

May 22, 1934.

M. RABB

1,960,089

MIXING IMPLEMENT

Filed Aug. 5, 1933

2 Sheets-Sheet 1

Fig. 1.

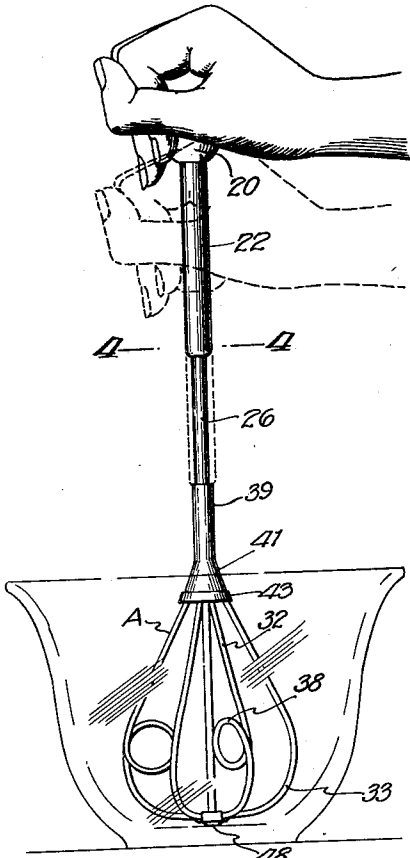
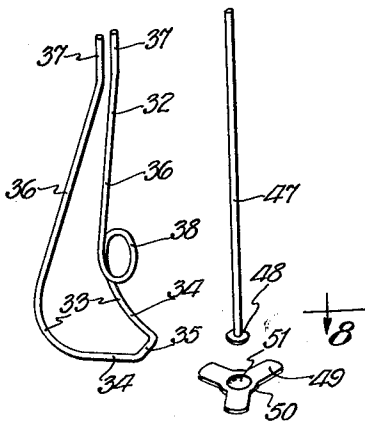


Fig. 1.



WITNESS:

W. H. ...

Fig. 2.

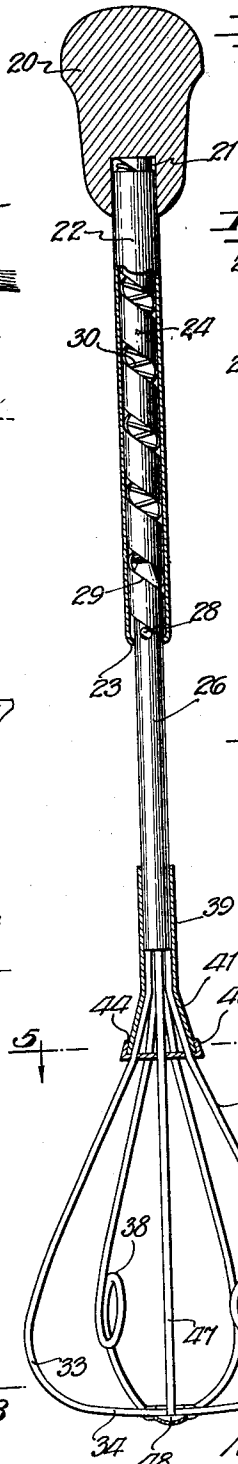


Fig. 10.

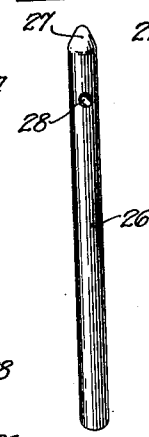


Fig. 3.

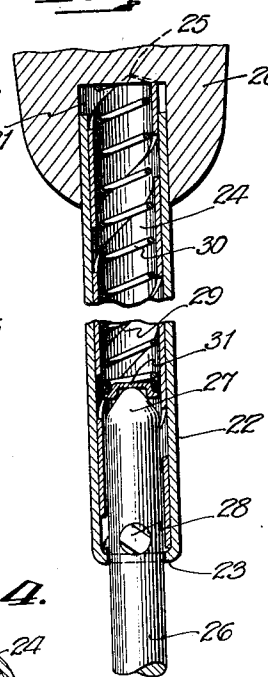


Fig. 4.

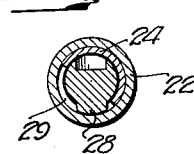


Fig. 5.

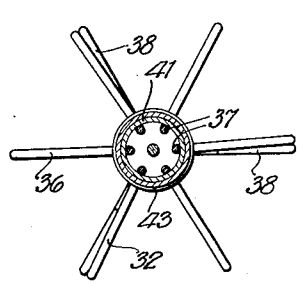
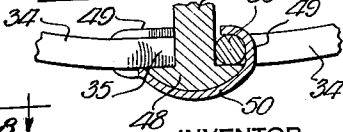


Fig. 6.



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2 Sheets-Sheet 2

Fig. 8.

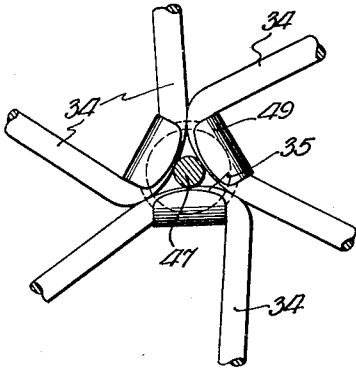


Fig. 9.

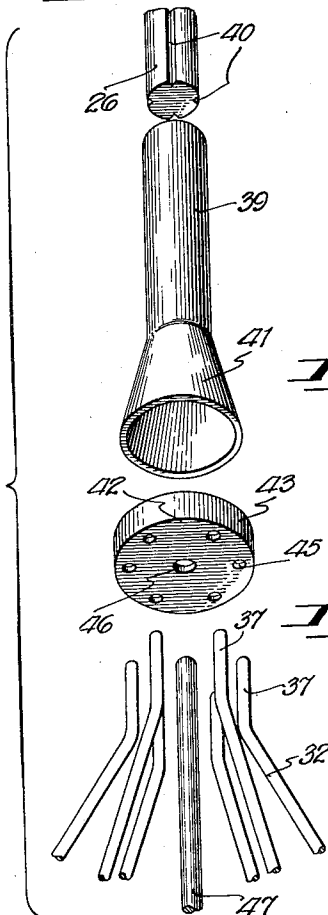


Fig. 10.

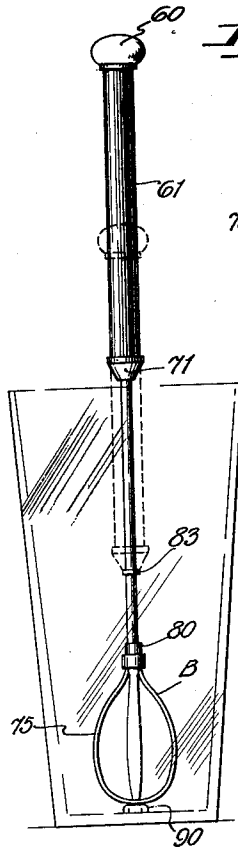


Fig. 11.

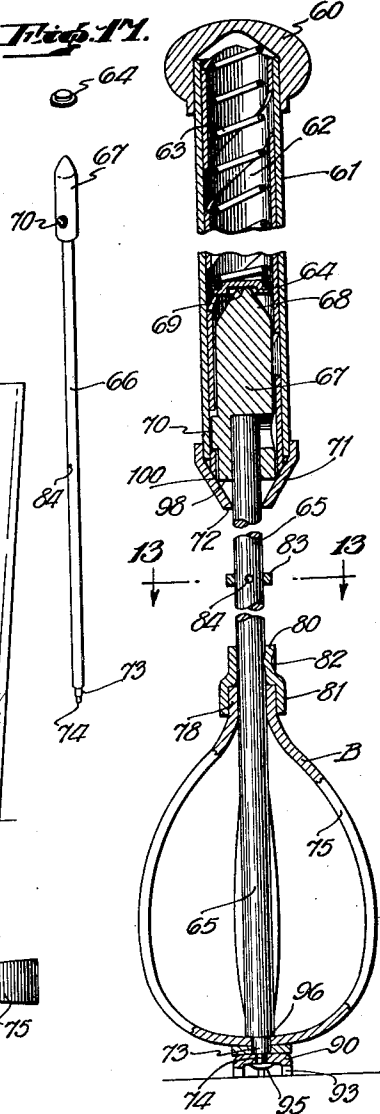


Fig. 12.

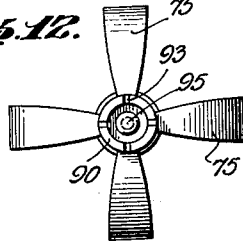


Fig. 13.

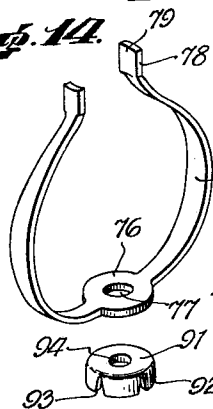


Fig. 14.

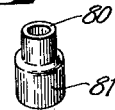
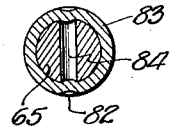


Fig. 15.



WITNESS:
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UNITED STATES PATENT OFFICE

1,960,089

MIXING IMPLEMENT

Michael Rabb, Newark, N. J.

Application August 5, 1933, Serial No. 683,717

2 Claims. (Cl. 74—89)

This invention relates to new and useful improvements in mixing, kneading and beating devices and more particularly it pertains to relatively small hand operated devices of this character, although it is not limited to hand operated devices and certain features thereof may be embodied in power machines.

One object of the invention is to improve the construction and mode of operation of such devices and so construct such devices that they will effect a better mixing and kneading operation than devices of this character as at present generally constructed.

A feature of the invention resides in a novel construction and arrangement of parts whereby the cost of manufacture of such devices may be reduced to a low figure and yet produce a highly efficient device.

Another feature of the invention resides in a novel arrangement and construction of driving mechanism for the beater head.

Still another feature of the invention resides in a novel construction of beater head for devices of this character.

Still another feature of the invention resides in a novel arrangement and construction for assembling and attaching the beater head to the member by which it is driven.

Other features of the invention relate to certain novel and improved constructions, arrangements and combinations of parts hereinafter described and particularly pointed out in the claims, the advantages of which will be readily understood and appreciated by those skilled in the art.

The invention will be clearly understood from the accompanying drawings illustrating the invention in its preferred forms and the following detailed description of the constructions therein shown.

In the drawings:

Figure 1 is a view in elevation illustrating one form in which the invention has been embodied.

Figure 2 is a longitudinal sectional view of the device shown in Figure 1, said Figure 2 being taken on an enlarged scale.

Figure 3 is a detail sectional view of the driving mechanism on a still further enlarged scale.

Figure 4 is a detail sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a detail sectional view taken on the line 5—5 of Figure 2.

Figure 6 is a detail sectional view illustrating the specific construction by which the beating elements are attached to the free end of the driving spindle.

Figure 7 is a distended perspective view illustrating the beater head construction.

Figure 8 is a detail sectional view taken on the line 8—8 of Figure 2.

Figure 9 is a distended perspective view showing the manner in which the upper portion of the beater head is attached to the driving spindle.

Figure 10 is a view in elevation illustrating a slightly modified form of the invention.

Figure 11 is a longitudinal sectional view on an enlarged scale, the figure being partly broken away illustrating the driving mechanism of that form of the invention illustrated in Figure 10.

Figure 12 is a bottom plan view of that form of the invention illustrated in Figure 10.

Figure 13 is a horizontal sectional view taken on the line 13—13 of Figure 11.

Figure 14 is a distended perspective view illustrating one of the beating elements and the supporting foot employed in the modified form of the invention.

Figure 15 is a detail perspective view of the collar employed to secure the upper ends of the beating elements to the driving spindle in the modified form of the invention.

Figure 16 is a perspective view of the spindle employed in that form of the invention illustrated in Figures 1 to 9, and;

Figure 17 is a detail perspective view of the driving spindle employed in the modified form of the invention.

In Figures 1 to 9, inclusive, and 16, the invention is illustrated as applied to an implement for beating eggs and for similar purposes, and in this form of the invention, the implement consists of a handle 20 having a recess 21 therein. Mounted in the recess 21 and extending from the handle there is a tubular member 22, the free or outer end of which is provided with a flange 23 which may be formed in any desired manner. Mounted within this tubular member 22 there is a spirally slotted sleeve 24. The upper end of this sleeve 24 is mounted in the recess 21 of the handle 20 and as illustrated in Figure 3, has a projecting piercing point 25 which is adapted to be engaged with the end wall of the recess 21 to prevent turning of the spirally slotted sleeve 24 within the tubular member 22.

The reference numeral 26 designates a driving spindle. This spindle preferably has a tapered end 27 which is mounted within the tubular member 22 and the spirally slotted sleeve 24, the spindle 26 projecting from the free end of the tubular member 22 as best illustrated in Figure 2. The flange 23 of the tubular member 22 forms a

bearing for the driving spindle 26 and serves to aid in supporting the same in alignment with the handle 20. The reference numeral 28 designates a projection or lug closely adjacent the tapered end 27 of the spindle 26 and this lug is adapted to ride in the spiral slot 29 of the sleeve 24 to impart a rotating movement to the spindle 26 as the same is reciprocated in the tubular member 22 and the spirally slotted sleeve 24.

Means is provided to maintain the spindle 26 in its extended position and to return the same to its extended position automatically during operation of the device and this means is herein illustrated as a coil spring 30 interposed between the end wall of the recess 21 and a cap or similar member 31 which rests upon the tapered end 27 of the spindle 26, and which has sliding movement in the spirally slotted sleeve 24.

Secured to the free end of the driving spindle 26 there is a beater head A. This beater head A consists of a plurality of beating elements 32 preferably formed from wire. By reference to Figure 7 it will be noted that each of these beating elements 32 consists of a length of looped wire, each leg of which is curved as at 33, has a substantially straight portion 34, the straight portions 34 being connected by an angularly disposed portion 35. Each leg of each beating element is provided with a straight portion 36 which terminates in a straight portion 37 slightly offset or angularly disposed with relation to their respective straight portions 36. In one leg of each beating element a complete loop 38 is formed and these loops will be so positioned as to be alternately disposed with respect to that leg in which there is no loop in the next adjacent beating element.

The beater head is operatively connected with the driving spindle 26 by a sleeve 39. This sleeve 39 is adapted to be secured to the spindle 26 by upsetting portions thereof in grooves or recesses 40 formed in the lower end of the spindle 26 in the manner illustrated in Figure 9. The free end of this sleeve 39 is flared as at 41 and is adapted to receive a collar 42, which collar has a flange 43 adapted to be turned or spun around the free end of the flared portion 41 of the sleeve 38, as best illustrated at 44 in Figure 2. This collar 42 is provided with a plurality of openings 45 arranged around its peripheral edge and a central opening 46. The openings 45 are adapted to receive the offset ends 37 of the beating elements in order to properly position them relatively to one another, the central opening 46 being adapted to receive a shaft or spindle 47, the lower end of which has a head 48. As best illustrated in Figure 6, the portions 35 of the beating elements rest upon the head 48 of the shaft or spindle 47 and are secured thereto by turning over arms or similar extensions 49 on a plate 50, which plate has a recess 51 for the reception of the head 48 of the shaft or spindle 47, this construction being illustrated in Figures 6, 7 and 8.

The device may be assembled by positioning the head 48 of the shaft or spindle 47 in the recess 51 of the securing plate 50. The beating elements are next positioned with their portions 35 resting upon the head 48 of the shaft or spindle 47 and the arms or projections 49 are bent around or over the portions 35 of the beating elements as best illustrated in Figures 6 and 7, thus securing the beating elements to the shaft or spindle 47. The collar 42 is next positioned upon the beater head by inserting the offset ends 37 of the beating elements through the proper openings 45 of the

collar 42 and the end of the shaft or spindle 47 through the central opening 46 of the collar. After this has been done the flared end of the sleeve 39 is placed within the flange 43 of the collar 42 and the flange spun or otherwise turned inwardly as at 44 in Figure 2 into engagement with the flared end 41 of the sleeve 39. The driving spindle 26 may now be inserted into the sleeve 39 and portions thereof upset into the grooves or recesses 40 to establish a driving connection between the driving spindle 26 and the beater head of the device.

This form of the invention operates as follows: With the parts in the position shown in Figures 1 and 2, pressure upon the handle 20 will cause the tubular member 22 and the spirally slotted sleeve 24 to move downwardly upon the spindle 26. During this movement the projection 28 rides through the spiral slot of the sleeve 24 and causes a rotation of the driving spindle 26 and the beater head A in one direction. During this operation the spring 30 has been placed under compression and upon the relief of pressure upon the handle 20, the spring 30 will force the spindle 26 outwardly of the tubular member 22 and the spirally slotted sleeve 24, whereupon the projection 28 moving through the spiral slot of the slotted sleeve 24 will cause rotation of the spindle 26 in the opposite direction. In this movement of the spindle, the projection 28 engages the flange 23 of the sleeve 22 forming a stop for limiting the reciprocating movement of the spindle 26 under the influence of the spring 30.

In Figures 10 to 15, and 17 I have illustrated a slightly modified form of the invention which particularly lends itself to the mixing of fluids such as beverages in tall glasses.

In this form of the invention the handle 60, tubular member 61, spirally slotted sleeve 62, coil spring 63 and cap 64 are of substantially the same form and construction as in the form of the invention previously described. The spindle, however, which in this form is designated 65 is of slightly different construction. The spindle 65 consists of a main body portion 66 having an enlarged head 67 which may be attached to the body portion in any desired manner. The enlarged head 67 has a tapered end 68 upon which the cap 64 is adapted to rest as at 69 in Figure 11. The head 67 is provided with a projection 70, which operates in the slot of the spirally slotted member 62 to effect rotation of the spindle 65. A ferrule or similar member 71 may be swaged, spun or otherwise attached to the tubular member 61 and this ferrule 71 is so formed as to provide a bearing 72 for the spindle 65. The body portion 66 of the spindle 65 is provided with two reduced portions 73 and 74 upon its free end.

The beater head B is formed by a plurality of substantially U-shaped beating elements 75 formed of sheet metal, each having a base portion 76 provided with an opening 77 for the reception of the reduced portion 73 of the spindle. The upper portion of each arm of each beating element is flattened as at 78 and slightly curved as at 79 in Figure 14 to conform in shape to the shape of the spindle 65, and the beating elements are secured to the spindle 65 by a collar or the like 80 constructed and arranged to provide a projecting flange 81 beneath or behind which the flattened portions 78 of the beating elements 75 are adapted to be received. This collar may be swaged or otherwise upset as at 82 into holding engagement with the spindle 65 in order that the beater head will rotate with the spindle when the same is ro-

tated. The reference numeral 83 designates a stop in the form of a washer secured to the spindle 65 preferably by means of a cross pin or the like 84.

All such devices with which I am familiar have a tendency in operation to slide upon or otherwise move relatively to the bottom of the receptacle in which they are used. This results from the generally smooth surface upon which the implement rests during operation and to obviate this disadvantage I provide the implement shown in Figures 10 to 15 and 17 with a supporting foot 90. This foot 90 consists of a flanged member 91 having a flange 92 which is formed with a plurality of cut out portions 93. The foot 90 has an opening 94 for the reception of the reduced portion 74 of the spindle and after the reduced portion 74 of the spindle is positioned in the opening 94 of the foot, the free end of the spindle is upset to provide a head 95, which head serves to secure the foot 90 upon the reduced portion 74 of the spindle 65 in such a manner that the upper surface of the foot member 90 forms a bearing together with the shoulder 96 formed by the reduced portion 73, for the beater head B. In upsetting or otherwise forming the head 95, however, it is to be understood that sufficient play will be left and the foot 90 and the beater head will be freely rotatable upon their respective reduced portions 74 and 73 of the spindle 65, and that there will be no binding at this point.

This form of the invention may be assembled as follows: The several beating elements are positioned with the reduced portion 73 mounted in the opening 77 thereof. Their free ends are next brought into engagement with the spindle 65, after which the collar 80 is so positioned that this flange 81 embraces the ends 78 of the beating elements, after which the collar is secured to the spindle as heretofore described. The tubular member 61 and spirally slotted sleeve 62 having been positioned in the recess of the handle, the spring is next inserted within the spirally slotted member 62. The enlarged head 67 of the spindle is then inserted into the spirally slotted sleeve, it being understood that the ferrule 71 is positioned upon the spindle 65 before the head is placed within the spirally slotted sleeve. With the parts in this position the ferrule is formed to provide the bearing 72 and to secure the spindle head 67 within the spirally slotted sleeve 62.

This form of the invention operates in substantially the same manner as the form heretofore described that is, upon pressing the handle

60, the spindle will be rotated by reason of the projection 70 of the spindle head 67 riding through the slot of the spirally slotted member 62. During this operation the ferrule 71 engages the stop 83 to limit the downward movement of the handle 60. When pressure is released the spring which has been compressed by the downward movement of the handle will serve to move the spindle 65 outwardly of the tubular member 61 and the spirally slotted sleeve 62, and will rotate the spindle 65 in the opposite direction. To limit the outward movement of the spindle 65 the end 98 of the enlarged head 67 will engage the ferrule 71 as indicated at 100 in Figure 11.

From the foregoing it will be apparent that the present invention provides new and novel mixing, kneading or beating devices which are highly efficient in operation and of relatively cheap manufacture, and in which the several objects of the invention have been accomplished.

Having thus described the invention, what is claimed as new and what it is desired to secure by Letters Patent of the United States, is:

1. In an implement of the type described, a tubular member, a helically slotted sleeve positioned therein, a spindle, a lug on the spindle movable along the slot of the sleeve, means at the lower end of the member for limiting outward movement of the spindle, spring means within the member yieldably urging the spindle outwardly thereof and a cap on the upper end of the member, the ends of the sleeve engaging the end of the member and cap respectively during opposite longitudinal movement of the spindle whereby to expand the sleeve into frictional contact with the walls of the member to secure the sleeve against rotation.

2. In an implement of the type described, a tubular member, a helically slotted sleeve positioned therein, a spindle, a lug on the spindle movable along the slot of the sleeve, means at the lower end of the member for limiting outward movement of the spindle, spring means within the member yieldably urging the spindle outwardly thereof and a cap on the upper end of the member, said sleeve being loosely mounted in the member with its ends abutting the cap and the lower end of the member respectively whereby said sleeve is expanded against the walls of the member by the longitudinal movement of the spindle to frictionally secure the sleeve against rotation.

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