

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Inventor:
John S. Cochran
per James A Whitney
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2 Sheets—Sheet 2.

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Fig. 5.

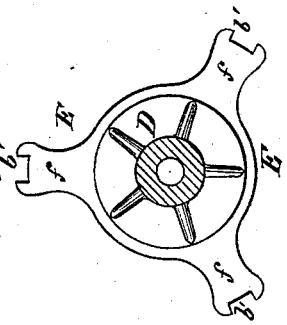


Fig. 6.

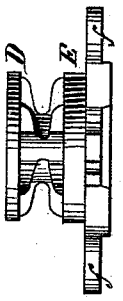


Fig. 4.

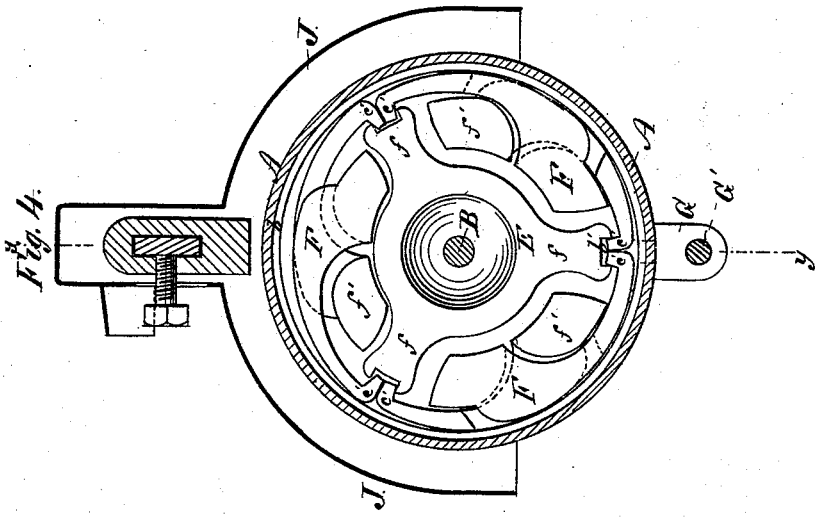
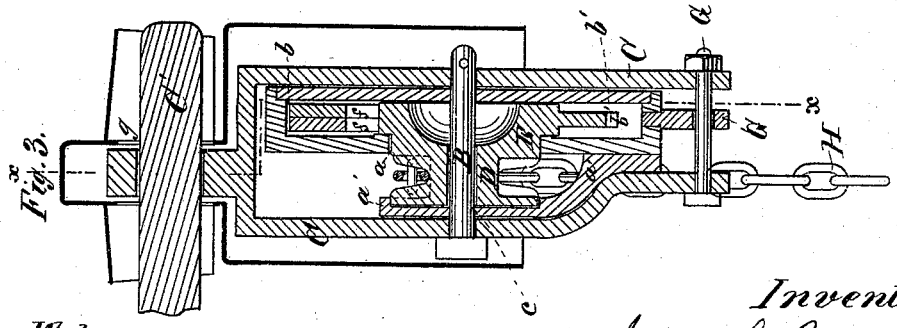


Fig. 3.



Witnesses:

Henry Eichling.

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Inventor:

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UNITED STATES PATENT OFFICE.

JOHN S. COCHRAN, OF NEW YORK, N. Y.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **182,061**, dated September 12, 1876; application filed August 18, 1876.

To all whom it may concern:

Be it known that I, JOHN STUART COCHRAN, of the city, county, and State of New York, have invented certain Improvements in Fire-Escapes, of which the following is a specification:

This invention relates to that class of fire-escapes in which an endless chain is passed over a sprocket-wheel, which gives rotation to centrifugal friction-blocks, the pressure of which upon the surface of a surrounding drum retards the motion of the chain to keep the same within the limits of safety when persons are descending therefrom from a greater or less elevation. As hitherto constructed fire-escapes of this class have been open to the objection that the sprocket-wheel, together with its drum and other adjuncts, have been tilted sidewise, causing the drum to bind in its bearings, and cause it to work with greatly diminished freedom and reliability.

The object of my invention is to obviate these serious drawbacks, while providing a fire-escape of the class mentioned, which shall be reliable under all circumstances, and which shall retain its parts in their normal relation with each other no matter what the strain brought upon the endless chain during the descent of one or more persons on said chain.

To this end my invention comprises, in a fire-escape, the sprocket-wheel of which is sustained upon a pivot provided in a hanger, and arranged at the axis of the circular drum surrounding the friction-blocks actuated by said sprocket-wheel, the entire weight of the sprocket-wheel and its adjuncts, the drum, the chain, and the weight placed upon the latter being carried by the pivot aforesaid, provided in the hanger as just set forth, the hanger having its point of suspension arranged nearly or quite in the same plane with the groove of the sprocket-wheel, and thereby preventing the tilting of the apparatus when in use, while the drum, being concentric with the pivots, insures the full and effective operation of the friction-blocks in permitting the movement of the chain at a proper speed, without liability either of stopping the same or permitting such chain to move at a too great or dangerous velocity.

The invention further comprises a novel combination of a stop with the hanger, and with the drum surrounding the centrifugal friction-blocks actuated from the sprocket-wheel and chain, whereby the drum is kept in a fixed position with reference to the hanger during the rotation of the sprocket-wheel, the chain, and the centrifugal friction-blocks, in order to prevent the turning of the drum with the movement of the sprocket-wheel, which would of course diminish the retarding action of the friction-blocks during the use and operation of the apparatus.

Figure 1 is an edge view of a fire-escape, made according to my invention. Fig. 2 is a side view of the same. Fig. 3 is a central transverse sectional view of the same taken in the line Y Y of Fig. 4. Fig. 4 is a longitudinal sectional view of the same taken in the line X X of Fig. 3. Figs. 5 and 6 are detached views of the sprocket-wheel and its adjuncts, for giving movement to the centrifugal friction-blocks.

A is the drum, having at its center a circular opening, *a*, concentric with its circular inner circumference *b*. This drum is provided with an arm, A′, which, in the axial line of the drum, has a bearing, *c*, on the pivot B, this pivot B being provided in the frame or hanger C, the shape of which is more fully shown in Fig. 3. D is the sprocket-wheel, with the usual deep groove in its periphery, and is situated in the space between the inner face of the arm A′ and the opposite face or side of the drum A itself. Formed upon or in one with the sprocket-wheel, is a spider, E, with any desired number of—as, for example, three—radial projections *f*, recessed at their outer ends, as shown at *b′*.

F are centrifugal friction-blocks, each of which is provided at one end with a spur, *c′*, fitting into the recess *b′* in the end of the adjacent projection *f*. By this means each of the centrifugal friction-blocks F is freely pivoted in the projection *f′* of the spider E aforesaid, the outer surface of each friction-block being so arranged as to come in contact with the inner circumference of the drum when the block is thrown out centrifugally by the rapid rotation of the spider—in other words, of the sprocket-wheel.

It is to be observed that the aforesaid inner

circumference of the drum A is concentric with the pivot B, upon which the sprocket-wheel and its adjuncts and the drum are supported. Projecting from the bottom of the drum is a loop or staple, G, through which passes the bolt G′, extending across the lower part of the bracket C′. It will be observed that this bolt sustains no part of the drum, but it is so arranged as to prevent any rotation or turning of said drum when friction in a circular direction is brought against the same by contact of the friction-blocks, hereinbefore referred to, and hereinafter more fully explained. H is the endless chain, of any suitable length, passed over the sprocket-wheel D in the same manner as over the sprocket-wheels of other fire-escapes of the class to which my said invention relates, as hereinbefore set forth; said chain, therefore, requiring no specific description.

It will be particularly borne in mind that the point *g* of suspension of the bracket C is in the same plane as that in which the endless chain works. In the operation of the apparatus the draft of the chain, therefore, is coincident with the point of suspension of the drum, sprocket-wheel, &c., and any tendency to laterally tilt the drum when strain is brought upon the chain is effectually avoided.

In the operation of the apparatus, one side of the chain is grasped by the party or parties descending. This turns the sprocket-wheel with greater or less velocity. A free descent of the chain grasped by the party descending is allowed up to a certain point, at which point the friction-blocks are thrown forcibly outward by centrifugal force, in contact with the inner circumference of the drum A, and as the speed increases this friction increases in due proportion, and, retarding the descent, keeps the velocity of such descent within the limits of safety. This action of the centrifugal blocks is rendered uniform at all portions of the revolution on the said blocks in proportion to the velocity with which the sprocket-wheel, and, consequently, the friction-blocks, is revolved by the position of the inner circumference of the drum concentric with the pivot B, supporting said drum, and constituting the pivot or axis of motion of the sprocket-wheel and friction-blocks.

In order to protect the parts from undue exposure or injury a hood, J, of sheet metal, and formed in suitable shape, may be placed over the same, as shown in Figs. 1, 2, 3, and 4.

It is, of course, to be understood that when the apparatus is in use the hanger C is attached, at the point of suspension *g*, to any suitable support—as, for example, a bracket, beam, or arm projected from a window or roof of the building.

What I claim as my invention is—

1. In a fire-escape, the sprocket-wheel D, sustained by the pivot B of the hanger C, having its point of suspension in the same plane as the groove of the sprocket-wheel, in combination with the drum and the centrifugal friction-blocks, the inner circumference of the drum being concentric with the pivot B, all substantially as and for the purpose herein set forth.

2. The staple or stop G on the drum, and the bolt attached to the hanger, said parts constituting a stop which prevents the turning of the drum within the hanger, substantially as and for the purpose herein set forth.

JOHN S. COCHRAN.

Witnesses:

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H. WELLS, Jr.