

(No Model.)

2 Sheets—Sheet 1.

G. M. BENNETT & J. JOHNSON.

FIRE ESCAPE LADDER.

No. 366,916.

Patented July 19, 1887.

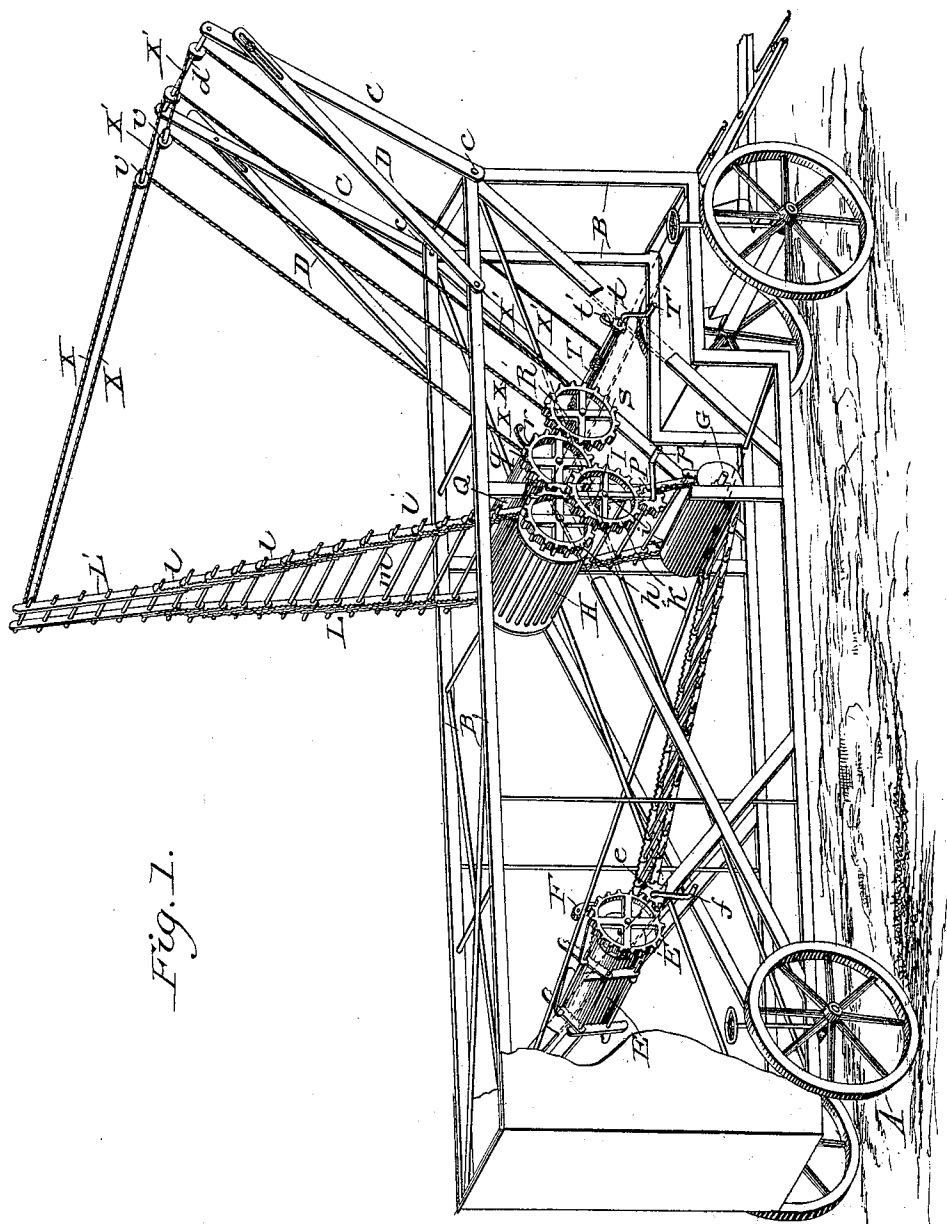


Fig. 1.

Witnesses.

S. Quantance

J. Bentum

Inventors.

G. M. Bennett and

Jas. Johnson, per

W. F. Rohde, dec.

att.

(No Model.)

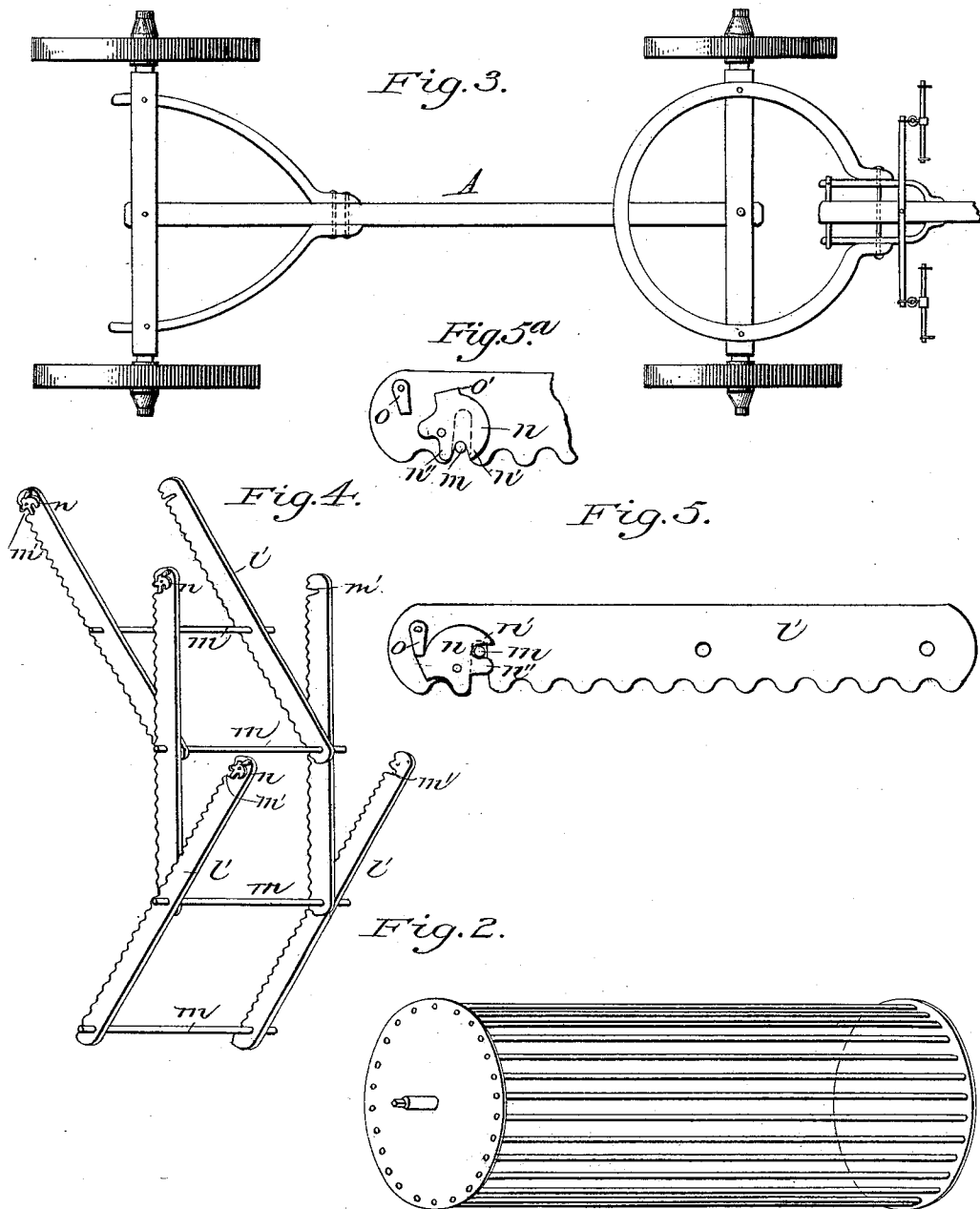
2 Sheets—Sheet 2.

G. M. BENNETT & J. JOHNSON.

FIRE ESCAPE LADDER.

No. 366,916.

Patented July 19, 1887.



Witnesses.
S. Quaintance
J. Bentin

Inventors.
Geo. M. Bennett,
and Jas. Johnson,
per H. F. Rohde,
their atty.

UNITED STATES PATENT OFFICE.

GEORGE M. BENNETT AND JOHN JOHNSON, OF BURLINGTON, IOWA.

FIRE-ESCAPE LADDER.

SPECIFICATION forming part of Letters Patent No. 366,916, dated July 19, 1887.

Application filed November 23, 1886. Serial No. 219,697. (No model.)

To all whom it may concern:

Be it known that we, GEORGE M. BENNETT and JOHN JOHNSON, both citizens of the United States, and both residing at Burlington, in the county of Des Moines and State of Iowa, have invented new and useful Improvements in Fire-Escape Ladders, of which the following is a specification.

Our invention relates to improvements in fire-escape ladders in which a jointed ladder wound around a reel operates in conjunction with a tackle mechanism; and the object of our invention is to furnish an escape-ladder which shall be simple in construction and easily managed. We accomplish this by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents full view of our invention. Fig. 2 represents cylinder H. Fig. 3 represents the truck. Fig. 4 represents sections of ladder L. Fig. 5 represents a view of slat *l'*, showing catcher *n* when locked. Fig. 5^a represents a view of a part of slat *l'*, showing catcher *n* when unlocked.

Similar letters refer to similar parts throughout the several views.

In the drawings, A represents the wheeled truck.

B represents the frame.

CC represent two arms at *c* jointed to frame B, and braced by the adjustable braces D.

d is a cross-piece joining the arms C C.

L is a ladder constructed of a series of sections (represented by *lll*) in the following manner: Section *l* of this ladder consists of two side slats, *l'* and *l''*, which are joined together by two rungs, *m* and *m'*, as illustrated in Fig. 4 of the drawings. The slats *l'* are coggied in one side, and are provided in the one end where there is no rung with a deep notch, *m'*. On the outside of slat *l'*, just above notch *m'*, is a catcher, *n*, of the peculiar shape as illustrated in Fig. 5 of the drawings, having the fingers *n'* and *n''* and the shoulder *o'*.

O is a dog fastened to slat *l'* in such a manner as to engage with shoulder *o'* of the catcher *n*. The purpose of catcher *n* is to lock rung *m* in notch *m'*. The dog O holds the catcher in position when locked, as illustrated in Fig.

5. Fig. 5^a shows the position of the catcher when unlocked.

It will be seen from the drawings, Fig. 4, that the rungs *m* are extended outside beyond the side slats, *l'*, so as to enable the section *l* to be attached to the preceding section *l* by means of the notch *m'* and catcher *n* of its side slat, *l'*, to get hold of these rungs from the outside, as shown in Fig. 4. The last section of ladder L (indicated by *L'*) is extended into the shape of an ordinary ladder.

The frame B is provided with the reel E, having the ratchet cog-wheel E', which engages with pinion *e*, having crank *f*. The dog F engages with the ratchet of the cog wheel E'. To the reel E is fastened one end of the jointed ladder L in such a manner that the same will wind upon reel E when crank *f* is turned. The frame B further has the cylinder G and the coggied or corrugated cylinder H. The cogs or corrugations of the cylinder H engage with the cogs of the different sections of ladder L. Cylinder H is provided with cog-wheel *h*. I is a pinion upon axle *i* in frame B, which engages with cog-wheel *h*. K is a cog-wheel fastened upon the same axle with pinion I, which engages with another pinion, P, of frame B, which pinion is provided with crank *p*. Frame B also has cylinder Q, provided with cog-wheel *q*, which cog-wheel engages with cog-wheel *h*.

r is a dog, and engages with the teeth of cog-wheel *q*, so as to form and act as a ratchet. R is another cylinder upon frame B, having cog-wheel S, which cog-wheel engages with cog-wheel *q*.

T represents a cylinder in frame B, having ratchet-wheel *t* and dog *t'* and the crank T.

x' and *x''* represent two strands of cable fastened in one end each to cylinder T, passing over cross piece *d*, and are fastened in the other end to pulleys *v v*.

x and *x'* are two strands of cable fastened in one end to the top of ladder L, then passing through pulleys *v v*, respectively, and fastened in their other ends to cylinder R.

The operation of our invention is as follows: When our invention is not in use, ladder L is wound around reel E about up to the last sec-

tion, L', which section rests on the top of the frame B. If, now, our mechanism is to be used, we first raise arms C C and brace them by means of brace D, which raises the ladder L as far as section L' to its proper position. If, now, crank *p* is turned, the cogged cylinder H is set in motion, and by means of its cogs engaging with the cogs of ladder L the ladder L is hoisted. The object of cylinder Q is to hold ladder L in position against cylinder H. At the same time that ladder L is hoisted the cable *x x*, wound around cylinder R, is unwound, so as to keep the ascending ladder in proper position. The object of having cables *x'* and *x'* connected, as described, with cylinder T is to be able to adjust the ladder L in its position in this, that when the cables *x' x'* are unwound from the cylinder T the ladder L is depressed. If the cables *x' x'* are wound upon cylinder T, it will raise the ladder to a more vertical position.

The object in having the ladder L divided in sections, as described heretofore, is as follows: We thereby enable the ladder to wind around the cylinder E, and it operates as follows: The first section *l* is fastened in one end to the cylinder E, and the one end of side slats, *l' l'*, of the next section *l* are fastened upon ring *m* upon the inner side of the side slats, *l' l'*, of the first section. The ends of the side slats, *l' l'*, of the first section *l*, which have the notches *m'*, are in these notches placed upon the rung *m* of the next section *l* of the ladder, and are locked thereto by means of the catcher *n*, as follows: When unlocked, the position of the catcher *n* is as shown in Fig. 5* of the drawings. If, now, rung *m* is pressed into the notch, the catcher *n*, by its finger *n'*, is pushed back, which brings finger *n''* in front of the rung *m*, and will hold it in this notch. The dog O, when in this position, will engage with shoulder *o'*, and thus hold the catcher in position. When the ladder L is in use and is afterward

taken down, these dogs O must be turned back by hand, so as to unloose the catchers.

We desire to state that we do not want to confine ourselves in our invention merely to purposes for fire-escapes; but claim the right to use the same for all other purposes where it may be useful.

What we claim, and desire to secure by Letters Patent, is—

1. In a fire-escape ladder, a section of a ladder comprising the cogged side slats, *l' l'*, the rung *m*, and the catcher *n*, substantially as and for the purpose herein described.

2. In a fire-escape ladder, the side slat, *l'*, having notch *m'*, in combination with a catcher, *n*, substantially as and for the purpose herein set forth.

3. In a fire-escape ladder, the catcher *n* of the peculiar shape as illustrated in the drawings, and having fingers *n'* and *n''* and shoulder *o'*, in combination with the dog O, substantially as and for the purpose herein specified.

4. In a fire-escape ladder, the ladder L, the cables *x x*, and the cylinder R, in combination with cables *x' x'*, pulleys *v v*, and cylinder T, substantially as and for the purpose herein set forth.

5. A fire-escape ladder comprising the wheeled truck A, the frame B, the reel E, cog-wheel E', dog F, pinion *e*, and crank *f*, the ladder L, the cogged cylinder H, cog-wheel K, pinion P, crank *p*, cylinder Q, cog-wheel *q*, dog *r*, cylinder R, cog-wheel S, cylinder T, ratchet-wheel *t*, dog *t'*, crank T', cables *x* and *x*, pulleys *v v*, arms *l l*, brace D, and cables *x' x'*, substantially as and for the purpose herein set forth.

GEORGE M. BENNETT.
JOHN JOHNSON.

Witnesses:

E. REGIER,
H. C. HADLEY.