

(No Model.)

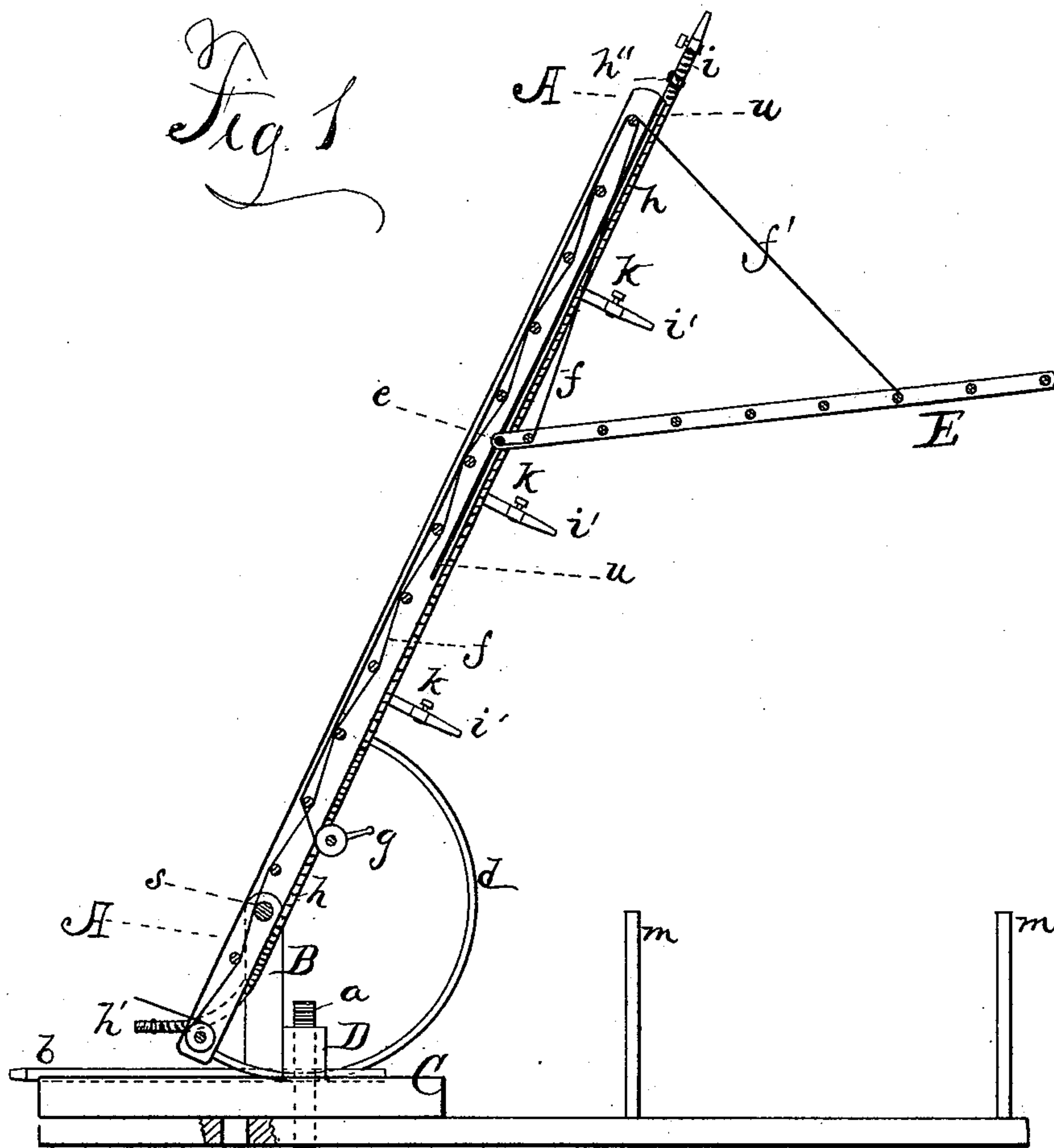
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J. P. CRAIG & T. F. STRACHAN, Jr.

EXTENSION FIRE LADDER.

No. 338,717.

Patented Mar. 30, 1886.



Witnesses:

*W. H. Parsons*  
*J. R. Drake.*

*J. P. Craig & T. F. Strachan, Jr.*  
Inventors,

*by J. R. Drake.*  
*Atty.*

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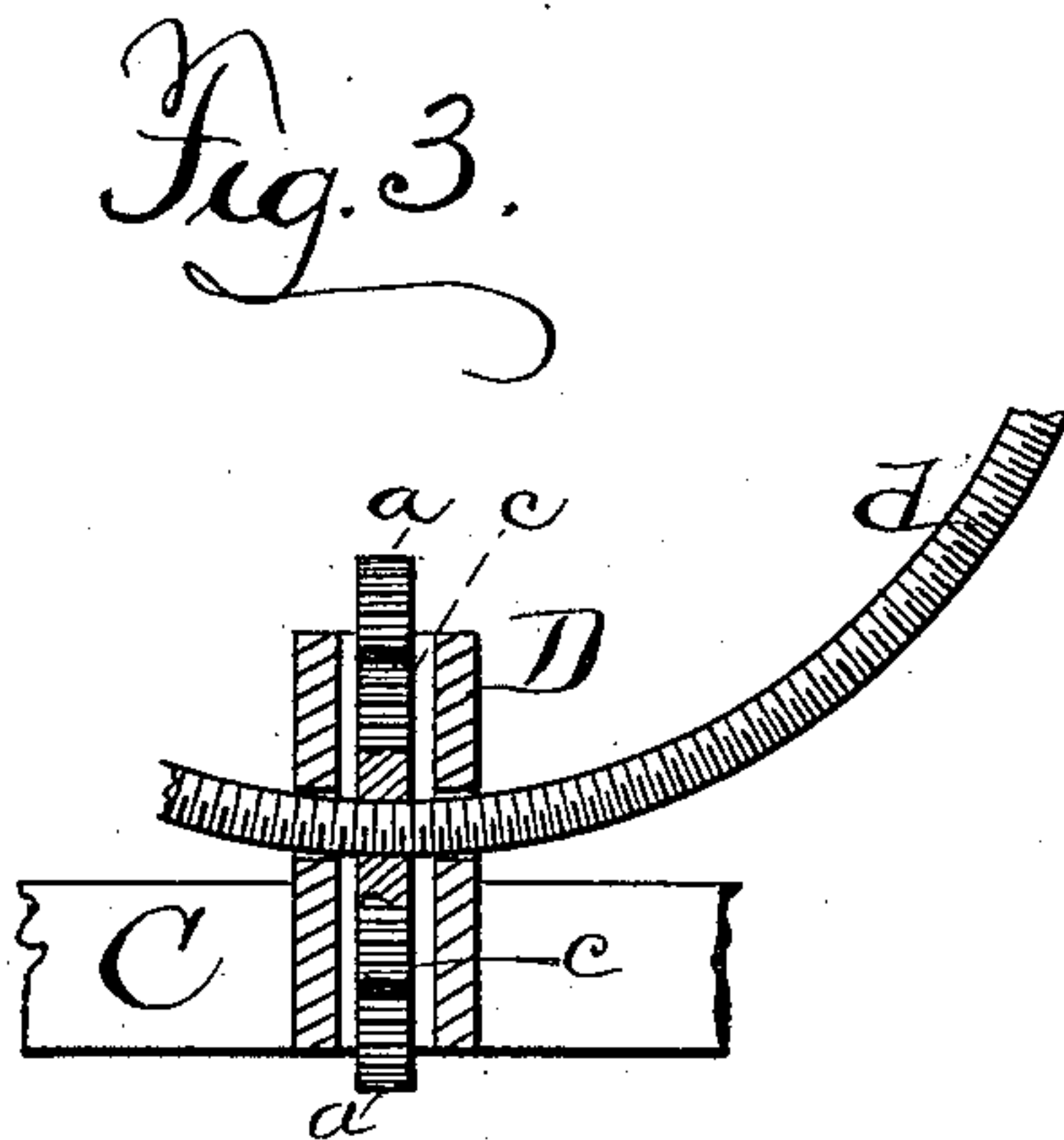
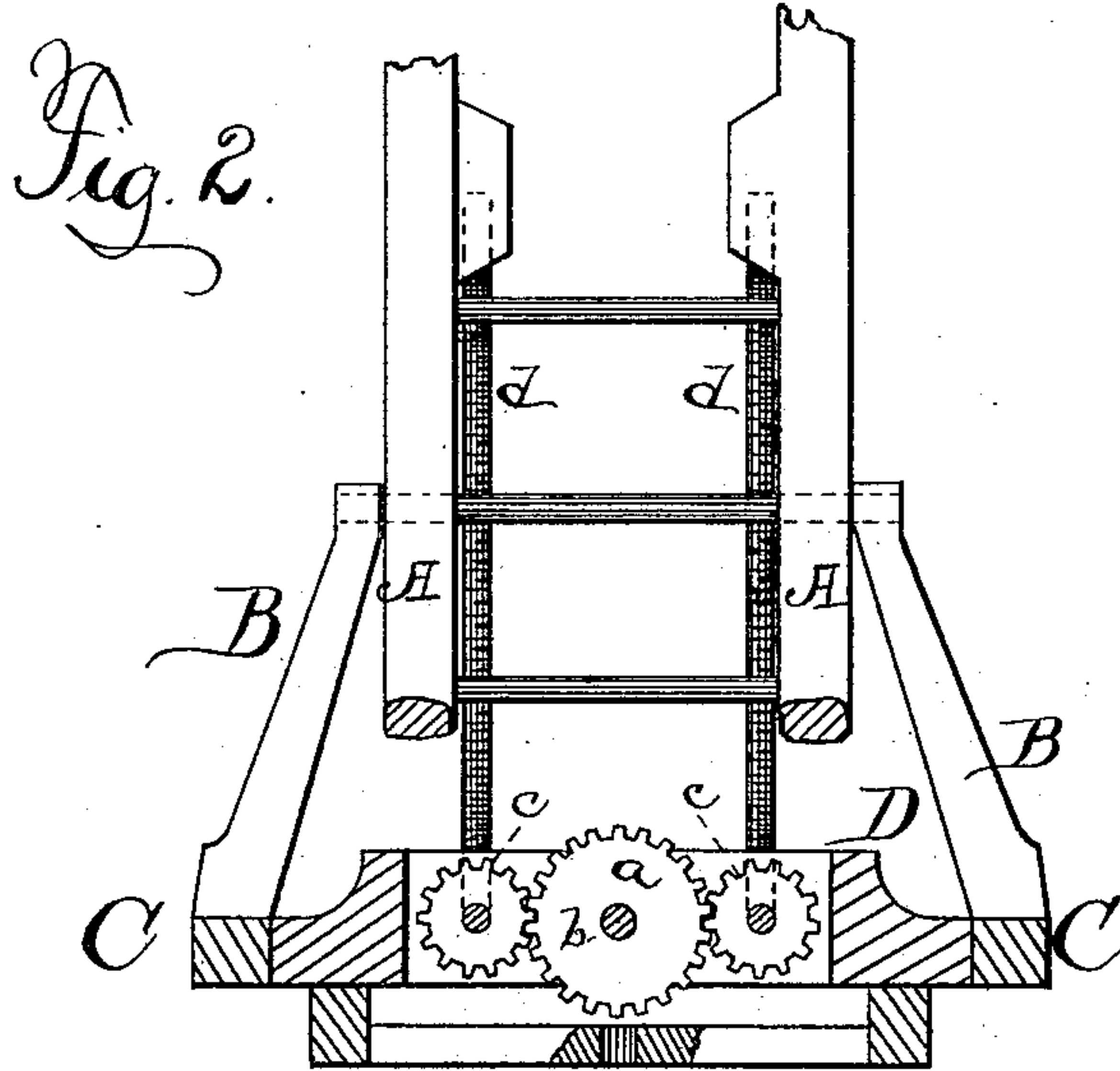
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*J. R. Drake,*  
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# UNITED STATES PATENT OFFICE.

JOHN PATRICK CRAIG AND THOMAS FRANK STRACHAN, JR., OF BUFFALO,  
NEW YORK.

## EXTENSION FIRE-LADDER.

SPECIFICATION forming part of Letters Patent No. 338,717, dated March 30, 1886.

Application filed October 21, 1885. Serial No. 180,480. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN PATRICK CRAIG and THOMAS FRANK STRACHAN, Jr., citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Extension Fire-Ladders; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The object of this invention is to furnish a simple means of raising and operating an extension fire-ladder, (on a suitable truck,) and the invention as constructed and applied will be understood by reference to the following specification and claim.

In the drawings, Figure 1 is a side elevation of one-half the entire device without the truck; Fig. 2, a detail of the appliances for raising the ladder or ladders, front view; Fig. 3, a detail in central cross-section of one screw curved rod and one of the cog-wheels through which said rod passes centrally, side view.

A represents the main ladder, pivoted to two upright posts, B B, by a rod, s, passing through the top of the posts and through the sides of the ladder a little above the lower ends. The posts B are firmly attached to a longitudinally-revolving circular base, C, to turn the ladder when raised in any direction. This feature being old, we do not further particularize it. Across this base, just back of the posts B, is a strong cross-frame, D, in which is a large central cog-wheel, a, fastened to a long shaft, b, projecting from the front of the machine. Meshing into this cog-wheel, each side, are two smaller cog-wheels, c c, each having a curved screw-rod, d, passing through the center, with corresponding screw-threads therein to fit the rods, which act as screw-axes thereto. One end of each rod d is fastened into the lower end of the ladder-frame, and is then curved into a half-circle, and the

upper end fastened above into the same side of the ladder. (See Fig. 1.) The end of the shaft b is fitted for a crank, and when turned revolves the central cog-wheel, a, which operates the two cog-wheels c c in connection therewith, which cause the threaded curved rods d d to move and raise or lower the ladder, as required. This is a very simple way of raising the heavy ladder A, and the two curved screw-rods give a great purchase as well as holding power.

Inside each of the main ladder-frames is a (metal) groove, u, running clear to the top, and in these grooves runs an extension drop-ladder, E, by means of a rod, e, (see Fig. 1,) which passes through said ladder at the base, and the ends of said rod projecting into said grooves u u. By an attached chain or cord, f, and a windlass, g, this ladder is hoisted, and when high enough so that the base is about opposite the story to be entered the outer end of the ladder is dropped by a chain, f', and thrust into a window, by which firemen can enter and carry hose, &c., or persons may escape from the building.

We believe this to be the only drop extension-ladder in connection with a fire apparatus. Its value in this connection will at once be seen. In combination with both side pieces of the main ladder, and permanently connected thereto, is a line of hose, h, fastened either in a groove on the under side or otherwise, as most convenient, the lower ends supplied with hose-couplings h', so as to be instantly connected with hose from hydrants or engines, the upper ends projecting a little beyond the ladder, and supplied with couplings h'', to which a pipe or nozzle, i, will be used in connection; or another line of hose may be coupled to run into a building or on a roof, and to carry it, if necessary, on to the drop-ladder E.

Our device can be attached to any ladder-truck in use, and a great advantage over others is its comparative lightness, by which it can be run on unpaved streets.

We claim—

The devices for raising and lowering the main ladder, consisting of the two curved

screw-rods *d d*, attached to the ladder as described, the cog-wheels *c c* in frame D, having screw-threads in the central opening, with the screw-rods *d* working therein, said cog-wheels  
5 meshing into a larger and central cog-wheel, *a*, fastened on the operating-shaft *b*, all substantially as described.

In testimony whereof we affix our signatures  
in presence of two witnesses.

JOHN PATRICK CRAIG.

THOMAS FRANK STRACHAN, JR.

Witnesses:

J. R. DRAKE,

T. H. PARSONS.