

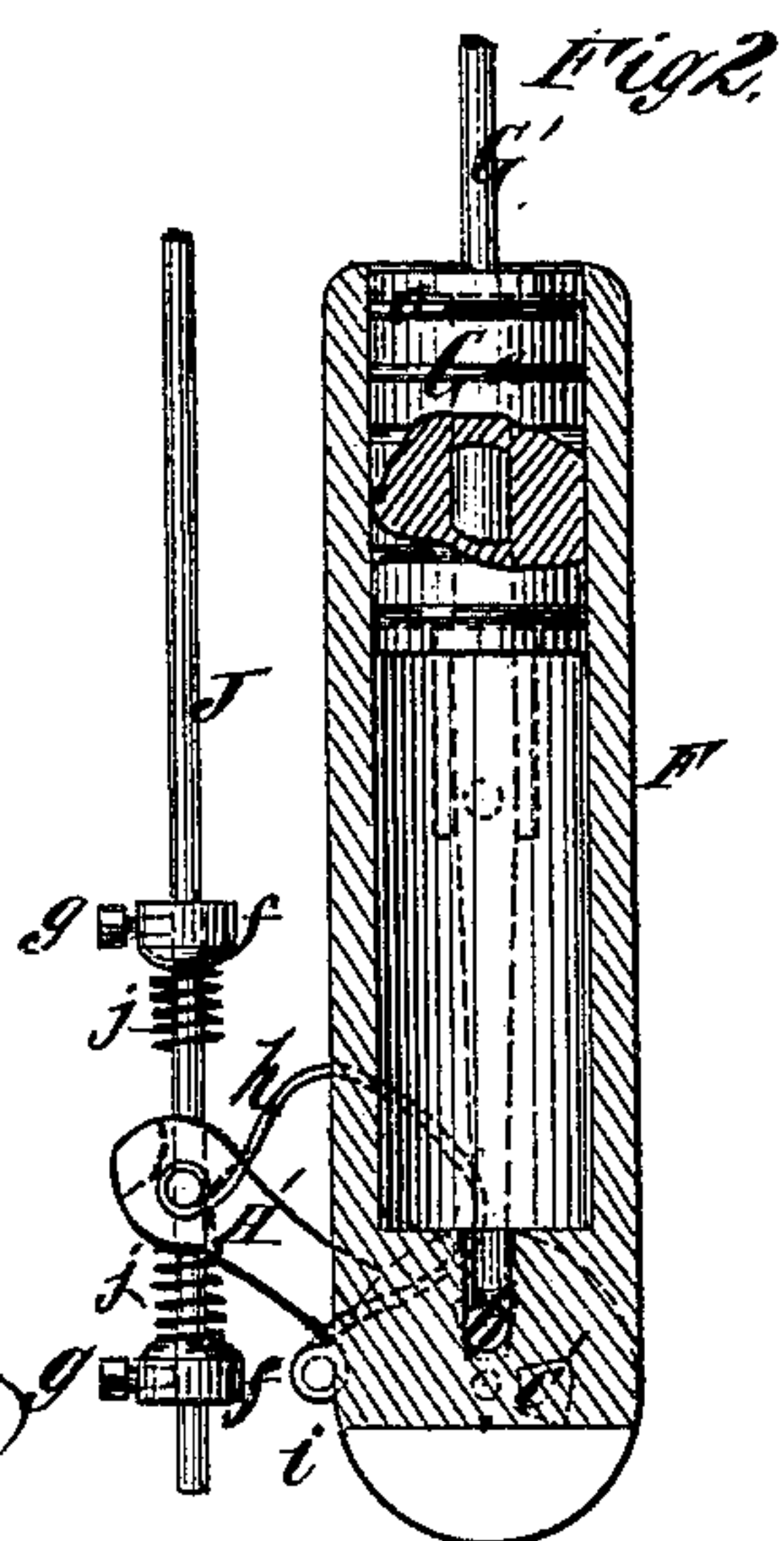
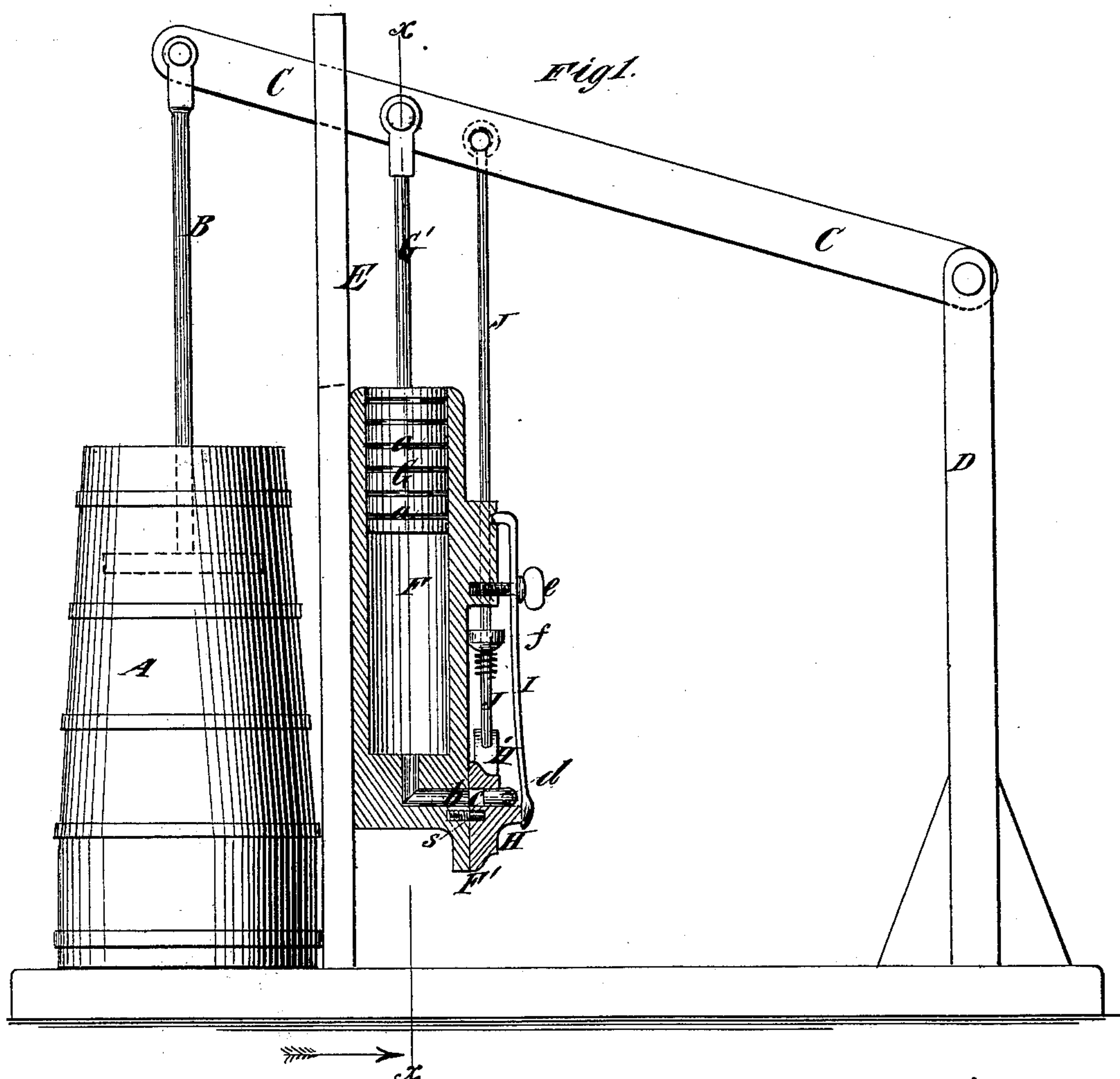
(No Model.)

A. T. POWELL.

Motor for Working Churns, &c.

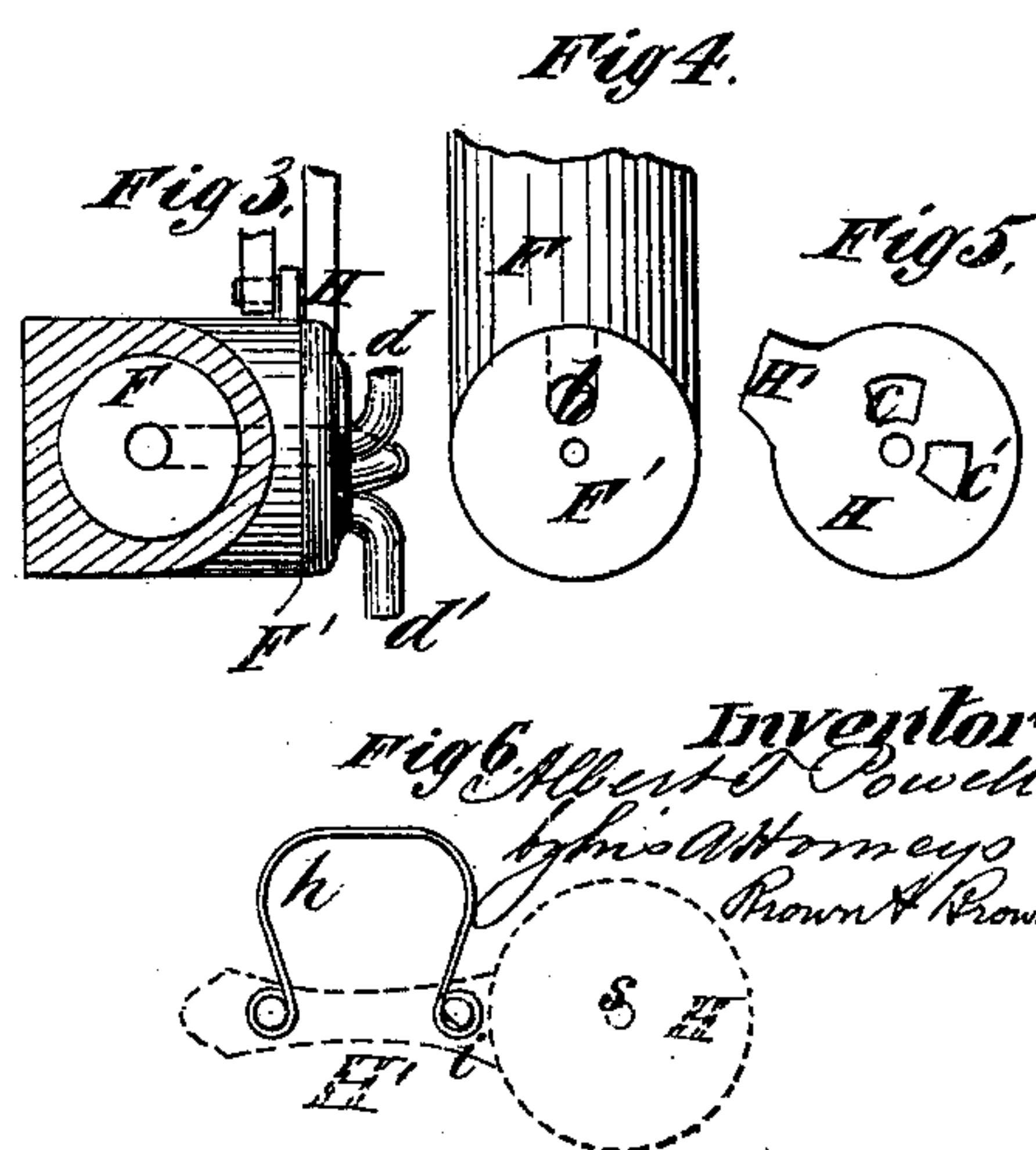
No. 234,061.

Patented Nov. 2, 1880.



Witnesses

John Becker
Fred H. Haynes



Inventor

By Albert Powell
his Attorneys
Brown & Brown

Brown & Brown

UNITED STATES PATENT OFFICE.

ALBERT T. POWELL, OF POUGHKEEPSIE, NEW YORK.

MOTOR FOR WORKING CHURNS, &c.

SPECIFICATION forming part of Letters Patent No. 234,061, dated November 2, 1880.

Application filed August 21, 1880. (No model.)

To all whom it may concern:

Be it known that I, ALBERT T. POWELL, of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain
5 new and useful Improvements in Motors for Working Churns and for other Purposes, of which the following is a specification.

The object of my invention is to provide a
10 very simple and inexpensive motor, and one having so few parts that it can be manufactured and sold to farmers and others at a very low figure.

The invention consists in the combination of a cylinder provided upon its exterior with
15 a flat valve-seat having in it one or more ports communicating with the cylinder, an uncovered disk or valve having a flat face and two ports, and adapted to be oscillated to bring either of its ports opposite the port or ports
20 in the valve-seat, and two flexible pipes for the supply of steam or other motive agent to and its exhaust from the motor, connected directly to the back of the valve, and communicating with the ports therein, whereby a valve
25 or steam-chest is entirely dispensed with, and the engine or motor is greatly simplified. In connection with such a valve I preferably employ a spring adapted to bear upon the back of the disk-valve and hold it upon its seat,
30 and provide for taking up the wear.

The invention also consists in the combination, as hereinafter described, with an oscillating valve, of a spring or springs for throwing the valve over the center and effecting the
35 continuous operation of the motor.

In the accompanying drawings, Figure 1 represents a side view of a churn and a vertical section of a motor embodying my improvements connected thereto. Fig. 2 represents a section of the cylinder of said motor
40 on the line *x x*, Fig. 1, looking in the direction indicated by the arrow. Fig. 3 represents a horizontal section through the lower part of the cylinder of the motor. Fig. 4 represents a side view of a portion of the cylinder and a front view of the valve-seat. Fig.
45 5 represents a face view of the disk or valve, whereby the steam or other motive agent is supplied to and exhausted from the cylinder;
50 and Fig. 6 represents a diagram view illus-

trating the office of the spring for throwing the valve.

Similar letters of reference designate corresponding parts in all the figures.

A designates an ordinary dasher-churn, and
55 B designates the dasher-rod thereof. At its upper end said rod is connected to one end of a beam or lever, C, pivoted at the other end to a standard, D, and guided in its upward and downward movements by a standard or
60 guide, E.

So far as above described the mechanism through which the churn is operated is similar to that often employed, and may be made
65 by a farmer himself with the aid of a few tools. The motor which I employ is separate from such mechanism, and is so simple that it can be readily attached thereto or connected therewith by any one who is not a skilled workman.

F designates the cylinder of the motor, which
70 is here represented as, and preferably is, secured in an upright position to the standard and guide E.

The piston G, which is fitted to the cylinder and connected by a piston-rod, G', to the beam
75 C, is preferably so heavy that it constitutes of itself a weight sufficient to bring down the beam C and the churn-dasher when the latter are raised by the motor. The piston may be
80 made of any iron shell or skeleton filled or loaded with lead, and any suitable packing may be employed in connection with it. A simple means of packing is to construct the piston with grooves *a*, to constitute a water-
85 packing.

Upon the exterior of the cylinder F is a valve-seat, F', in which is a single port, *b*, communicating, by a passage, with the interior
90 of the cylinder. To this valve-face is fitted an uncovered circular disk-valve, H, adapted to oscillate upon a central stud or pivot, *s*, and having in it a port, *c*, for the supply of a motive agent, and an exhaust-port, *c'*. To the back of the valve itself are connected flexible pipes *d d'*, which communicate, respectively,
95 with the ports *c c'*.

It is obvious that if the port *c* is brought into communication with the port *b* steam or other motive agent will be supplied to the cylinder to force up the piston therein; but if the
100

valve be oscillated to bring the port *c'* in communication with said port *b*, the steam or other motive agent will exhaust through the pipe *d'* and permit the piston and connections to fall.

5 The arrangement of these parts is shown clearly in Figs. 3, 4, and 5.

In order to hold the valve H tightly against the valve-seat F', I employ a spring, I, which, by means of an adjusting-screw, *e*, may be ad-
10 justed to exert more or less pressure upon the valve, as may be required.

The valve H has attached to it, and preferably made in the same piece therewith, a lever or arm, H', through which passes a valve-rod,
15 J, which is connected to and reciprocated by the beam C. Upon the rod J are tappets *f*, consisting of collars, which strike against the lever or arm H' as the rod J is reciprocated, and which may be adjusted upon the rod and
20 secured in any position by means of set-screws *g*.

Some means must be employed to trip or throw the valve over the center, and, as here shown, this means consists of a bent spring,
25 *h*, secured at one end to a fixed pivot, *i*, and at the other end to a stud projecting from the arm or lever H'. The lever or arm, as it moves toward a central position, compresses the spring, and as soon as said arm passes
30 said central position the resilience of the spring completes its movement.

The office of the spring *h* is clearly shown in the diagram Fig. 6, which represents the valve and the valve-actuating arm H' in a
35 central position. When so situated the pivots *i* and *s* are in line with the pivot upon the arm H', to which the spring is connected; but as soon as the arm H' is moved above or below such central position the spring *h* exerts
40 its force and completes the throw of the arm H'.

If desirable, springs *j* may be placed on the valve-rod J, so that the tappets *f* only act on the lever or arm H' through such springs, and this arrangement serves to aid the spring *h*.

45 The valve-seat and the face of the valve, which are flat surfaces, may be readily faced off when too much worn.

Steam, air, gas, or other motive agent may be used to operate my motor; and it is so sim-

ple and comprises so few parts that it can be
50 sold at a price within the reach of all.

The springs *h* and *j* might be used with oscillating valves of other forms than the one here shown.

What I claim as my invention, and desire
55 to secure by Letters Patent, is—

1. The combination of a cylinder provided upon its exterior with a flat valve-seat having in it a port or ports and a passage leading to the interior of the cylinder, an uncovered valve
60 having a flat face and two ports, and adapted to be oscillated to bring the said ports into and out of communication with the port or ports in the valve-seat, and flexible supply and exhaust pipes connected directly to the
65 back of the valve and communicating with the ports therein, substantially as specified.

2. The combination of a cylinder provided upon its exterior with a flat valve-seat having in it a single port communicating with the in-
70 terior of the cylinder, an uncovered valve having a flat face and two ports, and adapted to be oscillated to bring either of its ports into communication with the port in the valve-seat, flexible supply and exhaust pipes connected
75 directly to the back of the valve and communicating with the ports therein, and a spring for pressing said valve upon said seat, substantially as specified.

3. The combination of the cylinder F, pro-
80 vided with a valve-seat, F', in which is the port *b*, valve H, containing ports *c c'*, pipes *d d'*, spring I, and adjusting-screw *e*, substantially as specified.

4. The combination of the beam C, piston G,
85 and rod G', cylinder F, valve H, its arm H', valve-rod J, and spring *h*, connected at one end to a fixed pivot and at the other end to the movable arm H', substantially as specified.

5. The combination of the beam C, the pis-
90 ton G, the rod G', the cylinder F, the valve H, its arm H', valve-rod J, having upon it tappets *f f*, the spring *h*, and springs *j*, all arranged and operating substantially as specified.

Witnesses: ALBERT T. POWELL.
C. P. DORLAND,
JOHN M. DORLAND.