

M. L. BAUDER.

Churn.

No. 19,117.

Patented Jan. 19, 1858.

Fig: 2.

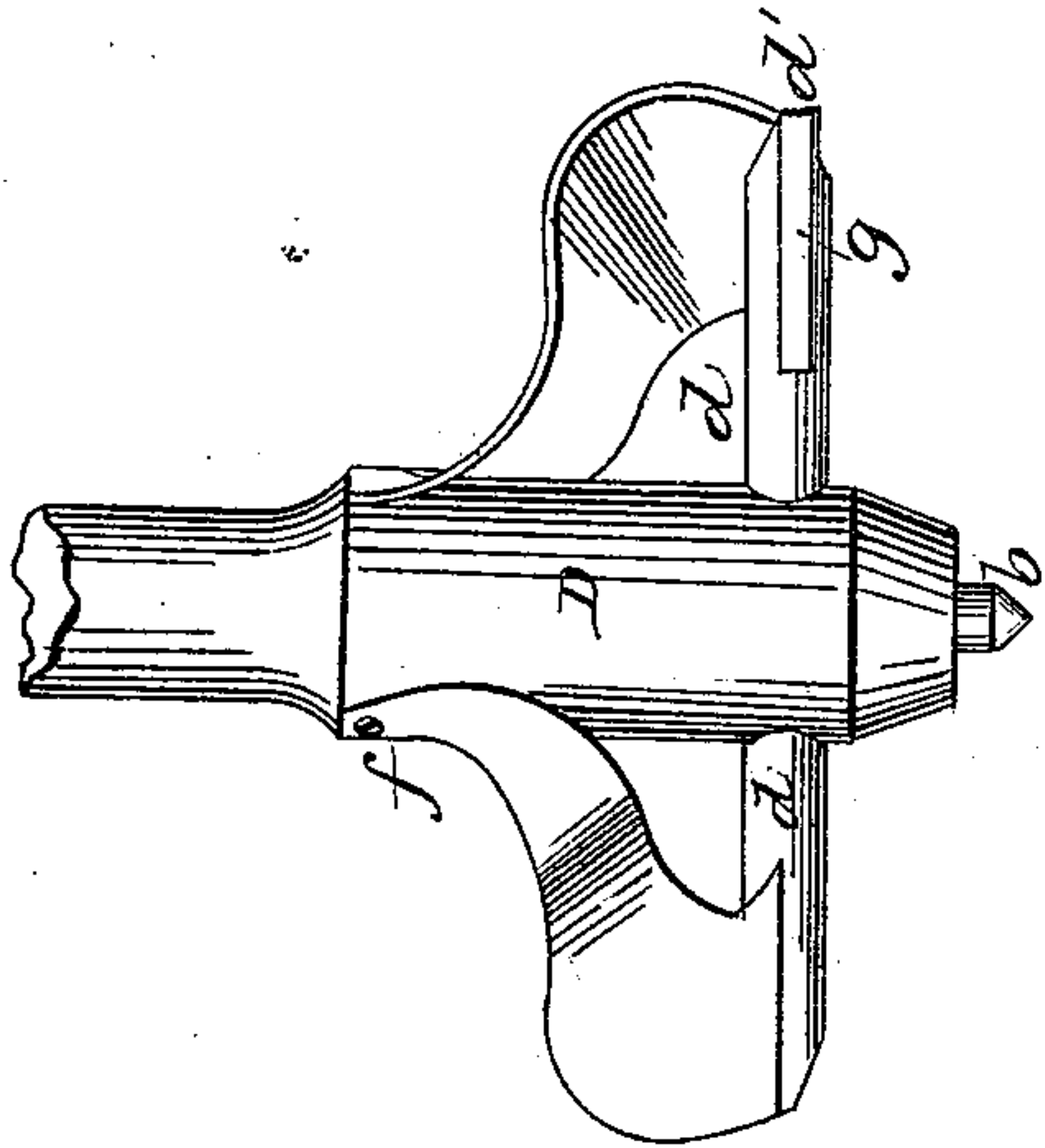


Fig: 3.

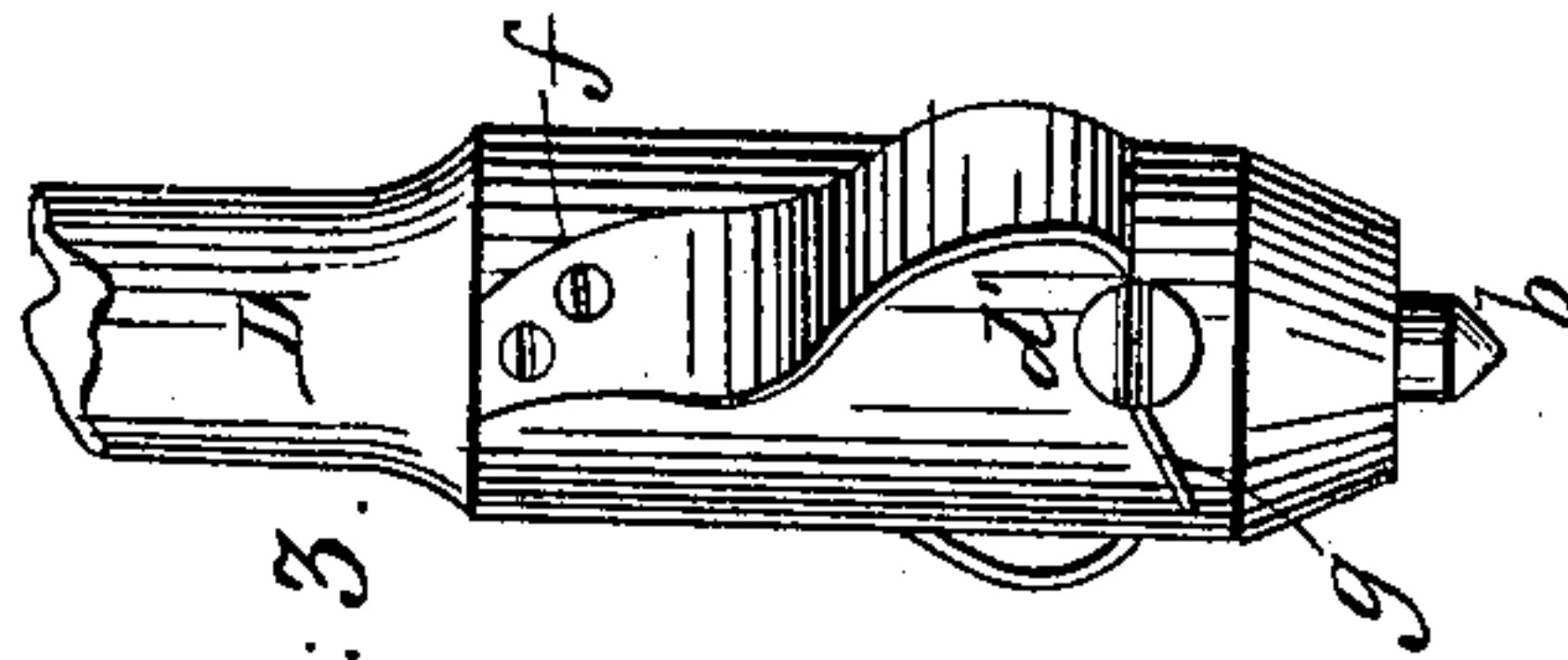
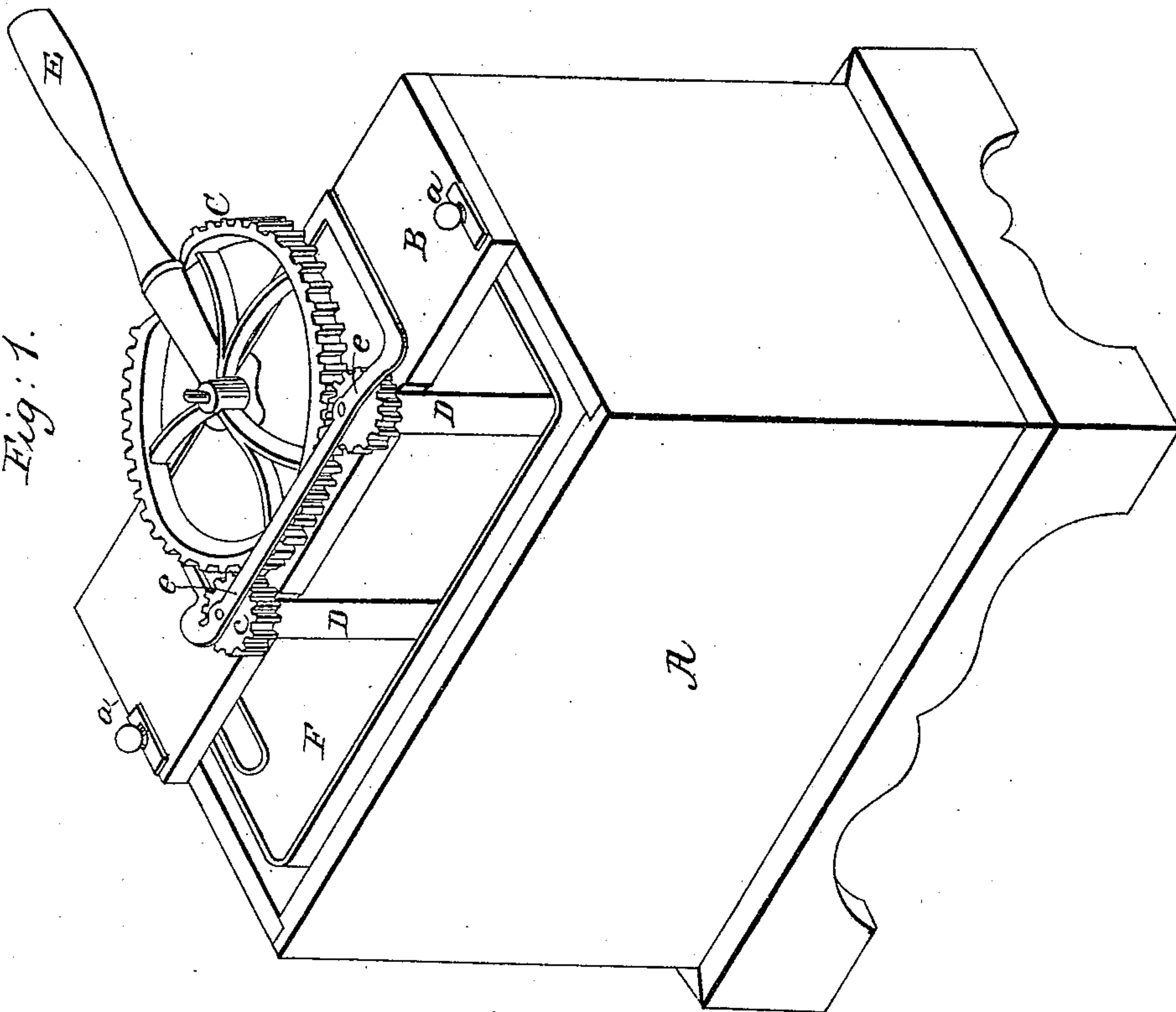


Fig: 1.



UNITED STATES PATENT OFFICE.

MICHAEL L. BAUDER, OF ELYRIA, OHIO.

CHURN.

Specification of Letters Patent No. 19,117, dated January 19, 1858.

To all whom it may concern:

Be it known that I, MICHAEL L. BAUDER, of Elyria, in the county of Lorain and State of Ohio, have invented new and useful Improvements in Churns; and I do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view, Figs. 2, and 3, sectional views of the shaft and metallic floats.

Like letters refer to like parts.

My invention consists first of two sets of beaters on two shafts so situated in an ovoid or elongated vessel that the beater on one shaft whirls all the cream in one end of the churn alternately forward and backward, while the beater on the other shaft whirls all the cream in the other end of the churn in the opposite direction, for the purpose of driving the currents of cream violently into each other at the central parts of the churn where the air is drawn into the cream, thus hastening the churning of the entire mass.

A, Fig. 1, represents the outer case of the churn. This case consists of a rectangular shaped box, made of wood or other material. A cover B, fits the top. It is made in two parts, one or both of which can be removed at pleasure, and it is best to work the churn with one half of the cover removed, in order to give admission to the air and thus hasten the process of churning. In the drawing, one half is left off for the purpose of showing the interior. The chief object of the box or case A is to receive hot or cold water in order to bring the cream in the churn to a proper temperature for churning, either in summer or winter. It may also be employed with the body of the churn, as a very convenient refrigerator for packing the butter, either for market or for temporary preservation at home. These are great advantages and are found in no other known churn. That part of the cover that is shown in the drawings is secured to the case A, by thumb screws *a a* and supports the segment-wheel C, and the bearings of the shafts D, D. The segment wheel C, has a handle E, by which the wheel is vibrated to the right and left. The outer case contains the body of the churn, which is made of zinc or tin, and is shown at F. The body F is smaller than the inside of

the outer case A, so that a space is left entirely around the three sides and bottom, and it is kept from coming in contact with the inner surface of the outer case by guards or cleats, attached either to the inner walls of the outer case or to the body of the churn. When the whole of the cover B is removed, the body F can be taken out for the purpose of cleansing and drying the outer case.

The shafts D, D, rest in steps attached to the bottom of the body F, and the lower end of the shafts D, D, are fitted for that purpose, as seen at *b, b*, Figs. 2 and 3. The upper ends of these shafts are furnished with pinions *c c* which mesh into the segment-wheel C. The journals of the shafts D are supported by the bearings E and by loosening the thumb screws *a, a*, the top B can be raised and the shafts D, removed at pleasure. The shafts D have an arm passing through them, near the lower end, as seen at *d*. This arm supports an ogee shaped plate of metal, bent into an ogee form, as shown in Figs. 2 and 3. The upper or narrow end of this ogee plate is attached to the shaft by screws, as seen at *f, f*, and bent outward in the form of an ogee, the broad and lower end passing through a slot in the end of the arm *d*, as seen at *d'*, in a horizontal direction. The part of the metal that projects is bent downward and forms an inclined plane, as seen at *g*, Fig. 3. Two of these floats are furnished for each shaft, and are exactly duplicates. When these two shafts are placed in the churn, they are so adjusted that the floats stand at right angles, that is, the arms are not parallel, but at right angles, otherwise they would not revolve without interfering. When these ogee floats are caused to revolve alternately in opposite directions, the peculiar curves and faces of the floats presented to the cream cause it to move rapidly in all directions, bringing it in contact with a large amount of atmospheric air and thus causing the butter to separate from the milk. The distance between the shafts is less than the entire length of the arm *d*, consequently the ends, as they pass over the middle part of the churn, sweep over the same space.

In all churns heretofore known where several sets of beaters have been employed, only a small portion of the whole mass of the cream could be controlled by the beaters at any given moment. But in my churn the beaters are so situated that the whole of the

cream in each end of the churn is moved by the beaters. The instant the motion of the beaters is reversed, they dash the whole mass of the cream, then at the ends of the churn, in the opposite direction. The currents thus produced are driven through each other in various directions, in a manner different from all other churns. Bubbles of air, when drawn into the cream, are immediately diffused throughout the whole mass.

The ogee form of my floats gives an upward tendency to portions of the cream around the shaft, so as to transfuse, at every moment, some of the cream from the bottom of the churn through other portions of cream descending around the shafts overlaid with air. In other churns which give a whirling motion to the cream, an eddy is formed around the shafts, while the cream rises at the circumference of the churn, and the bubbles of air descending near the shaft often rise unbroken to the surface instead of being diffused through the cream by counter or cross currents. If in these churns the beaters are large enough, or so situated as to seize large masses of the cream, they will splash it in every direction. But my

churn may be best operated when uncovered. The air-laden currents and the centrifugal currents are so interwoven with each other and with the cross currents and upward currents produced by the ogee floats, that the violent action of the churn produces neither deep eddies nor splashing, but simply hastens the churning process.

I am aware that shafts armed with beaters have been employed in circular churns, but this arrangement does not enable the beaters to control the masses of cream and drive them through each other, as in my machine; and I also know that such beaters have been employed with a reciprocating motion of the shafts. These I do not claim. But

What I do claim and desire to secure by Letters Patent of the United States is:

The arrangement of the elongated vessel F, provided with shafts D, D, armed with beaters in connection with the case A, constructed and operated substantially as set forth.

MICHAEL L. BAUDER.

Witnesses:

J. BRAINERD,
W. H. BURRIDGE.