

(No Model.)

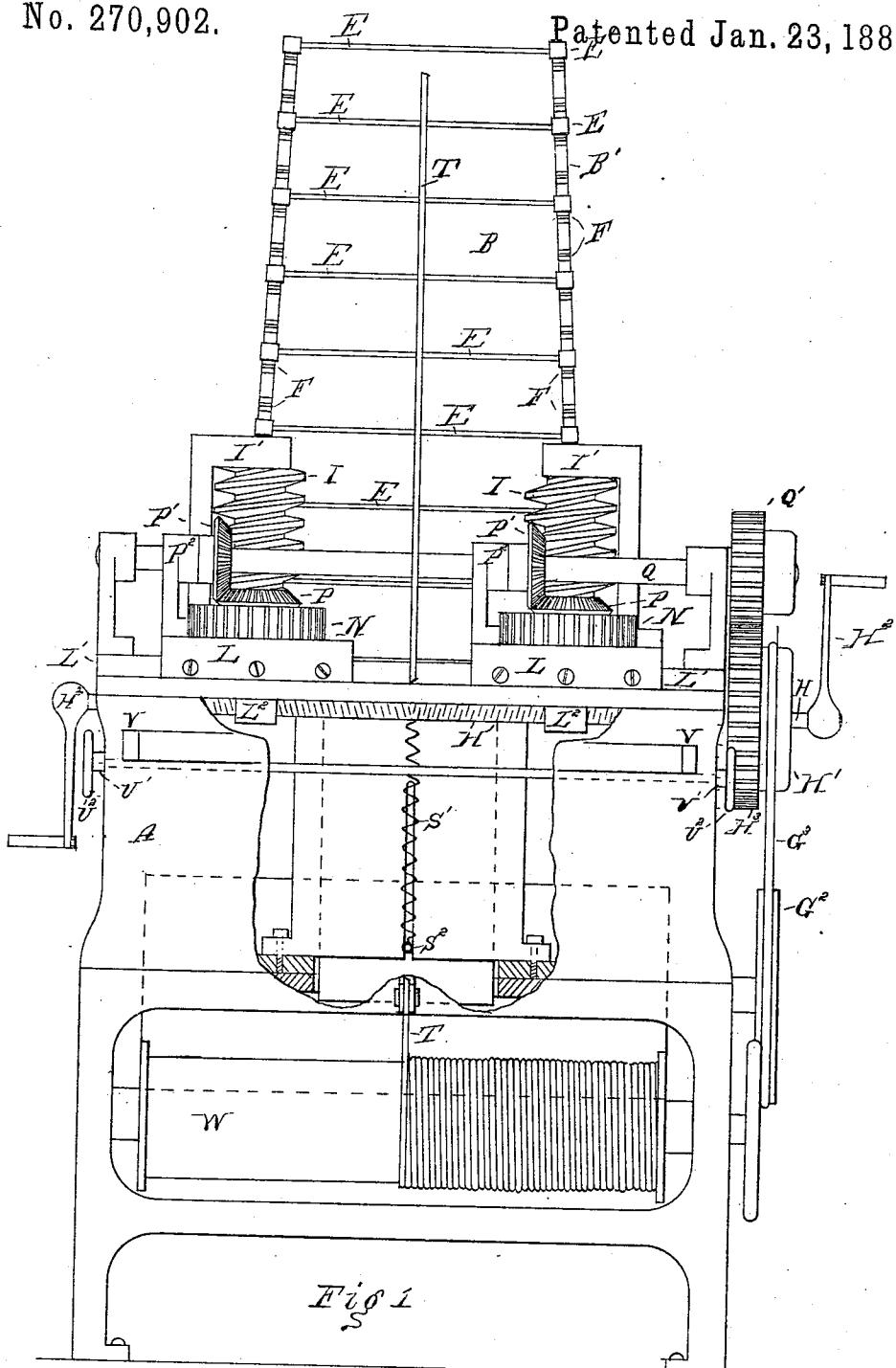
E. W. KELLEY.

3 Sheets—Sheet 1.

FIRE ESCAPE.

No. 270,902.

Patented Jan. 23, 1883.



Witnesses—

Kirkley Kelly,
William D. Pearson.

Inventor—

Edward W. Kelley,
By Albert M. Wood,
His Attorney.

(No Model.)

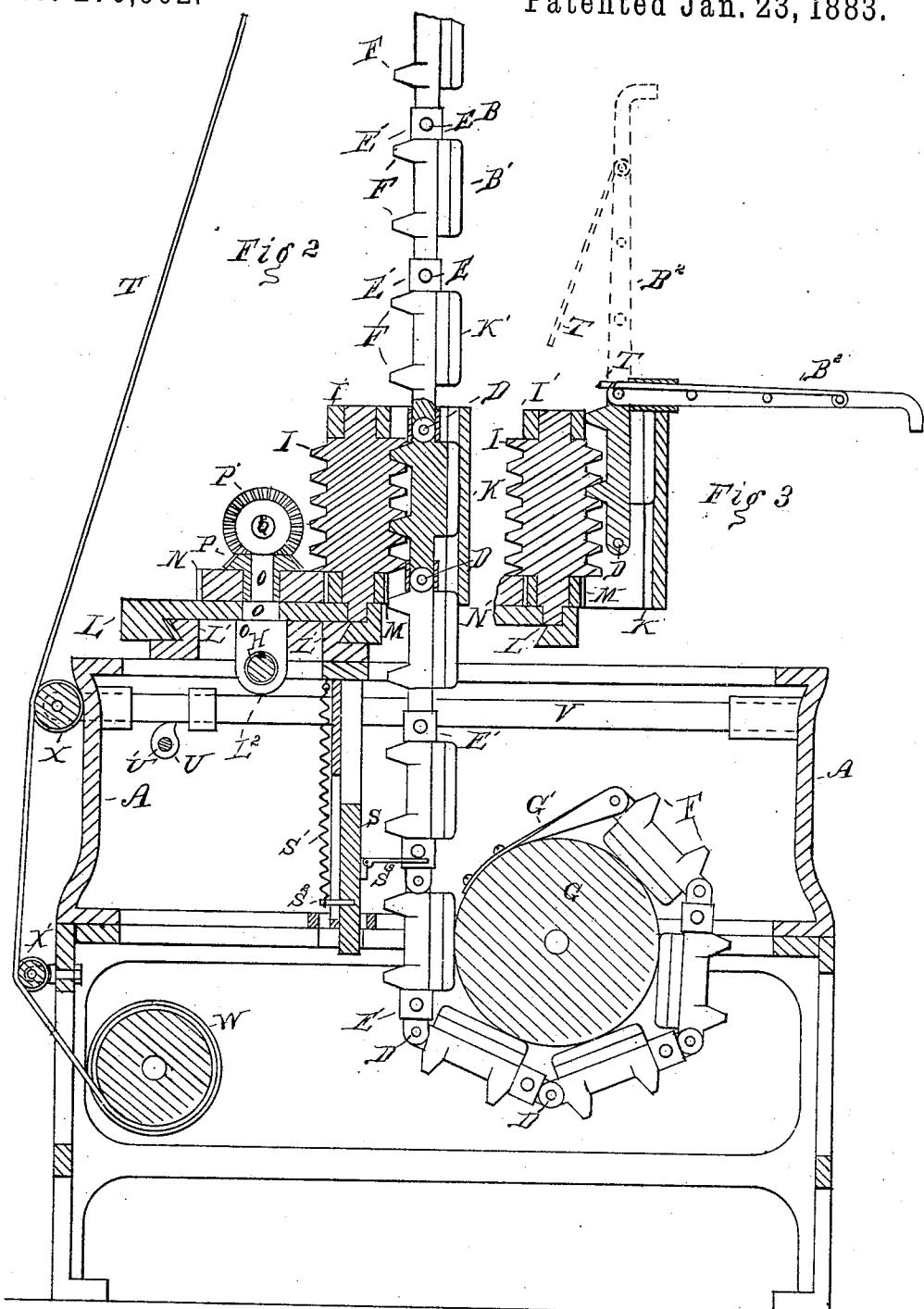
E. W. KELLEY.

3 Sheets—Sheet 2.

FIRE ESCAPE.

No. 270,902.

Patented Jan. 23, 1883.



Witnesses—

Kirkley Boyle.
William H. Pearson

Inventor—

Edward W. Kelley,
By Albert M. Moore,
His Attorney.

(No Model.)

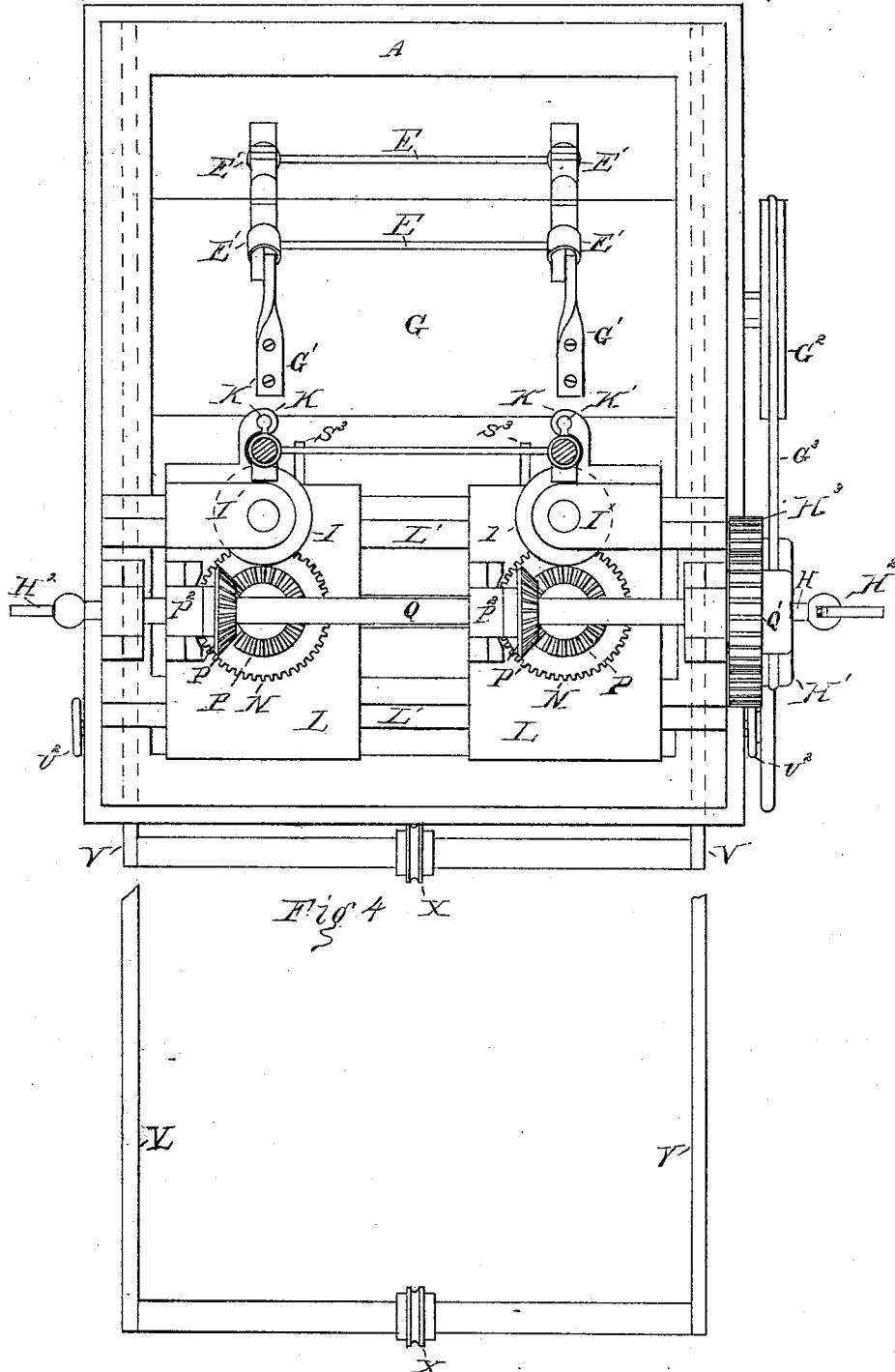
3 Sheets—Sheet 3.

E. W. KELLEY.

FIRE ESCAPE.

No. 270,902.

Patented Jan. 23, 1883.



Witnesses—

Kirkley Bryce,
William H. Pearson

Inventor—

Edward W. Kelley,
By Albert M. Moore,
His Attorney

UNITED STATES PATENT OFFICE.

EDWARD W. KELLEY, OF LOWELL, MASSACHUSETTS.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 270,902, dated January 23, 1883.

Application filed September 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. KELLEY, of Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented 5 certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to a jointed fire-ladder, means for extending and guiding the same, 10 means for winding up the same, and means for locking and unlocking the joints of the same.

In the accompanying drawings, on three sheets, Figure 1 is a front elevation of the fire-escape; Fig. 2, a central vertical longitudinal 15 section of the same; Fig. 3, a vertical longitudinal section of the carriage through the guide; Fig. 4, a plan of my machine.

A is a stout frame, preferably of iron, supporting the working parts of the fire-escape, 20 and intended to be supported upon a truck, as large portable fire-escapes are commonly used. The side rails of the ladder B are made in short sections B', cast of malleable iron or direct steel, and for lightness cored out, the ends of 25 the same being rounded and halved together, as shown, and the ends of one section being pivoted to the ends of the next section by pivots D. The rounds E are not secured directly to the side rails, but to sleeves E', which surround the side rails, and which, being slipped 30 down over the pivots D, lock or stiffen the joints between the sections B', and cause said sections to lie in the same plane. The rounds E, being connected to the sleeves, furnish a 35 means of locking and unlocking the opposite joints simultaneously, and the weight of a person ascending the ladder will cause the joints to be more firmly locked. The sleeves are prevented from slipping down past the joint by 40 striking the projections or teeth F on said sections. The rounds E should be made of wrought-iron pipe to secure strength and lightness. The upper portion, B², or section of the 45 ladder, when used for a fire-escape, may be, say, ten feet long, and have its rounds secured to the side rails directly, in the usual manner.

It will be seen that this ladder, with the exception of the upper section, can be rolled or folded after lifting the sleeves above the joints.

50 When the ladder is not in use the lower jointed section may be rolled up on the cylinder

G by turning the latter, the lower end of the ladder being secured by wrought-iron straps G' to the cylinder. The cylinder G may be revolved by the band G³, which passes 55 around the pulley G², secured to the shaft of said cylinder, and around the pulley H' on the shaft or screw H, the latter being turned by a crank, H². When the ladder is wound up the long top section, B², is unlocked by hand (by 60 raising the sleeve E at its foot) and allowed to lie in the position shown in Fig. 3. This is to prevent the ladder striking telegraph-wires or other overhead obstructions in the streets.

The ladder is raised or extended by the revolution of two screws, I I, into which the teeth F of the ladder take, and it is lowered by reversing the motion of the screws. The teeth F are held in the thread of the screws by guides K, which are shaped to fit a rib, K', cast or 65 formed on the back of each of the side rails. The screws I I are held in a vertical or nearly 70 vertical position by the brackets I' I', which contain or form the upper bearing for said screws, the steps or lower bearings of the same 75 being in the carriages L L. The screws I I are provided near their lower ends with spur-gears M M. Each gear M M takes into a spur-gear, N N. The gears N N turn on vertical studs O O, driven into the tops of the carriages L L. 80 A miter-gear, P P, is secured to the upper side of each gear N N, and turns with said gear N N, and takes into a miter-gear, P' P'. Each miter-gear P' P' is provided with a feather, 85 which slides in a longitudinal groove in the shaft Q. The shaft Q is revolved by turning the shaft or screw H by means of the crank H², the shaft Q being provided with a spur-gear, Q', which takes into a spur-gear, H³, on 90 said shaft H.

The ladder gradually grows wider from top to bottom, as other ladders do, and therefore it is necessary that the screws should recede from and approach each other as the ladder is raised or lowered.

95 As already stated, the guides and screws are supported upon the carriages L L. Both carriages L L are secured to the same dovetail ways, (said ways being supported transversely on the frame,) so as to slide on said 100 ways L'. Each carriage is provided with a nut, L², which projects from the under side

thereof. Through these nuts runs the shaft H, which is a right-and-left-hand screw, so that turning the crank H² in one direction causes the carriages to approach each other, 5 and turning it in a contrary direction causes them to recede from each other. The miter-gears P' P' are held up to the miter-gears P P by brackets P² P², which are secured to the carriages, and through which the shaft Q passes.

A rope, T, attached to the top round of the ladder, is used to guide the ladder and keep it clear of obstructions overhead, such as telegraph-wires, cornices, and projections on buildings. 15 This rope runs over the sheaves X X', secured to the frame A, and onto the drum W. This sheave X turns in bearings in the strips V V, which may be extended or drawn from the front of the machine to get a better purpose on the ladder. The pieces V V, when drawn out, are held in place by the cams or eccentrics U U, secured on a shaft, U', turning in the frame of the machine, and this shaft is turned by a hand-wheel, U². The roller W 20 is turned to wind up the rope T, when the ladder is wound on the cylinder, by pushing the roller W with the hand or foot. The rope is used by hand, and the roller is merely to stow away the rope.

30 I claim as my invention—

1. The combination of the ladder formed in sections pivoted together, and sleeves adapted to slide over the pivoted ends of two such adjacent sections, and to hold such adjacent sections in line with each other, and the rounds connecting said sleeves in pairs, as specified.
2. The combination of the ladder B, provided with teeth F, the screws I I, and means for rotating said screws, as and for the purpose specified.

3. The combination of the screws I I, provided with spur-gears M M, the spur-gears N N, the miter-gears P P, the miter-gears P' P', and means of rotating the same, as and for the purpose specified.

4. The combination of the ladder B, having converging side rails, B', and provided with teeth F, projecting from said rails, the screws I I, means of rotating the same, and means of causing the distance between said screws to 50 vary as the space between those portions of said side rails from time to time engage with said screws, as and for the purpose specified.

5. The combination of the ladder having side rails, B', which converge toward each other, 55 and teeth F, projecting from said rails, the screws I I, means of rotating said screws, carriages L L, adapted to support said screws, and means of causing said carriages to approach and recede from each other, as and for 60 the purpose specified.

6. The combination of the ladder having side rails, B', which converge toward each other, and teeth F, projecting from said rails, the screws I I, means of rotating said screws, the 65 carriages L L, adapted to support said screws I I, and provided with nuts L², the ways L', the right-and-left-hand screw H, and means for rotating the same, as and for the purpose specified.

7. The combination of the sheave X, its supports V V, the shaft U', the cams U U, secured to said shaft, and means of rotating said shaft, as and for the purpose specified.

EDWARD W. KELLEY.

Witnesses:

ALBERT M. MOORE,
JAMES EVANS.