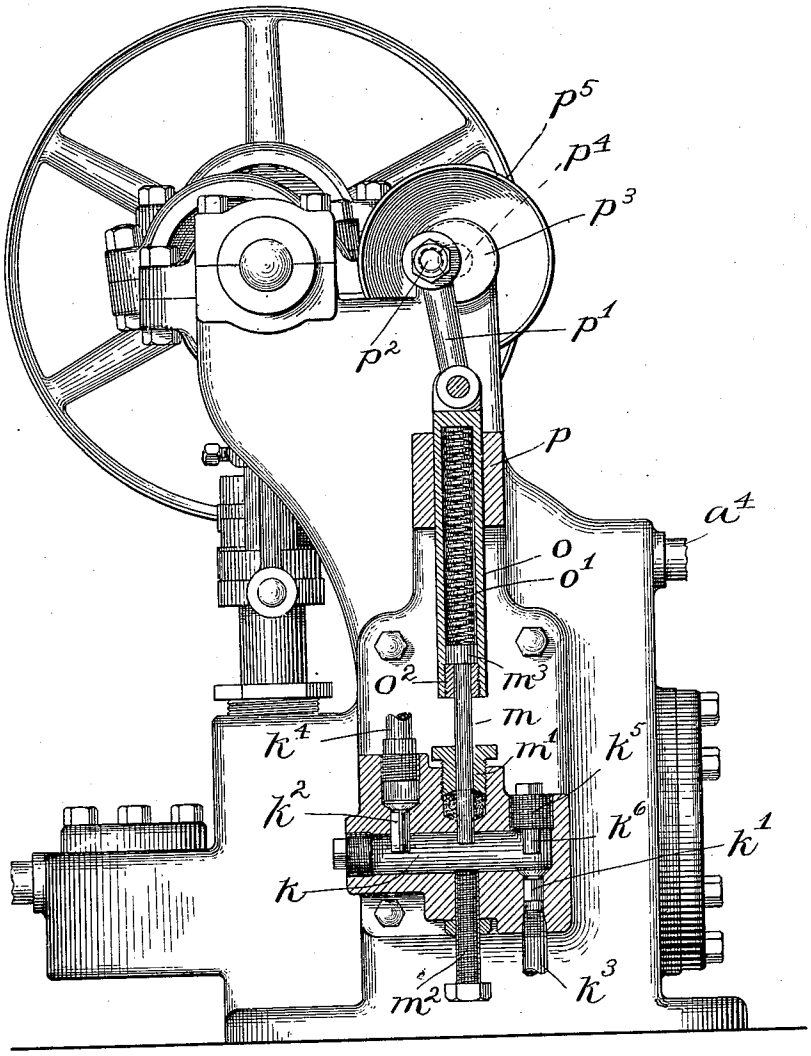
No. 700,646. Patented May 20, 1902.

J. HARTNESS.

FLUID OPERATING DEVICE.

(Application filed Jan. 21, 1901.)

(No Model.)



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES HARTNESS, OF SPRINGFIELD, VERMONT.

FLUID-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 700,646, dated May 20, 1902.

Application filed January 21, 1901. Serial No. 44,075. (No model.)

To all whom it may concern:

Be it known that I, JAMES HARTNESS, of Springfield, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Fluid-Operating Devices, of which the following is a specification.

This invention has for its object to provide a feeding pump or accumulator for fluid-operated machines, in which the pressure in the discharge or exhaust pipe may be yielding or continuous.

In Letters Patent No. 635,888, granted October 31, 1899, I have illustrated and described a turret-lathe in which the various parts are operated by fluid-pressure; and it is the purpose of this invention to provide mechanism for feeding fluid to the operating-cylinders.

Accordingly this invention consists of a feeding-pump having provisions for delivering the fluid under yielding pressure, the illustrated embodiment of said invention having means for limiting the play of the piston or analogous movable element.

The figure on the drawing illustrates the feeding-pump in section, said pump being attached to the casing of an operating-pump, to which no further reference is to be made, as it forms no part of the present invention.

The cylinder is indicated at k and is shown as horizontally arranged, though this arrangement is not material. Its inlet-port is provided with a check-valve k', which permits the inflow of fluid from the pipe k^3, leading from a suitable source of fluid-supply. The exhaust-port has a check-valve k^2, by which fluid is permitted to flow under pressure to the exhaust or delivery pipe k^4.

The play of the inlet-valve may be limited by an adjustable screw k^5, having a pin or projection k^6, arranged in alinement with said valve. This screw has provisions by which it may be rotated by a suitable tool.

The piston m consists of a rod which reciprocates into and out of the cylinder through a stuffing-box m', the movement of the piston being regulated by an adjusting-screw m^2, passed upward into the cylinder, as shown. The piston extends into a plunger o, which is hollow, as shown, to receive a spring o', which bears against the head m^3 of the piston and holds it yieldingly against a bushing o^2, which is screwed into the end of the plunger. The said plunger slides in a guide p, and its upper end is connected by an abutment p' with the crank-pin p^2, carried by a disk p^3 on a shaft p^4, journaled in bearings in the top of the casing a. The shaft is equipped with a pulley p^5, which may be driven at different speeds, according to the desired rate of flow of the liquid.

Preferably the pulley p^5 is driven by a belt from some automatically-controlled part of the lathe or fluid-operated machine with which it is used. When the shaft p^4 is rotated, the reciprocation of the eccentric effects a reciprocation of the spring-pressed piston m, and as the latter moves into and out of the cylinder the liquid is forced into and out therefrom.

The strength of the spring is so proportioned to the area of piston m as to give a pressure exceeding all normal resistances, so that the volume of liquid delivered by this feeding-pump will be a certain quantity per stroke, which quantity per stroke, however, may be regulated by the adjusting-screw m^2.

One of the advantages of this construction and arrangement is that the pressure of the liquid delivered by the operating-pump may be very slight—just enough for the free movement of the parts of the machine—and the pressure of the liquid delivered by the feeding-pump can be increased or made as much greater as is necessary to meet the greatest requirements of the cutting-tools.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all the modes of its use, I declare that what I claim is—

A pump comprising a cylinder, having inlet and outlet valves, a headed piston operating in said cylinder, a reciprocatory hollow rod in which said piston is telescoped, a spring in said rod bearing against the head of said piston, and a bushing in said rod for loosely engaging the head of said piston, whereby the suction-stroke of said piston is positive, and its operative stroke is yielding.

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

JAMES HARTNESS.

Witnesses:

W. LE ROY BRYANT,

HORACE BROWN.