

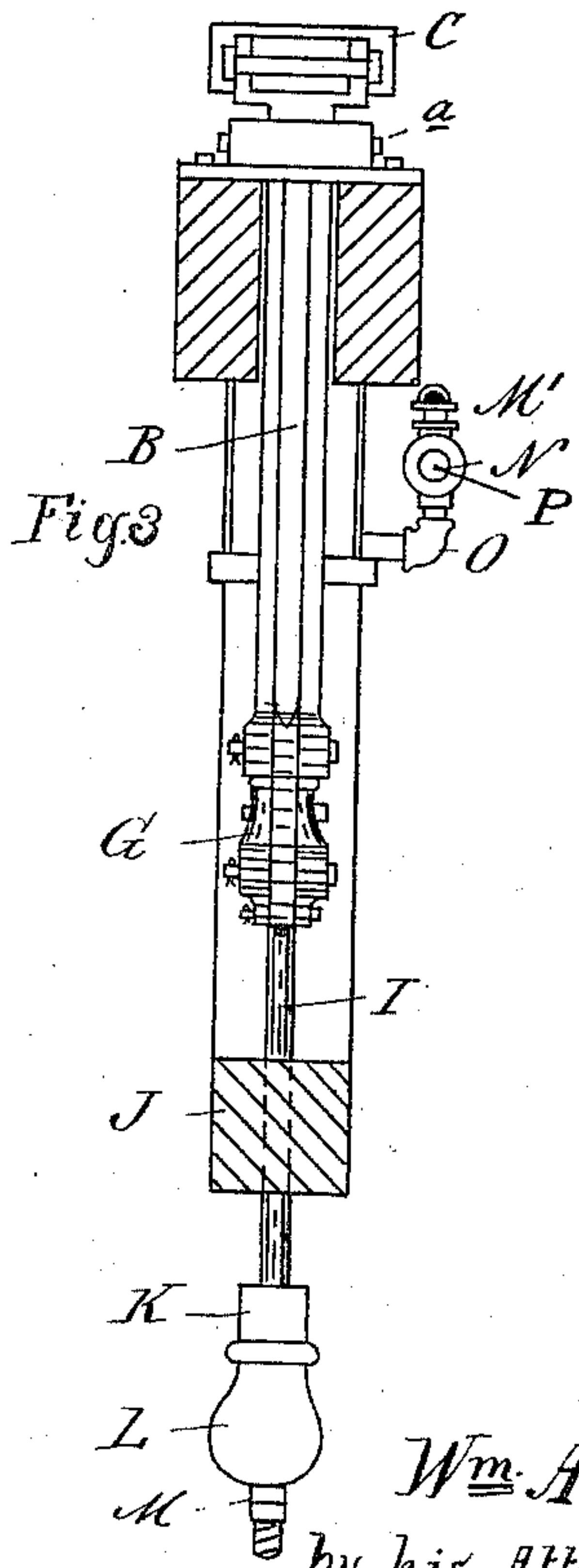
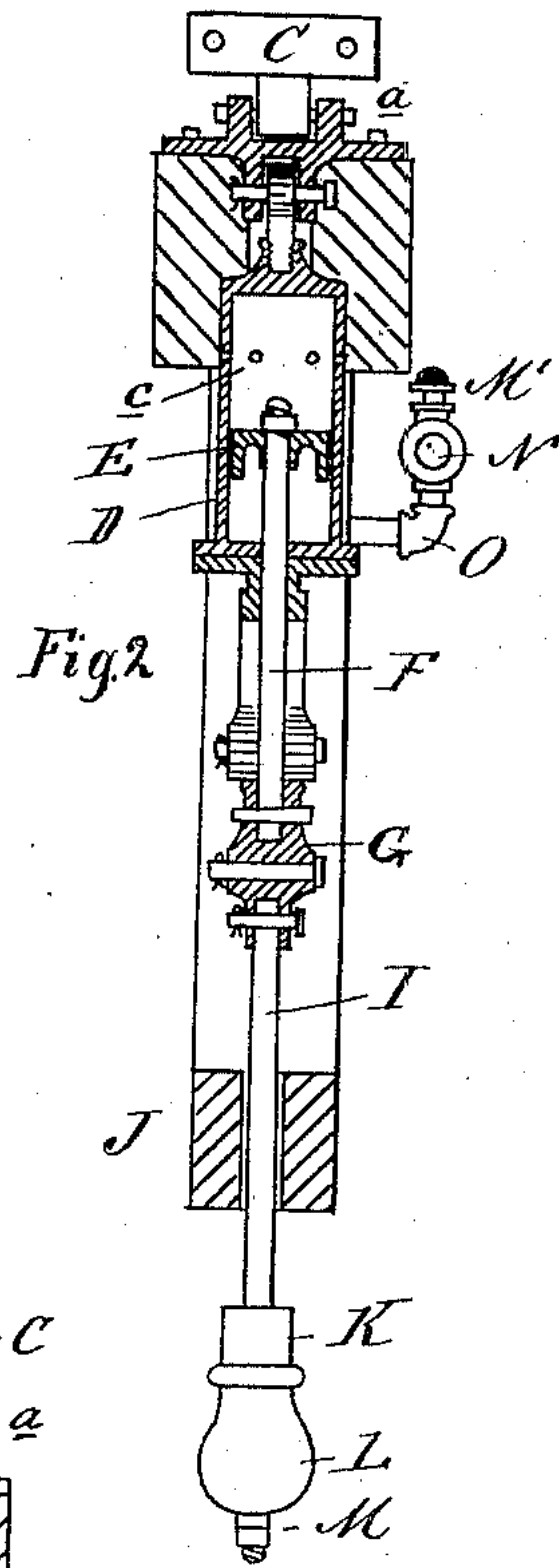
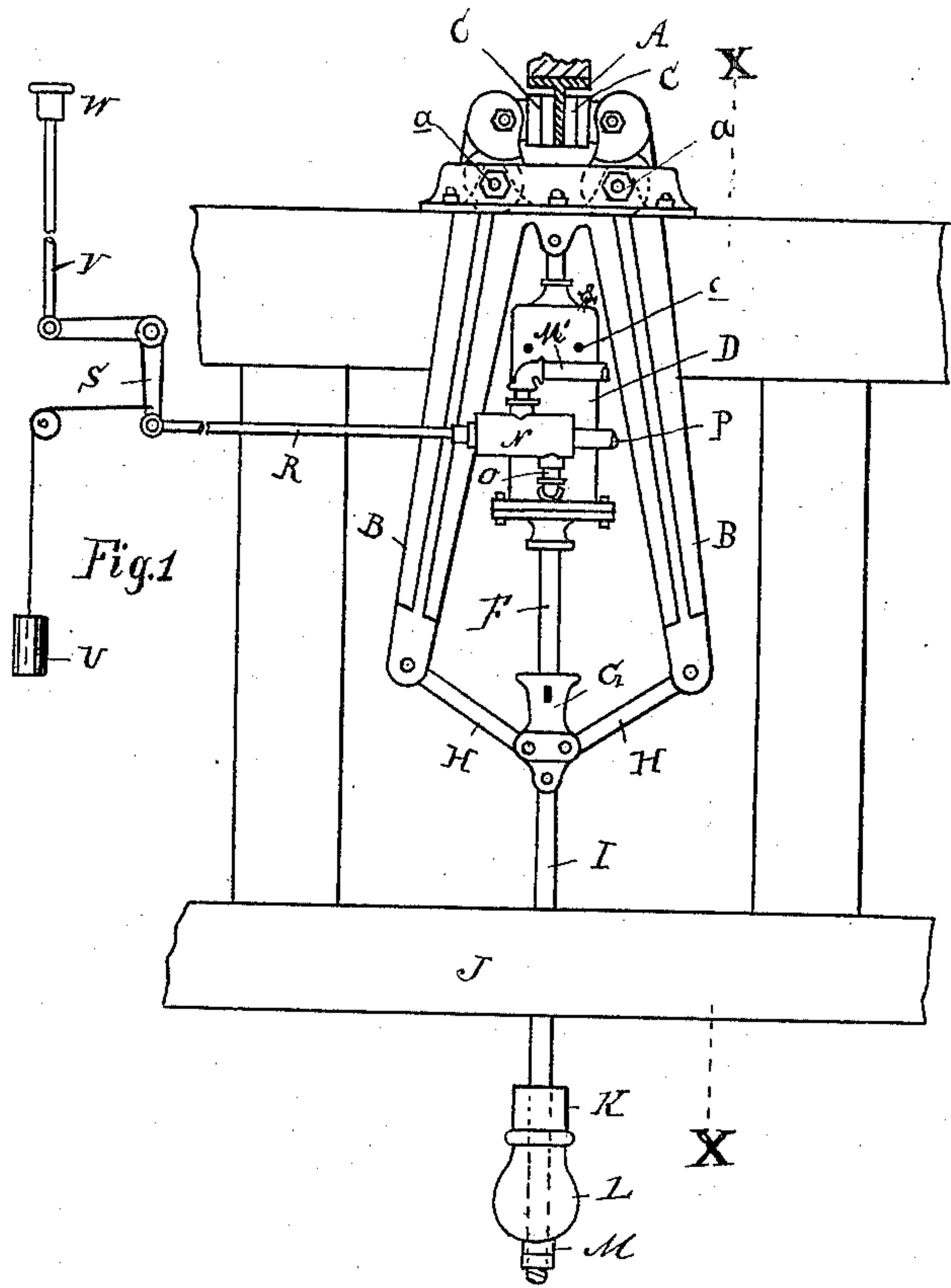
(No Model.)

W. A. CAMPBELL.

STEAM BRAKE FOR SAW MILL CARRIAGES.

No. 314,650.

Patented Mar. 31, 1885.



Attest:

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UNITED STATES PATENT OFFICE.

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STEAM-BRAKE FOR SAW-MILL CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 314,650, dated March 31, 1885.

Application filed September 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CAMPBELL, of East Saginaw, in the county of Saginaw and State of Michigan, have invented new and useful Improvements in Steam-Brakes for Saw-Mill Carriages; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in steam-brakes for saw-mill carriages, and is designed to form an improvement on Letters Patent No. 301,091, dated July 1, 1884.

The invention consists in an improved construction and arrangement of the parts, with the object in view to better control the operation of the brake.

In the drawings which accompany this specification, Figure 1 is an elevation of the brake, showing it as applied to the log-carriage of a saw-mill. Fig. 2 is a vertical central cross-section of Fig. 1. Fig. 3 is an elevation on the line *xx* of Fig. 1.

A is a T-rail or flange, which is secured to the under side of the log-carriage, and parallel with the track upon which the carriage reciprocates.

B B are the brake-levers, pivotally secured at *a a*, and operating in a plane at right angles to the T-rail, so that the brake-shoes C, which are pivotally secured to the upper ends of the short arms of the levers, are in proper position to grip the T-rail between them when the levers are spread apart upon their lower ends.

D is a steam-cylinder, pivotally suspended in any suitable manner vertically below the T-rail and between the two brake-levers B B, so that its axial line is in the same vertical plane with the center lines of the levers, and equally divides the angle between them. This construction admits of the brakes being applied with equal effect, the cylinder yielding or turning on its pivotal point of suspension to compensate for any defects which would otherwise cause one brake to be applied with a greater force than the other, thereby producing a strain upon the system which in course of time would produce serious results.

E is the piston, and F is the piston-rod. The latter terminates in a cross-head, G, to which the inner ends of the toggle-levers H are pivotally secured. The outer ends of the toggle-levers are pivotally secured to the lower ends of the brake-levers.

I is a rod pivotally secured to the lower end of the cross-head G. It passes loosely through the cross-beam J, and has adjustably secured to its lower end, by means of the nut M, the rubber buffer K and counter-weight L, the counter-weight L serving as a backing for the buffer K.

N is a steam-chest. M' is a pipe connecting said steam-chest with the live steam. O is a pipe connecting it with the lower end of the cylinder, and P is the exhaust-pipe. This steam-chest contains a valve operated by the valve-rod R in such manner that in one of its positions live steam may be admitted into the cylinder, while in its alternate position the steam previously introduced into the cylinder may be exhausted again.

The valve rod R is connected to one end of a bell-crank lever, S, the other end of which is connected to the vertical foot-shaft V, which projects through the floor and terminates in a foot-button, W, projecting sufficiently above the floor to allow the operator to operate the valve with his foot. This foot-shaft is placed in proper position to be operated by the sawyer.

U is a counter-weight for keeping the valve normally open to the exhaust. Normally the valve is kept open to the exhaust by the counter-weight U, and no live steam is admitted into the cylinder. The weight of the piston and of the other parts connected thereto will therefore keep the piston to the lower end of the cylinder and hold the brake-levers sufficiently together upon their lower ends to bring the brake-shoes out of contact with the T-rail, and the saw-carriage is free to reciprocate.

Whenever the operator depresses the foot-button, the valve is reversed and steam is admitted below the piston. The piston in moving upward will now actuate the toggle-levers and spread the lower ends of the brake-levers apart, thus instantly applying the brake-shoes to the T-rail and arresting the movement

of the saw-carriage. As soon as the pressure is removed from the foot-button all the parts are returned to their normal position, the steam in the cylinder escaping through the exhaust.

The rubber buffer is so adjusted that it will not interfere with the normal operation of the brake; but should the saw-carriage be at any time in a position where the T-rail runs out from between the brake-shoes the latter would be kept from closing much farther than they do in normal operation by the buffer striking against the under side of the cross-girt, which acts as a stop for the buffer. The object of this arrangement will be better understood when it is considered that in order to get the necessary power for braking, the upper ends of the brake-levers, to which the brake-shoes are connected, are made as short as it can conveniently be done, and therefore the T-rail would be removed from between the brake-shoes. The little space created thereby would give the brake-levers such extended play that damage would be caused to the machinery. In the construction described in the above-mentioned Letters Patent, and for which my improvement is especially designed, the piston was invariably blown out of the cylinder if the brake was brought into operation without the T-rail being between the brake-shoes. This could not be remedied by an increased length of cylinder, owing to the transverse way the cylinder was placed between the brake-levers, and which did not admit of lengthening the cylinder. I have still introduced an additional measure of safety, which consists in the construction of an air-cushion at the upper end of the cylinder, by means of the holes *c*, which allow the air to escape until the piston has far enough raised to effect the braking. Any further advance of the piston will

compress the air in the cylinder above the holes *c* and cushion the piston.

The position in which I place the brake-cylinder presents additional advantages over the one referred to. I apply the power more evenly to the brake-levers and avoid all side strains. I gain greater leverage and compactness by the use of the toggle-levers, and also save much dead-weight or obviate the use of the springs by the increased facility the parts are given to return the piston to its normal condition when the brake is taken off.

What I claim as my invention is—

1. In a steam-brake operating as described, the brake-cylinder D, pivotally and centrally suspended between the two brake-levers B B, and transmitting the breaking-power by means of toggle-levers connecting its piston-rod with the longer ends of the brake-levers, substantially as described.

2. In a steam-brake operating as described, the combination of its brake-cylinder and piston with the buffer-block K, adjustably connected with said piston, and stop, as J, the parts being constructed and arranged to arrest the braking movement of the piston at an abnormal action of the same, substantially as described.

3. In a steam-brake, the combination of the two brake-levers B B and their brake-shoes C, of the brake-cylinder D, centrally suspended between the brake-levers, of the cross-head G, of the toggle-levers H, connecting the piston-rod with the brake-levers, of the rod I, buffer K, counter-weight L, adjusting-screw, and cross-girt, all combined substantially as and for the purposes described.

WILLIAM A. CAMPBELL.

Witnesses:

HERBERT A. FORREST,
WM. A. DONALDSON.