

(No Model.)

2 Sheets—Sheet 1.

L. E. CURTIS.

TURN TABLE EXTENSION LADDER.

No. 336,512.

Patented Feb. 16, 1886.

Fig. 1.

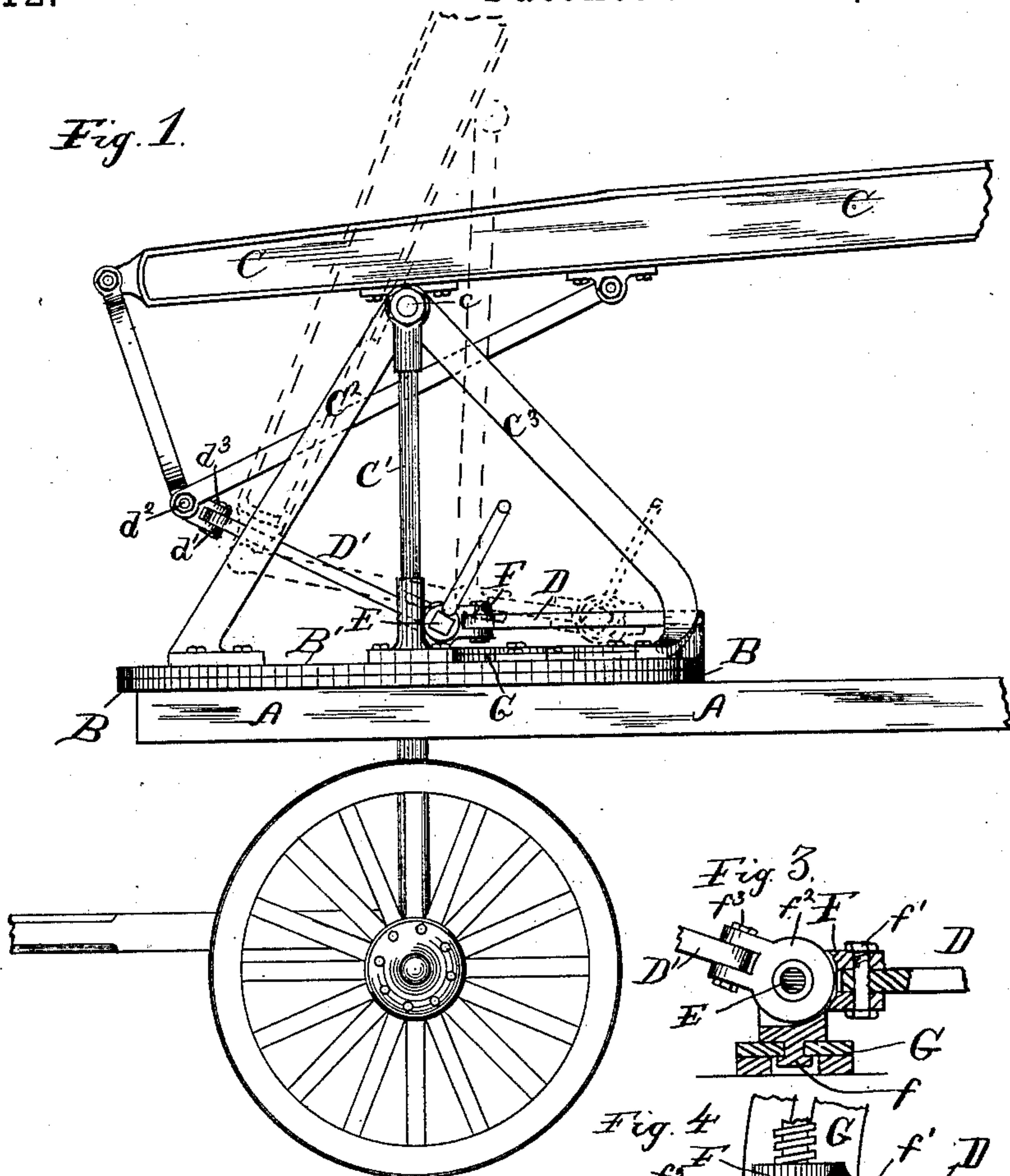
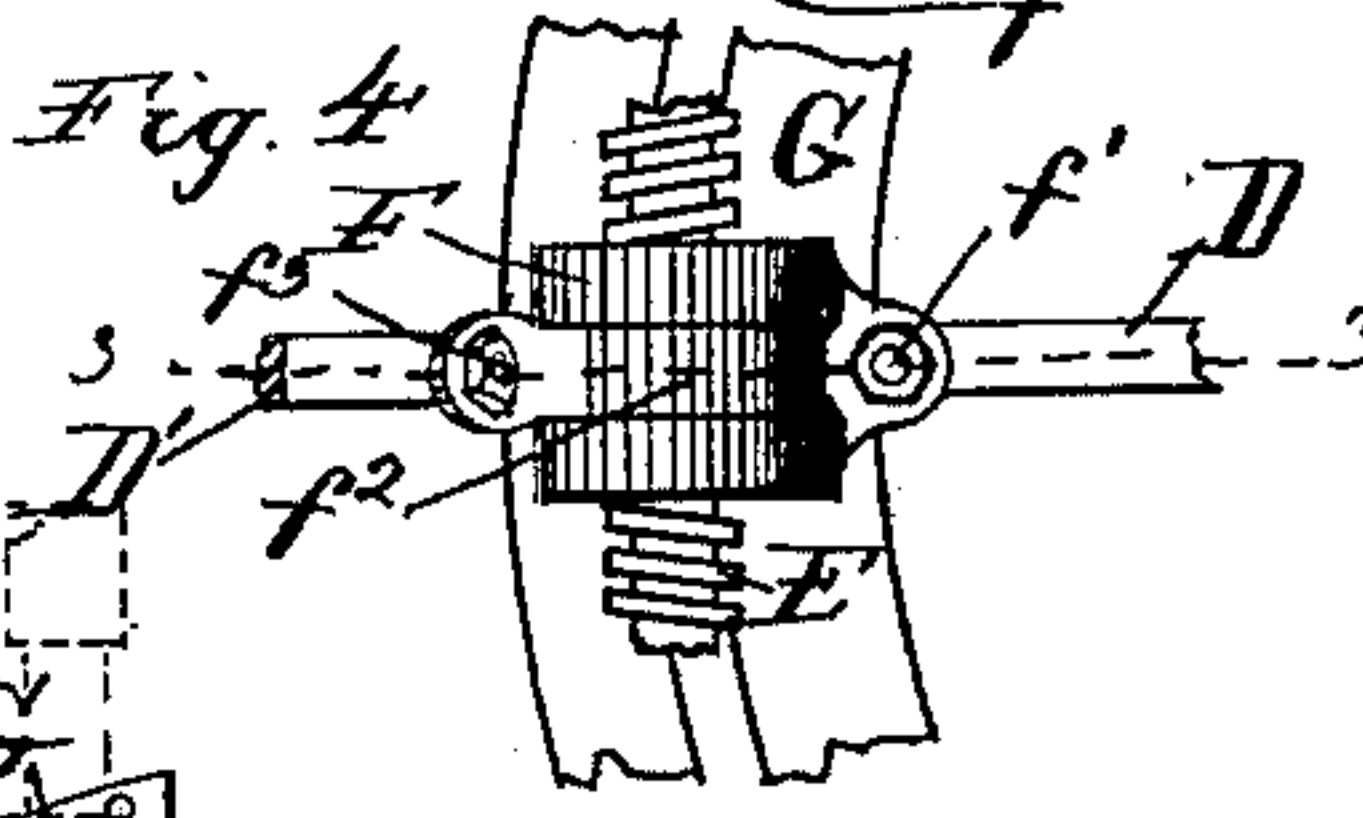
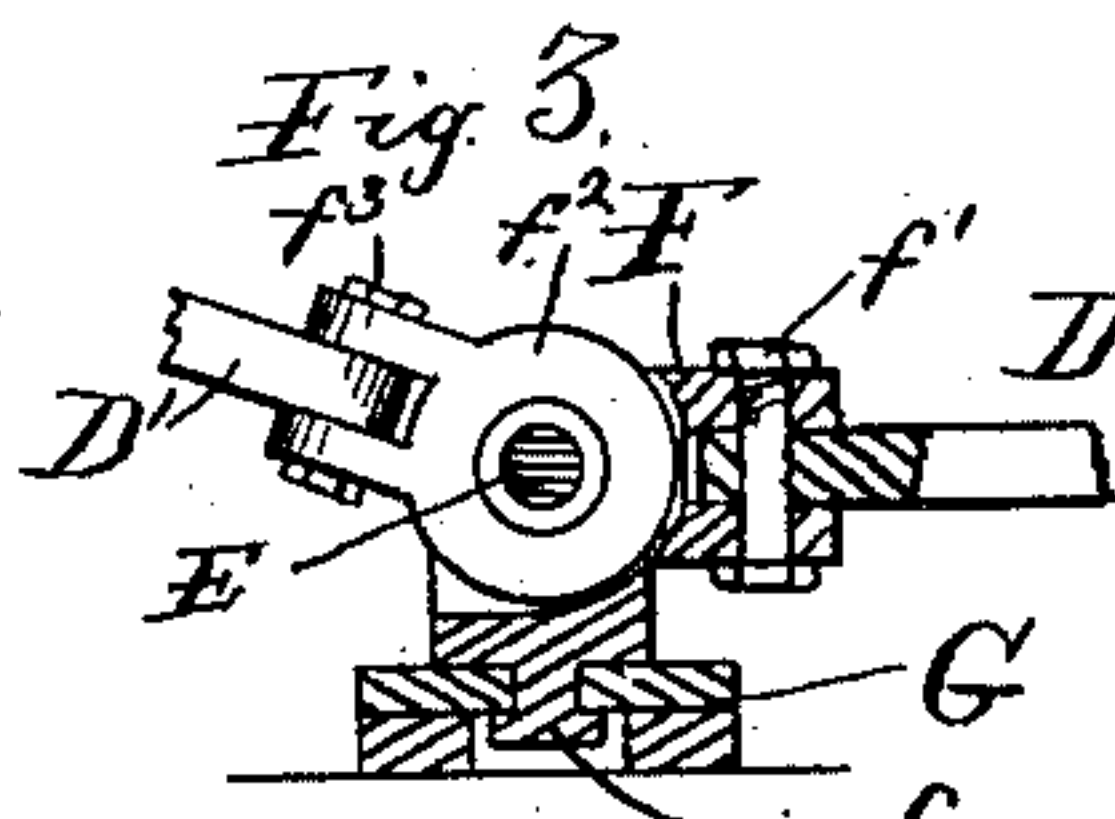
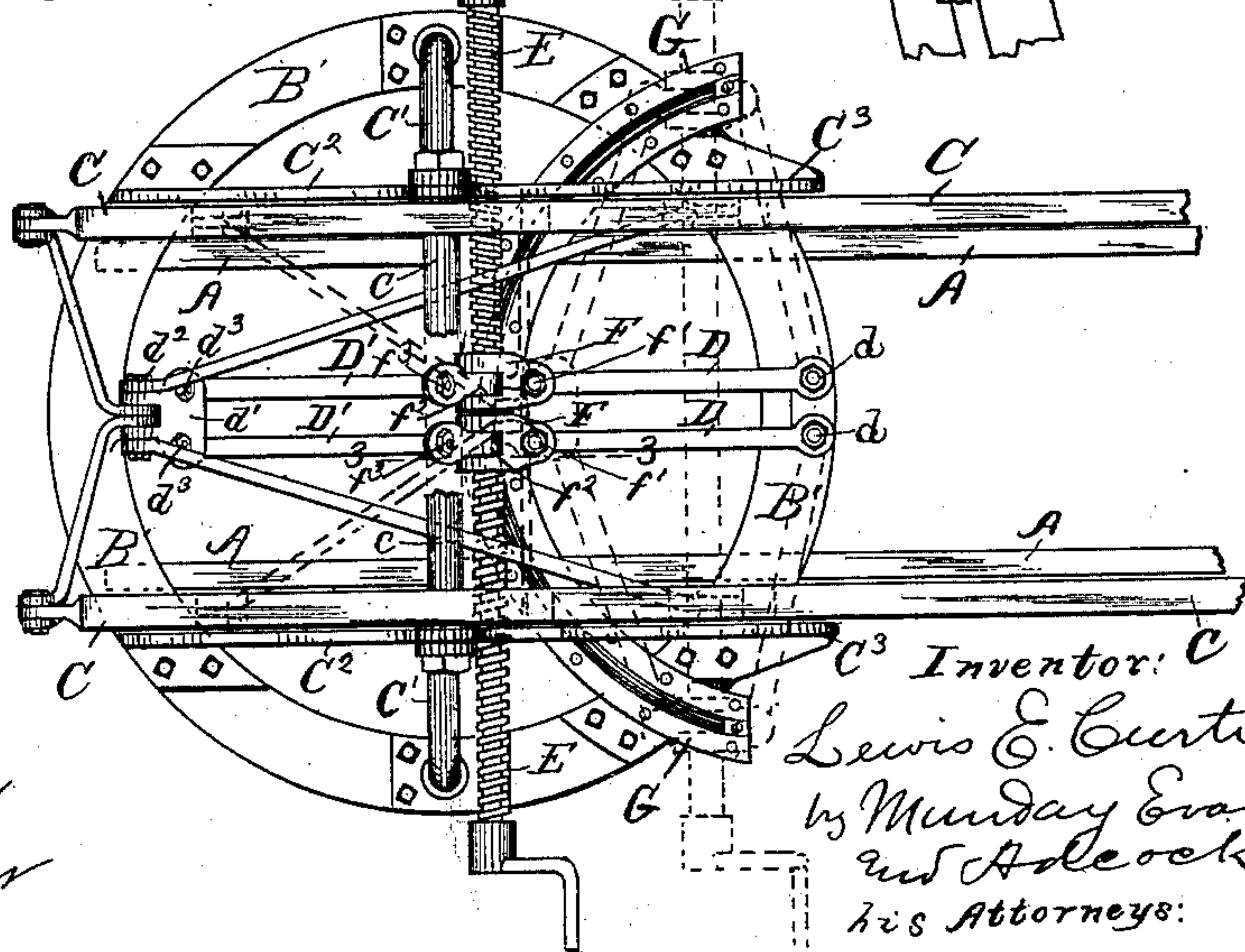


Fig. 2.



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Fig. 5.

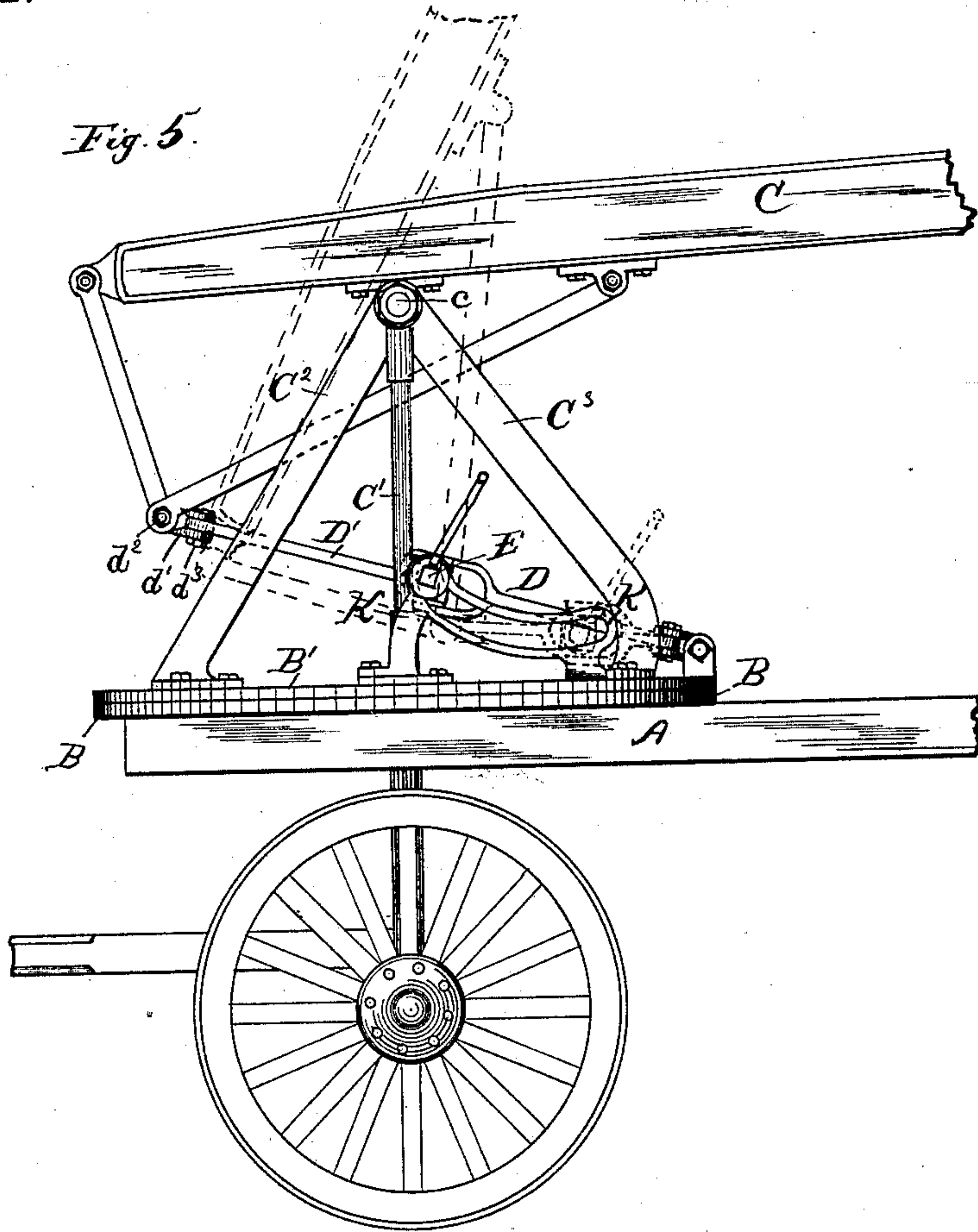
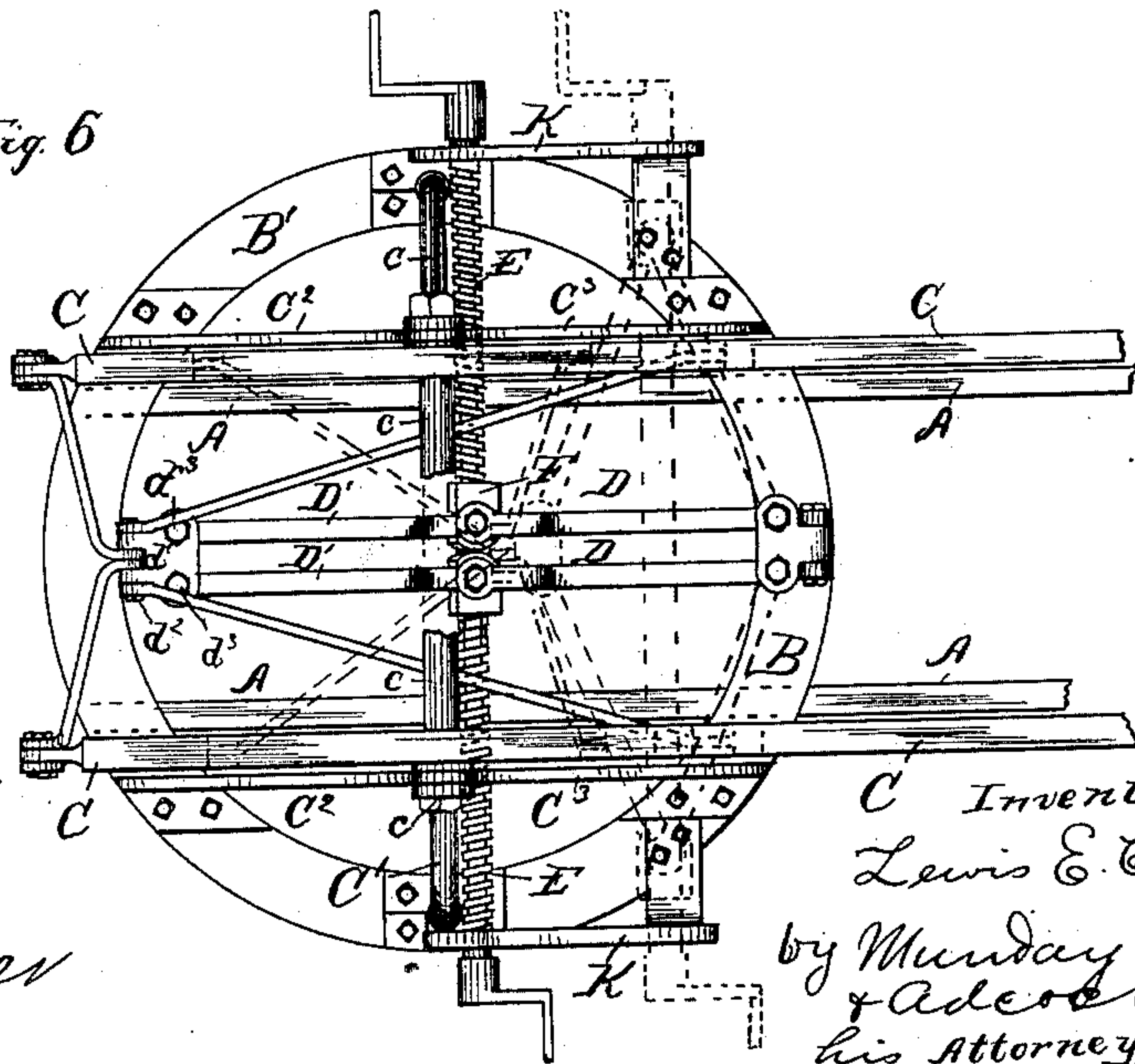


Fig. 6.



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UNITED STATES PATENT OFFICE.

LEWIS E. CURTIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO EVERETT B. PRESTON AND GEORGE E. PRESTON, BOTH OF SAME PLACE.

TURN-TABLE EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 336,512, dated February 16, 1886.

Application filed December 30, 1885. Serial No. 187,111. (No model.)

To all whom it may concern:

Be it known that I, LEWIS E. CURTIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Turn-Table Extension-Ladders, of which the following is a specification.

My invention relates to the means or mechanism for raising and lowering extension-ladders mounted pivotally upon turn-table trucks. When these pivoted ladders are near a horizontal position, the greatest power is required to raise or lower them, on account of the increased leverage of the ladder, and as the ladder approaches a vertical position less and less force is required. In my invention the pivoted ladder is raised and lowered by means of a screw operating through or by the agency of a pair of pivoted links or lazy-tongs, pivoted at one end to the short end of the ladder or its braces and at the other end to the turn-table. At the middle the lazy-tong links are pivoted together or to the traveling nuts on the screw by which they are operated. When the ladder is down or in a horizontal position, the lazy-tong links are extended straight or parallel or nearly parallel to each other, so that a very slight force exerted by the screw will exert a very great force upon the ladder. As the ladder nears the vertical position, so that little force is required to raise it, the lazy-tongs assume a much less powerful position. To prevent the screw which travels laterally back and forth as the ladder is raised or lowered from assuming different levels or heights, and thus becoming inconvenient to reach or operate, I provide a guide or slide way secured to the upper or movable surface of the turn-table, in which guide male guides or dovetail projections on the traveling nuts travel back and forth, and thus hold the nuts and the screw in the same horizontal plane. This feature of the invention may, however, be omitted, as the screw when at the highest point will otherwise naturally assume only a position a few inches above its position when at its lowest point. The guide or slide way before mentioned also serves in a measure to steady the screw; but in case such guide is not employed, vertically-curved slotted guides may, if desired, be used at one or both ends of the screw.

In the drawings which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a side elevation of a device embodying my invention, showing that portion of the extension-ladder truck and of the pivoted main ladder mounted thereon to which my invention relates. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged detail vertical section on line 3 3 of Fig. 2. Fig. 4 is an enlarged detail plan view of one of the traveling nuts and its guide or slide way; and Figs. 5 and 6 are views similar to Figs. 1 and 2, showing slight modification.

In said drawings, A represents a suitable truck, on which the stationary ring B and revolving ring B' of the turn-table are mounted in the usual manner.

C represents the main ladder, mounted pivotally on the braces or standards C', which are secured to the movable ring of the turn-table.

c is the pivot of the ladder, and C² C³ are braces to strengthen the pivoted end of the ladder.

D D and D' D' are the pivoted links or lazy-tongs, pivoted at one end to the turn-table and connected at the other end to the short end of the ladder or its braces by a double-jointed connection. The links D D are connected at one end to the turn-table by pivot-bolts d d. The double-pivoted connection, by which the links D' D' are connected to the ladder or its braces, preferably consists of a vertically-swinging hinge-plate, d', connected to the ladder or ladder-braces by the horizontal pivot or bolt d², to which hinge-plate the links D' D' are connected by the bolts or pivots d³ d³. The adjoining ends of the links D D and D' D' are pivoted together or to the traveling nuts F F of the screw E. The screw E has a right-and-left-hand thread, so that the nuts F F travel in opposite directions.

G is a guide or slide way, secured to the turn-table. This guide or slide way is curved almost in the arc of a circle, to correspond to the path of the traveling nuts as they swing around on the ends of the pivoted links D D. The nuts F F are provided with guides or projections f, which fit in this guide or slide way G, and thus serve to hold the nuts F F and links D D in a horizontal position or parallel to the turn-table. The links D D are pivoted

to the nuts F F by the pivots or bolts $f' f'$, and the links D' D' are connected to the nuts F F by a double-jointed connection. This double-jointed connection may preferably consist of an eye, f^2 , surrounding the screw E, so as to swing vertically thereon, to which the link D' is connected by the pivot or bolt f^3 . The vertically-swinging eyes $f^2 f^2$ may, if desired, be threaded, so as to serve as part of the nuts F F.

It will be observed that in case the slideway G is made strong enough to withstand the strain upon the nuts the links D D may both be omitted; but in this case the links D' D' should be connected pivotally to the nuts F F by vertical pivots located centrally with the nuts and screw, so that the strain of the links will not cause any twisting strain upon the nuts or screw.

In Figs. 5 and 6 I have shown the means of applying my invention when the guideway G is omitted. In this case, of course, the links D D and D' D' stand in the same straight line, and the screw E travels in a vertically-curved path, instead of a horizontal one. To steady or hold the ends of the screw in this construction, I deem it desirable to provide slotted curved guides K K for the same, which guides may be secured to the upper or revolving rim of the turn-table. Where the screw is thus allowed to conform in position to the common direction or plane of the links D D and D' D', it will, of course, be understood that it is not necessary, or even desirable, that the links D D and D' D' should be connected together or to the operating-nuts F F by a double joint—that is to say, the vertically-swinging hinge or joint should be omitted. In place of the screw E other equivalent or substitute mechanical device may be employed to operate the nuts F F.

My invention is also applicable to raising and lowering pivotally-mounted stand-pipes and other like articles as well as ladders. It should also be observed that instead of employing a right-and-left-hand screw and two traveling nuts F F that one of the nuts or blocks F may have no threads, but be connected or journaled in a fixed position longitudinally near the end of the screw, as the

operation of the screw and nuts F F is simply to separate said nuts. If but a single-threaded screw is employed and but one of the nuts provided with threads, it will, of course, take twice as many turns of the screw to raise the ladder, though the power will be greater.

I claim—

1. The combination, with a turn-table truck and a pivoted ladder mounted thereon, of a pair of links, D' D', and an operating-screw, E, and traveling nut, substantially as specified.

2. The combination of a turn-table truck and a pivoted ladder mounted thereon, lazy-tong links D D D' D', pivotally connected to said ladder or turn-table, a screw, E, and traveling nut, substantially as specified.

3. The combination of a turn-table truck and pivoted ladder mounted thereon, lazy-tong links D D D' D', pivotally connected to said ladder or turn-table, a screw, E, and traveling nuts and guideway G, substantially as specified.

4. The combination of a turn-table, a pivoted ladder, C, mounted thereon, having braces $C^2 C^3$ at its pivoted end, a pair of lazy-tongs connected at one end to the turn-table and at the other to said braces, and a screw and traveling nuts for operating said lazy-tongs, substantially as specified.

5. The combination of turn-table B B', ladder C, mounted pivotally thereon, braces $C^2 C^3$, links D D D' D', guideway G, nuts F F, having projections f , fitting in said guideway, and screw E, said links D D being pivoted at one end of the turn-table and at the other to said nuts, and said links D' D' having a double-joint connection at one end to said braces and at the other to said traveling nuts, substantially as specified.

6. The mechanism for raising and lowering a pivoted ladder or other like article, consisting in a pair of lazy-tongs and a screw and traveling nut for operating the same, substantially as specified.

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Witnesses:

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