

(Model.)

E. D. HAWKINS.

EGG BEATER.

No. 249,044.

Patented Nov. 1, 1881.

Fig. 1,

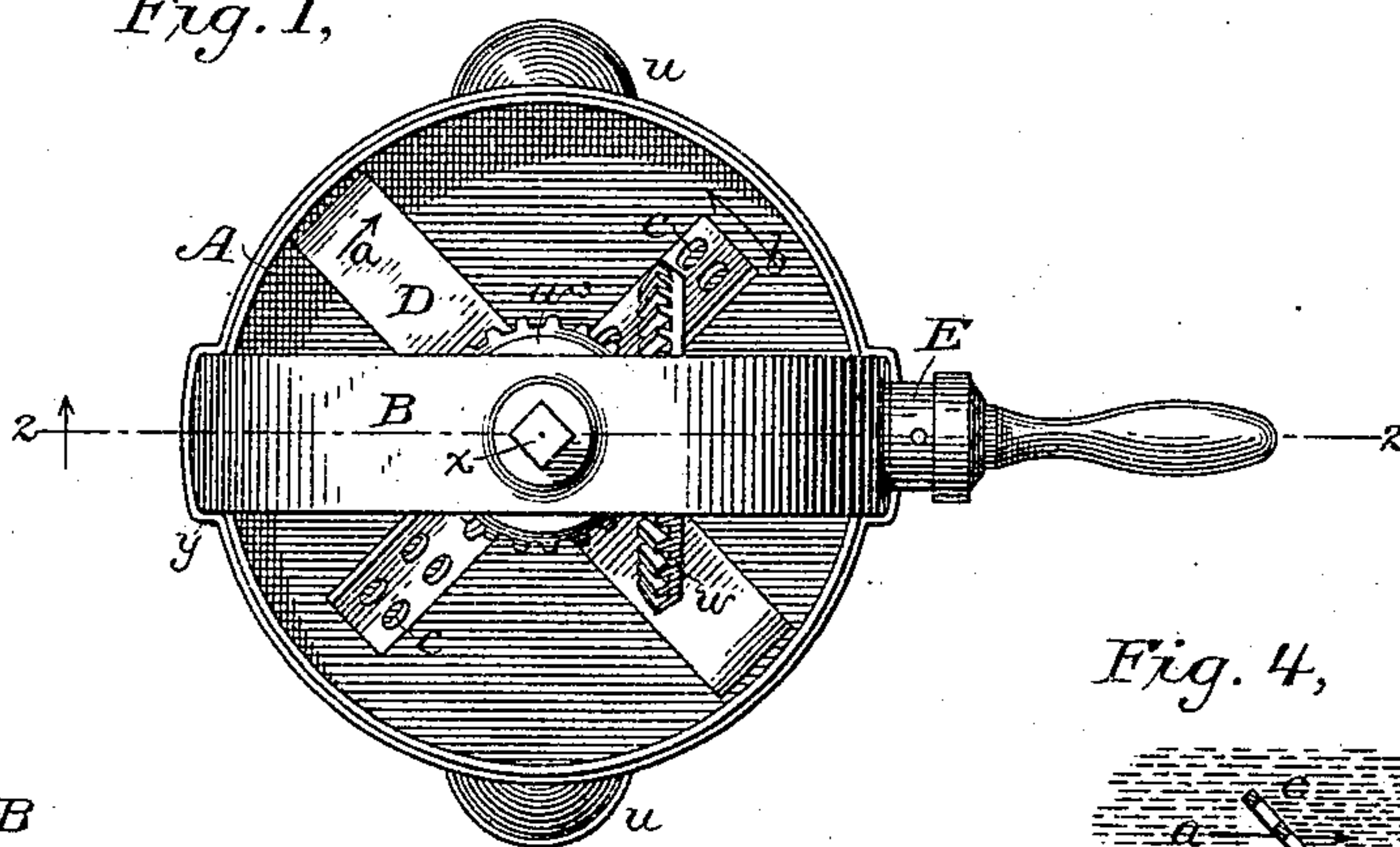


Fig. 3,

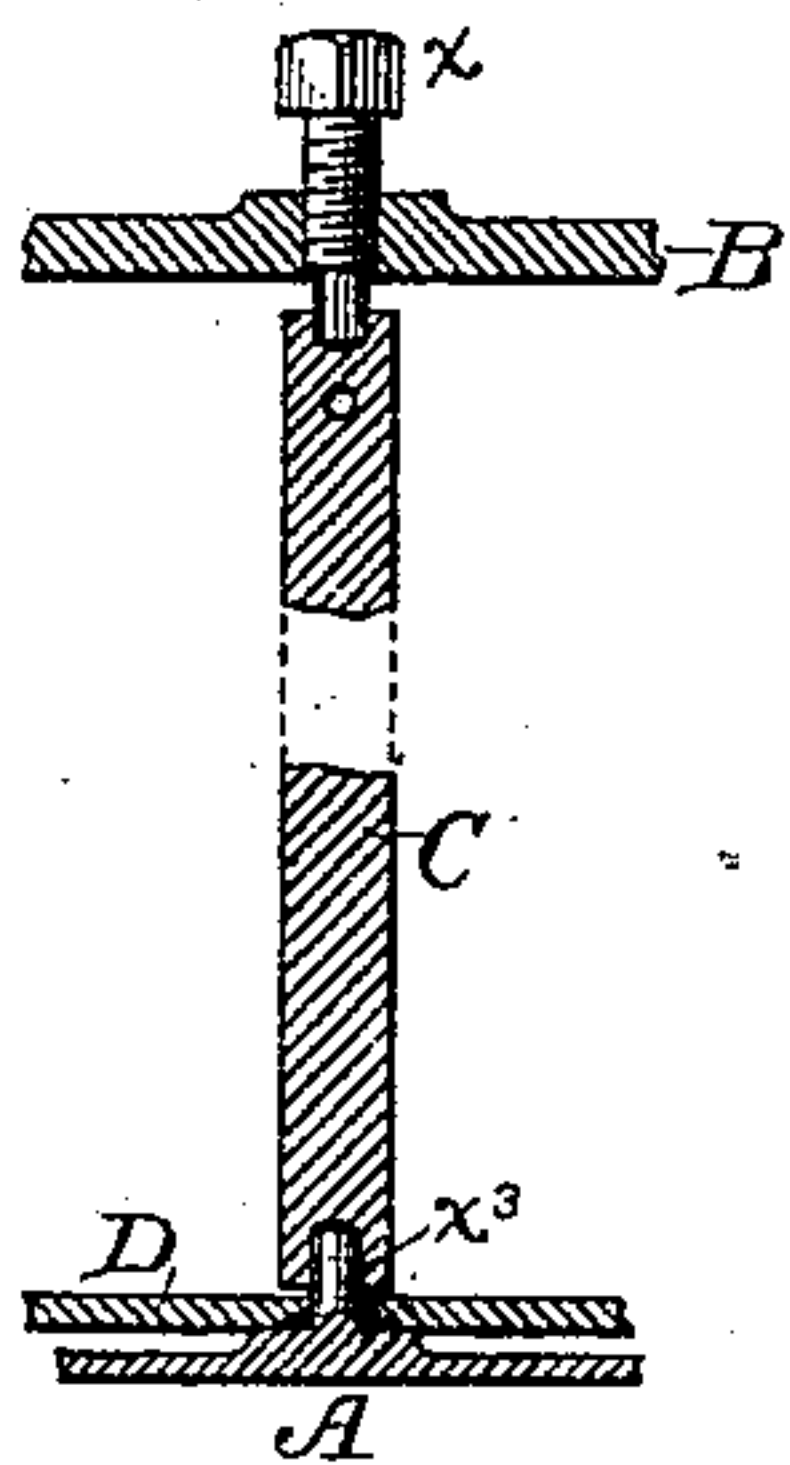


Fig. 4,

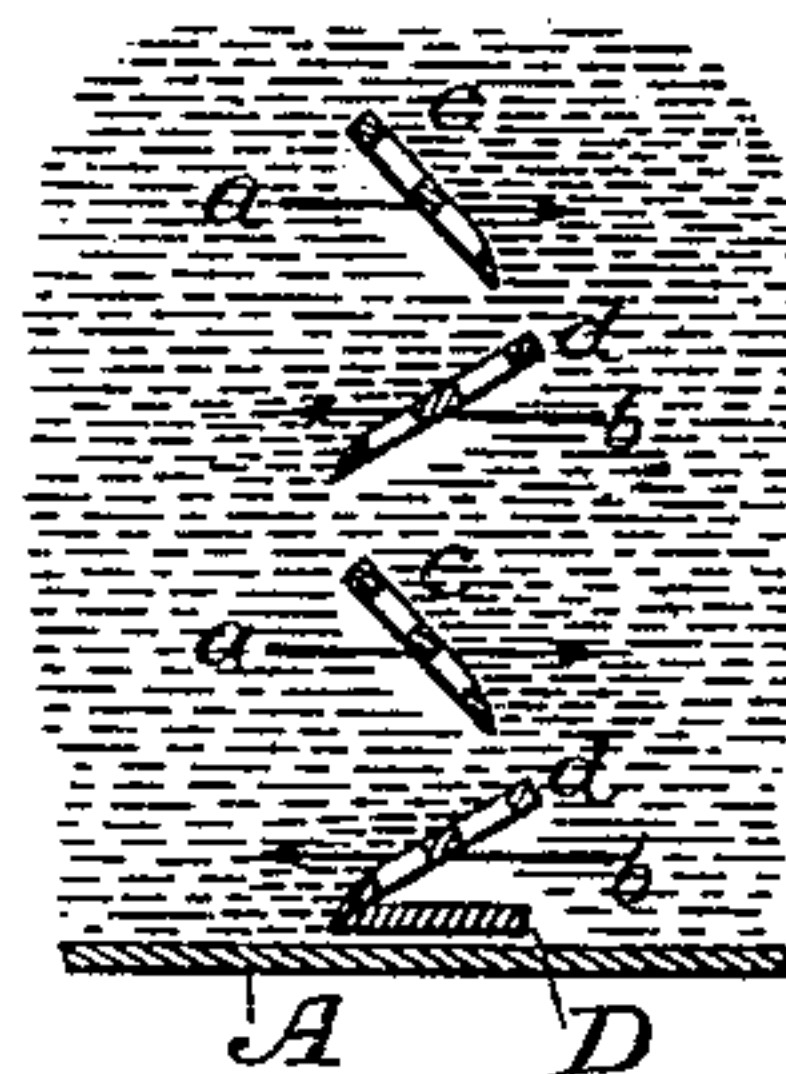
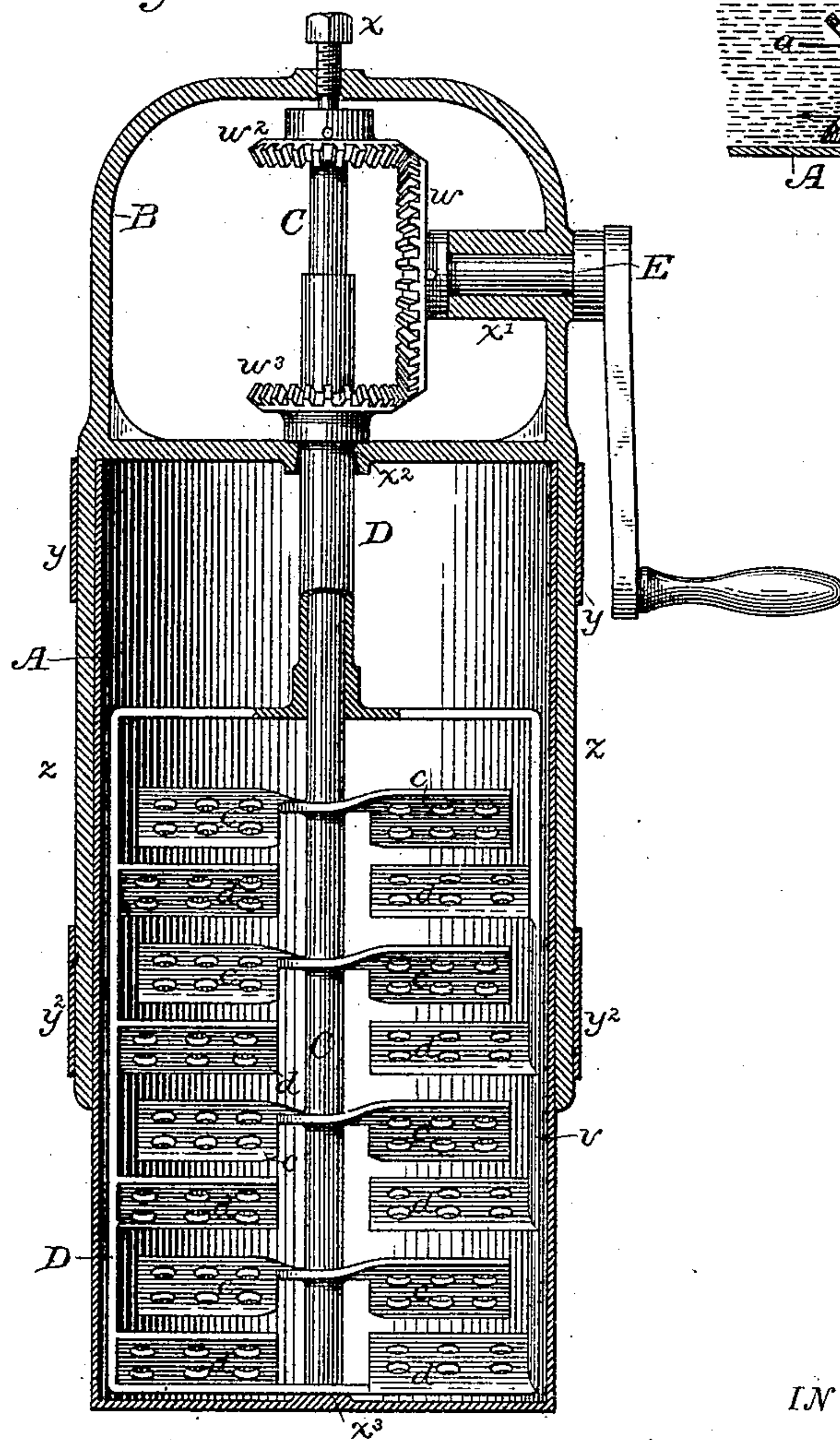


Fig. 2,



WITNESSES

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ELISHA D. HAWKINS, OF BROOKLYN, NEW YORK.

EGG-BEATER.

SPECIFICATION forming part of Letters Patent No. 249,044, dated November 1, 1881.

Application filed September 3, 1881. (Model.)

To all whom it may concern:

Be it known that I, ELISHA D. HAWKINS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Egg Beaters and Mixers, of which the following is a specification.

This invention consists in an improved machine embodying a novel combination of parts, as hereinafter described and claimed, for beating or mixing liquid or semi-liquid substances or compounds, and more particularly those of bakers and wholesale druggists, the machine being especially designed and adapted for beating a large number of eggs—for example, say one hundred or more—at one operation.

Figure 1 of the accompanying drawings is a top view of my said machine in illustrative form. Fig. 2 is a front view, partly in vertical section, on the line 2 2, Fig. 1, showing the beaters geared together in a somewhat different relation. Fig. 3 is a detail section through the ends of the axial shaft of the machine, in the same plane as Fig. 2; and Fig. 4 is a sectional diagram, illustrating the operation, as hereinafter described.

Like letters of reference indicate corresponding parts in the several figures.

A represents an upright vessel of substantially circular shape in cross-section, the same being cylindrical in the example, and, together with all the other parts, constructed of suitable metal. A slightly-conical or slightly-flaring tub constructed of wooden staves may be used instead, or a vessel of any suitable material possessing the aforesaid characteristic as to shape.

B represents a frame, which in the example consists of a single casting, comprising a pair of vertical side bars or legs, $z z$, which occupy staples $y y^2$ on the sides of the vessel A, the upper staples integral with a hoop which reinforces the upper edge of the vessel, while above the vessel said frame is substantially of \square shape, with an inwardly-projecting drilled stud, x' , forming a horizontal sleeve-bearing, a central tapped boss at top, provided with a vertical pivot-screw, x , and a loose bearing hole, x^2 , in its cross-bar beneath said pivot-screw.

C represents an axial shaft, supported at its upper end by the point of said pivot-screw x ,

and at its lower end by a matching central step-stud, x^3 , on the bottom of the vessel A, as shown most clearly in Fig. 3.

D represents a rotary frame, comprising horizontal top and bottom bars united by side bars parallel to the vertical walls of the vessel A, and an axial sleeve-shaft at top, which embraces the shaft C and extends through the loose bearing x^2 , the lower end of the frame D being supported by said step-stud x^3 , as shown in Fig. 3.

E represents a short horizontal driving-shaft, occupying said sleeve-bearing x' of the frame B, and provided in the example with a hand-crank at its outer end as means for rotating it, and at its inner end with a beveled spur-wheel, w , as means for transmitting rotary motion through a pair of smaller beveled wheels or pinions, $w^2 w^3$, to the axial shaft C and the concentric frame D, respectively, which are thus made to rotate simultaneously in opposite directions at one and the same rate of multiplied speed. It is only essential that said shaft C and frame D should rotate simultaneously in opposite directions, as illustrated by arrows a and b . By turning the screw x , the shaft C, and therewith the gear-wheel w^2 , may be lifted, so as to unmesh the gearing for changing the relation of the beaters, as illustrated by Figs. 1 and 2.

For agitating the mass within the vessel A the axial shaft C and the concentric frame D are provided respectively with rigid radial arms or beaters $c d$, which project horizontally, one set, c , alternating with the other, d , and are inclined in opposite directions with reference to the planes in which they rotate, and provided with perforations perpendicular to their main surfaces, the forward edge of each beater being sharpened, and those of the lower pair of beaters on the frame D extending down to the bottom of its lower cross-bar, as clearly shown in cross-section in Fig. 4. The forward edges of the side bars of the frame D are likewise sharpened or beveled, as shown at v , Fig. 2.

The apparatus is designed to be portable, and for carrying it a pair of sheet-metal handles, $u u$, have been attached to the front and back of the vessel A, as shown in Fig. 1.

The apparatus may be made of various sizes and styles, the vessel A to be of a capacity suited to the maximum quantity of the mass which the apparatus is designed for treating.

5 The operation of the apparatus in its distinguishing aspects is illustrated by Fig. 4. As the two sets of beaters *c d* revolve in opposite directions through the mass, the lowermost of the latter, *d*, acting upon the lowest stratum
10 of the mass, tends to lift the particles of this stratum upward from the extreme bottom of the vessel A toward its top. Some of these particles are caught by the next pair of beaters, *c*, and, together with other particles, receive
15 a like lifting impulse therefrom, while, owing to the movement of the latter being in a direction the reverse of that of the former, the rotating effect of the respective sets of beaters on the mass is neutralized. The lifting action
20 as thus described is continued by each succeeding pair of beaters to the uppermost, the upward tendency of the mass being greatest at the outer extremities of the beaters, which provides for a return of the particles downward
25 nearer the center, while the beveled edges *v* of the frame D aid to deflect the heavier particles toward the center, and preclude adhesion of particles of the mass to the outer walls. As the inclined beaters move rapidly through the
30 non-rotary mass, there is a tendency to form vacuums under and behind them, as represented by blank spaces in Fig. 4, and successive portions of the liquid or semi-liquid mass are thereby caused to be drawn through the per-

forations of the beaters, according to the most 35 approved method of agitation, while the perforations serve also to roughen the beaters sufficiently to materially increase their agitating effect without destroying their wedge-like primary action, which adapts an apparatus of 40 given size to be driven with a minimum of power.

I am aware that lifting-beaters, perforated beaters, and beaters revolving in opposite directions are separately old. These I do not 45 claim.

I claim as new and of my own invention—

The combination, in a beater or mixer for liquid or semi-liquid substances or compounds, of an upright vessel of substantially circular 50 shape in cross-section to contain the mass, an axial rotary shaft, a concentric rotary frame, means for rotating said shaft and frame in opposite directions, and two sets of alternating sectional lifting-beaters projecting horizon- 55 tally from said shaft and frame, respectively, inclined in opposite directions with reference to the horizontal planes in which they rotate, and provided with perforations perpendicular to their main surfaces, for aerating or inter- 60 mixing the particles of the mass, as herein specified.

In testimony whereof I affix my signature in presence of two witnesses.

ELISHA D. HAWKINS.

Witnesses:

JAS. L. EWIN,
JANIE KING EWIN.