Oct. 9, 1923. 1,470,170

C. E. KAIL

EGG BEATER

Filed July 17, 1922

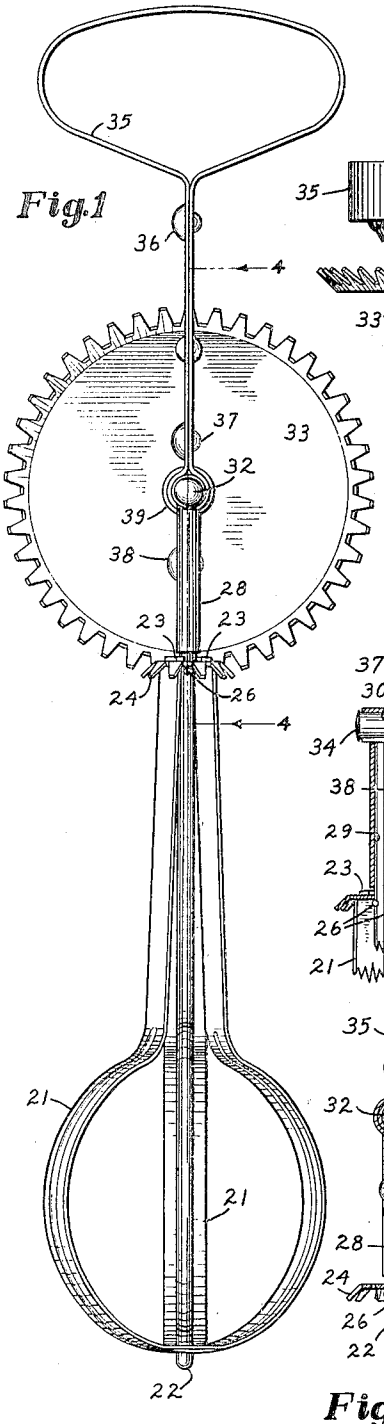


Fig. 1

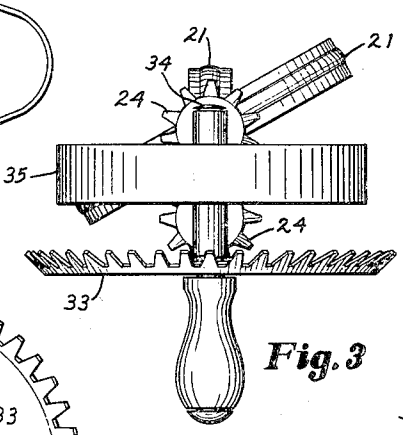


Fig. 3

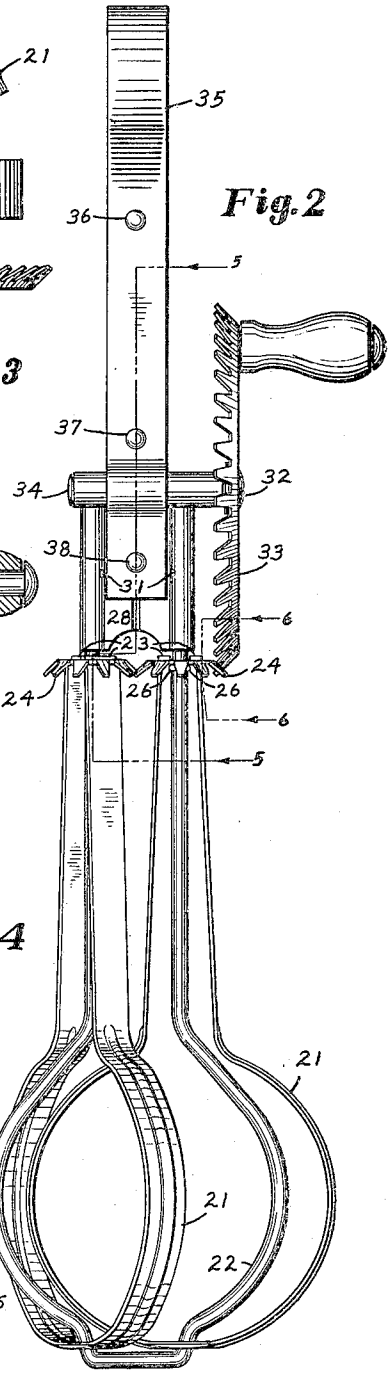


Fig. 2

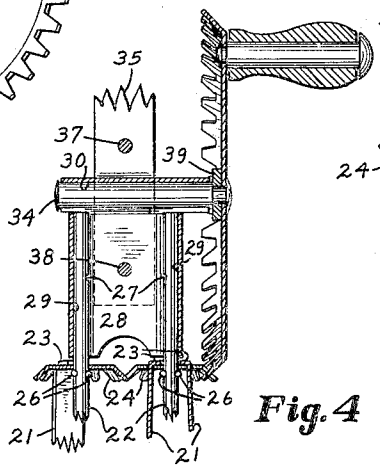


Fig. 4

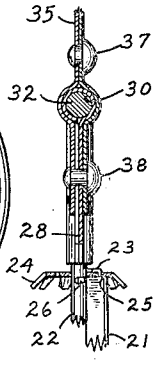


Fig. 5

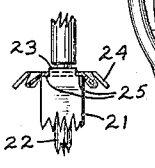


Fig. 6

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Patented Oct. 9, 1923. 1,470,170

UNITED STATES PATENT OFFICE.

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EGG BEATER.

Application filed July 17, 1922. Serial No. 575,522.

To all whom it may concern:

Be it known that I, CHARLES E. KAIL, a citizen of the United States, residing at Binghamton, county of Broome, and State of New York, have invented certain new and useful Improvements in Egg Beaters, of which the following is a specification.

This invention relates to hand operated egg-beaters in which two elements may be simultaneously rotated in opposite directions by turning an operating wheel, and more particularly to such beaters in which all parts other than those necessarily only suited for screw machine production, are arranged for being economically stamped from sheet metal.

In prior egg-beaters of the character described, the main shaft bearings have been of such form and arrangement that, because of the comparatively great pressure applied thereto during operation, wear has been very rapid and such looseness has soon developed so as to render the beater useless because of the irregularity of engagement of the driving gear with the beater pinions. Difficulty has also been experienced in so securing the ends of the U-shaped frame to the body member of such beaters as to prevent early loosening thereof from strains applied thereto during the operation of the beater; and the means employed for fixing prior beater wings to their respective operating pinions has either involved a burdensome manufacturing expense or has failed to provide an operably durable connection.

Objects of this invention are to provide a beater which is much more durable than prior beaters while being, at the same time, less expensive to manufacture through having a long inexpensively formed bearing for the main shaft and an improved method for securing the beater elements to their driving pinions and which is, in other particulars, to be hereinafter more definitely described, an improvement upon beaters previously known to the art.

This invention consists of certain features of construction and arrangement of parts more fully described in the following specification and shown in the accompanying drawing which forms part thereof, and in which

Figure 1 is a rear elevation of an egg-beater embodying this invention.

Fig. 2 is a side elevation of the beater of Fig. 1.

Fig. 3 is a plan view of the beaters of Figs. 1 and 2.

Fig. 4 is a fragmentary view, partly in section, of certain parts of the beaters of Figs. 1, 2 and 3, and

Figs. 5 and 6 are fragmentary views, partly in section, of details to be referred to.

Referring to Fig. 1,—the strip metal beating elements 21, 21 are journaled upon the U-shaped frame 22, and the upper ends of said elements are cut away to form the tenons 23, 23 (most clearly shown in Figs. 4, 5 and 6) which extend through openings provided therefor in the pinions 24, 24; said tenons being bent over as shown, so as to lie substantially parallel to the upper faces of said pinions. From the foregoing it will be seen that the pinions 24, 24 are securely fixed to the ends of said beater elements, the lower faces of said pinions being held in engagement with the shoulders 25, 25 at the bases of the tenons, 23, 23 by the engagement of the bent over ends of said tenons with the upper faces of said pinions, as best shown in Fig. 6.

The pinions 24, 24 are journaled upon the frame 22 near the ends thereof, and said frame ends have the notches 27, 27 formed therein for a purpose which will be hereinafter more fully described.

The body 28 consists of a single piece of sheet metal which is so formed as to provide the two parallel channels 29, 29 at respective sides thereof, and the channel 30 at the upper end thereof (see Fig. 4). The channels 29, 29 are of such form and are so spaced as to be suitable for holding the respective ends of the frame 22, and the indentations 31, 31 are formed in the material of said body 28 in such positions as to force the metal of said body into the notches 27, 27 provided near the ends of said frame, for the purpose of holding said frame ends firmly against withdrawal from their respective channels and against turning therein.

The channel 30 extends perpendicular to the length of and in substantially the same plane as the channels 29, 29. The shaft 32 has the operating wheel 33 and washer 39 fixed to an end thereof, the opposite end of said shaft being riveted over at 34, so as to form a shoulder for retaining said shaft

within the channel 30. The length of the shaft 32 exceeds the distance between the ends of the frame 22 by an amount greater than the radius of one of the pinions 24; and the channel 30 encloses said shaft so as to provide journal surfaces therefor adjacent each end thereof.

The sheet metal strip 35 is disposed in the form of a handle loop, the ends of said loop being side by side and embrace the outer surface of a portion of the channel 30 as well as the ends of the rolled over portions of the body 28 which extend beyond the channels 29, 29 and overlap the main portion of said body 28 between said channels 29, 29.

The side by side portions of the strip 35 are fastened together by the rivets 36, 37 and 38; the rivet 38 also passing through the body 28 between the ends of the overlapping portions thereof, so as to serve to hold the channels 29, 29 securely closed, and the rivet 37 being situated just above the channel 30, so as to retain said strip 35 in snug engagement with the outer portion of the body 28 which encloses the channel 30.

From the foregoing, it will be apparent that widely separated journal bearings of large area are provided for the shaft 32, so that engagement between the wheel 33 and the pinion 24 with which it meshes will be assured throughout a much longer period of use than would be the case if this shaft was journaled in pierced sheet metal ears in accordance with prior practice in beaters having stamped sheet metal bodies.

The ends of the frame 22 are very rigidly and permanently secured in the body 28, and said body and the strip 35 provide a combined body and handle member of exceptional rigidity and durability.

Although I prefer to enclose the shaft 32 from the washer 39 at the rear of the wheel 33 to the shoulder provided at the end 34 of said shaft, it is evident that an equally durable bearing for said shaft might be provided even if the material of the body 28 did not completely enclose said shaft intermediate the ends thereof. It is also evident that other changes may be made in the form and arrangement of the parts without departing from the spirit of this invention.

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

1. In an egg-beater: two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, and a shaft to one end of which said driving wheel is fixed,—in combination with a body member comprising a stamped sheet metal piece having portions thereof rolled over so as to form suitably spaced channels for holding the ends of said U-shaped frame and a continuous channel forming a journal for said shaft, the ends of the portions forming said spaced channels overlapping said body portion between said channels; and a strip of sheet metal in the form of a handle loop, the ends of said strips disposed side by side so as to form an extension to said piece, said ends embracing portions of said overlapping body ends, and rivets securing said strip ends one to the other, one of said rivets passing through said body member between the edges of the overlapping ends thereof.

2. In an egg-beater: two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, and a shaft to one end of which said driving wheel is fixed,—in combination with a stamped sheet metal piece having three channels, two of which channels are disposed in parallel relationship along the sides of said piece and are of such form and so spaced as to suitably hold the respective ends of said U-shaped frame, and the other one of said three channels extending in a plane substantially perpendicular to the length of said frame-end-holding-channels, said other one of said channels of such form as to provide a journal in which said shaft may freely turn and so positioned that when said shaft is journaled therein said driving wheel will suitably engage one of said pinions; and a strip of sheet metal in the form of a handle loop, the ends of said strip disposed side by side so as to form an extension to said piece, said ends embracing the outer surface of said bearing channel and secured to said piece and to one another by a plurality of rivets.

3. In an egg-beater: two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, and a shaft to one end of which said driving wheel is fixed—in combination with a stamped sheet metal piece having three channels, two of which channels are disposed in parallel relationship along the sides of said piece and are of such form and so spaced as to suitably hold the respective ends of said U-shaped frame, and the other one of said three channels extending in a plane substantially perpendicular to the length of said frame-end-holding-channels, said other one of said channels of such form as to provide a journal in which said shaft may freely turn and so positioned that when said shaft is jour-

naled therein said driving wheel will suitably engage one of said pinions; and a strip of sheet metal in the form of a handle loop, the ends of said strip disposed side by side so as to form an extension to said piece, said ends suitably secured to said piece.

4. In an egg-beater: two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, and a shaft to one end of which said driving wheel is fixed,—in combination with a stamped sheet metal piece having three channels, two of which channels are disposed in parallel relationship along the sides of said piece and are of such form and so spaced as to suitably hold the respective ends of said U-shaped frame, and the other one of said three channels disposed across the end of said piece and extending in a plane substantially perpendicular to the length of said frame-end-holding-channels, said other one of said channels of such form as to provide a journal in which said shaft may freely turn and so positioned that when said shaft is journaled therein said driving wheel will suitably engage one of said pinions; and a strip of sheet metal in the form of a handle loop, the ends of said strip suitably secured to said piece.

5. In an egg-beater: two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, and a shaft to one end of which said driving wheel is fixed,—in combination with a stamped sheet metal piece having three channels, two of which channels are disposed in parallel relationship along the sides of said piece and are of such form and so spaced as to suitably hold the respective ends of said U-shaped frame, and the other one of said three channels extending in a plane substantially perpendicular to the length of said frame-end-holding-channels, said other one of said channels of such form as to provide a journal in which said shaft may freely turn and so positioned that when said shaft is journaled therein said driving wheel will suitably engage one of said pinions; and a strip of sheet metal in the form of a handle loop, the ends of said strip suitably secured to said piece.

6. In an egg-beater: two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, an operating handle for said wheel situated a suitable distance from the center of rotation thereof, and a shaft to one end of which said driving wheel is fixed,—in combination with a body member formed from thin sheet material having portions thereof rolled over so as to provide suitably spaced channels for holding the ends of said U-shaped frame and so as to provide bearing surfaces for said shaft, one of which is situated adjacent said wheel and the other of which is situated at a distance from said wheel at least substantially as great as the distance between said handle and the center of rotation of said wheel.

7. In an egg-beater: two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, and a shaft to one end of which said driving wheel is fixed,—in combination with a body member comprising a stamped sheet metal piece having portions thereof rolled over so as to form suitably spaced channels for holding the ends of said U-shaped frame and a continuous channel forming a journal for said shaft, which journal-channel commences adjacent to the rear side of said driving wheel and extends to a point which is disposed farther from said driving wheel than either of said spaced channels; and a strip of sheet metal in the form of a handle loop, the ends of said strip suitably secured to said piece.

8. In an egg-beater: two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, and a shaft to one end of which said driving wheel is fixed,—in combination with a body member comprising a stamped sheet metal piece having portions thereof rolled over so as to form suitably spaced channels for holding the ends of said U-shaped frame and a continuous channel forming a journal for said shaft, one end of which journal-channel is disposed farther from said driving wheel than either of said spaced channels; and a strip of sheet metal in the form of a handle loop, the ends of said strip suitably secured to said piece.

9. In an egg-beater; two beating elements, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions journaled upon said respective legs and suitably secured to said beating elements, respectively, a driving wheel engaging one of said pinions, and a

shaft to one end of which said driving wheel is fixed,—in combination with a body member comprising a stamped sheet metal piece having portions thereof rolled over so as to form suitably spaced channels for holding the ends of said U-shaped frame and a continuous channel forming a journal for said shaft, and a strip of sheet metal in the form of a handle loop, the ends of said strip suitably secured to said piece.

10. In an egg-beater,—the combination of two beating elements each consisting of a suitably formed single strip of sheet metal, the ends of which strips are cut away so as to form tenons, a U-shaped frame on the respective legs of which said elements are journaled, coengaging pinions upon said respective legs and each having openings through which the tenons of one of said beating elements pass, the free ends of said tenons being bent over substantially parallel with faces of said pinions, and a driving wheel engaging one of said pinions.

In witness whereof, I hereunto subscribe my name, this 15th day of July, 1922.

CHARLES E. KAIL.