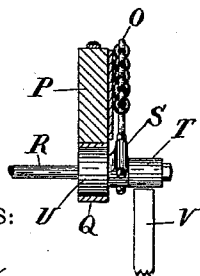
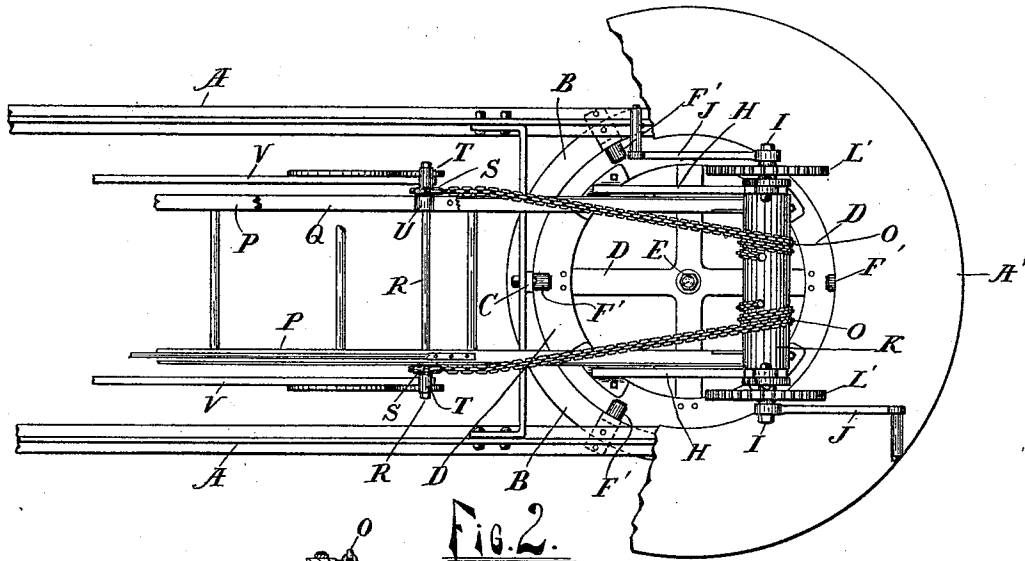
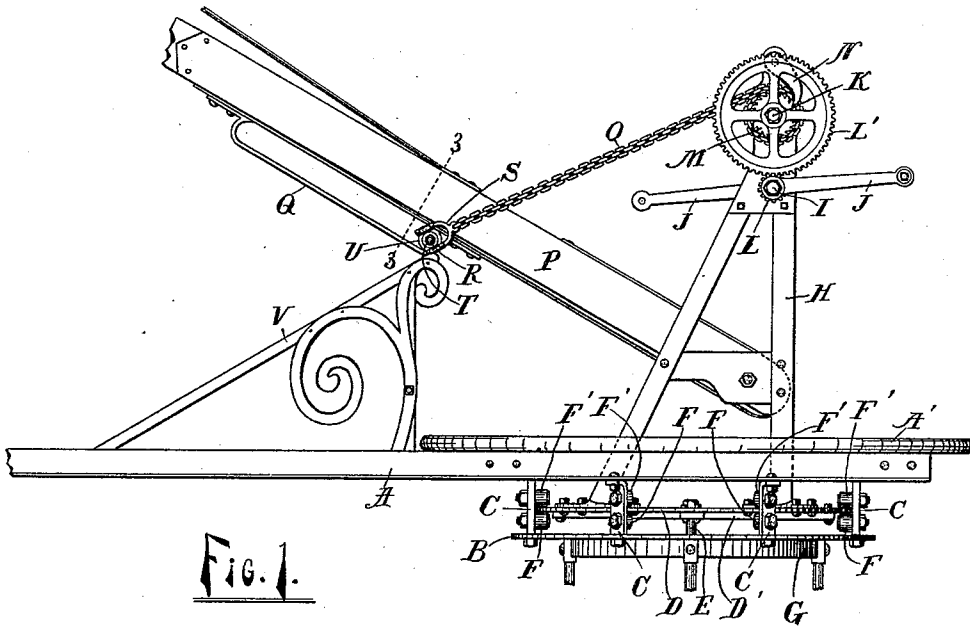


(No Model.)

R. BRAYTON.
FIRE LADDER.

No. 517,375.

Patented Mar. 27, 1894.



WITNESSES:

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FIRE-LADDER.

SPECIFICATION forming part of Letters Patent No. 517,375, dated March 27, 1894.

Application filed July 10, 1893. Serial No. 480,046. (No model.)

To all whom it may concern:

Be it known that I, RICHARD BRAYTON, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Fire-Ladders, of which the following is a specification.

This invention relates to fire ladders of the type wherein the ladder is mounted on a wheeled vehicle for transportation.

The invention has for its object to provide novel means for raising and lowering the ladder and for connecting the ladder with its support, so that when the ladder is partially raised it may be turned with its support in any required direction.

To accomplish this object my invention consists in the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure (1) is a side elevation of my improved fire ladder with a portion of the vehicle which supports the same. Fig. (2) is a plan view of the same with portions of the platform cut away in order to show more clearly the revolving plate which supports the frame work to which the ladder is pivoted; and Fig. (3) shows a sectional view on line 3 3 of Fig. 1 looking toward the rollers.

Similar letters refer to similar parts throughout the several views.

"A" represents a portion of the vehicle body constructed in the ordinary manner; A' represents a platform at the front end of the vehicle which is placed there for the convenience of the operators of the ladder.

"B" represents a stationary platform supported upon the vehicle by means of the support "G" or in any suitable manner.

"D" is the rotating platform which supports the main frame work to which the ladder is pivoted, and which in the example of my invention shown in the drawings also supports the raising and lowering mechanism with the exception of the inclines hereinafter described.

"C" are posts provided with studs or other suitable bearings for two sets of anti-friction rollers; the anti-friction rollers which sup-

port the plate "D" from beneath are shown by "F F," &c., while those which press upon the plate from above to retain it in its position, are shown by "F' F'," &c. Inasmuch as the plate "D" is designed to support the ladder and frame work and also to hold the ladder in position, whether perpendicular or otherwise, and is intended to rotate in carrying the frame and ladder, it becomes necessary to support the plate "D" near its periphery by anti-friction rollers both above and beneath it. The plate "D" is supported at its center by the journal "E" and said plate "D" may rotate upon the journal "E" or may rotate with it; said journal "E" having suitable bearings to allow for such rotation.

"H" represents the frame work to which the stationary end of the ladder is pivoted, the ladder being pivoted to said frame "H" in any suitable manner.

"K" is a drum adapted to receive the chains "O O," which chains are wound upon said drum or unwound therefrom in raising and lowering the ladder.

"I" is a shaft provided with pinions "L L" and also provided with the crank "J" for rotating said shafts and pinions. These pinions engage with cog wheels "L' L'" which cog wheels are rigid with the shaft of the drum "K." The shaft is also provided with a ratchet wheel "M" and pawl "N." There may be, and preferably, a ratchet wheel and pawl at each end of the shaft of the drum "K."

"R" is a traveling shaft provided with rollers "T T" which are adapted to travel up and down the inclines "V V." The shaft is also provided with rollers "U U" which are adapted to travel along the under side of the ladder "P."

"S S" represent suitable attachments connecting the chains "O" to the shaft "R;" the shaft "R" turning freely within the attachments "S S."

"V V" represent the inclined track or ways for the rollers "T T," said inclines being supported in any suitable manner upon the vehicle body.

"Q" represents a loop or guide attached to the lower side of the ladder and adapted to retain the rollers "U U" in position and to

form a stop when the rollers have passed above the upper ends of the inclines "V V" in raising the ladder.

The operation of my invention is as follows:—Let the ladder lie in a horizontal position upon the vehicle body. By turning the crank "J" the chains "O" will be wound around the drum "K," this will move forward the shaft "R" with its rollers, the rollers "T" moving upward along the inclined track "V" and the rollers "U" passing along the under side of the ladder "P," moving toward the fixed end of the ladder. This being continued the ladder will be raised from its horizontal position until it reaches the position shown in Fig. 1. A further movement of the crank, or a further winding of the chains upon the drum "K," now lifts the ladder entirely free from the incline track and the chain acting upon the ladder raises the same to its perpendicular position. While the ladder is moving from the horizontal position upward until it reaches a point free from the incline "V" it cannot be turned, but as soon as the rollers "T" leave the inclines "V V" the ladder is entirely supported upon the frame "H," when the frame "H" together with the ladder only partially raised, can be turned so as to carry the ladder at any required position around the circle. In lowering the ladder the chains are unwound from the drum and the ladder is suspended upon the chains "O O" until the rollers "T T" come in contact with the inclines "V," when the rollers pass down along the inclines until the ladder lies in its proper position upon the vehicle.

By this construction I am enabled to use my ladder in many places where it would be difficult or impossible to use the ordinary fire ladder in use, without the cutting of wires which are now so common in our cities and villages; that is, the ladder when raised to the point shown in Fig. 1, can be turned so as to pass beneath the ordinary telegraph and telephone wires, and when passed beneath them can frequently be raised to the position required without disturbing or interfering in any way with the wires. The inclines "V" also assist materially in starting the ladder and raising it to the position where it will be entirely suspended from the chains, the inclines acting as a wedge as the rollers roll thereon. The supporting plate "D" being supported above and below by anti-friction rollers, turns easily and with very little friction, even when the ladder is placed at an incline equal to that shown in Fig. 1 of the drawings.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

1. In combination with a ladder pivoted at one end, and having a free end, inclined tracks or ways supported upon the vehicle body, a traveling shaft provided with rollers to travel lengthwise of the ladder and also to

travel upon said inclines, supporting chains connected with the said traveling shaft, and suitable mechanism for operating said chains in raising or lowering the ladder, substantially as described. 70

2. In combination with a vehicle body, inclined ways, a traveling shaft provided with rollers to travel lengthwise of the ladder and also to travel upon said inclines, a ladder pivoted to a revolving frame, a drum and suitable winding mechanism supported upon said frame, chains connecting the traveling shaft to said drum, and a rotating plate supporting the frame, the stationary end of the ladder and the raising and lowering mechanism, substantially as described. 80

3. The combination of a rotating plate, a plurality of friction rollers beneath said plate near its periphery, a plurality of rollers above said plate near its periphery, and frame supported on said rotating plate, a ladder pivoted to said frame, the drum and winding mechanism supported on said frame, and chain connecting said drum to a shaft, a shaft provided with rollers adapted to move along the under side of said ladder, rollers adapted to move upon the incline connecting to the vehicle body, inclines properly supported acting as ways for said rollers last mentioned, all substantially as described. 95

4. The combination of a ladder having a free end and a pivoted end, an incline, a shaft having rollers adapted to travel on said incline, a drum and suitable mechanism for operating same, a chain connecting said drum with the roller shaft, said chain adapted to move the rollers along the said incline in raising said ladder during the first part of its elevation, and adapted to raise the ladder without reference to said inclines during the remainder or latter part of its elevation, substantially as described. 105

5. The combination of a ladder pivoted at one end, a drum and suitable operating mechanism, chains connecting the drum to a shaft as "R" connecting with rollers, an incline supported by the vehicle body, rollers as "T" adapted to move along an incline, a loop as "Q" serving as a stop to said shaft when the rollers leave the incline, and also as a bearing for the raising of the ladder during the remaining portion of its upward movement, substantially as described. 115

6. The combination of a ladder pivoted to a suitable frame, a drum supported upon said frame, a shaft as "R" provided with rollers "T T" and "U U," chains connecting the drum to the shaft "R," inclines or ways "V," a loop "Q," said loop serving both as a guide and a stop, substantially as described. 125

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

RICHARD BRAYTON. [L. S.]

Witnesses:

CHRIS. HONDELINK,
ARTHUR C. DENISON.