

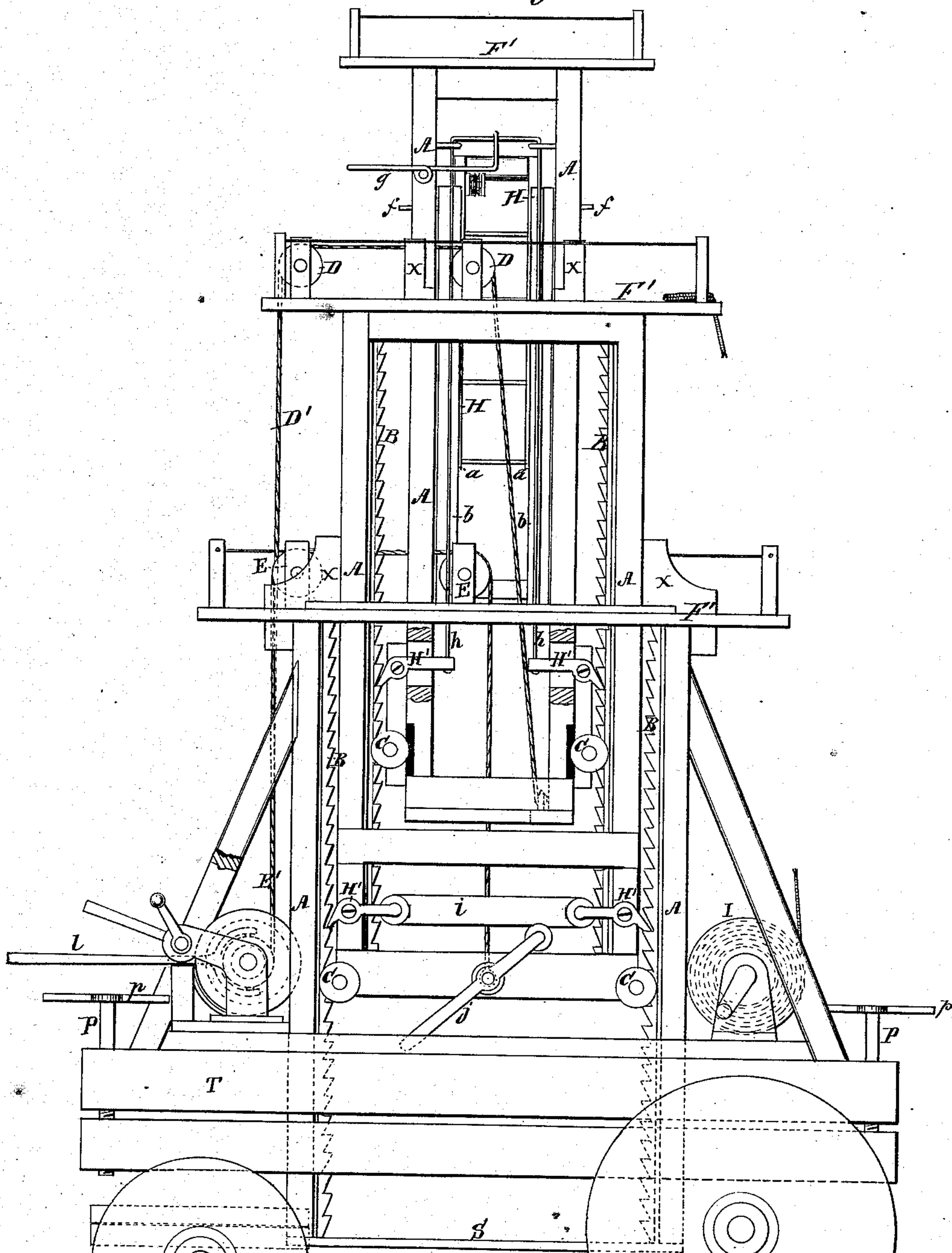
A. OBERNDORF, Jr & E. FRANK.

Fire-Escape Ladders.

No. 158,730.

Patented Jan. 12, 1875.

Fig. 1.



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Fig. 2.

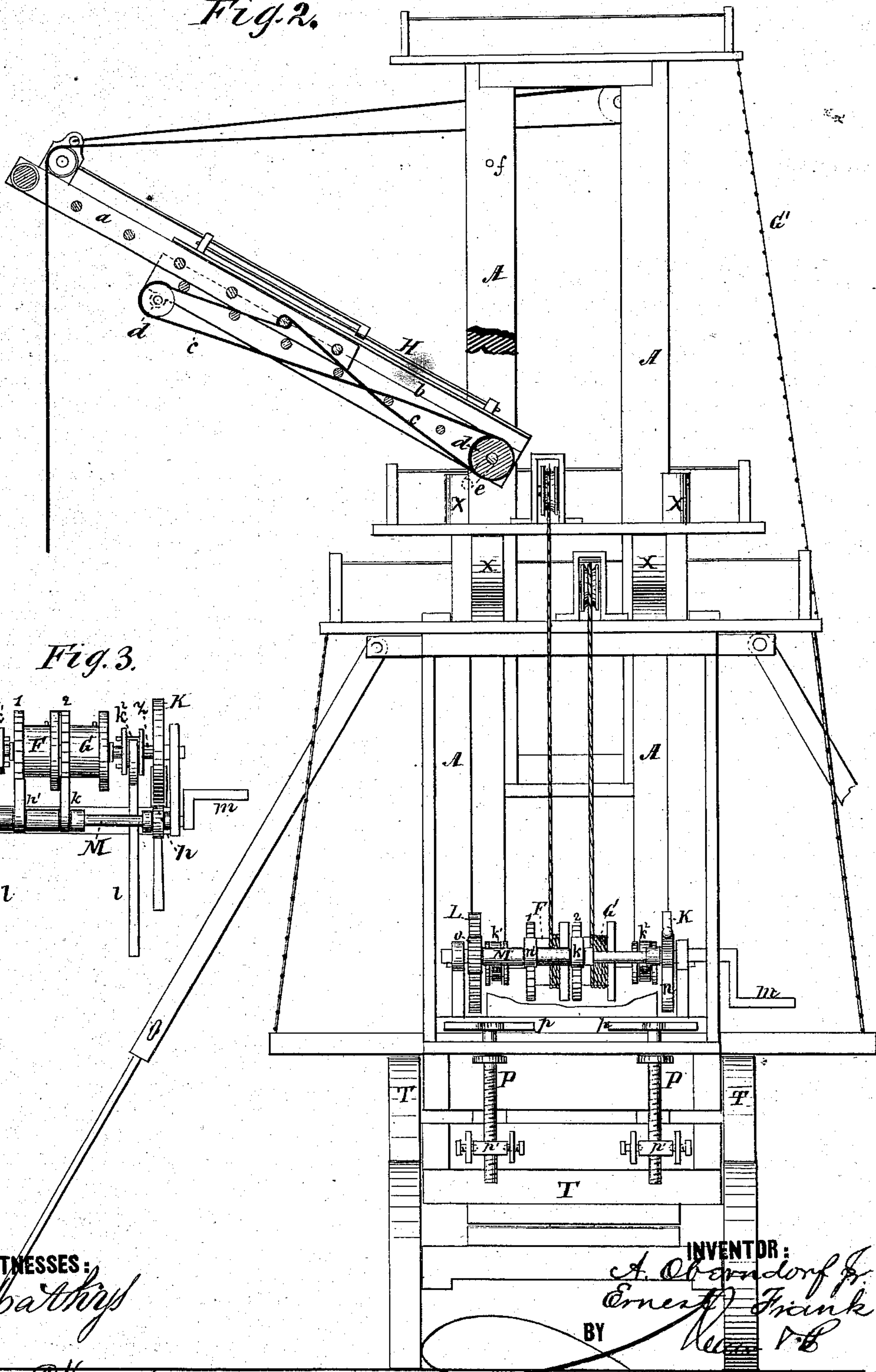
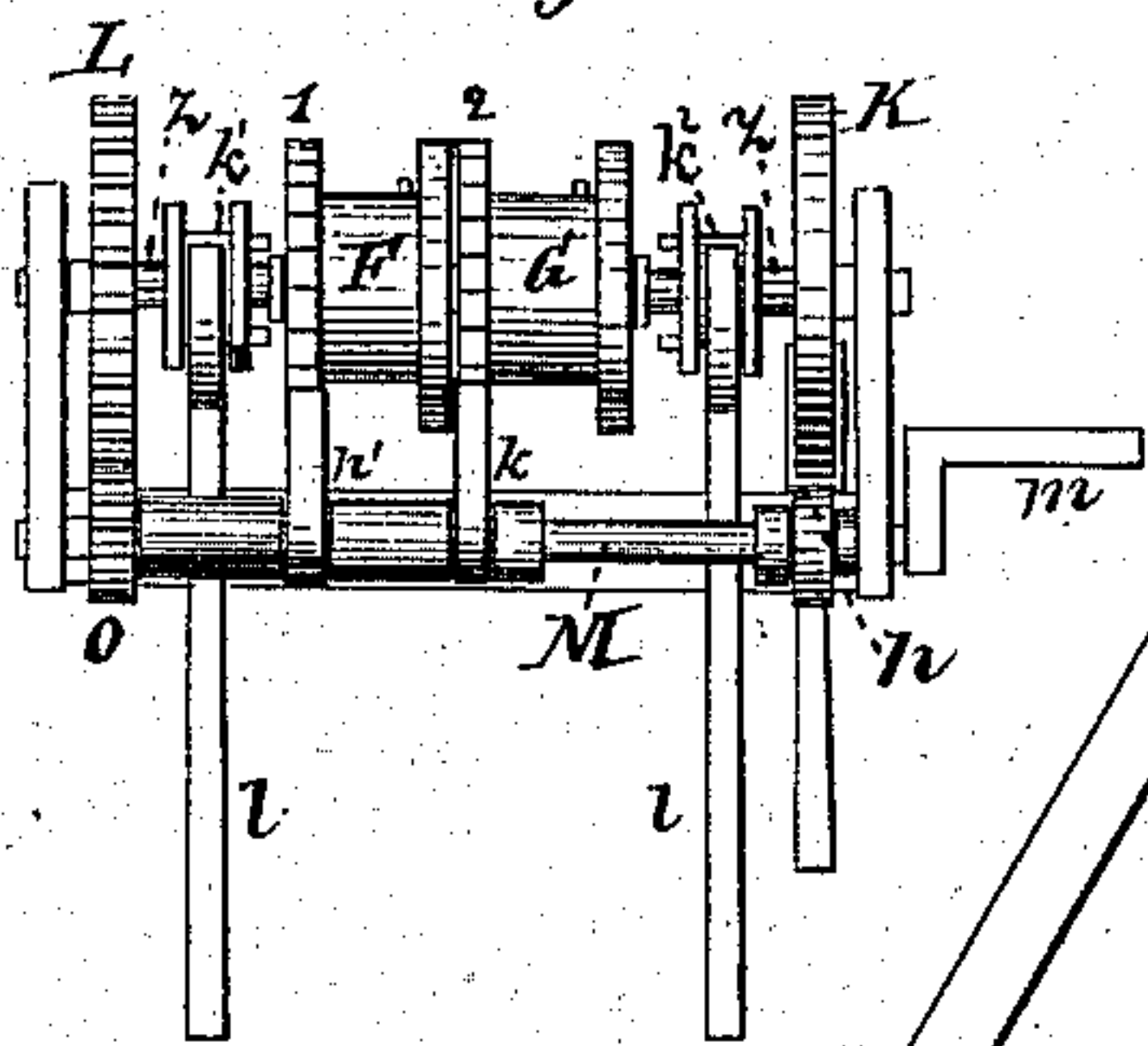


Fig. 3.



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ABRAHAM OBERNDORF, JR., AND ERNEST FRANK, OF BALTIMORE, MD.

IMPROVEMENT IN FIRE-ESCAPE LADDERS.

Specification forming part of Letters Patent No. 158,730, dated January 12, 1875; application filed May 2, 1874.

To all whom it may concern:

Be it known that we, ABRAHAM OBERNDORF, Jr., and ERNEST FRANK, of Baltimore city and State of Maryland, have invented a new and Improved Extension-Ladder and Fire-Escape; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is an end view; Fig. 3, a plan view of windlass.

This invention relates to that class of ladders wherein a series of stories are made to fit into each other after the manner of a telescope, and are alternately raised and lowered by means of pulleys and a windlass. It consists of a series of stories, constructed of four posts with ratchet-tramways, connected at the top by a square hollow platform, the smaller or inside stories being provided with friction-wheels, which slide along the tramway, and teeth, which catch in the ratchets to support the story when raised. To all of the platforms except the top and bottom are attached the pulleys over which the ropes pass that communicate with the windlass. Said windlass, being of peculiar mechanism, will be specifically described hereafter. Upon the opposite side of the platform is a reel, around which a coil of hose is wound, the nozzle being attached to the top story and the hose unwound as the story rises. The platform of the first story rests upon a truck, to which it is attached by means of leveling-screws, said truck rendering the machine portable.

In the drawings, A A A represent the corner posts of the three stories; X X, guide-blocks to keep the frame straight; B B, the ratchet-tramways attached to the four posts of said stories; C C, the friction-wheels attached to the inside posts, which move upon the tramways B B. D D are the pulleys over which the ropes pass that elevate the third story, and E E the pulleys over which the ropes pass that elevate the second; D', the rope which raises the third story, one end of which is attached to the lower part of said story and the other to the barrel F of the windlass. E' is the rope that raises the second story, one end being attached to the bot-

tom of said story and the other to the barrel G of windlass. F' F' F' are the platforms, inclosed by rails; G', the rope-ladders from one story to the next. H' are the teeth or pawls that catch in the ratchets of tramway, those of the upper story being controlled by vertical rods *h* and a lever, *g*, and the ones of the lower story by horizontal swinging bars *i i* and lever *j j*. I is the reel upon which the hose is wound, one end with nozzle being attached to the top story, ready for use, the hoisting of the stories serving to unwind the hose from the reel. The windlass consists of separate barrels F and G, with ratchet-wheels 1 2 and pawls *n' k*, which revolve independently upon a core, Z, which core is permanently attached to the head K and the cog-wheel L. On the part of the core or shaft Z next to the cog-wheel is a clutch-wheel, *k'*, which is made to revolve in the same direction with the core by a spline, but has a lateral motion on the same, which allows the stems in said wheel to be forced into the holes in the end of barrel F by means of lever *l*, thus coupling said barrel with the core Z and cog-wheel L. On the opposite end of the core Z is another similar clutch-wheel, *k''*, fastened to the core by a similar spline, and having similar stems, that are forced into the holes in barrel G by means of lever *l'*, thus coupling this barrel with said core and cog-wheel. Near the windlass is the shaft M, with crank *m*, brake *n*, pawls *n' k*, and pinion-wheel *o*. P are leveling-screws, consisting of shafts with arms *p* and nuts *p'*, pivoted in brackets or supports attached to the truck T, by means of which arrangement the apparatus may be leveled, so as to avoid friction. The truck consists of a heavy running-gear, having a body or bed, S, for the stories to rest in when lowered.

Having specifically described its parts, we now proceed to give its mode of action.

When the machine is down the ropes D' and E' are wound around the barrels F and G.

To raise the second story, first level the machine by means of leveling-screws P; then throw the clutch *k''* into communication with the head of the barrel G by means of the lever *l'*, thus coupling the barrel G with the core Z and the cog-wheel L; now wind up the barrel

by crank *m*, and the second story rises, it being held in place while up by the pawl *k* in the ratchet-wheel, and also by the teeth *H'*, which the weight of the swinging bars *i i* forces into the ratchet of the tramway.

To raise the third story, we throw the clutch *k''* out of communication with head of barrel *G*, thus uncoupling the barrel *G* from the core *Z* and cog-wheel *L*; then throw the clutch *k'* into communication with barrel *F*, thus coupling this barrel with said core and cog-wheel; now wind up the crank *m*, and the third story rises, it being held in place after it is up by the teeth *H'* in the ratchet-tramways, and also by the pawl *n'* in the ratchet-wheel. Now that the machine is elevated the rope-ladders *G'* are stretched from story to story, and the hose from the reel *I* to the top of the machine, ready for attaching to the engine.

To lower the third story, throw the teeth *H'* out of the ratchet of the tramway by elevating rods *h* by means of lever *g*; also throw the pawl *n'* out of the ratchet-wheel, and then ease down the story by the crank *m* and the brake *n*. To lower the second story, throw out the clutch *k'* from contact with the barrel *F*, thus uncoupling the third-story gearing, and thrust the clutch *k''* into communication with barrel *G*, thereby connecting the second-story gear-

ing; now throw the teeth *H'* out of the ratchet-tramways by raising the swinging bars *i i* by means of levers *j j*; then ease down the second story by the crank and brake, as in the other case.

Having thus described our invention, what we claim as new is—

1. In a telescopic fire-escape, the combination of the friction-wheels, ratchet-tramways, and guide-blocks with the corner posts of the stories, for reducing the friction, substantially as described.

2. In a telescopic fire-escape, the combination of the horizontal swinging bars *i i* and the vertical rods *h h* with the detents *H'*, for withdrawing the same from the ratchet-tramways, substantially as described.

3. In combination with the pulleys *D* and *E* and the ropes *D'* and *E'*, a windlass consisting of separate independent barrels, corresponding in number to the number of movable stories, which rest upon a central core or shaft, or revolve with the same by means of a clutch-wheel and spline, as may be desired.

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Witnesses:

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