

No. 688,201.

Patented Dec. 3, 1901.

E. J. SCOPES.
BALL BEARING EGG BEATER.

(Application filed June 19, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

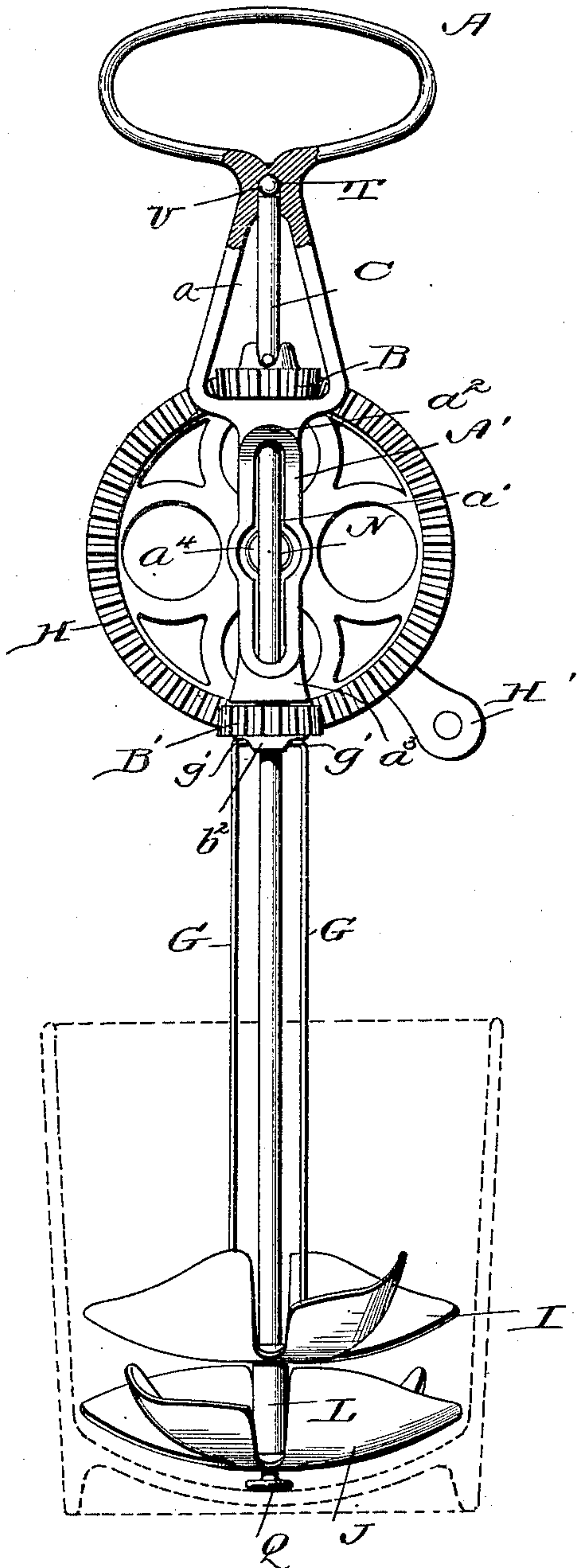


Fig. 2.

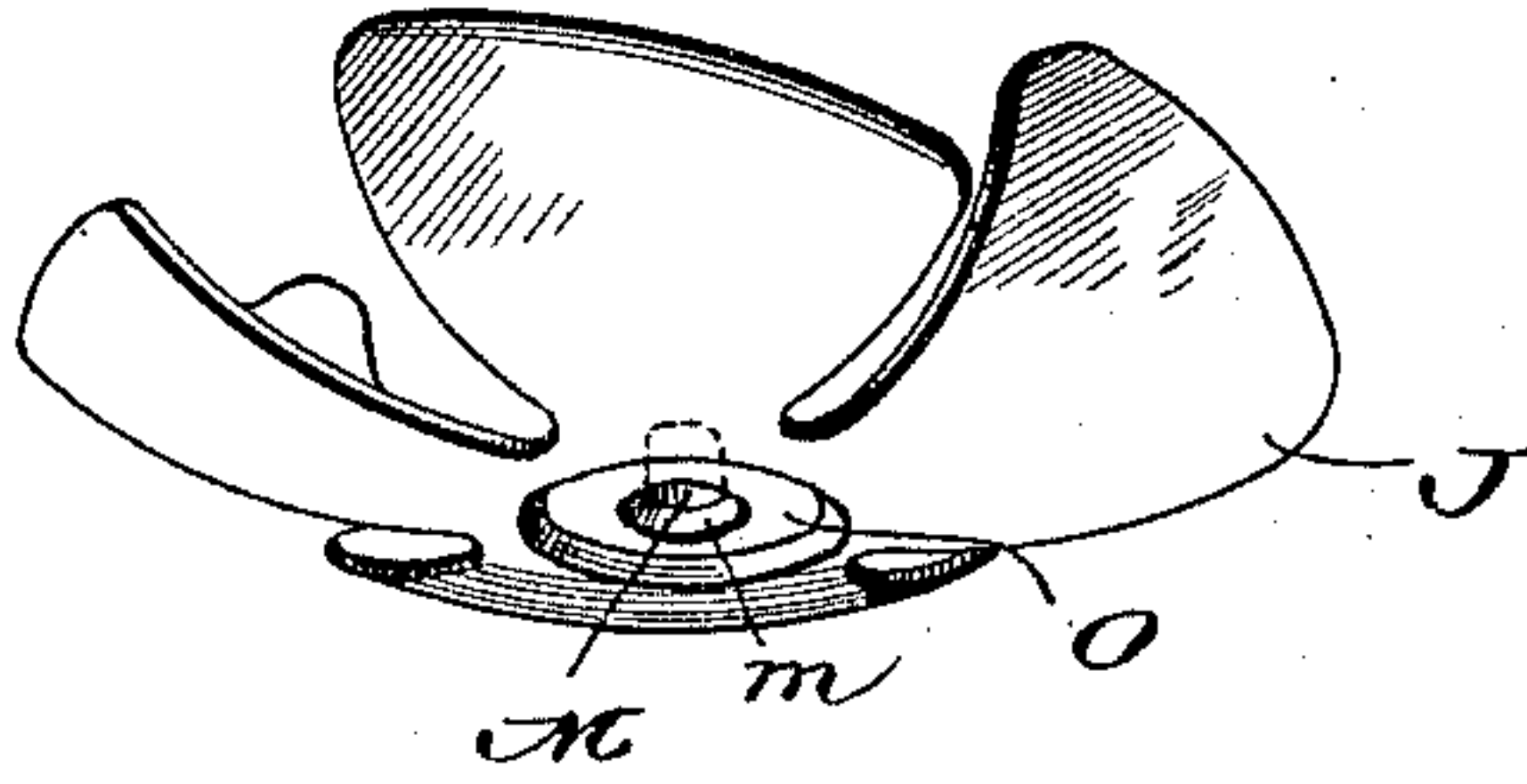


Fig. 3.

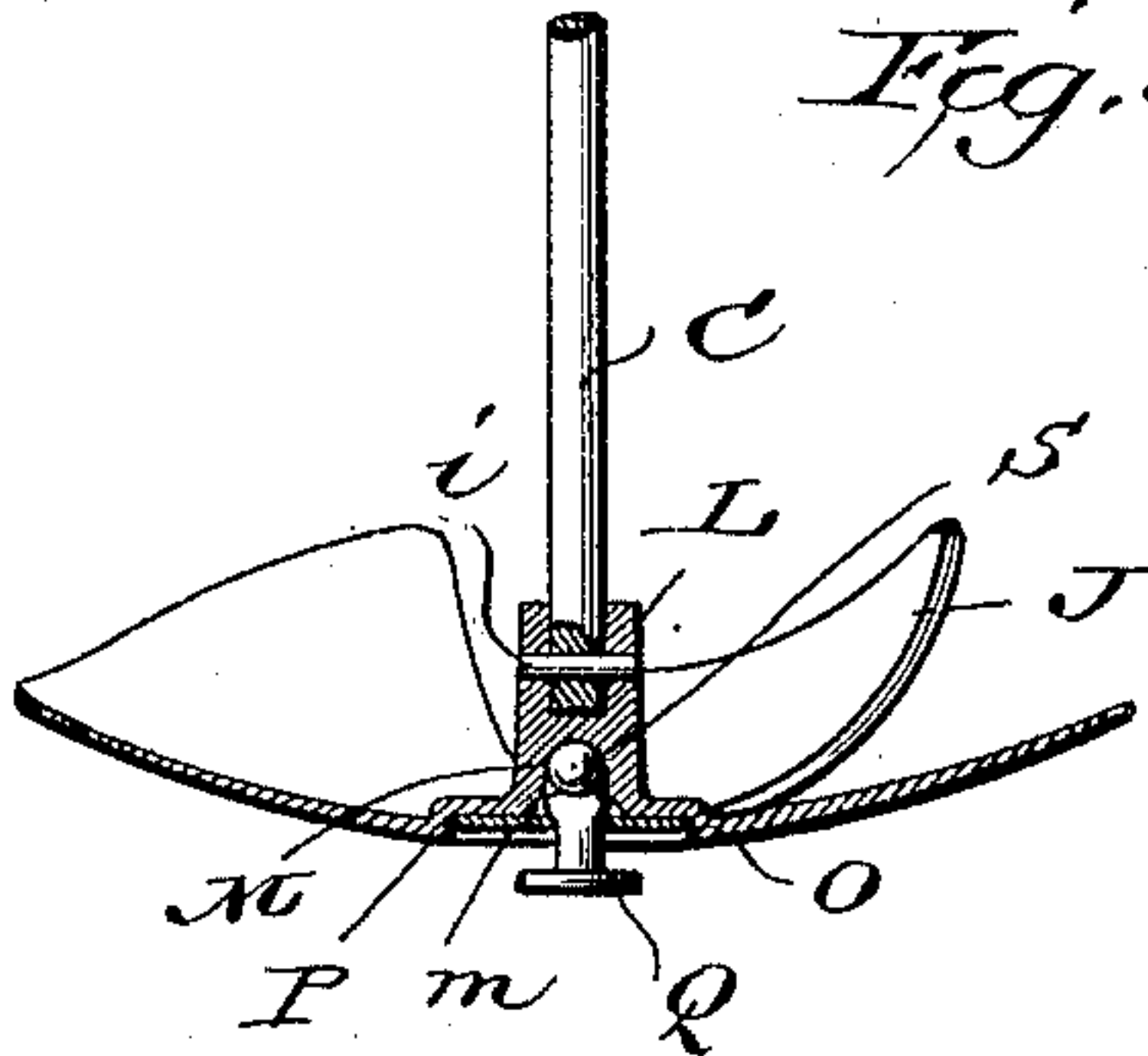


Fig. 4.

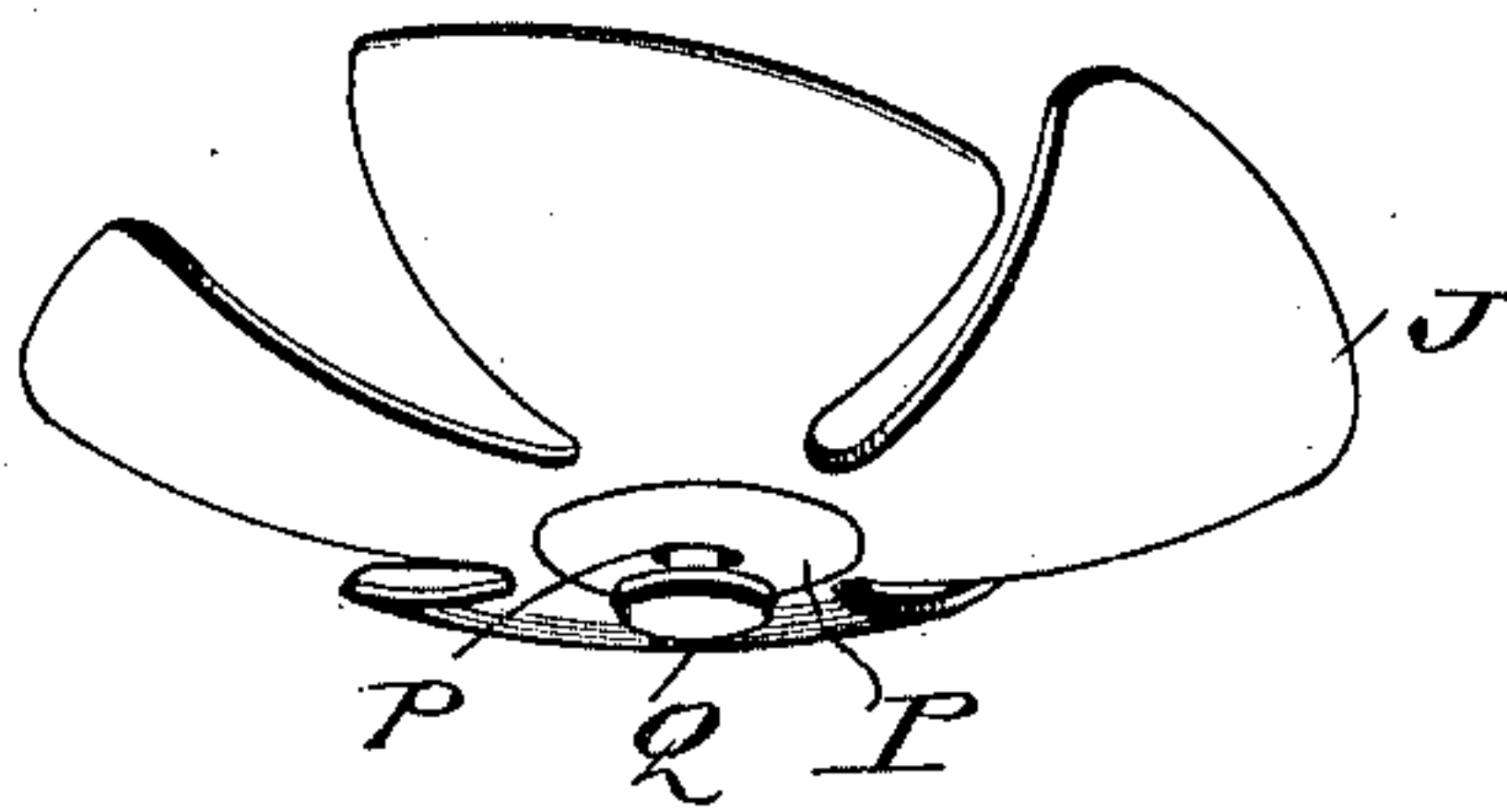
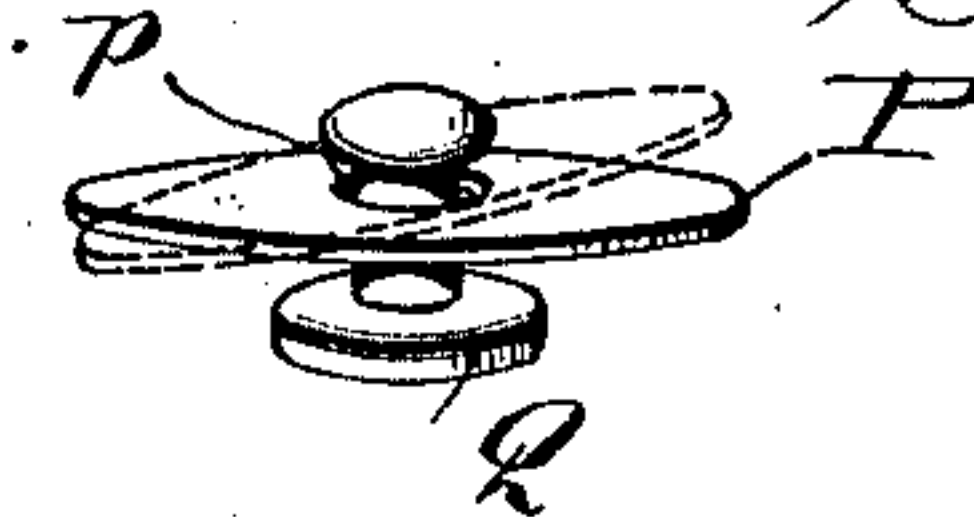


Fig. 5.



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2 Sheets—Sheet 2.

Fig. 6.

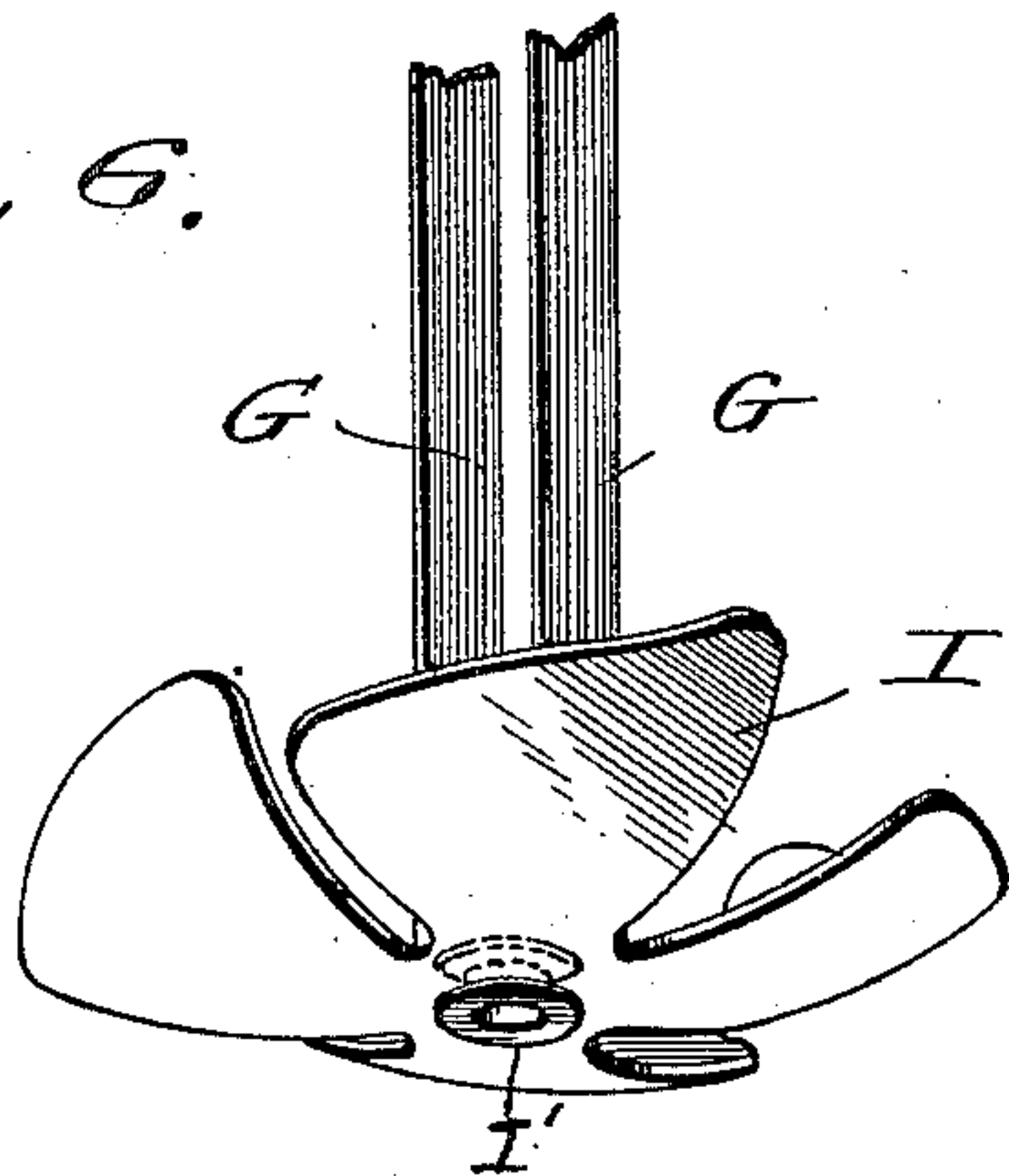


Fig. 7.

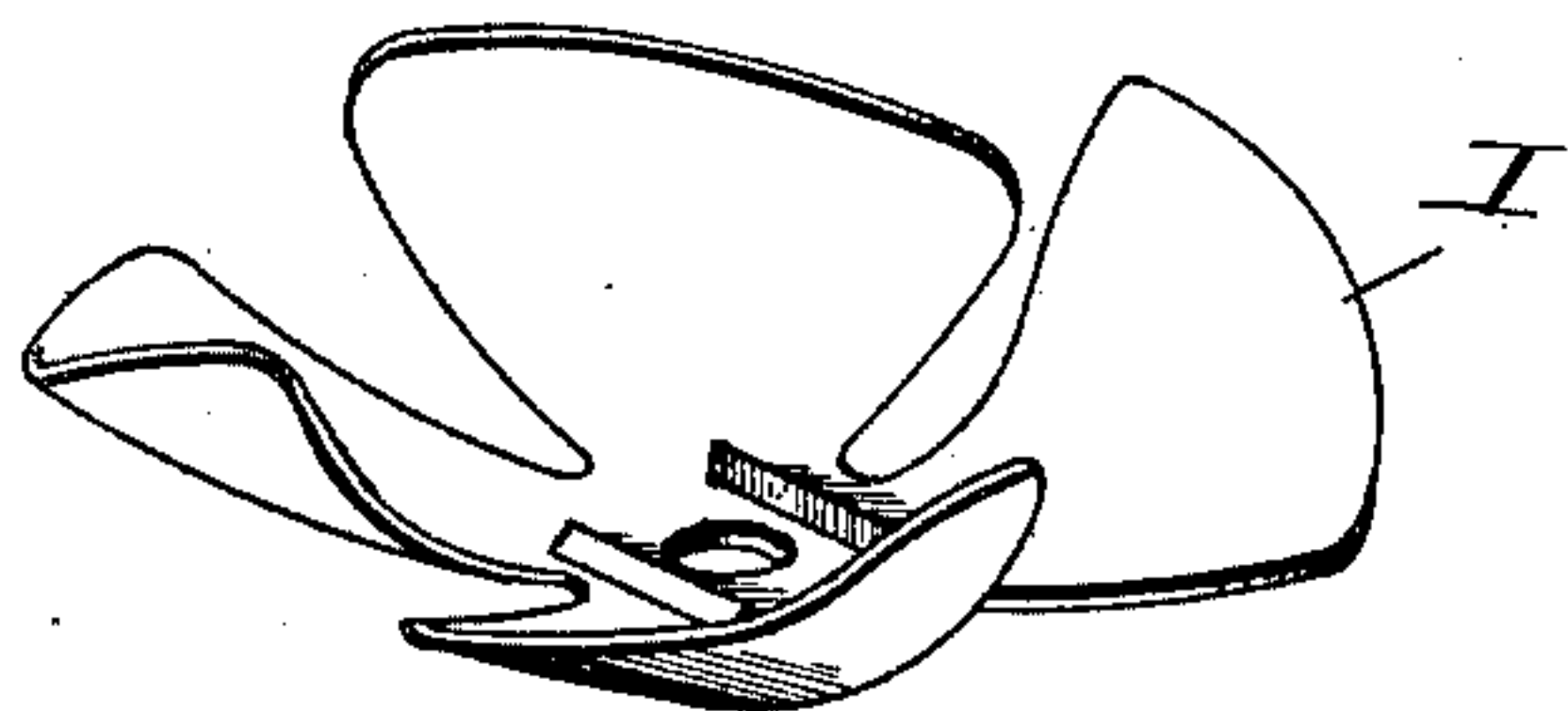


Fig. 8.

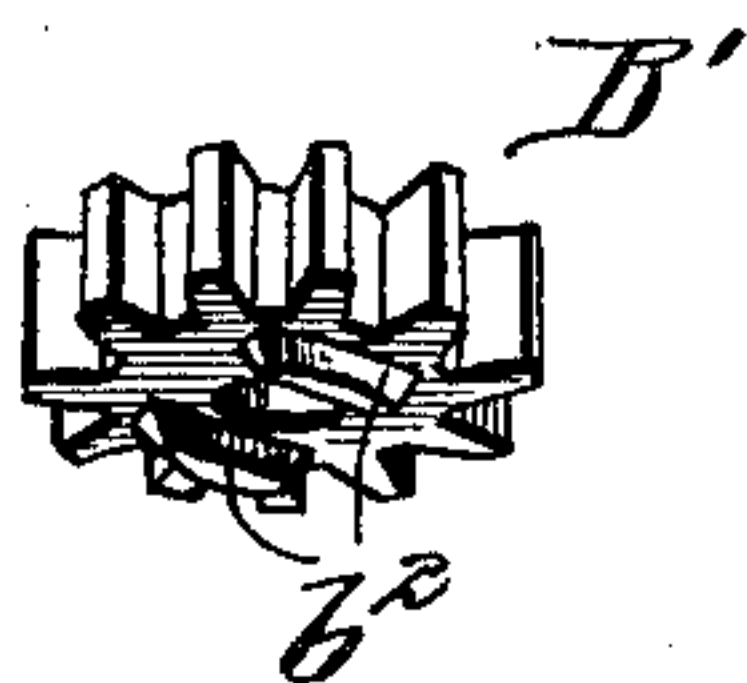


Fig. 12.

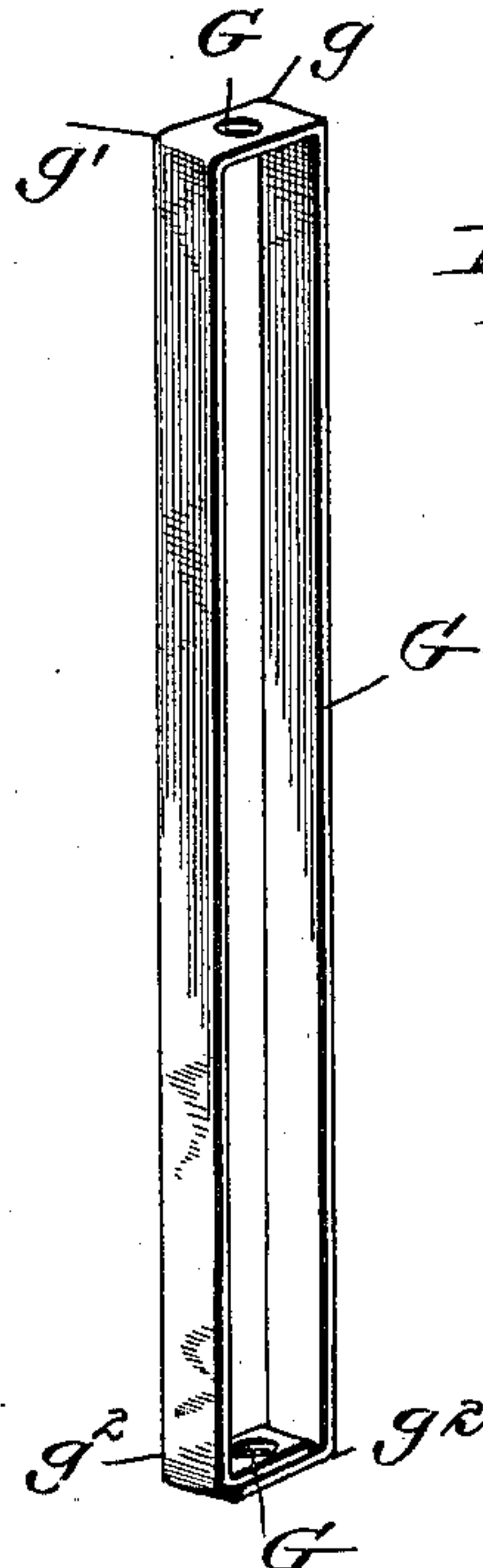
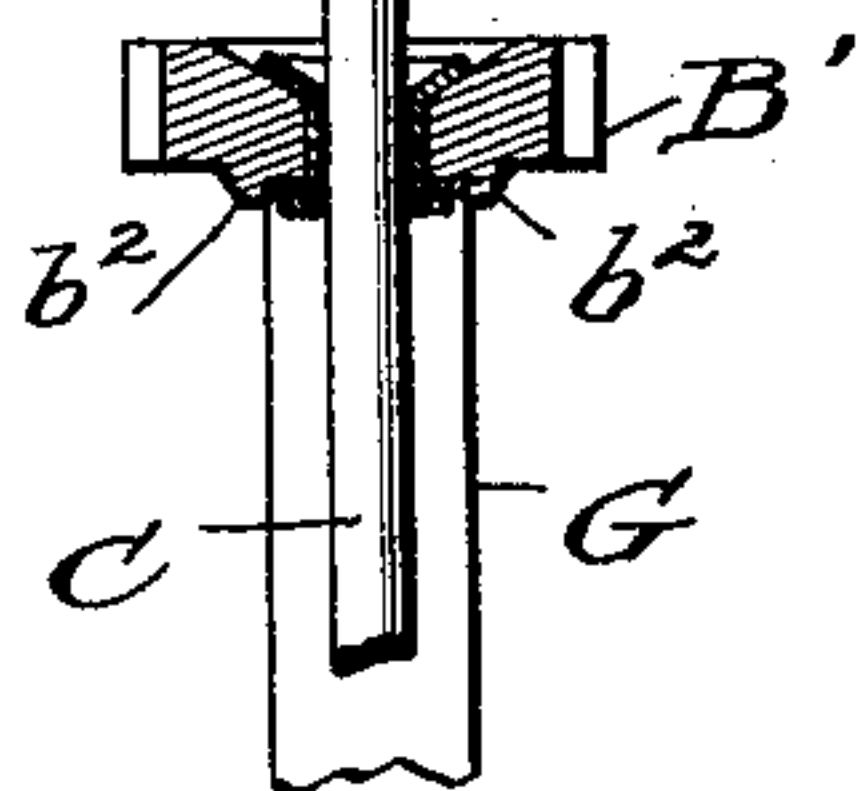


Fig. 9.

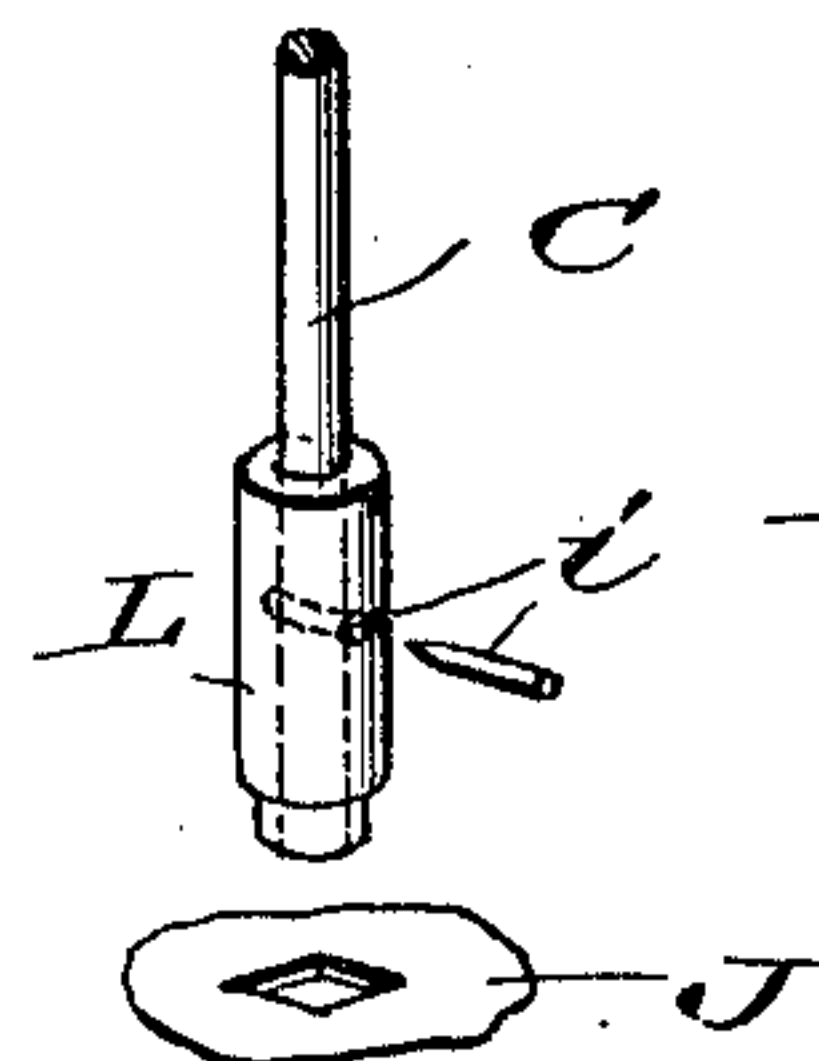


Fig. 10.

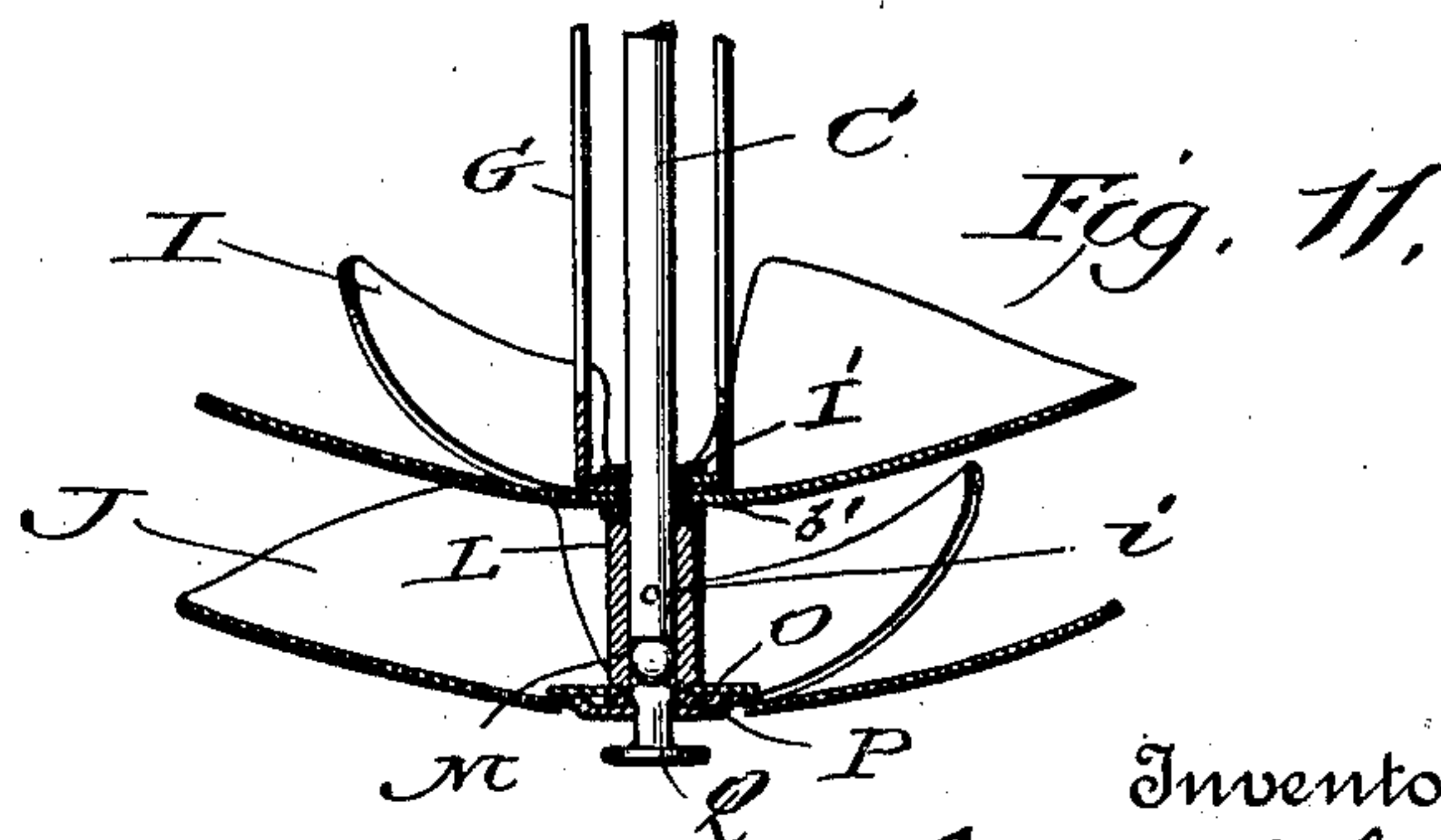


Fig. 11.

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UNITED STATES PATENT OFFICE.

EDWARD J. SCOPES, OF ALBANY, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO GEORGE L. LYON AND WILFRED B. WHITING, OF MILFORD, NEW YORK.

BALL-BEARING EGG-BEATER.

SPECIFICATION forming part of Letters Patent No. 688,201, dated December 3, 1901.

Application filed June 19, 1899. Serial No. 721,062. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. SCOPES, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Ball-Bearing Egg-Beaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to egg-beaters, cream-whips, and similar utensils having two reversely-rotating dashers in different horizontal planes, each dasher consisting of a series of flukes or blades and each fluke or blade having a forward cutting edge and an upwardly-bent rear part.

In particular this invention relates to and is an improvement on my previous patent, No. 599,661, dated February 22, 1898, which shows, describes, and claims an egg-beater or similar utensil having the flukes of the lower dasher curved upwardly from the center thereof, giving its lower face as a whole a convex shape adapted to fit close to the surface of the concave bottom of a cup, so that the cutting edges of the flukes will act on even the lowest layer of egg or other material, taking it up for further action by the rear parts of these flukes and by the flukes of the upper dasher. The flukes of the upper dasher are shown and described in the said patent as having their lower faces horizontal. It is found in practical operation that there is a decided advantage in changing this construction by giving to the said upper dasher the same concave form as the lower dasher, because the upwardly-curving blades lift the material which is being operated on and cut upward through it much more efficiently than the partly flat blades of the upper dasher in said patent and in the prior state of the art. If the lower dasher alone be concave, it will throw upward the egg which is near the bottom of the cup until the material thus thrown reaches the horizontal bottom of the upper dasher, which will necessarily somewhat obstruct this upward movement, while even the upwardly-bent parts of

said upper dasher will only very imperfectly carry on the lifting and upwardly-cutting process, applying the same to so much of the egg or similar material as may rise above its blades. If now the upper dasher be made concave as well as the lower, the material thrown up by the lower dasher instead of being stopped by a flat horizontal surface will come in contact with a gently-curving surface and follow the same upward or laterally without being repelled or beaten until it passes in between the blades or flukes of the upper dasher or over their outer edges into the upper concavity of said dasher, so as to be acted on obliquely by said blades for cutting and throwing it upward precisely after the manner of the lower dasher. This becomes important in view of the fact that the purpose of this device is not really to beat eggs or similar material, although it is conveniently classed with egg-beaters, but more properly to lightly divide, slice, whip, toss, and aerate the said material, bringing it to a very light and foamy condition and causing it to be thoroughly interpenetrated by particles of air, which is a very different action from beating and bruising the adhesive shreds and fibers and glutinous masses found in the materials most often operated on. To this end, therefore, one chief feature of my present invention consists in the combination of an upper dasher, having its flukes concaved from their center of rotation upwardly, with a lower dasher of similar construction, and means for rotating these dashers simultaneously in opposite directions, each fluke of each dasher having a forward cutting edge, substantially as hereinafter more particularly set forth and claimed. The said patent also shows a frame used for steadying the said dashers and operating devices and an especial construction of the lower end of the handle-shank for the attachment of said frame. There is some complexity in these parts and some difficulty and expense in their manufacture. They also require a certain amount of material and add somewhat to the weight of the device as a whole. In these little articles it is important to secure lightness and simplicity. It is further important to increase the ease of

running and to diminish friction. To this end I have discarded the said frame and the said special construction of handle-shank and have used instead antifriction-balls at the upper and lower ends of the actuating-spindle, providing also a step at the lower end of the device, which affords a bottom bearing for the lower ball and holds it, as well as the spindle and the upper ball, securely in place, while being so loosely attached that it allows the device as a whole to rock lightly about its supporting-point in any direction, accommodating itself to any concave surface—as, for example, that of the interior of a cup—on which it may rest. These features form additional elements of importance in my invention.

My said invention further consists in additional details of construction and combination which need not be here more particularly described, but will be presented later in this specification and in the appended claims.

In the accompanying drawings, Figure 1 represents a rear elevation of an egg-beater embodying my invention, the cup in which it turns being shown in vertical section and the handle being slightly broken away on the nearer side below the loop to show the upper antifriction-ball and the pocket in which it rests. Fig. 2 represents a detail perspective view, taken from below, of the lower fluke. Fig. 3 represents a vertical section of the same with the lower part of the spindle inserted and the ball, retaining-disk, and the bottom step in place. Fig. 4 represents a bottom view in perspective, similar to Fig. 2, showing the said lower dasher with the disk and step or stud in place. Fig. 5 represents an enlarged detail view of the said lower disk and step or stud, the looseness of their attachment being indicated by showing in dotted lines an inclined position of said disk on said step or stud, such as it will take when tilted with the device as a whole, excepting only the said step or stud, so that the lower dasher may be brought close to the concave interior surface of a cup, at the bottom thereof. Fig. 6 represents a detail perspective view of the upper dasher, taken from below with the frame attached. Fig. 7 represents a perspective view of the same, taken from above before the parallel suspending bars or frame have been attached thereto. Fig. 8 represents a perspective detail view of the upper pinion, taken from below before the said bars have been riveted thereto. Fig. 9 represents a detail perspective view of the said bars brought together in their normal position without any fastening. Fig. 10 represents a detail perspective view of the sleeve or hub extending upward from the lower dasher and the fastening-pin which passes through said sleeve or hub and the spindle, the said sleeve being provided, as in the said patent, with a malleable tubular downward extension for riveting on the said lower dasher when sheet metal is employed for the dashers of this device.

Fig. 11 represents a vertical section through both of the dashers and the said sleeve or hub as well as the disk below, the step being shown in elevation and the said sleeve being constructed and attached as last stated and the said dashers being of sheet metal, but the parts having in other respects the same construction shown in Fig. 3 so far as concerns the parts common to both figures. Fig. 12 represents a vertical central section through the pinion B' and its eyelet, the spindle and supporting-frame being shown in elevation.

A designates a handle of the ordinary loop form having a shank A' cast therewith. The upper part of this shank is broadened to provide room for an opening a of approximately triangular form, in the lower part of which turns the pinion B, fast on the rotary spindle C of the lower fluke-dasher J, which turns therewith. Said spindle turns in bearings a^2 a^3 , formed with the said shank A', and in a longitudinal groove a' , connecting the bores of these bearings. It has also upper and lower ball-bearings, hereinafter described. The lower bearing a^3 forms at bottom a flat shoulder which acts as a stop for a lower pinion B', to which the two parallel suspending-bars G of the upper dasher I are attached, the said pinion B' and upper dasher being free to turn on the said spindle and having a slight upward and downward play thereon, but not to such an extent as to take the said lower pinion out of engagement with the driving gear-wheel H, which meshes with both of said pinions and is turned by a crank-handle H', as in the said patent. The stud N, on which the said wheel H turns, and the tubular boss a^4 , into which it fits, also are of the same construction as the corresponding parts of said patent, although the boss is therein designated as a^3 . The rotation of the said crank-handle and driving-wheel causes the dashers to turn in reverse directions, as therein described.

The suspension-frame G consists of a strip bent at the top and having overlapping ends at the bottom, the intermediate parts constituting two parallel suspension-bars. It is also provided at top and bottom with holes G' and G² for receiving the eyelets b' and I', whereby the said frame is fastened to the pinion B' and the dasher I. These eyelets are headed up in the usual way when the said parts are put together. Lugs b² on the under side of the pinion B' overlap the said bars G, at the upper end of the latter, and prevent the said pinion or bars from turning independently of each other.

L designates a sleeve or hub which may be cast, as shown in Fig. 3, with the lower dasher when the dashers are made of cast metal or may be provided at its lower end with a malleable tubular downward extension L', Fig. 10, to pass through the central hole of the said dasher and be headed up on it eyelet fashion, as stated with regard to the similar parts b' and I', as shown in Fig. 11, when sheet-metal

dashers are employed. This sleeve, which serves as a lower spacing-stop for the upper dasher, fits on the spindle C, and both the sleeve and spindle are transversely bored to receive a fastening-pin *i*, which secures them together. This spindle passes more than half the way down through the said sleeve or hub L, leaving below it enough of the bore unoccupied to form a pocket M, which is flared outwardly at its lower end *m*. When the said dasher and sleeve are cast together, this flaring part of the bore is formed in the dasher itself. An annular depression O is formed in the lower face of the lower dasher J, surrounding the said bore, to receive a disk P, which is countersunk in said depression and soldered to the said dasher. A step or supporting-stud Q, having a flat head on which the whole article rests, extends up through a central hole *p* of the said disk and is headed above the same sufficiently to prevent them from separating, although the diameter of this hole is somewhat greater than the diameter of the stud between its heads in order that the said stud and disk may be capable of motion independently of each other, and that consequently while the stud rests firmly on the bottom of the cup the egg-beater as a whole may rock and gyrate around this center, so as to make the concave surface of the lower dasher sweep close to the inner face of the cup, at the bottom thereof, and do its work very perfectly. The outward flare *m* at the bottom of the bore of the sleeve and dasher will also allow the requisite freedom of play on the slightly-headed upper end of the said step or stud, as the said dasher with the rest of the mechanism is rocked and rotated. An antifriction-ball S, of hardened steel, is located in the upper end of pocket M between the lower end of spindle C and the upper end of step or stud Q. Its lowest part is at the flaring part *m* of the pocket or bore M. A similar antifriction-ball T is located in the upper end of a pocket U, which extends upwardly from the triangular opening *a* into the material of shank A', at the upper end of the latter. The upper end of the spindle C enters this pocket from below, and the said ball T is therefore directly interposed between said upper end and the closed upper part of the shank. When the disk P is secured to the lower dasher, it holds the stud or step Q thereto and prevents the separation of the lower antifriction-ball S, the upper end of the said stud or step being in contact with said ball, so that the latter cannot escape. This also prevents any such downward motion of the said spindle as would remove its upper end from the upper pocket U aforesaid. Consequently the upper antifriction-ball T is securely retained within the said pocket and all the parts of the device are held together. There is absolutely no need of a retaining or bracing frame such as was shown in said patent and marked

F in Fig. 1 or M in a modified form in Fig. 2. There is also no need for the special construction called a "box" and marked D in said patent nor for the fastening-bolt shown as passing through said box and through the upper ends of the said frame. My present construction is not only simpler and lighter, but obviously better. It affords extra facilities for rocking about an undisturbed center, and no reasonable amount of pressure will appreciably increase the friction. There is no risk of separation such as there must always be when a bolt is employed. The antifriction-balls are conveniently obtainable, being habitually made in quantities for their especial use and function.

All the other parts of the egg-beater are made with facility, though not likely to get out of order, and very durable.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for whipping up eggs, cream and other materials, a handle provided with a pocket near its upper end, in combination with a spindle journaled in said handle and having its upper end extending into said pocket, an antifriction-ball arranged in said pocket above the said spindle, a rotating dasher attached to the said spindle and having a pocket below the lower end of the same, an antifriction-ball in this latter pocket below the lower end of the said spindle, means for holding this ball in place and affording a support for the said dasher, an upper dasher rotating upon the said spindle and mechanism for driving these two dashers simultaneously in opposite directions, substantially as set forth.

2. In a device for whipping up eggs, cream and other materials, a step or support, in combination with a lower dasher loosely connected thereto, so that the device as a whole may rock thereon, a spindle to which this dasher is attached, an upper dasher turning on the said spindle, mechanism for driving these dashers in opposite directions simultaneously and ball-bearings presented against the upper and lower ends of the said spindle, substantially as and for the purpose set forth.

3. In a device for whipping up eggs, cream and other materials, a rotating dasher having a pocket opening downward and flared at its lower end, a disk countersunk in the said dasher below the said pocket, a supporting step or stud which extends upward through a hole in the said disk into the said pocket and is headed above the said disk to prevent separation therefrom, the diameter of the said hole being such as to permit rocking the said dasher and the parts supported thereby to a limited extent without moving the said step or stud, substantially as and for the purpose set forth.

4. In a device for whipping up eggs, cream and other materials, the rotating spindle of

the lower dasher and antifriction-balls in contact with its ends, the frame and driving mechanism for the said shaft and the step below the said dasher, this step and its means of attachment to the said dasher serving to hold the lower antifriction-ball in place and therefore also to prevent the separation of the said spindle and the upper antifriction-ball from the said frame, while supporting the device as a whole and the part which receives the said step being recessed laterally for allowing the said device to rock upon the said step, substantially as and for the purpose set forth.

5. In a device for whipping up eggs, cream and other materials, a pair of reversely-rotating dashers and gearing for driving the same, in combination with a spindle having the lower dasher fast on it and the upper dasher loose on it and an antifriction-ball held beneath the lower end of the said spindle, the lower dasher being provided with a pocket below the spindle for the reception of the antifriction-ball and with an upwardly-extending

sleeve or hub which acts as a stop for the upper dasher, substantially as set forth.

6. In a device for whipping up eggs, cream and similar materials, a lower dasher provided with a central bore and an upwardly-extending hub or sleeve having a reduced, malleable tubular downwardly-extending part for attaching the said dasher and hub together after the manner of an eyelet, a spindle fastened in said sleeve and extending down partly through said dasher to leave a pocket at its lower end, an upper dasher loose on the said spindle, stops for preventing the said upper dasher from sliding up or down the said spindle out of its proper position and mechanism for driving the said dashers, substantially as set forth.

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

EDWARD J. SCOPES.

Witnesses:

JAMES GLEDHILL,
JOHN HARTNETT.