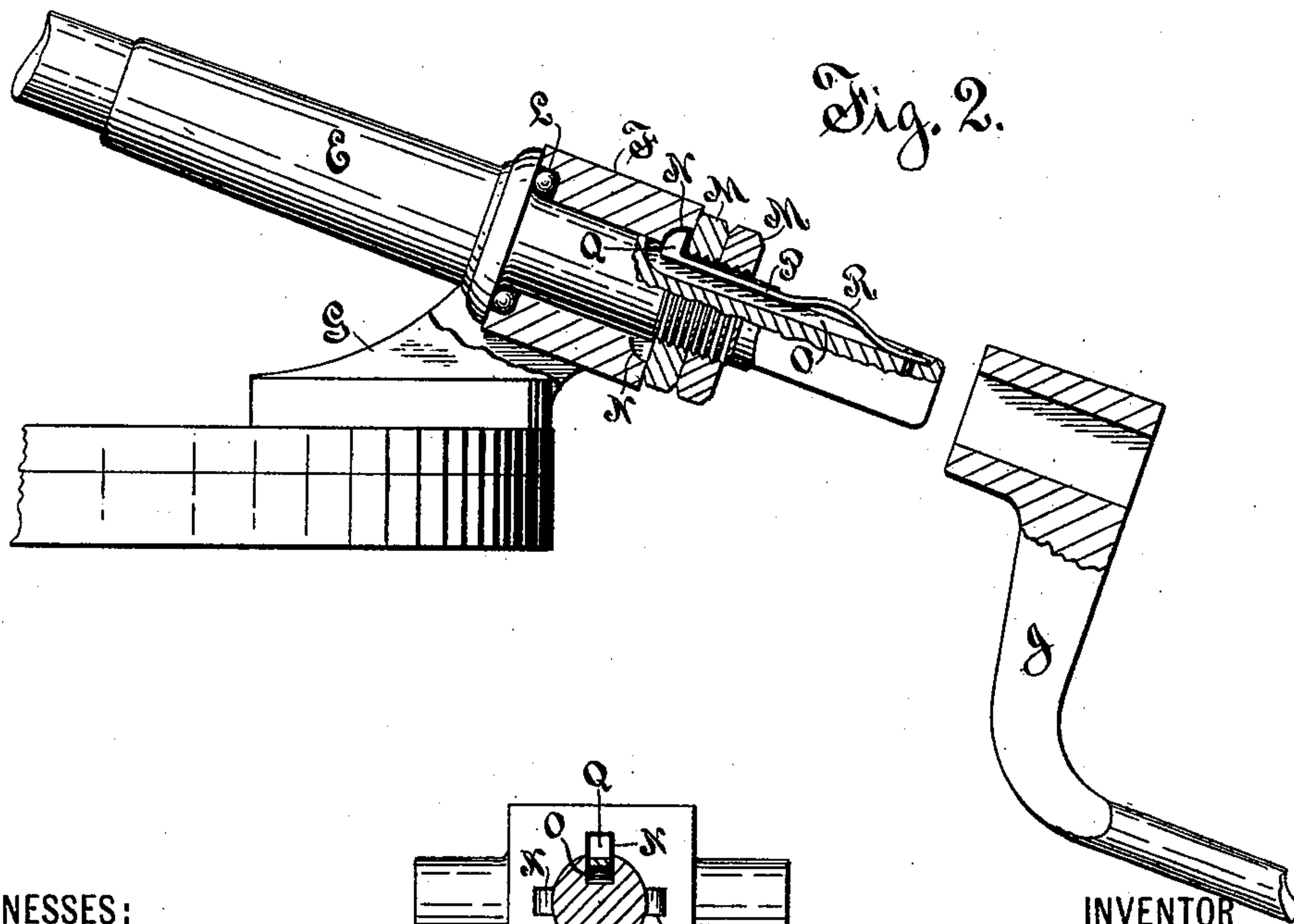
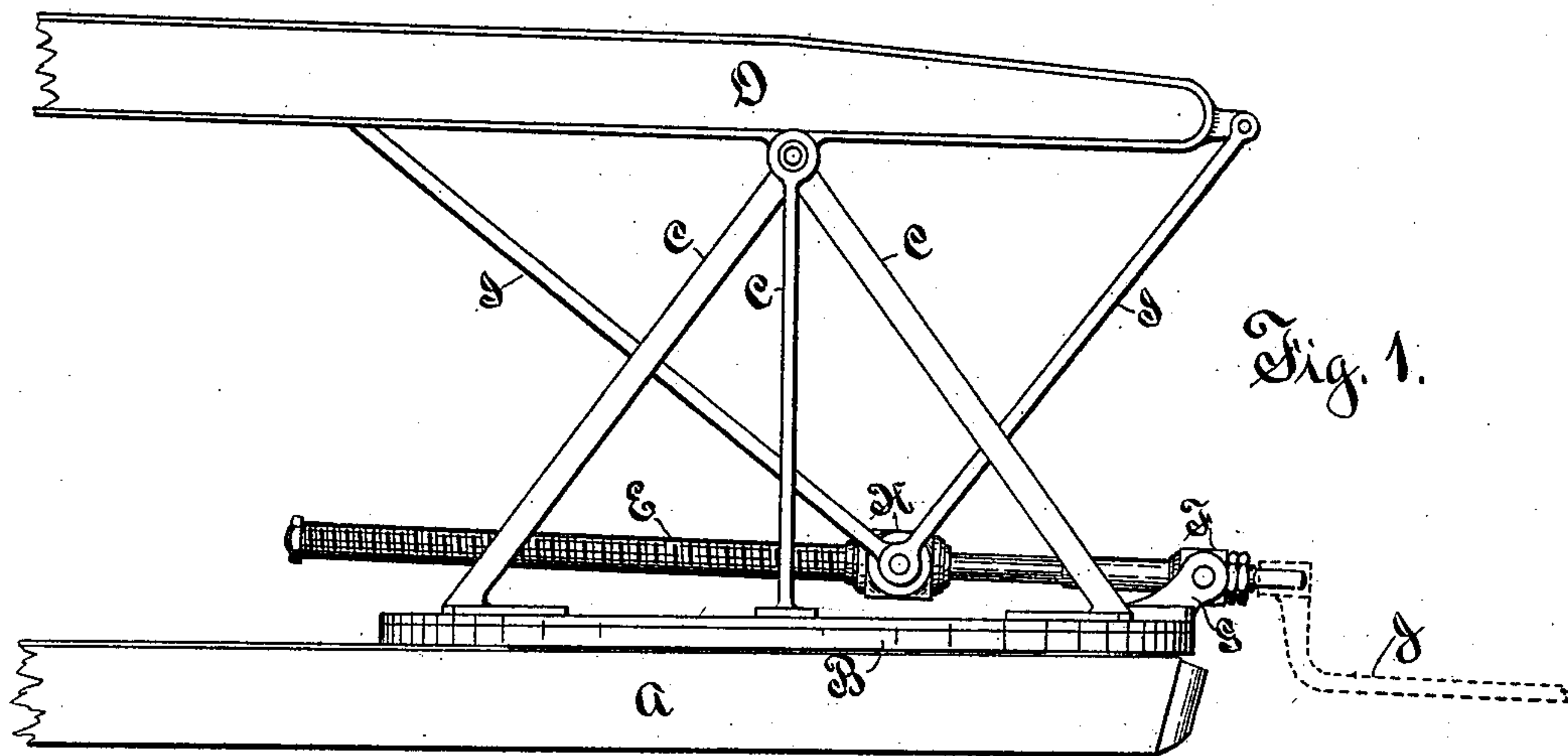


(No Model.)

A. W. LA FRANCE.
ELEVATING SCREW FOR AERIAL LADDERS, &c.

No. 602,262.

Patented Apr. 12, 1898.



WITNESSES:

A. S. Diver

C. Tracey Stagg.

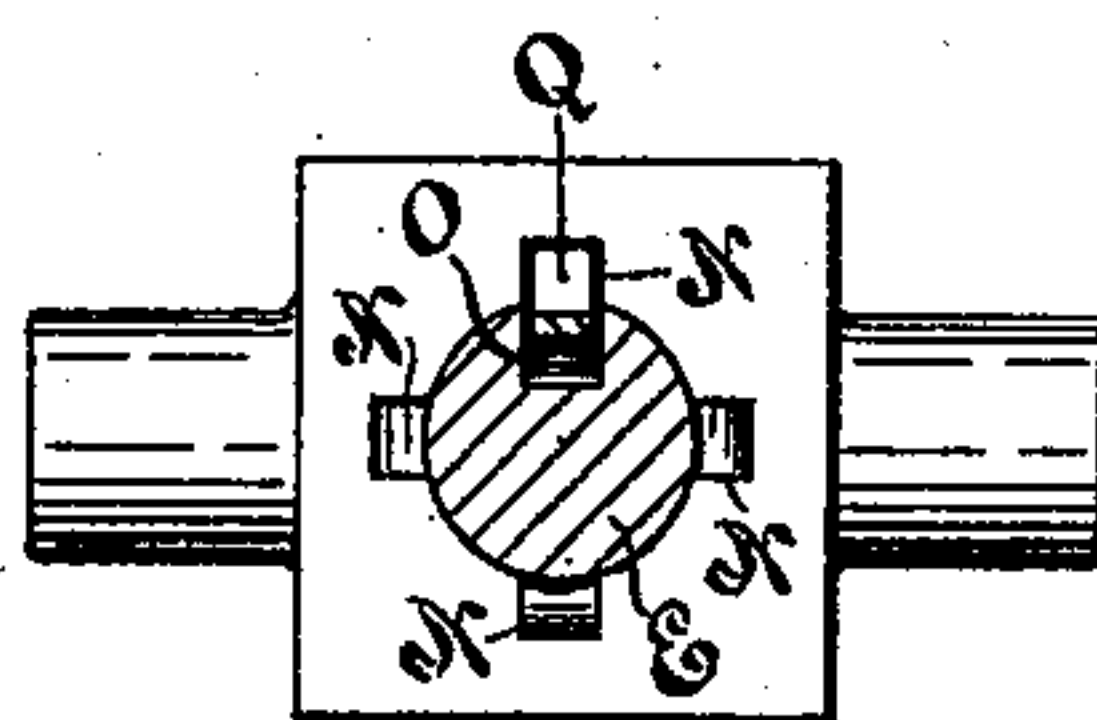


Fig. 3.

INVENTOR

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ASA W. LA FRANCE, OF ELMIRA, NEW YORK, ASSIGNOR TO THE LA FRANCE
FIRE ENGINE COMPANY, OF SAME PLACE.

ELEVATING-SCREW FOR AERIAL LADDERS, &c.

SPECIFICATION forming part of Letters Patent No. 602,262, dated April 12, 1898.

Application filed January 10, 1898. Serial No. 666,156. (No model.)

To all whom it may concern:

Be it known that I, ASA W. LA FRANCE, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Elevating-Screws for Aerial Ladders, &c., of which the following is a specification.

My invention relates to improvements in the screw by which the swinging member of an aerial ladder or other piece of apparatus is elevated into position; and the object of my invention is to provide means for locking the screw in order to prevent its turning backward when released by the operators and allowing said swinging member to descend of its own weight.

In apparatus of this nature as recently constructed the screw has been made to run easily by the use of ball or other antifriction bearings, and it has been found that while the object in view has been attained—namely, rapid and easy raising of the heavy ladder, mast, &c.—there has appeared a new objection and danger—that of having the ladder, mast, &c., drop back of its own accord when released from the counterbalancing effect of the operating-crank—and therefore in order to retain the easy-running bearings the necessity has arisen of providing some means for preventing the descent of the swinging member of the apparatus when the screw is released, and this I accomplish by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the front portion of what is now known as the "Hayes truck;" Fig. 2, a detail, partly in section, showing my improvement; and Fig. 3, a section through the screw shank and lock just outside of the trunnion-block.

Similar letters refer to similar parts throughout the several views.

In Fig. 1, A represents the frame of the apparatus, upon which rests the turn-table B. Above the turn-table is supported upon the braces C C C, which rise from the movable member of the turn-table, the butt-ladder D or swinging member of the apparatus. The elevating-screw E is supported by the trunnion-block F, which swings in cheek-pieces G,

fastened to the forward portion of the turn-table. From the traveling nut H the pieces I I run to the butt-ladder at each side of its pivotal point D'.

The apparatus is shown with the parts in position ready for elevating the ladder. It will be seen that when the crank J is turned the nut H will be moved rearward and the screw will be tilted upward, due to the swinging of the nut H about the pivotal point of the ladder. When the ladder is in elevated position, there is a heavy backward thrust upon the nut H, which tends to turn the screw backward. Ordinarily this tendency is overcome by the counterbalancing effect of the crank; but owing to the slant of the screw the crank is liable to slip from it when released by the operators, especially if the crank-socket fits loosely upon the shank of the screw, and frequently the crank will be detached through carelessness on the part of the operators. Moreover, at times it becomes necessary to remove the crank. When from any of these reasons the counterbalancing effect of the crank is removed, it has been found that the ladder will descend rapidly, seriously endangering both the apparatus and the lives of the men who may happen to be upon the ladder at the time. In Fig. 2 I have shown a form of lock designed to overcome this objection. The trunnion-block F is shown in section, and at one end is represented the ball-bearing L, designed to sustain the thrust upon the screw E. M M represent the jam-nuts, which hold the shank of the screw in the trunnion-block F. In the front face of the trunnion-block I cut with a milling-tool preferably four notches N N N N, (see Fig. 3,) and in the shank of the screw a groove O is milled, in which groove I fasten a spring-dog P, provided with a tooth Q, adapted to engage the notches N in the trunnion-block, and with a bulge R, which projects above the squared portion of the screw-shank.

The operation of the device will be quite apparent. When the crank is removed, the spring-dog P will be released and the tooth Q will spring into one of the notches in the trunnion-block, no more than a quarter-turn of the screw being allowed before such action on the part of the dog. When it is desired

to replace the crank for raising or lowering the screw, it will be seen that when the socket of the crank is pushed upon the screw-shank it will slide over and depress the bulging portion R of the dog and withdraw the tooth Q from the notch with which it is in engagement. With this spring the locking action is entirely automatic, as the simple removal or attachment of the crank throws the lock into or out of operation.

While I have described my invention as applied to the Hayes truck, I do not wish to confine myself to this form of truck. Neither do I wish to confine myself to the application of my invention to the screw for elevating aerial ladders, as it is quite evident that it may be applied to the screws for elevating masts of water-towers or the movable member of any piece of apparatus or mechanism wherein an elevating-screw of this nature is used and wherein the difficulties set forth herein are encountered. Neither do I confine myself to the form of lock described, as many different

forms will at once present themselves to the mind of the skilled mechanic.

What I claim, therefore, as my invention, and desire to secure by Letters Patent, is—

1. The combination of an elevating-screw, a thrust-block, an operating-crank, and a lock whereby the screw is automatically locked from turning in the thrust-block when the crank is removed, substantially as described.

2. The combination of a screw, a thrust-block, a spring-dog attached to the screw-shank to engage a notch in the thrust-block, a projection on the spring-dog, and a crank provided with a socket adapted to depress the spring-dog when attached to the screw-shank, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

ASA W. LA FRANCE.

Witnesses:

C. TRACEY STAGG,
EUGENE DIVEN.