

(No Model.)

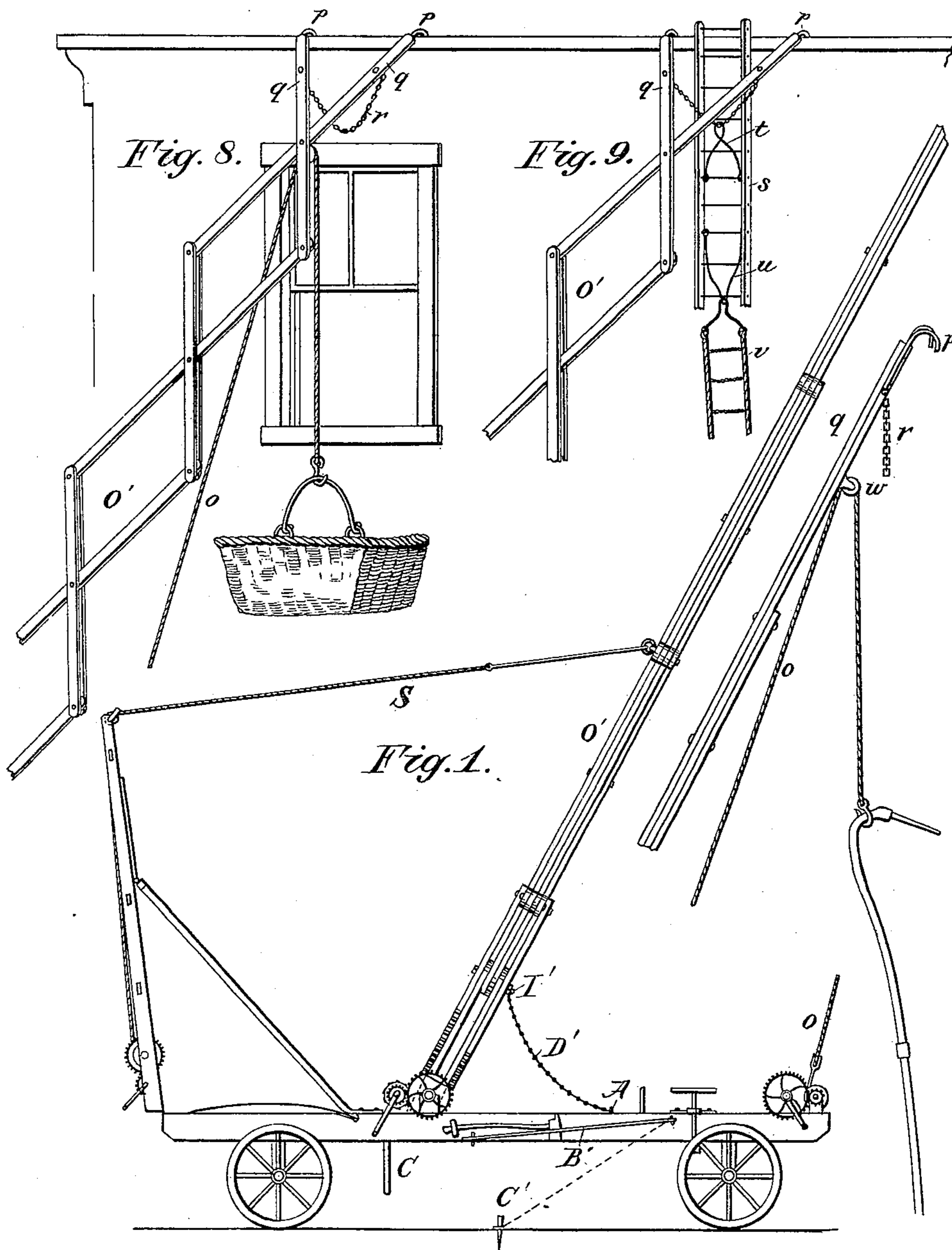
W. McCAUGHEY.

3 Sheets—Sheet 1.

FIRE ESCAPE.

No. 270,451.

Patented Jan. 9, 1883.



Witnesses.

O. J. Bailey
W. F. Kline

Inventor.

Wm. McCaughey,
by J. S. Erb
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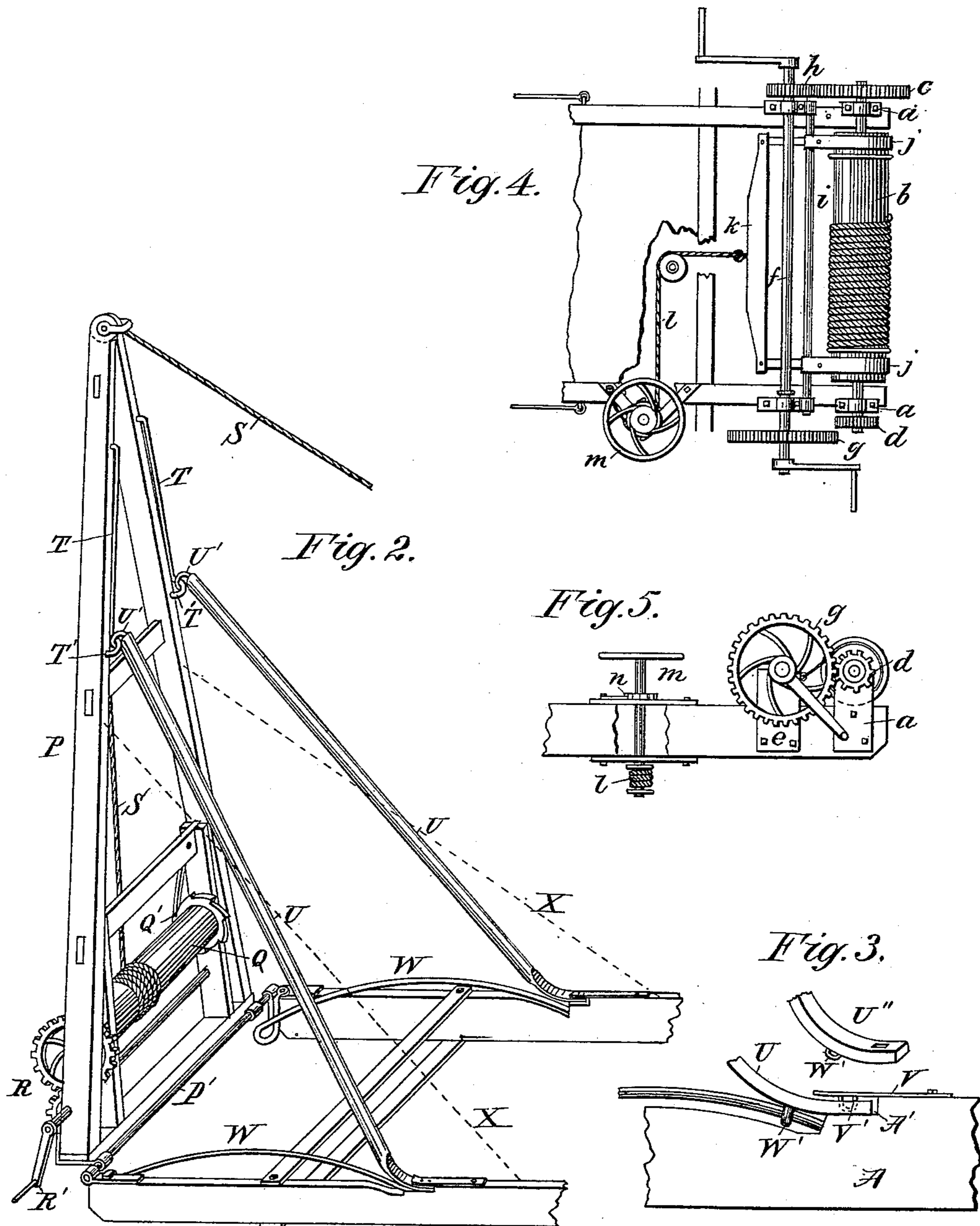
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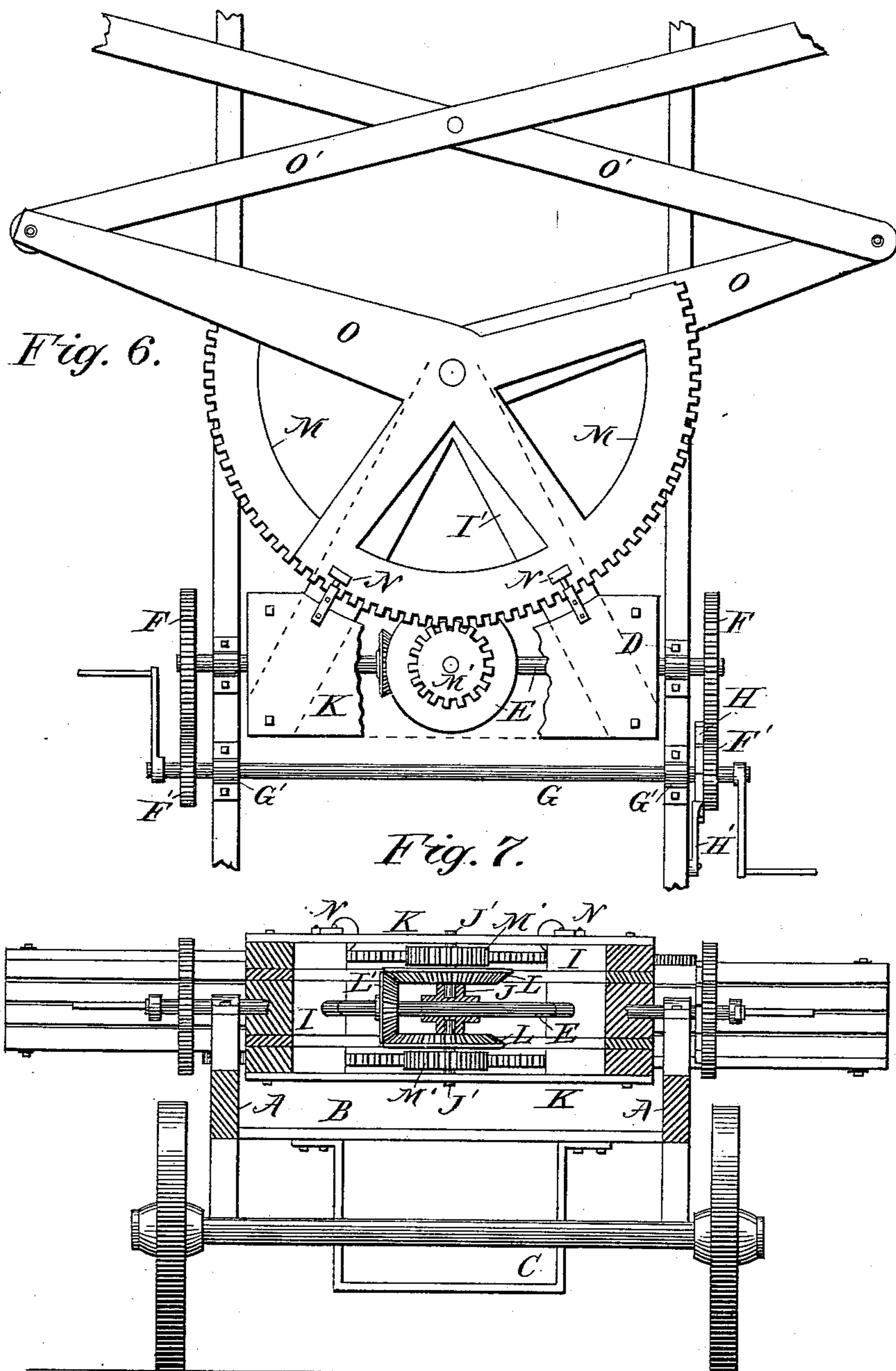
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Patented Jan. 9, 1883.



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UNITED STATES PATENT OFFICE.

WILLIAM MCCAUGHEY, OF GREENVILLE, OHIO.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 270,451, dated January 9, 1883.

Application filed May 31, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MCCAUGHEY, of Greenville, in the county of Darke and State of Ohio, have invented a new and useful Improvement in Portable Extension-Ladder and Fire-Escape and Truck, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation of the portable extension-ladder and fire-escape. Fig. 2 is a perspective view of the front end enlarged. Fig. 3 is an enlarged detail view of the adjusting-brace for the forward end. Fig. 4 is a top view of the rear end. Fig. 5 is a side view of same. Fig. 6 is a top view of the central part of the frame, showing the arrangement of the mechanism and disposition of the lazy-tongs system thereon. Fig. 7 is a front view of same, partly in section. Fig. 8 is a perspective view of the upper end of the lazy-tongs, showing attachment of same to the eaves of a building; and Fig. 9, a view of same, showing manner of attaching the ladders.

The object of the present invention is to provide a portable fireman's extension-ladder and escape, so arranged that the body of the truck contains suitable racks and apartments for ladders, hooks, buckets, block and tackle ropes, and all the paraphernalia now usually required and used by hook-and-ladder or fire-patrol companies, and in addition it is designed to have, first, an extensible lazy-tongs system, which is hinged centrally to the body of a truck and capable of being elevated at any angle to or from the building, or folded and laid horizontally on the trucks when not in use; second, a hinged derrick on the forward end of the truck, which is intended to be laid horizontally on the truck when not in use, or elevated to a vertical position and secured by means of peculiarly-constructed adjustable braces, the whole of which is employed to raise the lazy-tongs and regulate the same; third, a windlass on the rear end, provided with a multiplying or reducing gear, by means of which articles may be raised or lowered, or to provide for an escape-basket or for a hose-elevator, all of which will now be fully set forth in detail.

In the accompanying drawings, A represents the longitudinal beams of an ordinary truck

of suitable length, having preferably a bottom or floor, B, between. These beams are mounted on wheels of the usual construction. The space between the beams on the floor B is designed for the reception of ladders, buckets, and tools, such as are desirable in trucks of this character. Below the bottom are two or more arches, C, to receive ladders, poles, hooks, &c. Centrally on the beams are uprights or bearings D—one on each side—designed to receive a cross-shaft, E, which is journaled there. On each of the projecting ends of the shaft E is a pinion, F, which pinions mesh with the smaller pinions F' on the parallel shaft G, journaled in the bearings G' on the beams. This shaft has at each end a crank, and on one end a ratchet-wheel, H, and a pawl, H', operating therein for the ordinary uses of retaining the shaft in position. Between the beams the cross-shaft E is provided with a rocking base-piece composed of the end pieces or blocks, I, and the alternating binding pieces or plates K, as shown more clearly in Figs. 6 and 7, having two arch-shaped pieces or A-shaped extensions, I', on the rear side. Centrally the rocking piece I is provided with a cavity to receive the operating mechanism.

J is a journal bearing piece, cross-shaped, through the horizontal limb of which the shaft E passes. The vertical limbs are each provided with sockets, in which the vertical shafts J' are journaled. The outer ends of these shafts J' are journaled in the facing-plates K. These shafts J' carry on their inner ends the bevel-pinions L L, which mesh on opposite sides with the bevel-pinion I' on the cross-shaft E. It will be observed that the two bevel-pinions L revolve in opposite directions.

The apex of the arches I' has pivoted thereto on each side segments M M, whose toothed edges mesh with the small pinions M' on the vertical shaft J'. The segments are held in one plane by means of roller-guides N, secured to the face-plate K. The segments M M are provided with oppositely-disposed arms O, which form the base of the lazy-tongs column O'. When motion is applied to the cranks on the cross-shaft G the segments M are turned in opposite directions and the column extended or contracted.

On the forward end of the truck is a derrick-frame, P, of suitable height, hinged to the truck by the cross-rod P', so that when it is not in use it may be laid back down onto the truck.

5 This frame is provided with a drum, Q, pawl and ratchet-wheel Q' at one end, and reducing gear-wheels R and crank R' at the opposite end. A rope, S, on the drum Q, and extending up over a suitable pulley at the top of the frame, 10 and extending thence to the lazy-tongs column, serves to elevate said column from a horizontal to a vertical position. On the rear side of the posts of the frame P are placed vertical bars T, parallel therewith, having at the lower ends 15 loops T'.

U U represent braces provided at the upper ends with eyes U', which hang on the bars T, or slide thereon. The lower ends of these braces are curved and provided in their upper 20 faces with slots U''. A flat spring, V, attached to the beam A, has on its under side a lug or stud, V', which is designed to enter the slot U'' of the brace U when the foot of the brace is placed under said spring. For the 25 purpose of readily guiding the foot of said brace to and under the spring V a recess is cut in the beam A, and a shoulder, A', formed, against which the foot of the brace U is designed to rest. The beam is further provided 30 with a bar or rod, W, which is attached to the beams A in the region of the shoulder A', and is curved upwardly slightly, and extends forward to the end of the beam and is attached thereto. The under side of the foot of the 35 brace U has an eye or loop, W', through which the rod or bar W operates, so that the foot of the brace U slides on said bar or rod.

Guy-rods or stay-chains (not shown) from the beam A to the frame P may be attached 40 to regulate the forward throw of said frame.

It will be observed that when the derrick-frame is in position, as shown in Fig. 2, to elevate the lazy-tongs column, the upper ends of the braces are kept from turning by virtue 45 of the lug V' and slot U''. When it is desired to lower the frame P the spring V is raised, disengaging lug V', when the foot is turned to one side. This movement permits the eyes U' to move out of the loops T' and travel up the 50 rods T. At the same time the lower ends of the braces travel forwardly on the rods W, permitting the frame to be lowered to the rear.

The rear end of the truck has on each beam a standard, a, which serve as bearings for the 55 journal of the cross-drum b. One end of the drum-shaft is provided with a large pinion, C, and the opposite end with a small pinion, d. A short distance forward of the drum are similar standards, e, which serve as bearings 60 for the cross-shaft f, parallel with the drum, and having on one end a large pinion, g, and on the opposite end a small pinion, h. The large pinion C on the drum-shaft meshes with the small pinion h on the crank-shaft, and the 65 small pinion d on the opposite end with the large pinion g; but the pinions on the crank-

shaft are so placed that only one of the pinions will mesh at one time with the pinions on the drum-shaft, and the crank-shaft is therefore provided with a limited end-play in its 70 journals, so that the speed to the crank-shaft may be increased or diminished at will.

A permanent cross bar, i, is attached to the beams A, between the drum and crank-shaft, to which is attached near the opposite ends the 75 upper ends of two curved springs, j. These springs extend around the drum to the rear and down, projecting forward beneath the drum, where they are attached to a cross-bar, k. To this bar centrally is attached a rope, l, which 80 connects with the drum of a brake, m, said brake being provided with a suitable pawl and ratchet, n, to hold the drum b at any point. The drum has wound around it a rope, o, the 85 opposite end of which goes over a suitable pulley on the upper end of the lazy-tongs column, and extends thence down to the ground, as shown in detail in Figs. 1 and 8.

The upper end of the lazy-tongs column O' is provided with hooks p, which are designed 90 to grapple the roof or eaves of a building. The two last sections q q of the lazy-tongs are provided with a chain, r, secured to the opposite sides. To this chain a ladder, s, may be attached by means of a hook, t, so that the 95 upper end of the ladder projects above the eaves. At the lower end of the ladder is a hook, u, to which a rope ladder, v, reaching to the ground, may be attached, as shown in Fig. 9. Centrally on the cross-pieces q q is a 100 pulley, over which runs the rope o from the drum b.

The operation is as follows: The lazy-tongs column, when the machine is not in use, lies 105 horizontally on the truck, and the derrick-frame P also rests horizontally on the top of the column O'. The racks C and floor B receive the ladders, buckets, hooks, and other equipments. A truck thus supplied is ready for any emergency in case of a fire. When 110 the truck arrives at the place where it is designed for use the rear end is backed up against the curb, and the forward ends of the hinged braces B' on the side of the beams A are secured to the ground by means of pins C' 115 through the foot, as shown by dotted lines, Fig. 1. Thus the truck is securely adjusted to prevent a forward or sidewise movement or play. The derrick-frame P at the forward end is then raised to a vertical position, as shown 120 in Fig. 2, the eyes U' being placed so they rest in the loops T', and the foot of the brace U moved forward, so that the lug V' on spring V engages with the slot or notch U'', the whole resting against the shoulder A', to prevent the 125 frame P from being drawn back toward the lazy-tongs column. The crank R' is then set in motion, causing the rope S to travel around the drum Q, and thereby elevate the column O', which, when raised to the proper angle, is 130 ready to be projected upward. To accomplish this the cranks on the cross-shaft G are set in

motion, which cause the toothed sectors M to travel in opposite directions, so that the upper ends of the arms O approach each other, thus projecting the column upward until the prongs or hooks *p* grapple the eaves of the building, as shown in Figs. 8 and 9. In the meantime the brake on the drum *b* has been disengaged, so as to permit the rope *o* to unwind. A guy rope or chain, *D'*, secured at opposite ends to the arch *I'* and to the beams *A*, serves to hold the column on the sides to steady it from lateral vibration. The device is now ready for operation.

The column is not designed as a ladder, but simply as a means whereby a ladder may be raised to the top story of a building and as a means of elevating a basket, such as is shown in Fig. 8, to the upper story also.

The ladder *s* is preferably attached to the upper end of the column before it is projected, and the rope ladder *v* may also be attached to the ladder *s* before the column is raised.

The windlass *b* is used for the purpose of raising and lowering the basket or of raising and lowering hose or other articles desired.

The apparatus thus constructed is readily manipulated, and is designed to accomplish the various objects desirable in a machine of this character.

Having described my invention, what I claim is—

1. The herein-described mechanism for operating the lazy-tongs column, which consists of driving-shaft *E*, having centrally the cross-shaped journal-bearing *J*, through which said shaft passes, the vertical shafts *J' J'*, socketed in the bearing *J*, the bevel-pinions *LL*, and pin-

ions *M' M'*, in combination with the base-piece *I*, mounted on shaft *E*, having the arch *I'*, provided with the toothed sectors *M M*, substantially as and for the purpose herein shown.

2. The derrick-frame *P*, containing the drum *Q*, provided on the rear side with the rods *T*, having at the lower end the loops *T'*, with the braces *U*, substantially as herein shown.

3. The side beams, *A*, having near the forward end the shoulder *A'*, and overlapping spring *V*, having on the under forward side the lug or stud *V'*, said beam being also provided with the curved rod or bar *W* on the inner side, extending back from the shoulder *A'*, in combination with the brace *U* on the derrick, engaged at its lower end with the rod *W*, and provided on the upper face of its foot with a slot, groove, or notch, *U''*, substantially as herein shown.

4. The crank-shaft *f*, having a limited end-wise movement and provided with the pinions *g h* on the opposite ends, and the drum *b*, having on its ends the pinions *c d*, in combination with the frictional curved springs *j* around said drum, the cross-piece *k*, and the brake *m* and rope *l*, substantially as herein set forth.

5. The column *O'*, having at the upper end the pendent chain *r*, in combination with the ladder *s*, having the hooks *t u*, and the rope ladder *v*, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of May, 1882, in the presence of witnesses.

WILLIAM McCAUGHEY.

Witnesses:

S. L. KOLP,
JAMES B. KOLP.