

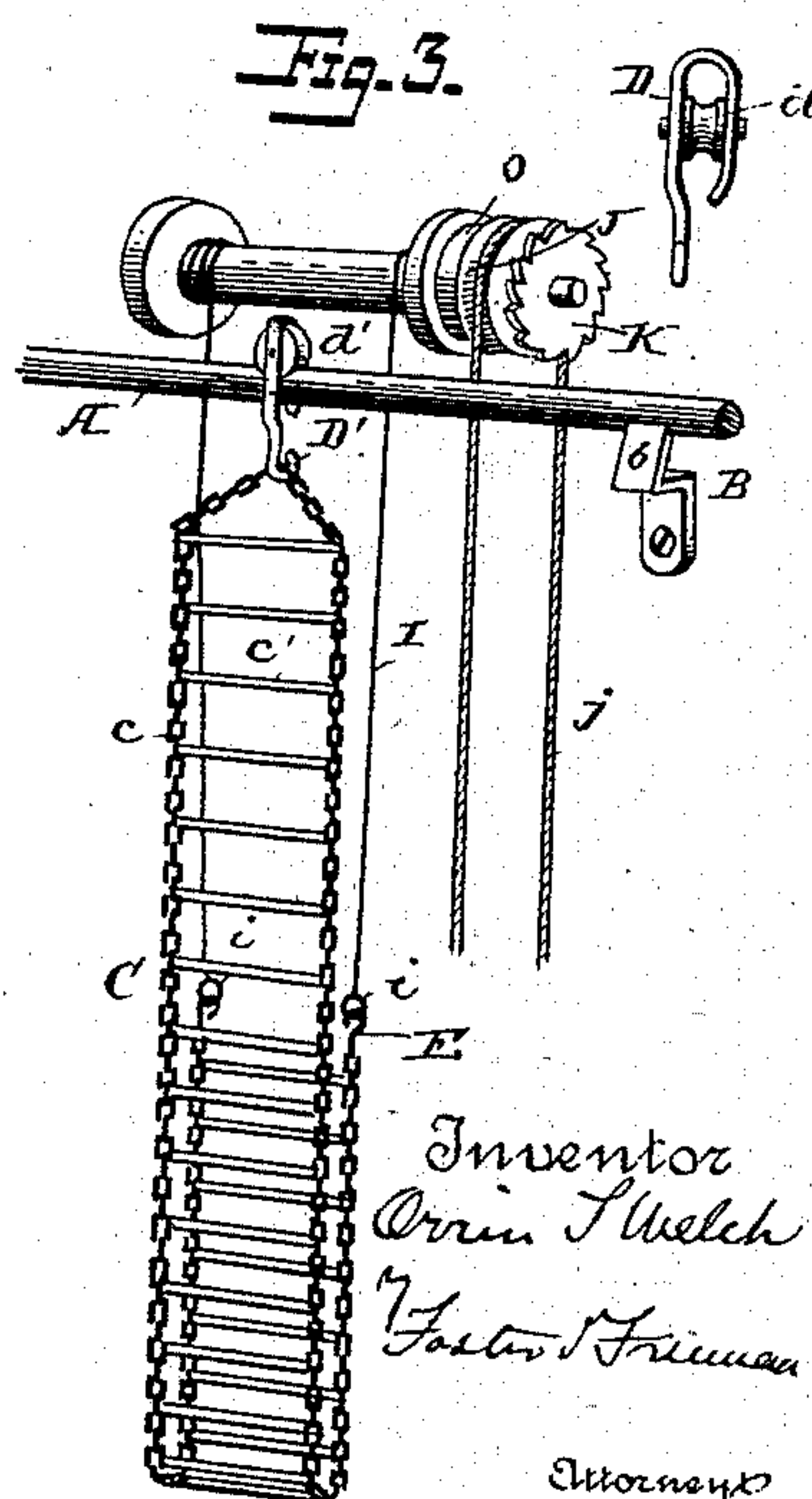
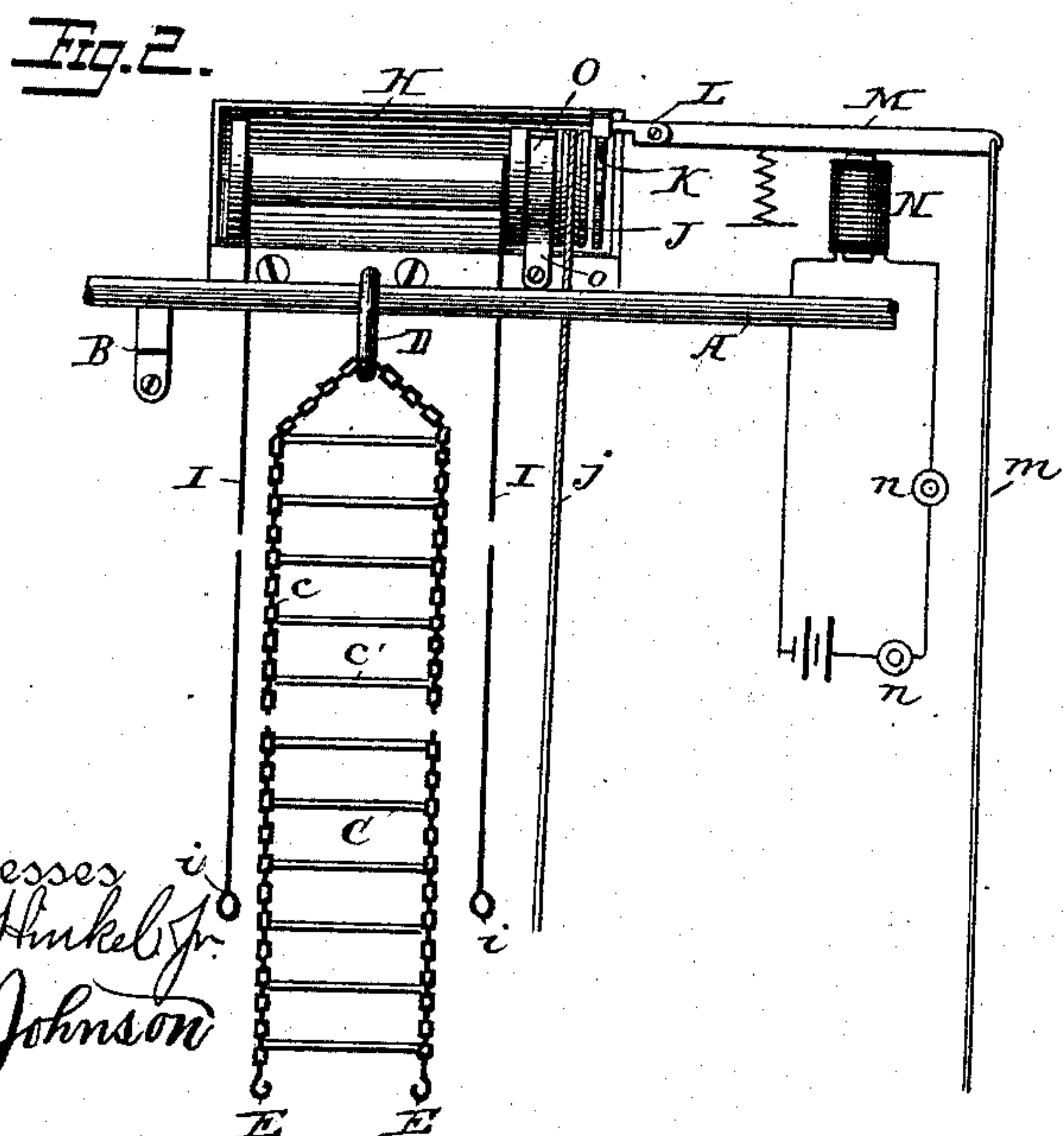
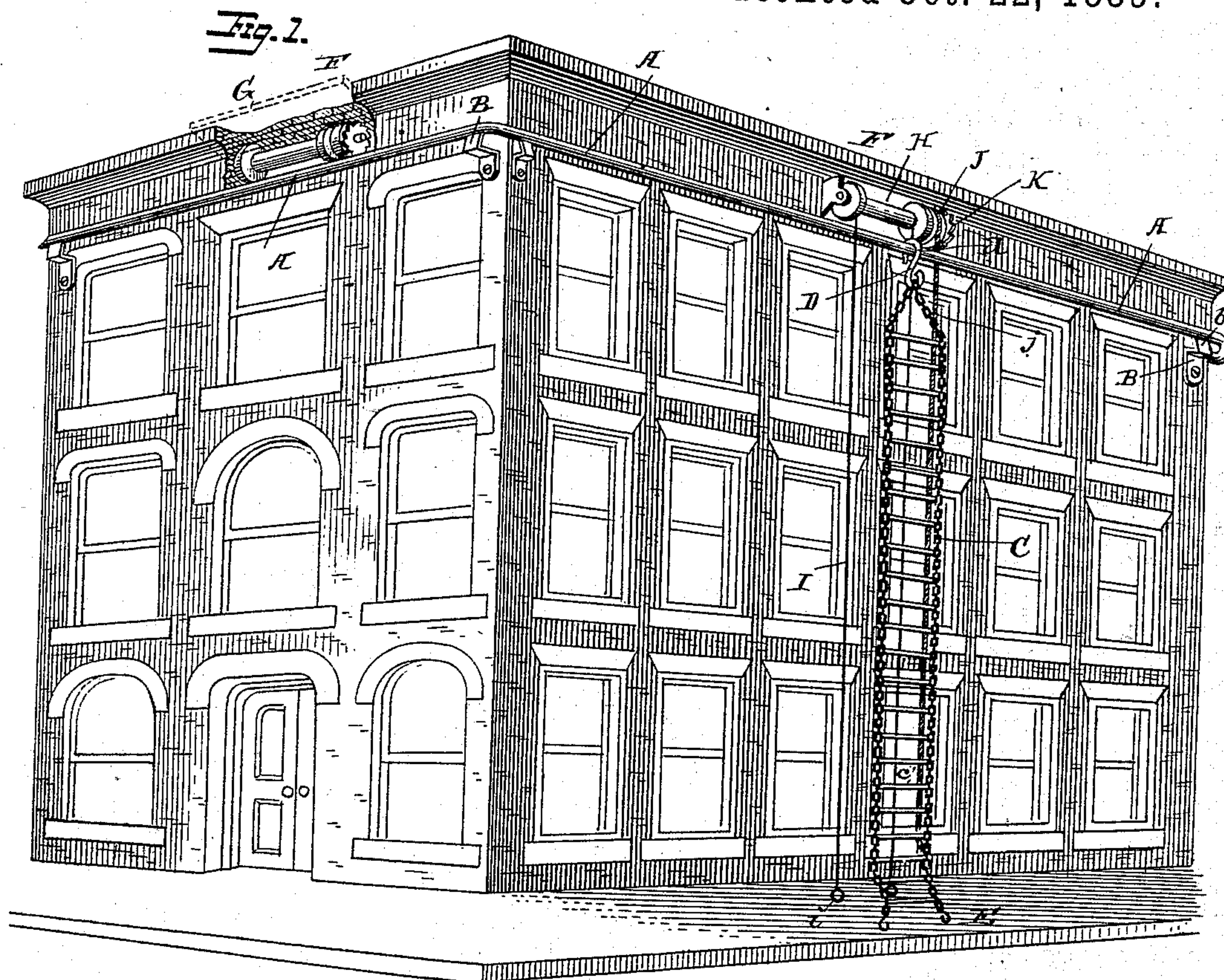
(No Model.)

O. T. WELCH.

FIRE ESCAPE.

No. 413,270.

Patented Oct. 22, 1889.



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UNITED STATES PATENT OFFICE.

ORRIN T. WELCH, OF TOPEKA, KANSAS.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 413,270, dated October 22, 1889.

Application filed December 24, 1888. Serial No. 294,540. (No model.)

To all whom it may concern:

Be it known that I, ORRIN T. WELCH, a citizen of the United States, residing at Topeka, Shawnee county, State of Kansas, have invented a new and useful Improvement in Fire-Escapes, of which the following is a full, clear, and exact specification.

My invention relates to fire-escapes, and more particularly to that class which is adapted to be applied permanently to buildings; and the object of my invention is to provide a simple, cheap, and effective arrangement of devices which may be applied to a building in a manner to be ready for use at all times, and so as not to impair or interfere with the ordinary uses of the building or the general appearance thereof; and to these ends my invention consists in an apparatus constructed and arranged and adapted to be operated substantially in the manner hereinafter set forth.

Referring to the accompanying drawings, forming part of my specification, Figure 1 is a side view of a building, showing my improved fire-escape applied thereto. Fig. 2 is a side view showing the general arrangement of the operating devices; and Fig. 3 is another view, partially in perspective, showing the devices in another condition.

One of the first objects of my invention is to provide a fire-escape which shall be practically permanent in its connection with the house or building to which it is applied and shall be capable of being easily and readily moved around the building to different positions in accordance with the necessities of the case; and to facilitate such removal of the fire-escape I provide at some suitable place on the building, preferably near the eaves, a stationary rod or bar, which is so fixed as to be rigidly and securely supported, and at the same time form a way or track upon which to move the fire-escape proper from one position to another. In the drawings this bar or rod is indicated by the letter A, and while it may be variously mounted, according to the nature of the case, I have shown it supported by brackets or arms B, which are of such a shape as to hold the rod a certain distance from the walls of the building and at the same time permit the passage of a traveling carriage or trolley from one portion of the

building to another, the supporting-edges *b* of the brackets or arms being narrower than the diameter of the track or rod A.

The form of fire-escape proper which I prefer to use is a chain, rope, ladder, or other similar device, as shown at C, and while this may be of any suitable construction or material that indicated in the drawings, in which the sides are made up of chain-links *c*, and metal or other rods *c'* connect the chains and form the steps, is preferable, though any other similar or suitable construction may be used without departing from the spirit of my invention. This ladder is connected to some suitable hook, trolley, or carriage D, which is adapted to move freely upon the rod A, but is so fitted that it will not fall or slip from the rod after being once attached. In Fig. 1 I have shown this trolley or traveler as being a simple hook, one end of which supports the ladder, the ladder being attached thereto, and the other end of which is clasped or hooked around the rod A sufficiently to prevent its slipping off even if the hook is reversed, and at the same time the end *d* of the hook is sufficiently free from the body thereof to allow the hook to freely pass over the finger or projection *b* of the bracket B supporting the rod.

In Fig. 3 I have illustrated another form of traveler, in which there is a trolley consisting of a yoke D', having a friction-wheel *d'* secured therein and traveling on the rod A, while the yoke extends over and projects down to the opposite side of the rod sufficient to prevent derailment of the trolley under any circumstances, but leaves a space between the end thereof and the body to permit the projection *b* to pass freely there-through. From this description the general principles of construction of the traveler will be understood, and any well-known or equivalent form may be used.

The chain, rope, ladder, or other equivalent device is preferably permanently connected with the traveler at one end, and the other or free end is provided with hooks E E, by which the ladder may be secured to the sidewalk or other place to steady it when being used and prevent it from swaying with the person or persons thereon, and by means of which it may be drawn up out of sight and stored until required again. One of the special

features of my invention consists in thus storing the ladder or escape in the building, and having it permanently attached thereto, so as to be ready to be operated at any and all times, and this part of my invention may be carried out in various ways.

I have shown a roller, drum, or windlass secured to some convenient portion of the building and adapted to receive and hold the ladder or chain. This roller, drum, or windlass may be secured, as shown at F, at the top of the building and under the projecting eaves or molding, or elsewhere; but a preferable way is to secure it inside the building by forming a chamber or recess in the roof, as indicated at F' in the drawings. In this way a permanent structure may be made which will not at all interfere with the appearance of the building, and which, if desired, may be made fire-proof, or as nearly so as practicable, by being incased in brick or other suitable fire-proof material. When so mounted and the chain secured thereon, the door G or other opening may be closed, leaving only the projecting link or hook D, embracing the rod A, extending beyond the building line.

The roller, drum, or windlass H, when mounted in either manner previously set forth, or similarly, is provided with cords I, permanently secured thereto, and the free ends of these cords are provided with rings *i*, adapted to engage with the hooks E of the chain or ladder; and when the roller or windlass is operated, as indicated in Fig. 3, they are taken onto said roller, drum, or windlass and serve to draw the free ends of the ladder up and wind it thereon, in which position it is kept until again required for use. Various ways of winding this ladder upon the windlass, roller, or drum will suggest themselves; but I have shown a friction-pulley J secured to the axle or windlass, over which a hand rope or cord *j* may be passed, and which may be made for the time being endless by connecting its ends, and by its operation the ladder is wound up on the pulley or drum, after which the cord *j*, by disconnecting its ends, may be removed from the pulley until it is required again. The pulley is provided with a ratchet-wheel K, and a pawl L engages therewith to securely hold it from revolving backward, and this ratchet is shown as being attached to one end of a lever M, provided with a cord *m*, leading to some convenient portion of the building where it is readily accessible in case of danger. Instead of or in addition to the cord *m*, an electro-magnet N may be arranged to operate the lever M, and a push-button or circuit-closer *n*, or a number thereof, may be suitably located in different parts of the building, so that there can be no delay in releasing the fire-escape. By this it will be seen that either the cord or the electro-magnet may be operated to release the device and allow the chain or ladder to be automatically projected ready for use.

In order to insure the ladder being projected, I apply a spring or other device to the drum, windlass, or pulley, so that when the ladder is wound therein this pulley is under tension, and I have shown a coiled spring O, one end of which is secured to the pulley-shaft, drum, or windlass and the other end of which is secured to the frame supporting the pulley, and it will be evident that when the pulley is turned to wind up the ladder the spring is put under tension and is held in this condition by the pawl and ratchet; but as soon as the pawl is operated to release the pulley, drum, or windlass the spring instantly starts the pawl to rotate and causes the ladder or chain to be projected. When the ladder has reached its lowermost position, the hooks E E may be disconnected from the rings *i i* of the cords and the ladder moved around the building upon the rod A to the desired position to receive the inmates of all parts thereof or to ascend or descend. After the ladder has served its purpose it can be again restored to the position with relation to the pulley or windlass, and the hooks being replaced in the rings *i* and the hand rope or cord *j* having been passed over the friction-pulley J the cords *j j* and ladder are again wound upon the windlass or drum and the devices restored to their normal position.

From the above it will be seen that I provide a very simple and cheap device, which is always ready for instantaneous use, and which at the same time is capable of being used at any and all parts of the exterior of the building. It requires no skilled operators to manipulate it; but any one knowing the location of the push-button or of the operating-cord can release the pawl-and-ratchet mechanism and allow the ladder to be projected without delay, which is usually a great source of danger.

By having the ladder secured upon the rod at the upper part of the building it will be seen that it may be brought opposite any window or opening of any floor of the building and furnishes a safe and convenient mode of exit for the occupants thereof or ingress for firemen or others, and, as it is opposite one of the windows or openings in each story at the same time, exit or ingress to or from the different floors may be made quickly and safely.

I am aware that before my invention it has been proposed to have a rod or rail permanently secured to the outside of the building, and a traveler has been connected therewith, whereby a basket or other device could be elevated from the sidewalk or street to any desired window. I am also aware that it is not broadly new to have permanently-secured fire-escape devices which may be thrown out of the building in case of danger; but these devices do not anticipate my invention, as I combine in my arrangement the advantages of both these systems, as well as other advantages not inherent in either of them.

I am aware that fire-escapes have been proposed in which there are chains passing over the rail and secured to a drum arranged above or beyond the rail.

5 Having thus described my invention, what I claim is—

1. In a fire-escape, the combination, with a permanently-secured windlass or drum and a permanently-secured rail, of a ladder adapted
10 to be wound upon the windlass or drum and having one end attached to the rail, substantially as described.

2. In a fire-escape, the combination, with a permanently-secured windlass or drum and a permanently-secured rail, of a ladder one end
15 of which is permanently but freely secured to the rail and the other end of which is detachably secured to the windlass, the arrangement being such that the ladder is adapted
20 to be wound upon the windlass, substantially as set forth.

3. In a fire-escape, the combination, with a permanently-secured windlass and a permanently-secured rail, of a ladder provided with
25 a traveler permanently but movably secured to the rail, and cords permanently connected to the windlass adapted to be connected to the free ends of the ladder, substantially as described.

30 4. In a fire-escape, the combination, with a permanently-secured windlass and a permanently-secured rail, of a ladder supported upon the rail, cords connected to the windlass adapted to engage the free ends of the ladder, and a friction-pulley upon the windlass,
35 whereby the ladder may be wound thereon, substantially as described.

5. In a fire-escape, the combination, with a permanently-secured windlass, of the cords
40 connected thereto, a ladder adapted to be connected to the cords, a friction-pulley connected with the windlass, a tension device also connected to the windlass, and a pawl and ratchet controlling the movement of the
45 windlass, substantially as described.

6. In a fire-escape, the combination, with a windlass adapted to retain a ladder, of a tension device normally holding the windlass
50 under stress, a pawl and ratchet holding in check the tension device, and connections for operating the pawl and ratchet to release the
55 windlass, substantially as described.

7. In a fire-escape, the combination, with a permanently-secured rod, of a ladder permanently secured to the rod, but free to travel
60 thereon, and a windlass adapted to hold the ladder when not in use, substantially as described.

8. In a fire-escape, the combination, with a permanently-secured rod, of a ladder one end
65 of which is secured thereto, but free to travel thereon, and a permanently-secured windlass provided with cords to engage the ladder and store the same when not in use, substantially
as described.

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

ORRIN T. WELCH.

Witnesses:

GEO. H. GRAHAM,
J. S. BARKER.