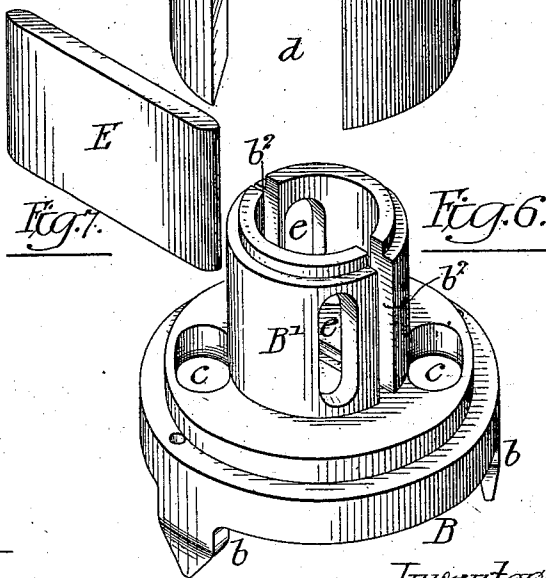
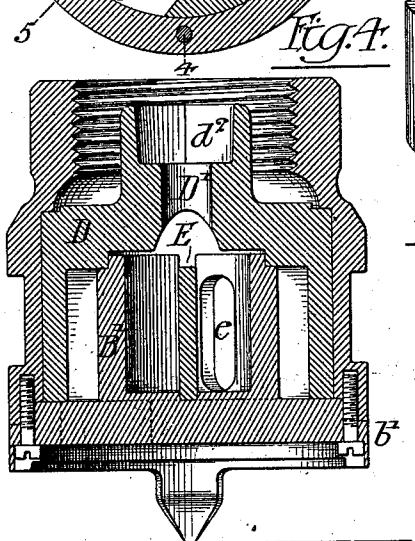
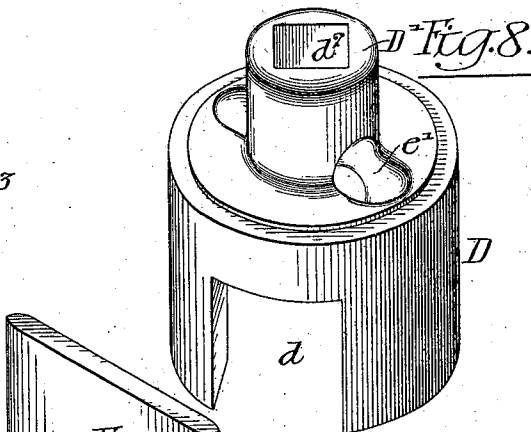
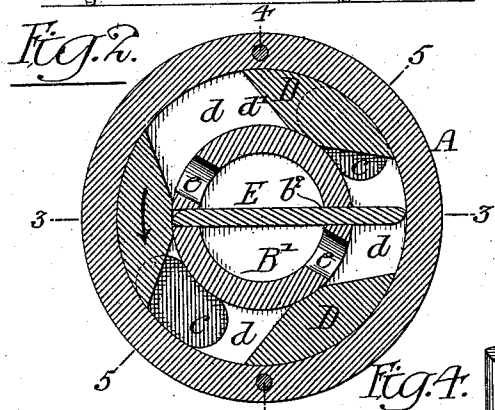
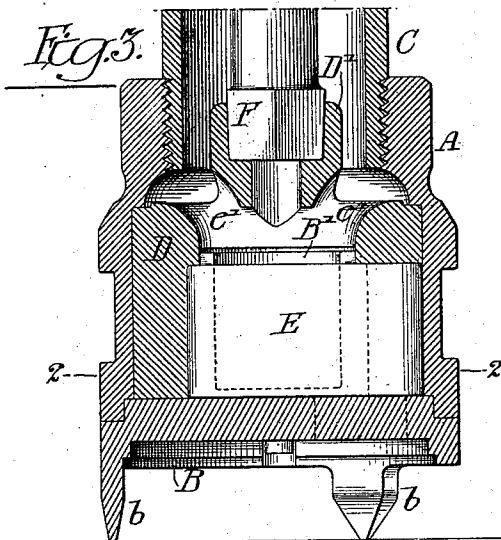
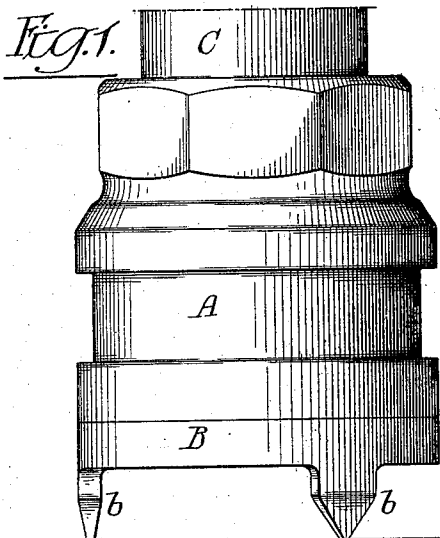




Witnesses:

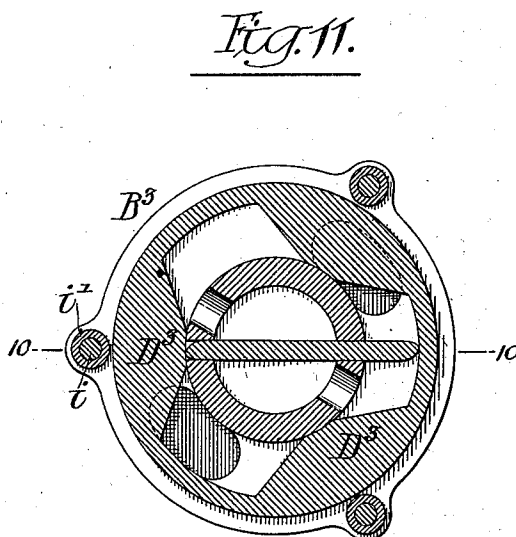
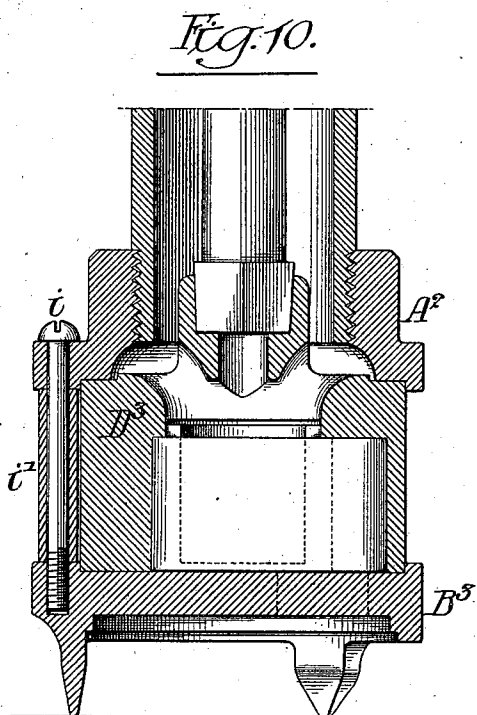
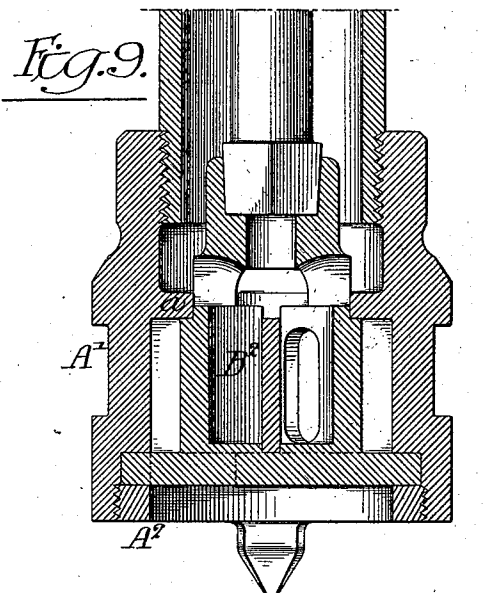
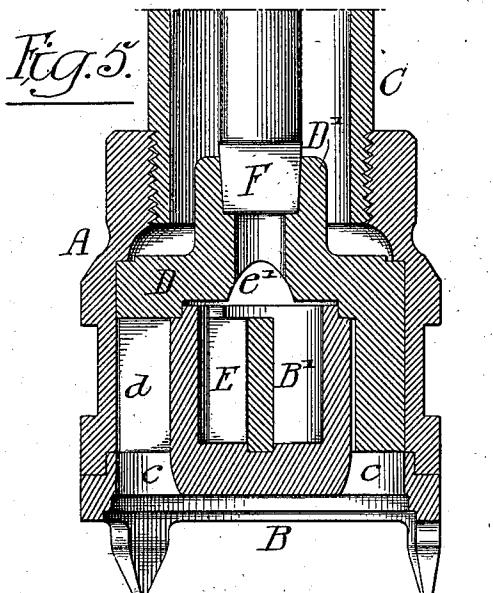
Hamilton D. Turner
Herman E. Metcalf.

Inventor:

Sylvester B. Leidy,

by his Attorneys:

Howson & Howson



Witnesses:-

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UNITED STATES PATENT OFFICE.

SYLVESTER B. LEIDY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THE ENTERPRISE MANUFACTURING COMPANY, OF PHILADELPHIA,
PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 723,686, dated March 24, 1903.

Application filed January 18, 1902. Serial No. 90,323. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER B. LEIDY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Pumps, of which the following is a specification.

My invention relates to certain improvements in the construction of rotary pumps which are operated by a stem from driving
10 mechanism at the head of the pump.

My invention, while applicable to pumps in general, is especially designed to pump molasses and like material, the casing illustrated being attached to the lower end of a
15 stem, the upper end of the stem having driving mechanism and registering mechanism—such, for instance, as that described in the patent granted to John Wilson Brown, Jr., on the 1st day of January, 1901, No. 665,390.

20 The object of my invention is to improve the construction of pumps of this type, so that they will be compact, can be readily made, and will accurately operate to deliver a certain quantity of molasses or other material. This object I attain in the following
25 manner, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a pump-casing with a portion of the stem to which the pump-casing is attached. Fig. 2 is a sectional plan
30 view on the line 2 2, Fig. 3. Fig. 3 is a vertical sectional view on the line 3 3, Fig. 2. Fig. 4 is a vertical sectional view on the line 4 4, Fig. 2. Fig. 5 is a vertical sectional view
35 on the line 5 5, Fig. 2. Figs. 6, 7, and 8 are detached perspective views of portions of the pump, and Figs. 9, 10, and 11 are views of modifications of my invention.

A is the pump-casing, made cylindrical in
40 the present instance and screw-threaded at its upper end, so as to receive the screw-threaded end of the tubular stem C of the pump, to the upper end of which is attached the driving mechanism and through which
45 the molasses or other material is forced to a suitable outlet at the head of the pump. Secured to the bottom of the casing is a cap B, having feet b, which are comparatively sharp, so as to enter the wood of a barrel, for in-

stance, and give sufficient space for the pas- 50
sage of the molasses or other material to the inlet-openings of the pump. In this cap are inlet-openings c c, Figs. 2 and 5.

The cap is secured to the casing of the pump in the present instance by screws b'; 55
but other means may be used without departing from my invention.

Extending from the cap within the casing is a fixed hub B', as clearly shown in Fig. 6. This hub has vertical slots b² at its opposite 60
sides, and in these slots slides the laterally-movable blade E. The hub is hollow, and openings e e therein form a communication between the center of the hub and the casing. It will be noticed that the inlet-open- 65
ings c c to the casing are out of line with the openings e e, leading to the interior of the hub. This is to allow a certain amount of molasses or other material to enter the casing and to be carried around to the discharge- 70
passages e e.

D is a cylindrical piston fitting between the hub B' and the casing A. This piston in the present instance is cut through at three points d d d, so as to form pockets into 75
which the molasses or other material may pass from the barrel through the inlet-passages c.

The blade E is of a sufficient length to fit snugly between the inner surface of the pis- 80
ton and the casing, as shown in Fig. 2, so that as the piston is rotated the blade will reciprocate, thus allowing the piston to freely rotate and yet cut off one side of the pump 85
from the other.

If, for instance, the piston is driven in the direction of the arrow, Fig. 2, the molasses will pass up through the inlet-port c into the chamber d and the wall d' of the piston will gradually close the inlet-opening and carry 90
the molasses forward and will discharge the molasses through the outlet-opening e as it is uncovered by the rotation of the piston. In the meantime the inlet-opening has been covered, so that the molasses must pass out 95
through the outlet-opening.

The piston D has an extension D', provided with a squared opening d² in the present in-

stance, to which is adapted an operating-rod F, Fig. 3.

In the head of the piston D are passages e' , forming a communication between the hollow pump-stem and the interior of the stationary hub B', so that the molasses or other material forced into the hub will pass freely through the ports e' into the tubular stem to the point of discharge.

The pump so constructed can be made in very small compass, the parts can be concentric so that the stem need not be arranged out of line, and the parts can be readily and cheaply manufactured owing to the fact that the parts are concentric.

In the pump described the casing, the cap, and the hub are stationary and the piston rotates on the cap between the casing and the hub; but in some instances I may make the piston stationary or as a part of the casing, as shown in Fig. 9, and rotate the cap and the hub, the inlet-openings being formed in the cap and the outlet-openings in the hub.

Referring to Fig. 9, A' is the casing, having a flange. B² is the rotating hub attached to the operating-stem and having a flange at its lower end forming a cap. In this flange are the inlet-openings. This rotating hub is secured in the casing by a screw-ring A² or other suitable device, and the casing has an internal flange a , separating the pump-chamber from the outlet-chamber communicating with the tubular stem.

While I have shown a single-bladed pump with two outlet-openings and a piston with three cavities, the number of the openings, the blades, and the cavities may be increased or decreased as desired; but I prefer to use the form shown when the pump is used for pumping molasses.

In Figs. 10 and 11 I have shown a modification of the invention, in which the outside casing is dispensed with, and as a substitute for the casing the cap B³ is secured to a ring A² by means of bolts z , on which are spacing-sleeves z' , the piston D³ being mounted between the cap and the ring, and instead of the casing forming one wall of each cavity, as shown in Fig. 2, the piston itself forms the three walls of the cavity and the hub forms the other wall.

It will be understood that the term "casing" will apply to any means for holding the cap to the tubular stem, and the piston may be either movable or stationary or the hub may be stationary or movable, as desired.

I claim as my invention—

1. The combination of a casing, a disk in the bottom of the same, a hub forming a part of the disk and having openings, a blade carried by the hub and means for causing said blade to reciprocate as one of the parts comprised by the hub and the casing is moved, together with a conduit connected with the interior of the hub, substantially as described.

2. The combination in a pump, of a casing,

a cap secured to said casing and having a hub extending into the pump-chamber of the casing, inlet-ports in the cap and outlet-ports in the hub, a blade arranged to move laterally in the hub, and a piston having cavities into which the blade extends, substantially as described.

3. The combination in a pump, of a casing, a cap secured to the casing and having a hollow hub extending into the pump-chamber within the casing, an inlet-port in the cap, an outlet-port in the hub, a blade mounted in the hub, a piston having cavities into which the blade extends and with which the ports communicate, substantially as described.

4. The combination in a pump, of a piston having cavities therein, a hollow hub extending into the piston and having an outlet-port, a cap having inlet-ports, said cap and hub closing the cavities in the piston, and a blade carried by the hub, substantially as described.

5. The combination of a casing secured to the tubular stem of a pump and forming a pump-chamber, a cap secured to said casing and having a hub extending into the pump-chamber, inlet-ports in the cap, outlet-ports in the hub, said hub being slotted, a blade mounted in the slots of the hub and arranged to move laterally, a piston having cavities into which the blade extends, said piston being capable of being rotated and having passages leading from the outlet-passage of the pump-casing to the tubular pump-stem, substantially as described.

6. The combination of a casing, a cap secured thereto having a hollow hub extending into the pump-chamber therein, said hub being slotted, a blade mounted in the walls of the hub, a piston having a plurality of cavities and mounted in the casing, inlet-ports in the cap and outlet-ports communicating with the hollow hub, with means for rotating one of the members comprised by the piston and the hub in respect to the other, substantially as described.

7. The combination of a casing, a cap secured thereto, a hollow hub extending from the cap into the casing, an inlet-port in the cap and an outlet-port in the hub, said ports being staggered relatively to each other and being slotted, a movable blade mounted in the slotted hub separating one port from the other, a piston extending over the hub and having cavities into which the blade extends and means for rotating one of the members comprised by the piston and the hub in respect to the other, substantially as described.

8. The combination in a pump, of a casing, a tubular stem to which the casing is secured, a cap attached to the casing and having a hub extending within the pump-chamber in the casing, a blade mounted in the hub, two inlet-ports in the cap and two outlet-ports in the hub, one inlet and one outlet port being mounted on one side of the blade, the other ports being on the opposite side of the blade,

a piston having three cavities arranged to cover and uncover the ports, a stem by which the piston is driven, and passages in the upper end of the piston forming communication
5 between the hollow hub and the tubular stem, substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

SYLVESTER B. LEIDY.

Witnesses:

ARTHUR M. HOPWOOD,
CHAS. H. SCHURBAUM.