(No Model.)

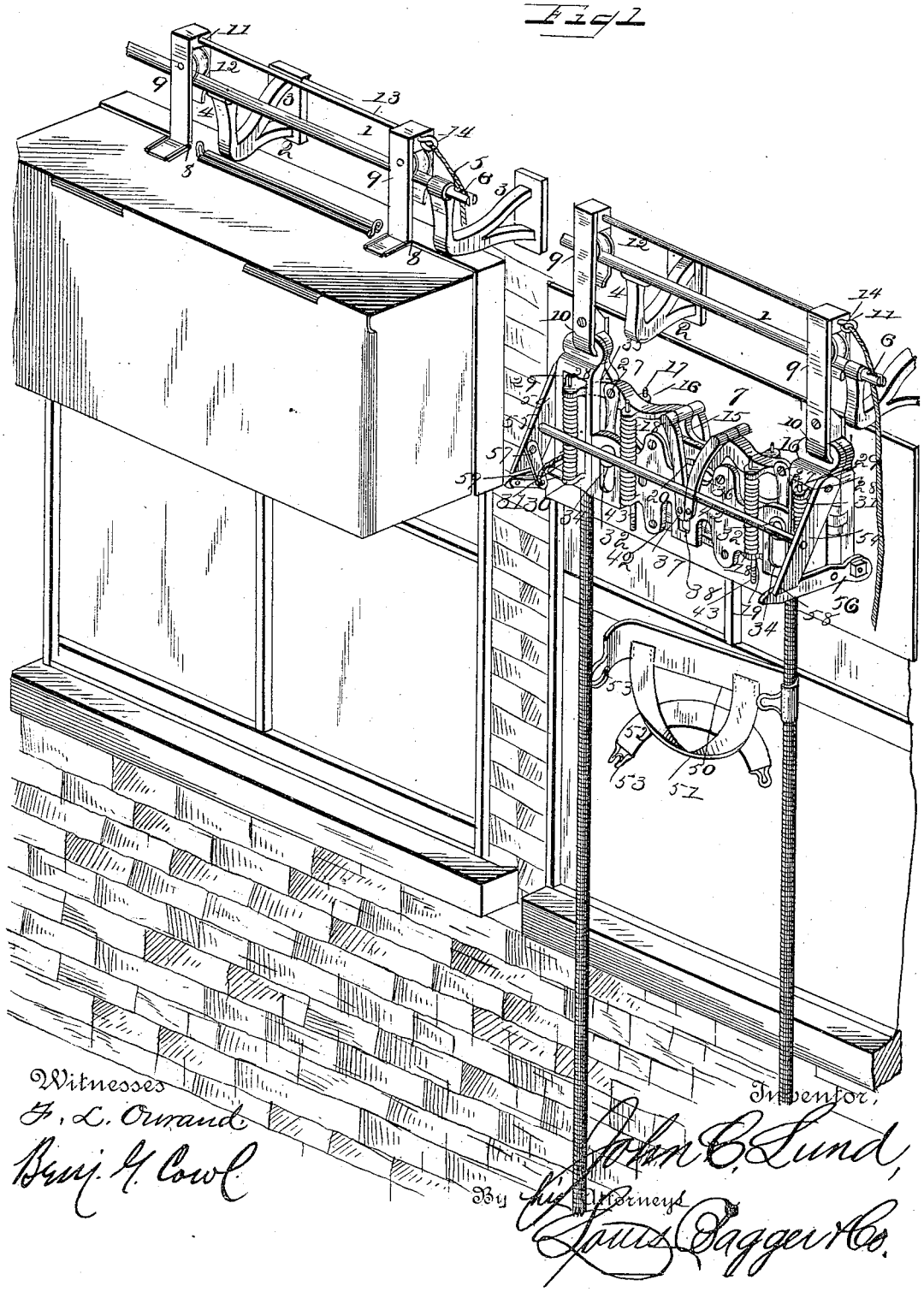
2 Sheets—Sheet 1.

J. C. LUND.

FIRE ESCAPE.

No. 381,478. Patented Apr. 17, 1888.

Fig 1



Witnesses
F. L. Ormand
Benj. H. Cowl

Inventor,
John C. Lund,
By his Attorneys
Louis Bagger & Co.

(No Model.) 2 Sheets—Sheet 2.

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No. 381,478. Patented Apr. 17, 1888.

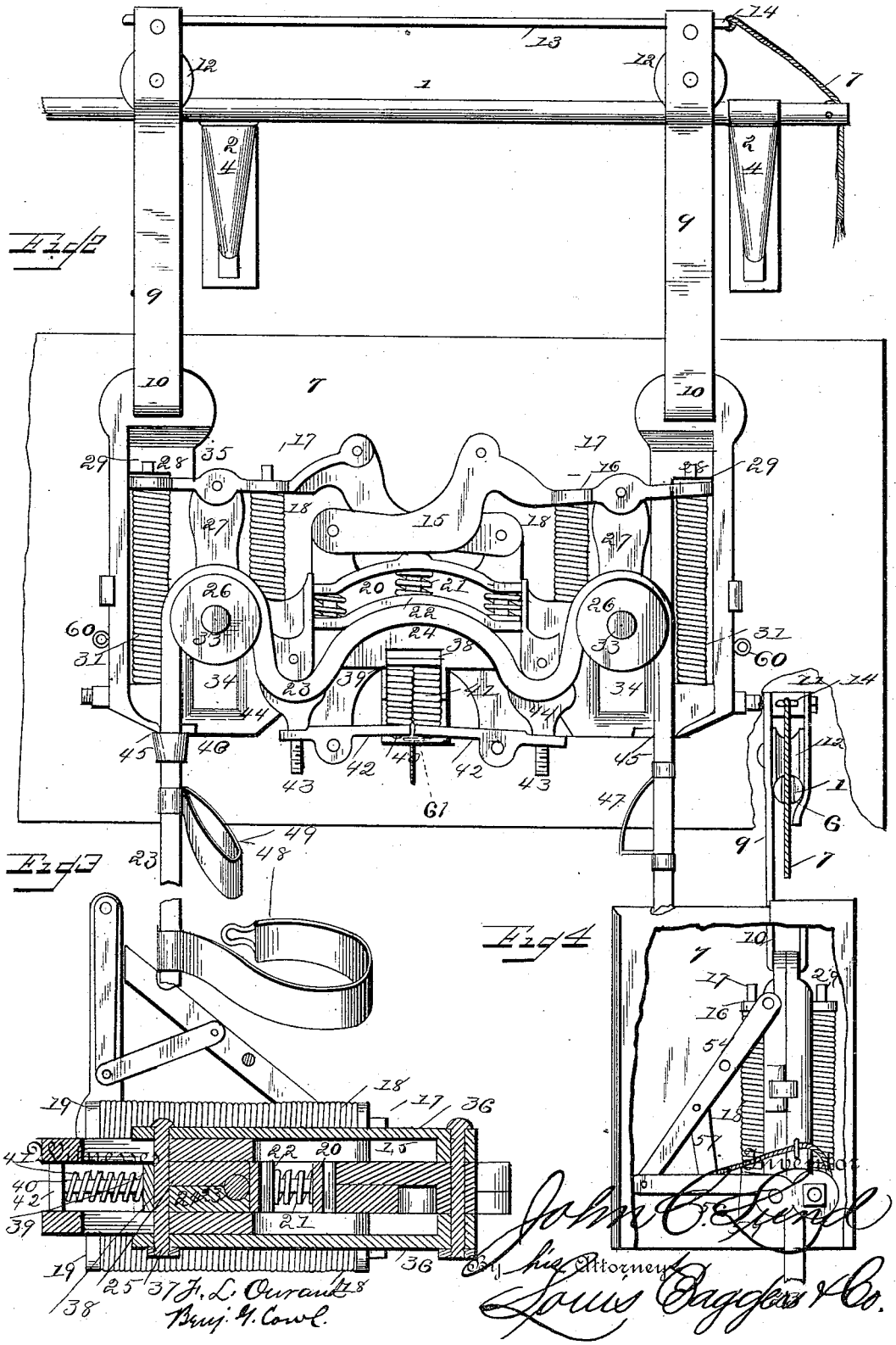

Fig. 2

Fig. 3

Fig. 4

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UNITED STATES PATENT OFFICE.

JOHN C. LUND, OF EAU CLAIRE, WISCONSIN.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 381,478, dated April 17, 1888.

Application filed July 30, 1887. Serial No. 245,690. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. LUND, a citizen of the United States, and a resident of Eau Claire, in the county of Eau Claire and State of Wisconsin, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of as much of a building as will illustrate the application of my invention, one escape being shown at one window as it appears when not in use, and another escape being shown at another window in use. Fig. 2 is a front view of the mechanism within the inclosing-casing, with the forward portion of the frame and the mechanism thereon removed, so as to more clearly show the clamping mechanism. Fig. 3 is a sectional view of the same; and Fig. 4 is an end view of the apparatus and of the track, showing the end of the inclosing-casing of the apparatus broken away.

Similar numerals of reference indicate corresponding parts in all the figures.

My invention has relation to that class of fire-escapes in which suitable slings or other supporting devices are secured to opposite ends of a rope passing through a suitable friction-clamp, so that the person descending will raise the other sling; and it consists in the improved construction and combination of parts of such a device, which is supported by rollers upon a rail passing around the building and has means for drawing it to any window or other opening in the wall of the building and means for regulating the frictional pressure automatically, so that the heavier the burden upon the rope the heavier the friction upon the rope becomes, so that light and heavy persons will descend with the same velocity, as hereinafter more fully described and claimed.

In the accompanying drawings the numeral 1 indicates a rail, which is supported upon the wall, preferably above the windows, by means of brackets 2, which consist of straight outwardly-projecting portions 3 and upwardly-projecting portions 4, to the ends of which the rail is secured. A pulley, 5, is journaled in the rail at each window, and a cord, 6, passes over this pulley down to the window, having its other end attached to the escape, which travels upon the rail. The frame 7 of the escape is provided with two eyes, 8, at the upper edge, into which eyes two straps, 9, are secured with their looped lower ends, 10, and the upper ends of the strap are doubled, as shown at 11, and have grooved sheaves 12 journaled in them, the said sheaves traveling upon the rail, the downwardly-doubled portions of the straps projecting down upon the inner sides of the rails and of the vertical portions of the brackets. The upper doubled ends of the straps are connected by means of a rod, 13, and the cord for drawing the device in place is secured to an eye, 14, at the end of this rod.

Two levers, 15, are fulcrumed with their inner ends at both sides of the central portion of the frame of the escape mechanism and have laterally-projecting eyes 16 at their outer ends, with which eyes they slide upon vertical rods 17, secured upon the sides of the frame at the ends of the same and having coiled springs 18 wrapped around them and bearing against the eyes of the levers and against the lips 19, in which the lower ends of the rods are secured. The inner ends of the levers cross each other within the frame and have the under sides of the inner portions bearing against a curved yoke, 20, which is connected by means of coiled springs 21, secured to the concave under side of the yoke, to a similar friction-yoke, 22, having the springs secured to its upper convex side, the concave under side of this yoke bearing against the escape-rope 23, which at the middle of the frame passes over a convex friction-block, 24, secured within the sides of the frame. The rope passes under two convex and downwardly-facing friction-blocks, 25, at each side of the central block, and passes thereupon over two pulleys, 26, journaled in the lower ends of arms 27, pivoted to the levers a short distance inside of the eyes at the ends, whereupon the ends of the rope pass downward out of the frame.

The levers are provided with two pairs of laterally-projecting eyes, 28, a short distance inside of the arms supporting the pulleys, and these eyes slide upon vertical rods 29, project-

ing at the sides of the frame from lips 30 and having coiled springs 31 wrapped around them and bearing upward against the eyes. The lower ends of the arms supporting the pulleys are formed with laterally-projecting studs 32, which form bearings for the trunnions 33 of the pulleys, and these studs slide in vertical guide-slots 34 in the sides of the frame, the outer eyes of the levers sliding likewise in vertical slots 35 in the sides of the frame.

Two pairs of arms, 36, are pivoted with their upper ends to the levers near the inner ends, and the lower ends of these arms are pivoted to the ends of bolts 37, projecting out through vertical slots 38 in the sides of the frame at the middle of the same from a block, 39, and this block is provided with two downwardly-projecting rods, 40, having coiled springs 41 wrapped around them and projecting through and sliding in the inner ends of a pair of brake-levers, 42, fulcrumed between the lower edges of the sides of the frame at both sides of the middle of the same, the lower ends of the springs bearing against the eyed ends of the said levers. The outer short arms of these levers are formed with screw-threaded perforations, in which fit and turn two set-screws, 43, and the ends of these set-screws have brake-shoes 44 secured upon them, the screws turning in the brake-shoes, and these shoes bear against the rope from below, clamping it against the two downwardly-facing friction-blocks.

It will now be seen that when one end of the rope is drawn down by a person hanging on to it, or by any article being suspended from it, the weight upon the rope will draw it out between the brakes and friction-blocks; but as the weight upon the rope is increased the downward pull upon the pulleys will be increased, tilting the levers down, which will cause them to bear with increased force upon the central brake-shoe, and likewise through the arms upon the block sliding in the lower portion of the frame, causing the said block to bear down upon the inner ends of the brake-levers and the brake shoes upon the outer ends of the levers to bear up against the rope. The friction will thus be increased upon the rope with the increase of the weight upon the same, so that the speed of the descent will at all times be the same, regardless of the weight upon the rope.

By having the springs interposed between the central yoke and the central brake-shoe or yoke, and by likewise having the springs interposed between the central sliding block and the inner ends of the brake-levers, the increased pressure will be somewhat modified and eased, so that the rope may slip between the shoes and friction-blocks, and the springs will also prevent any uneven places of the rope to stop the progress of the same, the pressure being uniform upon the rope without regard to the diameter of the same at different places. The rope passes out of the frame through two apertures, 45, formed between the lower edges of the side pieces of the frame, and the rope is provided with two yielding stops, 46, which may alternately strike the apertures and prevent the rope from sliding up too far into the frame, the said stops being so adjusted that they will stop the rope when the supporting-sling is opposite the window and the other sling is at the ground, so that the person in the sling at the ground may get out conveniently and may reach the ground without injury, and the person in the building may reach the sling conveniently and seat himself or herself with ease.

The supporting means may either be simply a stirrup, 47, for the support of a foot, a strap or sling, 48, for securing around the waist, and a loop, 49, for holding on with the hands, or it may be the more elaborate sling or support which is shown at the other end of the rope in Fig. 1, and which consists of a strap, 50, for passing around the body under the arms, a strap, 51, forming a seat, and a strap, 52, for securing around the waist, the straps passing around the body having suitable means for connecting their ends, such as hooks and eyes 53 or other fastenings.

The entire apparatus is preferably inclosed in a casing, 53, secured to the supporting-straps, and the rope is coiled up within this casing and rests upon two arms and a rod connecting them, the said arms being numbered 54 and the rod being numbered 55.

The arms are pivoted upon the ends of the frame near the upper side of the same, and arms or brackets 56 project from the ends of the frame near the lower edge of the same, the said arms and brackets having toggle-arms 57 pivoted to them, by means of which the lower beveled ends, 58, of the pivoted arms may be drawn down to rest against the ends of the brackets and to stand obliquely.

Cords 59 are secured to the joints of the toggle-arms and pass through eyes 60 upon the ends of the frame, from which they pass around one side of the frame and pass downward through an eye, 61, at the center of the frame, hanging within convenient reach from the window when the casing and frame are drawn above the window, so that by drawing the cord the rope-supporting arms may be tilted down and allow the rope which rests upon them to drop.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a fire-escape, the combination of a rail passing above the windows or similar openings and supported by brackets consisting of outwardly-projecting portions and upwardly-projecting portions having the rail secured to their ends, straps supporting the apparatus and having the upper ends doubled and having pulleys traveling upon the rail journaled in the doubled ends and having a rod secured by its ends to the said ends, and a cord secured to the end of the rod and passing over

a pulley in the rail above the window to within reach of the window, as and for the purpose shown and set forth.

2. In a fire-escape, the combination of a frame having frictional devices, a rope passing over the frictional devices and having means for supporting a person, arms pivoted upon the ends of the frame and connected by a rod, brackets projecting from the lower portions of the ends of the frame, toggle-arms pivoted to the arms and to the brackets, and cords secured by their ends to the joints of the toggle-arms and passing through eyes upon the ends of the frame and upon the middle of the frame within reach of the place of exit, serving to tilt the rope-supporting arms down, as and for the purpose shown and set forth.

3. In a frictional fire-escape, the combination of two levers fulcrumed near the middle of the frame and crossing each other and formed with two pairs of eyes projecting laterally from the outer portions, coiled springs wrapped around vertical guide-rods projecting into the eyes of the levers and bearing upward against the eyes, an upwardly-facing convex friction-block at the middle of the frame having the rope passing over it, a brake-yoke having the inner portions of the levers bearing against its upper convex side and bearing with its concave under side against the rope above the friction-block, two downwardly-facing convex friction-blocks at the ends of the central block, arms pivoted to the outer portions of the levers and having pulleys journaled in their lower ends and having the rope passing over them, levers pivoted in the frame at the middle of the same and having the outer short arms provided with upwardly-facing concave brake-shoes bearing against the rope and the friction-blocks and having eyed inner ends, a block bearing against the inner ends of the brake-levers, and arms pivoted to the inner portions of the upper levers and having the lower ends pivoted to the block, as and for the purpose shown and set forth.

4. In a frictional fire-escape, the combination of a frame having two vertical pairs of slots near the ends of the side pieces and two vertical slots in the middles, two levers fulcrumed at their inner ends, crossing each other at both sides of the middle of the frame and having two pairs of laterally-projecting eyes at their outer ends, vertical guide-rods for the eyes upon the outer sides of the frames, having coiled springs bearing upward against the eyes of the levers, arms pivoted to the levers between the eyes and having laterally-projecting studs at their lower ends sliding in the vertical slots of the sides of the frame and forming bearings for the trunnions of pulleys journaled between the ends of the arms, an upwardly-facing convex friction-block at the middle of the frame, two downwardly-facing convex friction-blocks at the ends of the central block, a curved yoke having the inner portions of the levers bearing against its convex upper side and having coiled springs secured to its concave under side, a curved brake-shoe secured with its convex upper side to the lower ends of the springs, a block sliding in the middle of the frame and having laterally-projecting bolts and downwardly-projecting rods having coiled springs around them, the laterally-projecting bolts sliding in the central vertical slots, two levers fulcrumed near the center of the frame and having adjustable upwardly-facing concave brake-shoes at their short outer arms and having the eyed inner ends sliding upon the rods of the central sliding block bearing against the springs, and the rope passing over the convex central block and under the side blocks and over the pulleys, as and for the purpose shown and set forth.

5. In a frictional fire-escape, the combination of a frame having suitable frictional devices, a rope passing through the frame and the friction devices, stirrups and slings upon the rope for supporting a person, and yielding stops secured upon the rope to bear against the perforations in the under side of the frame through which the rope passes, stopping the rope with one sling outside of the window and the other at the ground, as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN C. LUND.

Witnesses:
OLE NOER,
A. C. LARSON.