

J. CLAYTON.

Improvement in Valve-Motion for Steam-Pumps.

No. 129,269.

Patented July 16, 1872.

Fig:1.

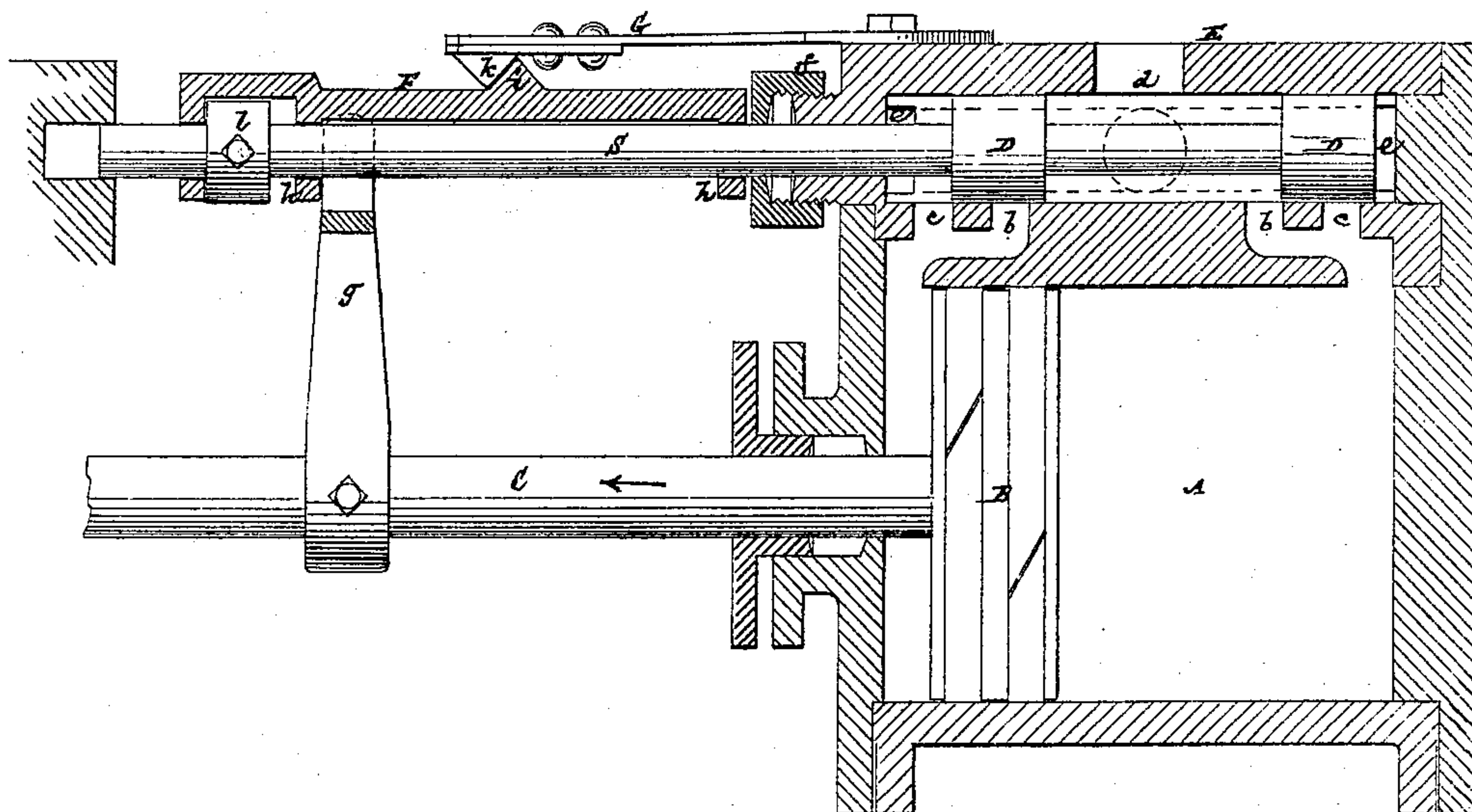
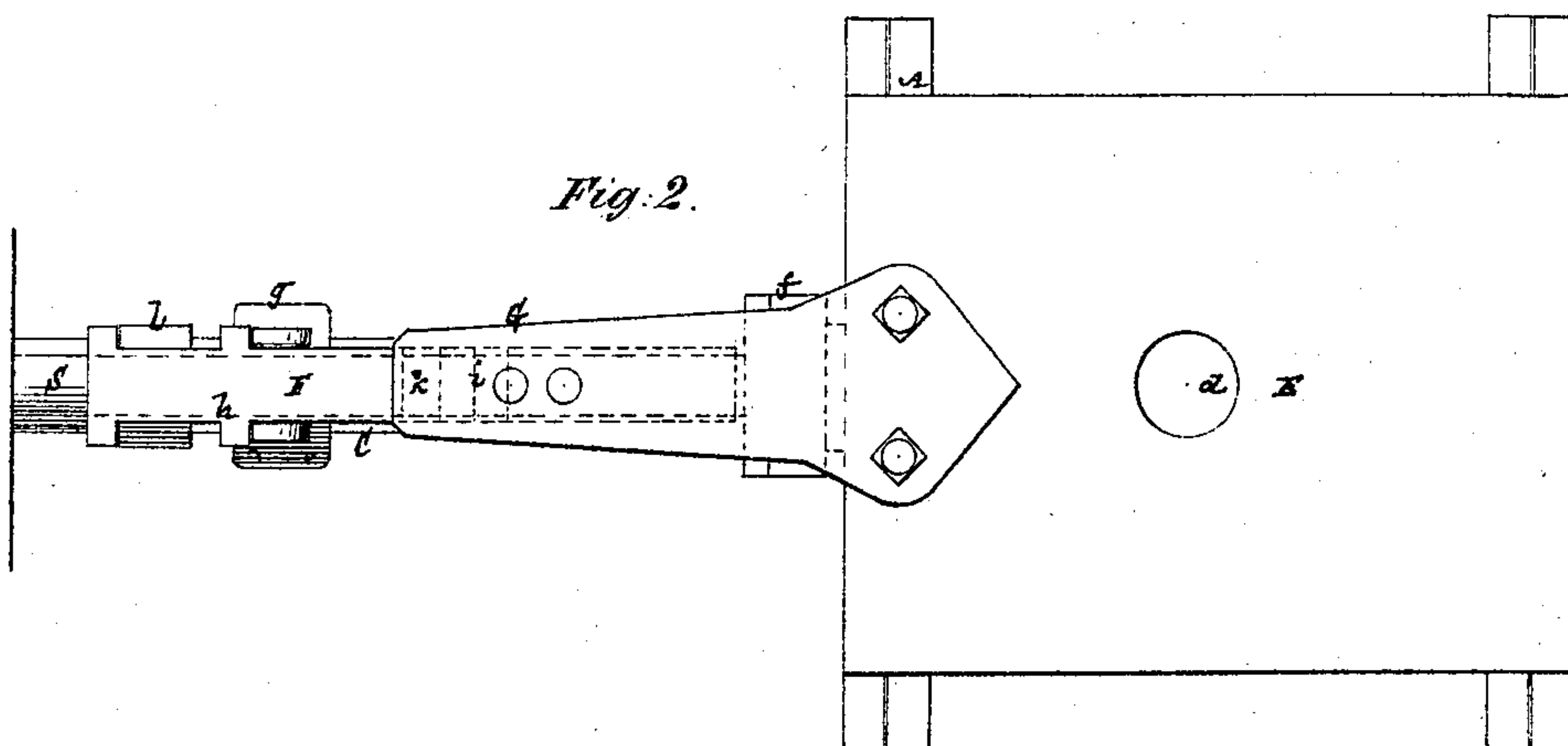


Fig. 2.



Witnesses:

Fred Haynes
 R. E. Rabenau

12 9 6 3 0 7 Feet

Scale.

Gaslayton

UNITED STATES PATENT OFFICE.

JAMES CLAYTON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN VALVE-MOTIONS FOR STEAM-PUMPS &c.

Specification forming part of Letters Patent No. 129,269, dated July 16, 1872.

To all whom it may concern:

Be it known that I, JAMES CLAYTON, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Valve-Motions for Steam-Pumps, Liquid-Meters, and Direct-Acting Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 is a longitudinal section of the steam-cylinder and valve portion of a steam-pump with my improvement applied to it. Fig. 2 is a plan of the same.

Similar letters of reference indicate corresponding parts in both figures.

My invention has reference to valve-motions for steam-pumps, liquid-meters, and direct-acting engines, or other devices in which a reciprocating piston, impelled by a fluid, gas, or vapor, is used; and said invention more particularly relates to the means employed for reversing the action of the valve at the end of the piston's stroke. To this end the invention consists in a novel arrangement of an independent slide or movable device, set in motion by the piston of the motor and caused to actuate a spring or weighted driver that abruptly continues the motion of the slide in advance of the piston, toward the end of the latter's stroke, and thereby allows of said slide shifting the valve as required.

In the accompanying drawing, A represents the steam-cylinder of a steam-pump; B, its piston; and C, the piston-rod. D is the valve that controls the movement of said piston, and E the valve-box or cylinder. The valve D may be of any suitable construction, but it is preferred to adopt, for a reason hereinafter given, a well-known form of balance-slide valve, as here shown, and which is composed of two pistons, arranged to control passages *b b* and *c c*, that, when uncovered by said pistons, communicate, respectively, with an interior live-steam space or chamber having an inlet, *d*, and with outer exhaust-ports *e e*. This

construction of valve allows of the valve-stem S being loosely packed by a stuffing-box, *f*, inasmuch as it has only to be protected against escape of the exhaust or spent steam; hence the valve is more easily moved than when its stem requires to be packed against escape of the live steam. Such freedom of movement materially aids the perfect action of the device I employ for suddenly reversing the valve at the end of the stroke of the piston of the motor. This valve-reversing device consists of an independent or loose movable contrivance, which may be in the form of a slide, F, arranged to freely move upon the valve-stem S or other rod as a guide. Said independent slide F has a tappet-like motion, being operated, by the piston-rod C, alternately in reverse directions toward the close of the stroke of the piston B in its opposite courses of travel—as, for instance, by an arm, *g*, on the piston-rod striking, alternately, opposite ends or heads *h h* of the slide F and moving said slide sufficiently to cause a double or reversely-inclined projection, *i*, on it to lift or ride up on to it a V or other suitably shaped projection, *k*, of a spring or weighted driver, G. This driver, so soon as the apex of the projection *i* passes from under the center, or to one side, of the projection *k*, operates, by the last-named projection pressing on the one inclined side of the projection *i*, to continue the motion of the slide F independently of the piston, and to suddenly shoot it so as to reverse the valve D, by projections on the slide, or its one hollow head *h* striking either side or end of a stop, *l*, on the valve-stem, which stop may be adjustable, if desired, upon said stem.

The loose or independent action of the slide or movable device F set in motion by the piston of the motor, but moved by an independent force to throw the valve, is a or the distinguishing feature of the invention.

If desired, a spiral spring may be arranged around the valve-stem S, within a box attached to the slide F, and so that toward the close of the stroke of the arm *g* said spring will be compressed by said arm to assist in

the reverse travel of the arm *g* in throwing the valve.

What is here claimed, and desired to be secured by Letters Patent, is—

The independent slide *F* having a double or inclined projection, *i*, in combination with the spring or weighted driver *G* and its projection *k*, the valve-stem *S*, and the piston *B*

with its rod and device or devices for adjusting the slide into position for action by the driver, all constructed and arranged essentially as described.

JAS. CLAYTON.

Witnesses:

FRED. HAYNES,
R. E. RABEAU.