

G. L. WITSIL.
Mixing Apparatus.

No. 36,633.

Patented Oct. 7, 1862.

Fig. 1

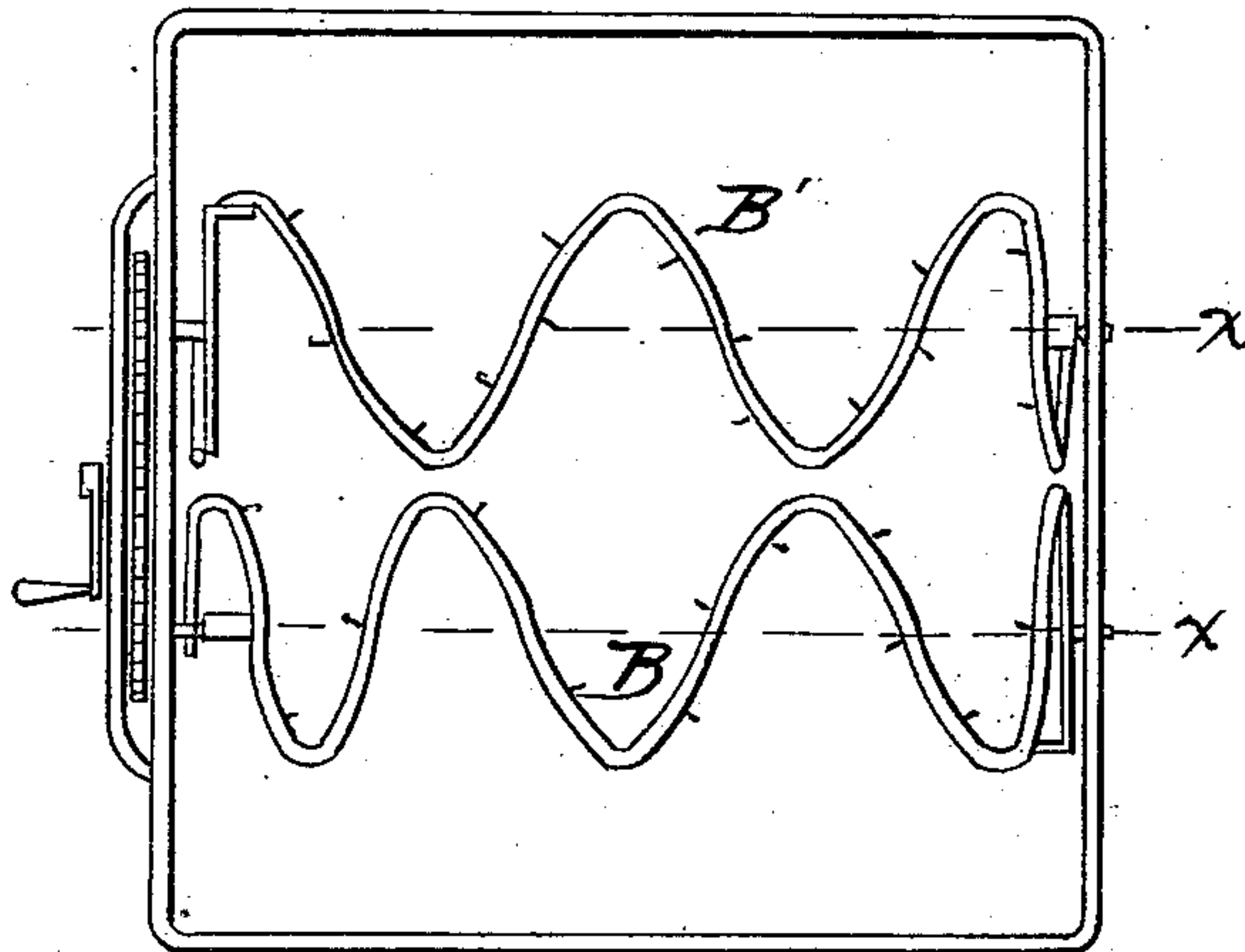


Fig. 2

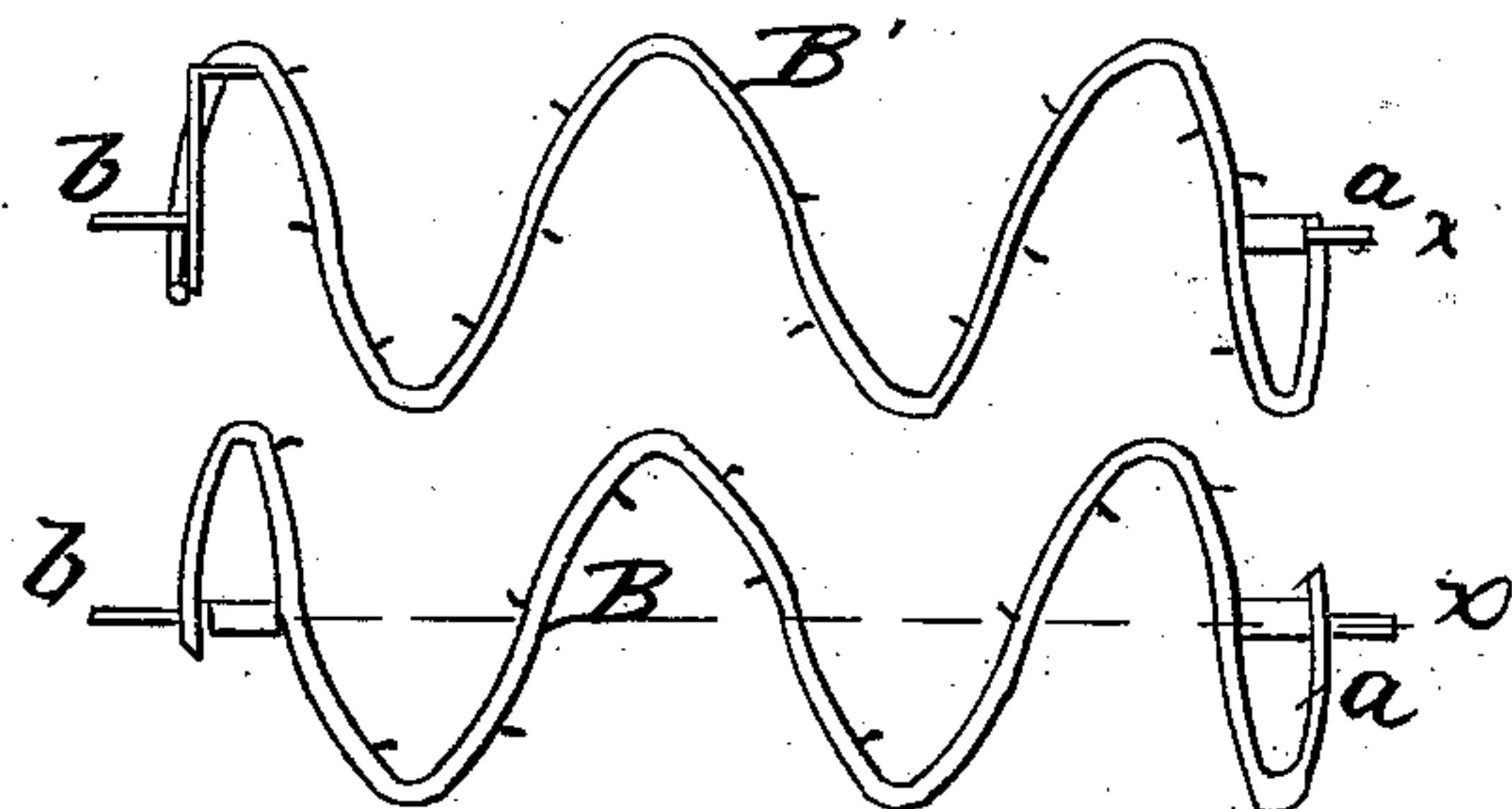
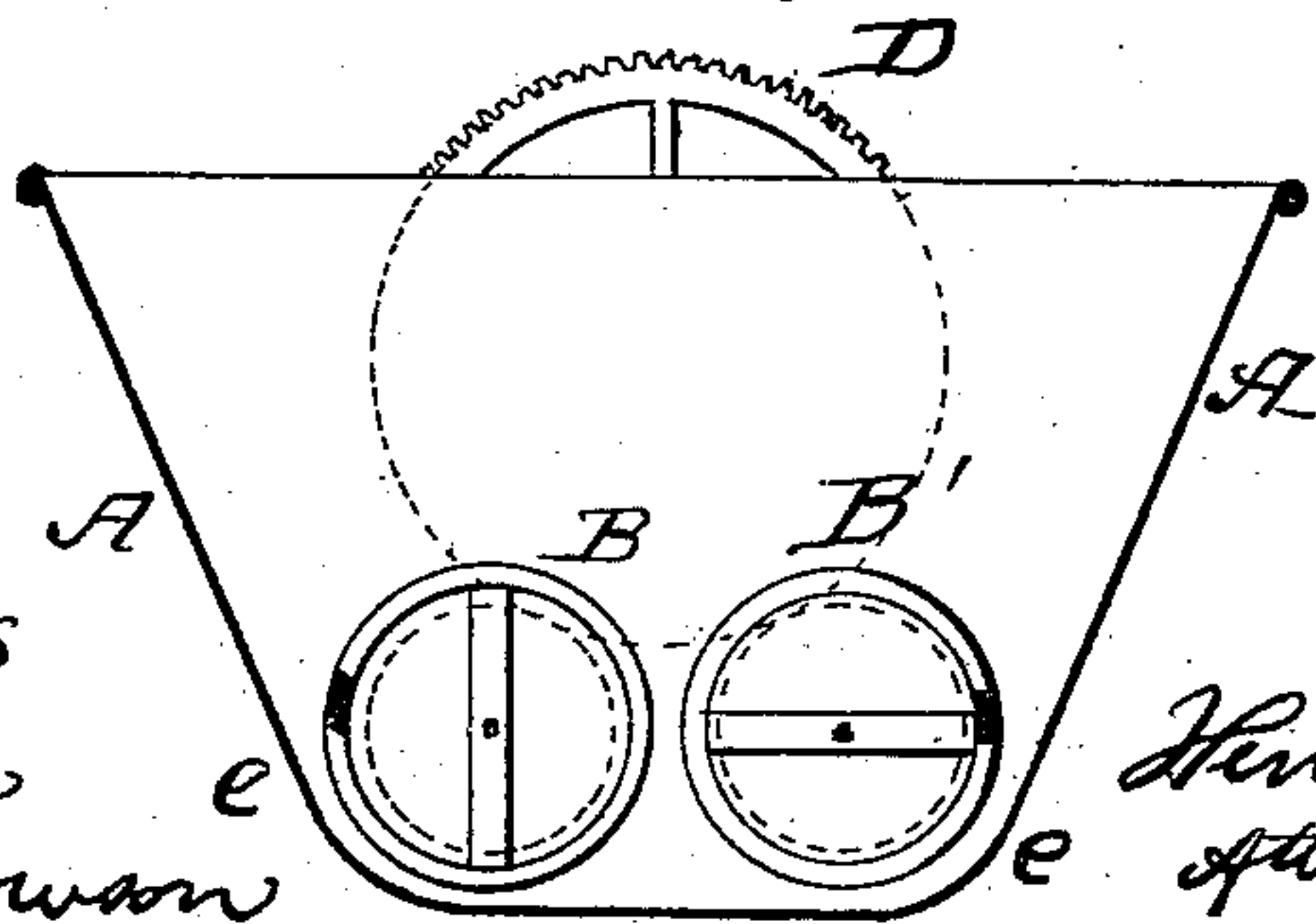


Fig. 3



WITNESSES

Charles Foster
Charles Bowman,

INVENTOR

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UNITED STATES PATENT OFFICE.

GEORGE L. WITSIL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND THOMAS COCHRAN, OF SAME PLACE.

IMPROVED APPARATUS FOR STIRRING AND MIXING.

Specification forming part of Letters Patent No. 36,633, dated October 7, 1862.

To all whom it may concern:

Be it known that I, GEORGE L. WITSIL, of Philadelphia, Pennsylvania, have invented a Machine for Agitating and Mixing Substances; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of two or more spiral rods or bars contained in a vessel of suitable form, one spiral rod being left handed and the other right handed, or the rods being otherwise so arranged and caused to so revolve as to produce separate currents in and a thorough agitation and admixture of the contents of the vessel in the manner described hereinafter.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a plan view of my machine for agitating and mixing substances; Fig. 2, a detached view of the two spiral rods of the agitator, and Fig. 3 a transverse section of the machine.

Similar letters refer to similar parts throughout the several views.

A represents the vessel for receiving the substance to be agitated and mixed, and within this vessel are the two spiral rods or bars B and B', the journals *a a* of which turn in suitable bearings at one end of the vessel, while the journals *b b* project through the opposite end of the vessel, on the outside of which each projecting journal is furnished with a pinion, each pinion gearing into a cog-wheel, D, as shown in dotted lines, Fig. 3, so that on turning the wheel D by means of any suitable handle both spiral rods will turn in the same direction, the dotted lines *x x* representing their centers of rotation, and each spiral rod representing the thread of a screw. It should be understood, however, that one spiral rod should represent the thread of a right-handed screw, while the other spiral rod represents the thread of a left-handed screw. It is desirable that the rods should be as near to the bottom of the vessel as possible without being in actual

contact therewith, and that the lower portion of the sides of the vessel should conform or nearly conform in shape to the circumference described by the revolving rods, as seen at *e e*, Fig. 3. The fluid or semi-fluid having been deposited in the vessel and a rotary motion being imparted to the spiral rods, one rod must have a tendency to force the fluid in one direction and the other rod to force the fluid in a contrary direction; hence there are two currents of the fluid constantly circulating in the vessel in contrary directions to each other and in a line with the centers of rotation of the spiral bars. The two currents, however, are not uniform undisturbed streams, for the angles presented by the spiral rods are such that the fluid must necessarily be forced by the bars in an angular direction, thereby producing minor currents and more or less interrupting and disturbing the first-mentioned currents.

In Figs. 1 and 2 are shown two different positions which the spiral rods will assume as they revolve. When we take into account the constant change taking place from one position to the other and the changes of relative positions other than those illustrated, it will be evident that a most thorough agitation and intimate admixture of the contents of the vessel must ensue.

Instead of using a left-handed and a right-handed spiral rod and causing the two to revolve in the same direction, two left-handed or two right-handed spiral rods revolving in contrary directions to each other may be used; but the agitation and mixing produced by the latter arrangement will not be so effective and thorough as that above described, for the reason that there will not be such a constant change in the relative position of the two rods as they revolve.

The above-described machine may be used effectively for beating eggs, mixing batter, and for mixing the many substances required in the preparation of articles of diet. The machine may also be used on a larger scale as a churn, and when thus used a third and even a fourth spiral rod may be used, and vanes or beaters may be attached to the rods, as shown by red lines, Fig. 2, in order that a more thorough agitation of the cream may be produced.

I also wish it to be understood that I do not desire to confine myself to any specific form of vessel for containing the substances to be mixed, nor to any specific gearing for driving the spiral rods; but

I claim as my invention and desire to secure by Letters Patent—

Two or more spiral rods or bars contained in a vessel of suitable form, one spiral rod being left-handed and the other right-handed, or the rods being otherwise so arranged and

caused to so revolve as to produce separate currents in and a thorough agitation and admixture of the contents of the vessel, in the manner specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. L. WITSIL.

Witnesses:

HENRY HOWSON,
JOHN WHITE.