

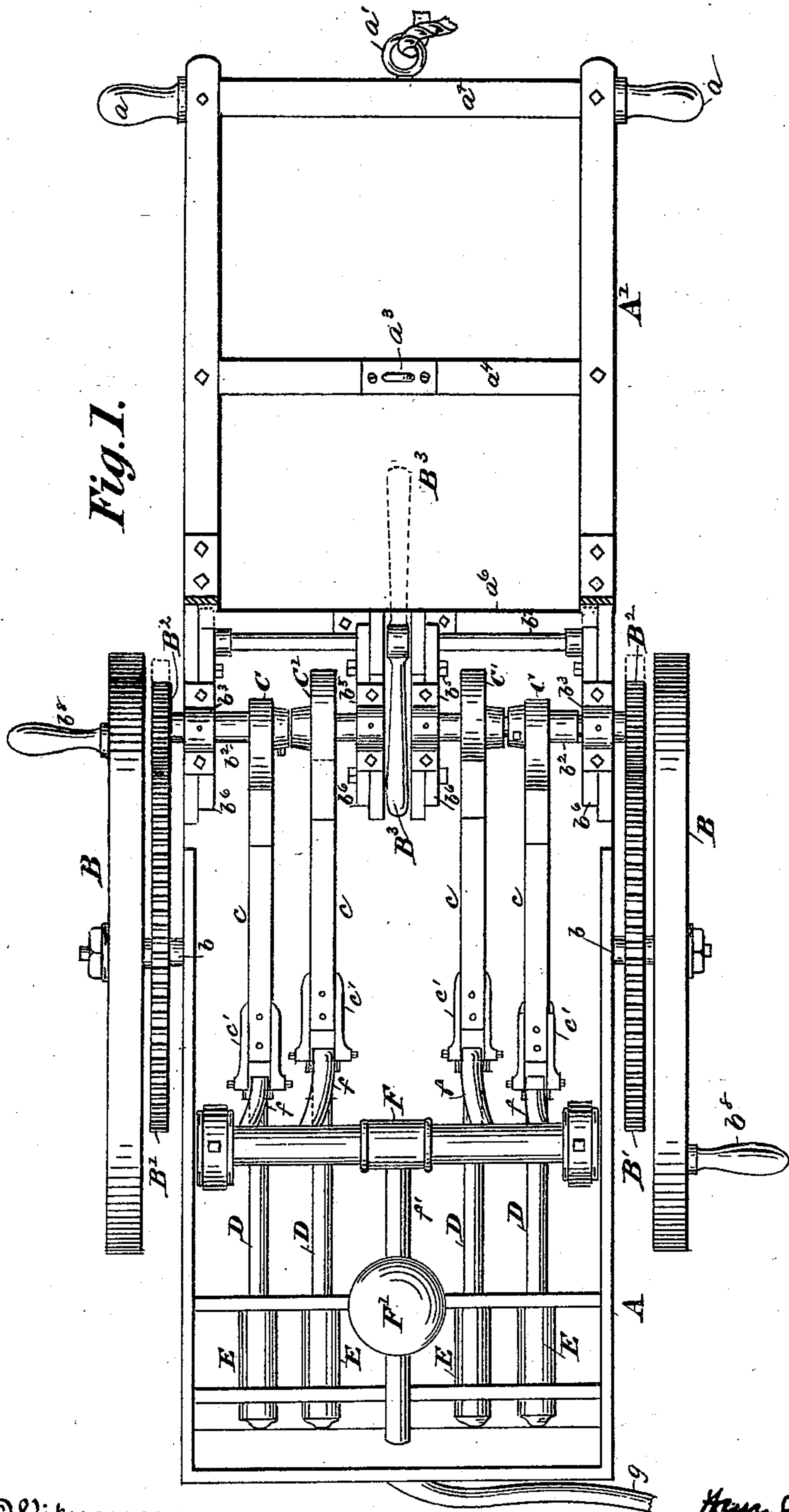
(No Model.)

3 Sheets—Sheet 1.

H. C. ATKINSON & W. MILLER.
HAND FIRE ENGINE.

No. 547,871.

Patented Oct. 15, 1895.



Witnesses

Frank Pardon.

A Scott

Henry C. Williams Inventor of
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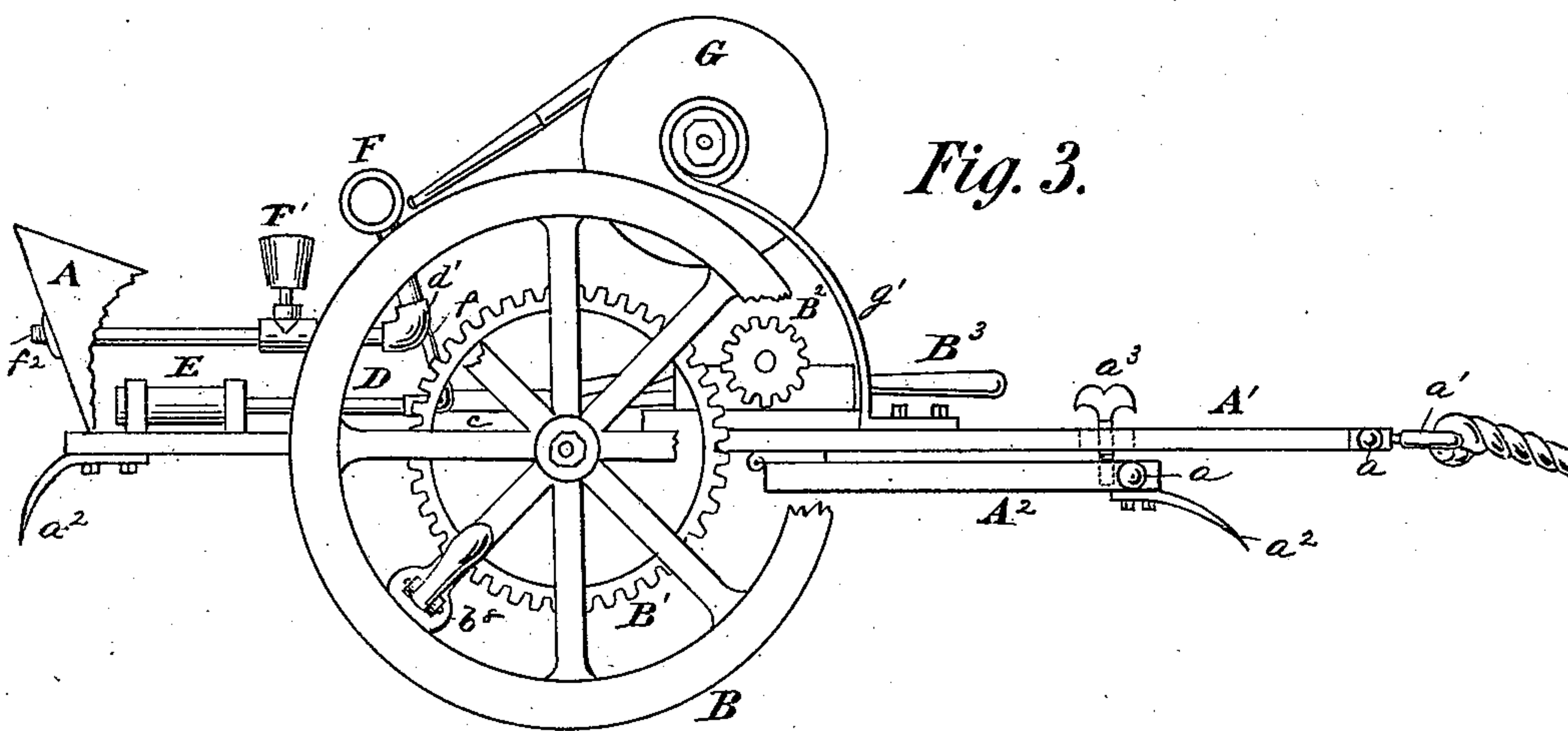
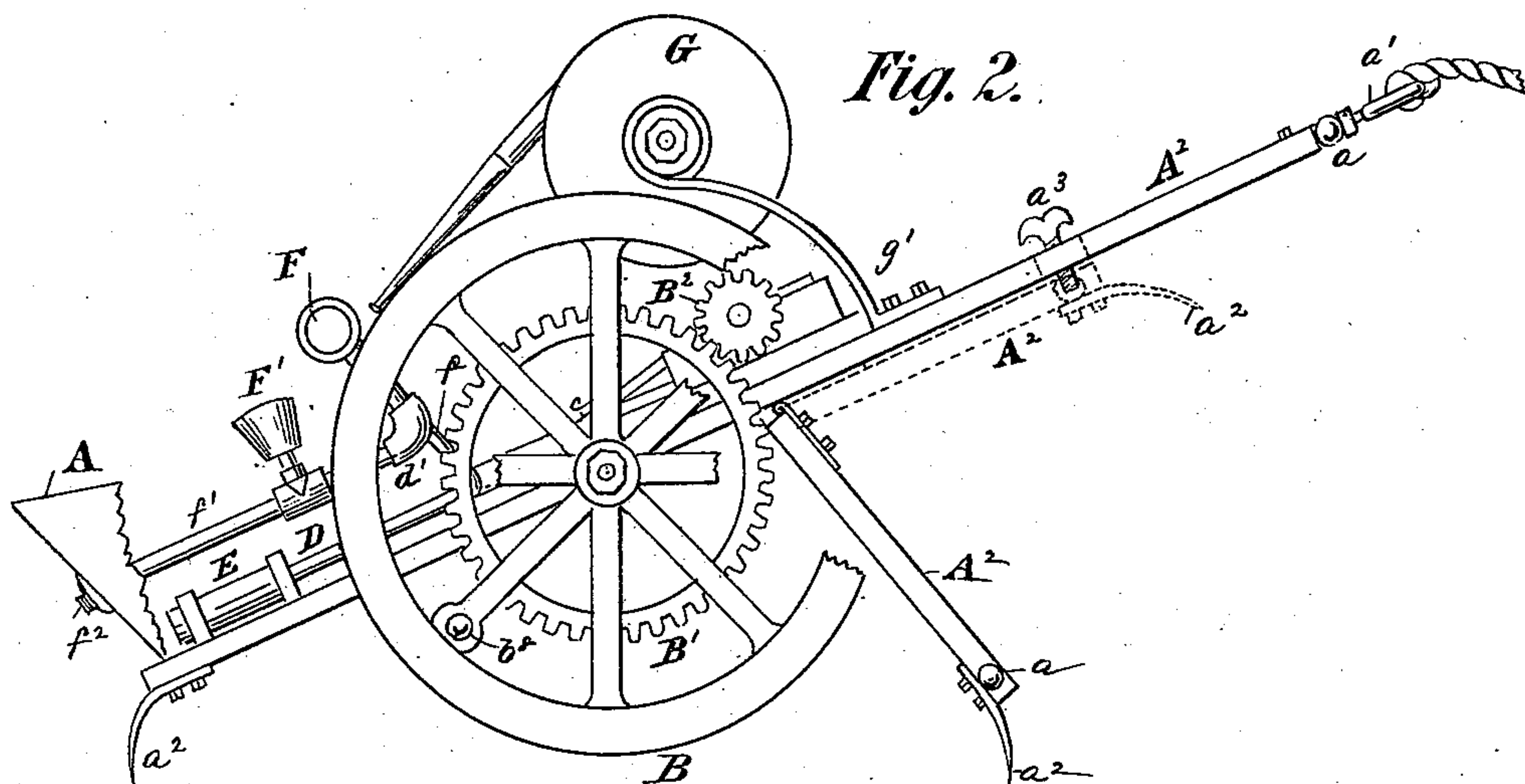
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Fig. 4.

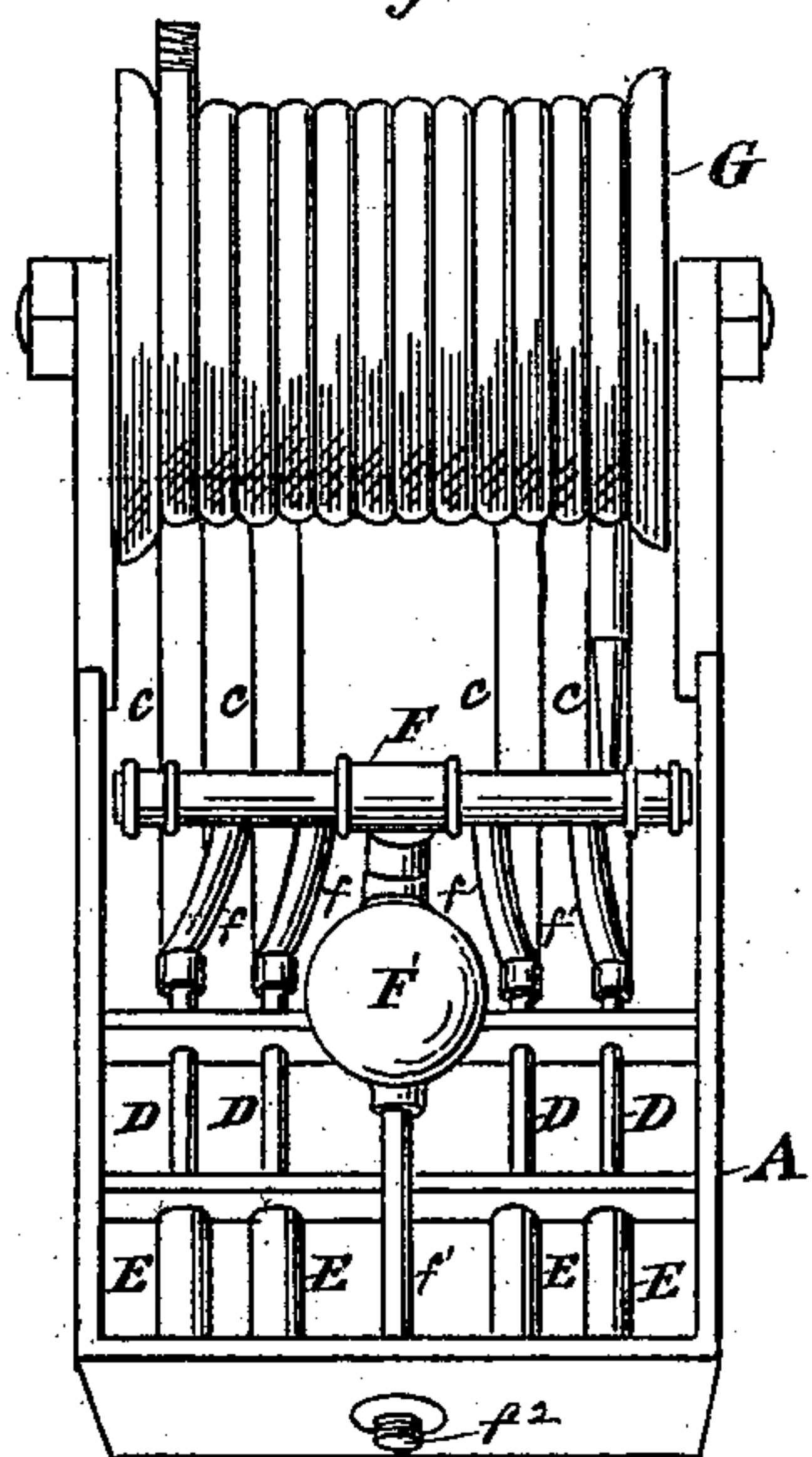


Fig. 5.

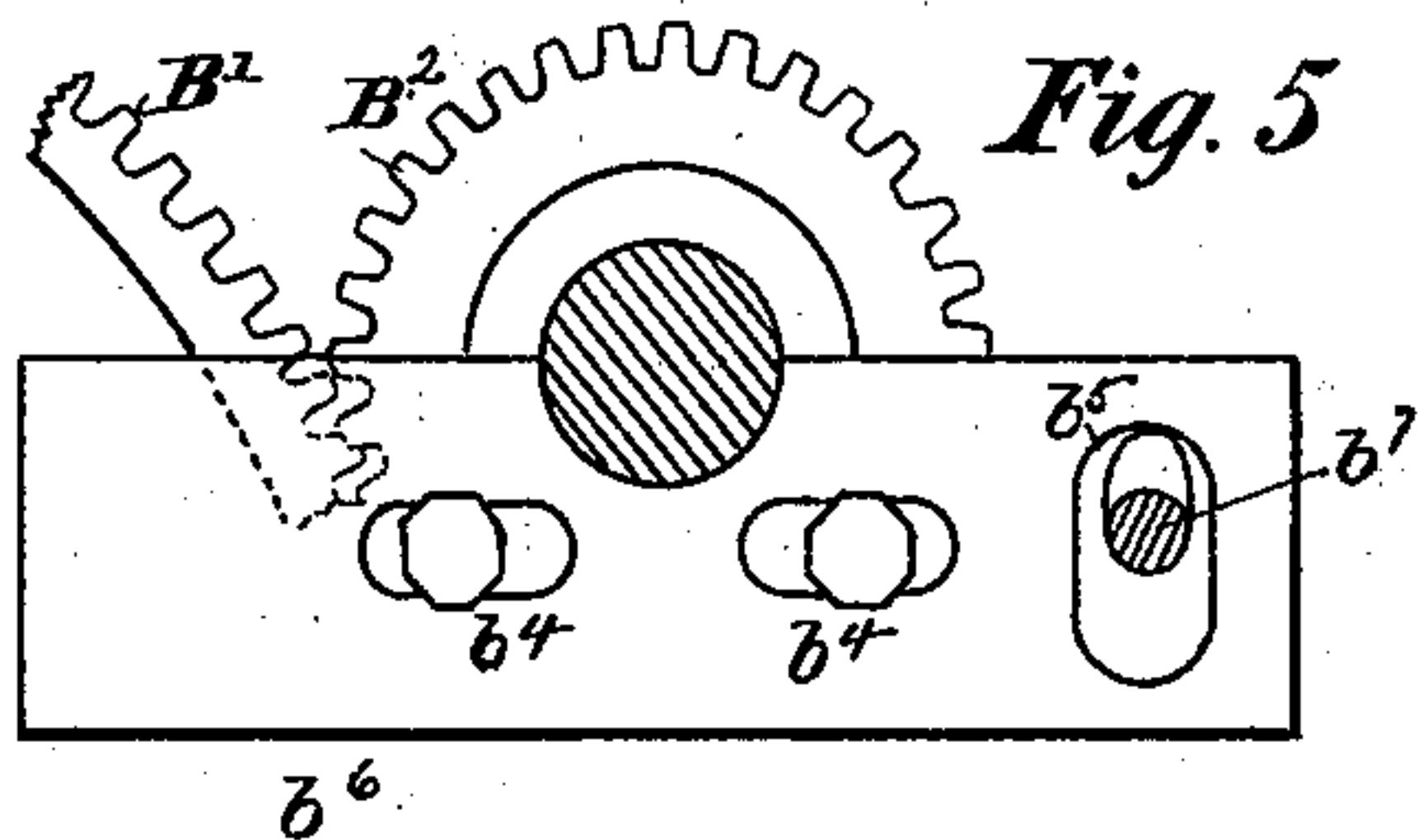


Fig. 6.

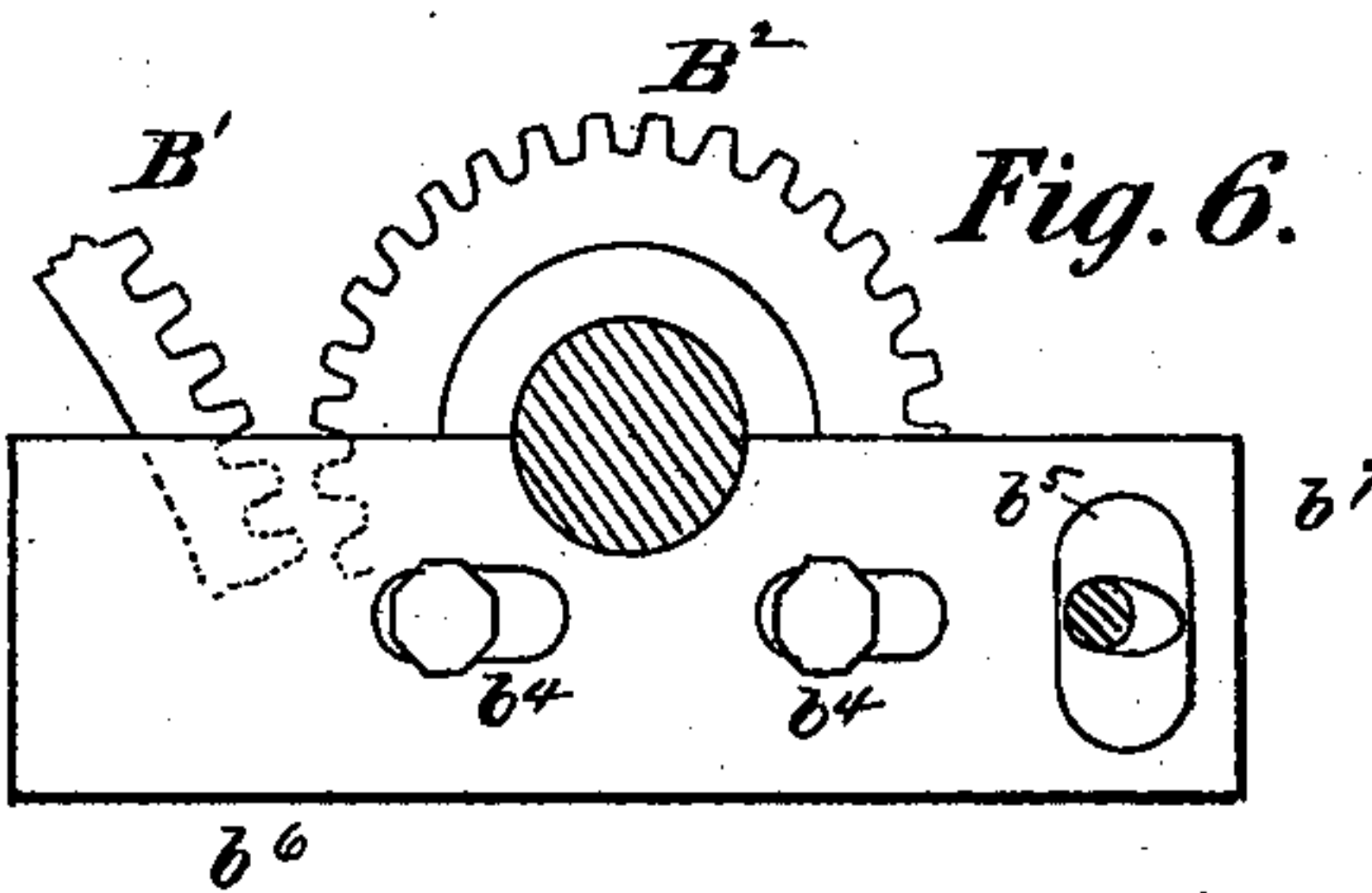
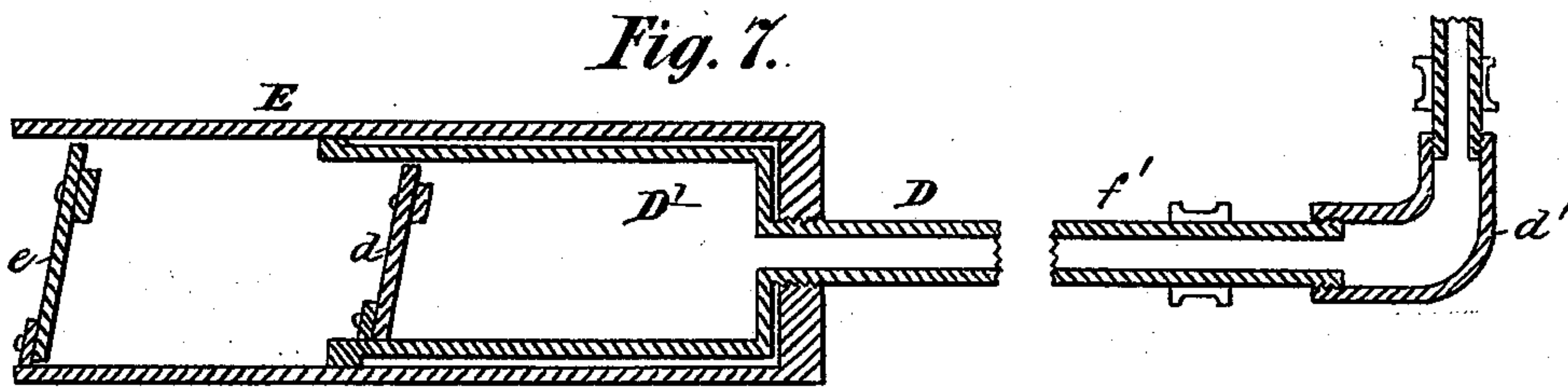


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY C. ATKINSON AND WILLIAM MILLER, OF LOUISVILLE, KENTUCKY.

HAND FIRE-ENGINE.

SPECIFICATION forming part of Letters Patent No. 547,871, dated October 15, 1895.

Application filed February 19, 1895. Serial No. 538,940. (No model.)

To all whom it may concern:

Be it known that we, HENRY C. ATKINSON and WILLIAM MILLER, citizens of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Hand Fire-Engines; and we do hereby 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.

The object of our invention is to provide a convenient machine for extinguishing fires in villages and towns of small population that are without water-works and unable to maintain a regular fire department. In such places, when a fire breaks out, there is usually no better provision for extinguishing it than the water brought in buckets by the neighbors, and when the fire gets a good start it is difficult to approach near enough to apply the water effectively.

Our object is to provide an engine transportable easily from place to place, fed by water brought by hand and directed against the fire through hose-pipe and workable by a small force. In order to accomplish this object in the most convenient and economical manner, we provide a two-wheeled carriage, the bed of which serves as a water-reservoir to be filled by water brought by hand. In this reservoir we provide a system of pumps by which the water may be forced through a hose. Shafts are attached to the carriage, with handles and other arrangements to enable it to be pulled by hand to the place where it is needed, and means for lifting the carriage wheels from the ground, throwing them into gear with wheels actuating a shaft carrying eccentrics, having rods actuating on a novel arrangement of hollow piston-rods provided with valves adapted to carry the water into the hose-pipe, and an air-chamber to regulate the flow. The mechanism by which we accomplish these objects is illustrated in the accompanying drawings, in which—

Figure 1 is a top view of our engine with the hose-reel removed; Fig. 2, a side view of our engine in position for working, showing the hose, and with parts of the reservoir and carriage-wheels broken away; Fig. 3, a side view

of the same, with parts of the carriage-wheel and reservoir broken away, showing the engine in position for transportation; Fig. 4, a detail top view showing the hose-reel in position; Figs. 5 and 6, details of the gearing and ungearing device; and Fig. 7, a sectional detail view of the pump-cylinder and hollow piston-rod, showing the valve arrangements.

Similar letters refer to similar parts throughout the several drawings, and dotted lines indicate change of position of parts shown.

In the drawings, A represents the bed or frame of the engine made water-tight, having side boards rising in height toward the rear and a tail board corresponding in height to the rearward height of the side boards, adapting the bed to serve as a reservoir when the engine is in action. In Figs. 2 and 3 the side boards are broken away in large part, in order to show the relations of the pumps and hose supply-pipe.

A' represents the hauling-gear, consisting of two shafts bolted at one end on each side to the frame A and strengthened by three cross-bars a^4 , one next to the engine-bed, one in the middle, and one near the outer end. Hinged to the rear cross-bar of the shaft-gear A' is a supporting-frame A², consisting of two side pieces at the same distance apart as the shafts, connected by two cross-bars, the rear bar corresponding to and fitting under the rear bar of the shafts and the front one corresponding to the middle cross-bar of the shafts and adapted to be attached to the middle bar of the shafts by a thumb-screw a^3 passing through that bar at a point half-way between the shafts. The side pieces of the supporting-frame A² extend as far as the middle bar a^4 , connecting the hauling-shafts. To the front ends of each of the side bars of the supporting-frame A² and to each of the side sills of the engine-bed, at their rear ends, are bolted curved and pointed pieces of iron a^2 , adapted to take a firm hold on the ground when the engine is put into position to throw water. Near the outer ends of each shaft of the hauling-frame A', and of each side bar of the supporting-frame A², are attached, on the outside, handles a , adapted to furnish a hold for the men hauling the engine, and to the front of the outer cross-bar a^4 of the hauling-

frame, is attached a ring a' , adapted to hold a rope by which additional men can help to haul.

B B represent wheels for transporting the engine and also adapted to actuate the pumps, as hereinafter described. Each of these wheels works on an axle b , having bearings in the frame A of the engine. On each axle, between the wheel B and the bed on frame A, is carried a gear-wheel B' , adapted to engage a pinion B^2 , keyed onto a shaft b^2 , having bearings b^3 , on the frame of the engine, at points indicated. Each of these shafts b^2 carries two eccentrics C and C', oppositely arranged, having rods c , connected by cross-heads c' , with piston-rods D actuating pistons D', which are arranged in pump-cylinders E. The bearings b^3 are suitably slotted, each furnished with a slotted slide b^6 , (shown in Figs. 5 and 6,) interiorly arranged, in the forward end of which a rod b^7 , having a cam movement on the slides, has bearings. This rod b^7 carries at its middle part, opposite the space between the interior ends of the two shafts b^2 , an ungearing-lever B^3 . The pump-cylinders E at their outer ends are each furnished with a valve e , and the hollow pistons D' have each a valve d , both of which valves open inwardly, as shown on Fig. 7. The piston-rods D are hollow and open into the hollow piston D' at their lower end and their upper end into flexible tubes f , which open into a receiving-pipe F, from which an exit is provided by an aperture in its lower circumference opening into a pipe f' , which by a bend d' is conducted horizontally through the end of the engine-bed, where at its end f^2 , as shown in Fig. 4, it is furnished with a screw-thread to receive the hose-pipe g . Into a threaded aperture in this exit-pipe f' is screwed an air-chamber F'. By suitable curved bars g' , bolted on each side to the shafts of the hauling-gear A', is supported a hose-reel G, carrying a supply hose-pipe g . The running-wheels B are each provided with a handle b^8 , as shown in Fig. 1, attached to the outer end of one of the spokes by snaps and adapted to be folded down onto the spokes when the engine is to be moved, as shown in Fig. 3.

When it is desired to move our engine to the scene of a fire, the arrangement of its parts are as shown in Fig. 3, where the supporting-frame A² is attached to the hauling-frame A' by the screw a^3 , the handles b^8 of the running-wheels are turned back on the spokes, the rope attached to the ring a' , and the ungearing-lever B^3 thrown forward parallel with the hauling-frame A', thus disengaging the pinion B^2 from the gear-wheel B' . When the scene of the fire is reached, the supporting-frame A² is released and the engine tilted, as

shown in Fig. 3, and made to rest on the pointed irons a^2 , provided at the outer ends of A² and at the rear of the engine-frame, thus giving it a firm seat on the ground and lifting the running-wheels B clear of the ground. The handles b^8 of the running-wheels are then turned out, as shown in Fig. 1, and the lever B^3 is turned back into the position shown in Fig. 1, thereby bringing the pinion B^2 into gear with the wheel B' . The tilting of the engine and the shape of the bed makes a sufficiently capacious reservoir in the rear part of the bed, and the water, brought in buckets, is thrown into it, covering the pumps. One man takes hold of the handle of the wheel B on one side and another of the wheel-handle on the other side, and by revolving them set the pumps in motion. Owing to the manner in which the wheels are geared, as described above, the wheels can be revolved in opposite directions, if desired, thus enabling the operators to use their hands alternately. One wheel can be used at a time. The arrangement of the eccentrics keeps the supply of water to the receiving-pipe constant, and the effect of the air-chamber F' is to make the exit-stream regular. By means of the novel arrangement of valves in the pump-cylinder and piston and the hollow piston the water thrown into the reservoir is conveniently and rapidly taken up and forced through the hose.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a two wheeled hand fire-extinguisher, the combination with the engine bed, supporting wheels, and the hauling shafts, of the supporting frame hinged at its rear end, the foot pieces secured to the free end of said supporting frame, devices for holding said frame and foot pieces out of working position, and foot pieces secured to the rear end of said engine bed, substantially as shown and described.

2. In a hand fire engine, the combination with the water-reservoir, a series of pump cylinders therein having induction valves, hollow valved piston, heads, and hollow piston rods, of a receiving pipe having communication with all of said piston rods, an exit pipe extending from said receiving pipe, and an air chamber in said exit pipe, substantially as described.

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

HENRY C. ATKINSON.
WILLIAM MILLER.

Witnesses:

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EDWD. HILPP.