

E. BALTZLEY.
CULINARY BEATER.

No. 332,375.

Patented Dec. 15, 1885.

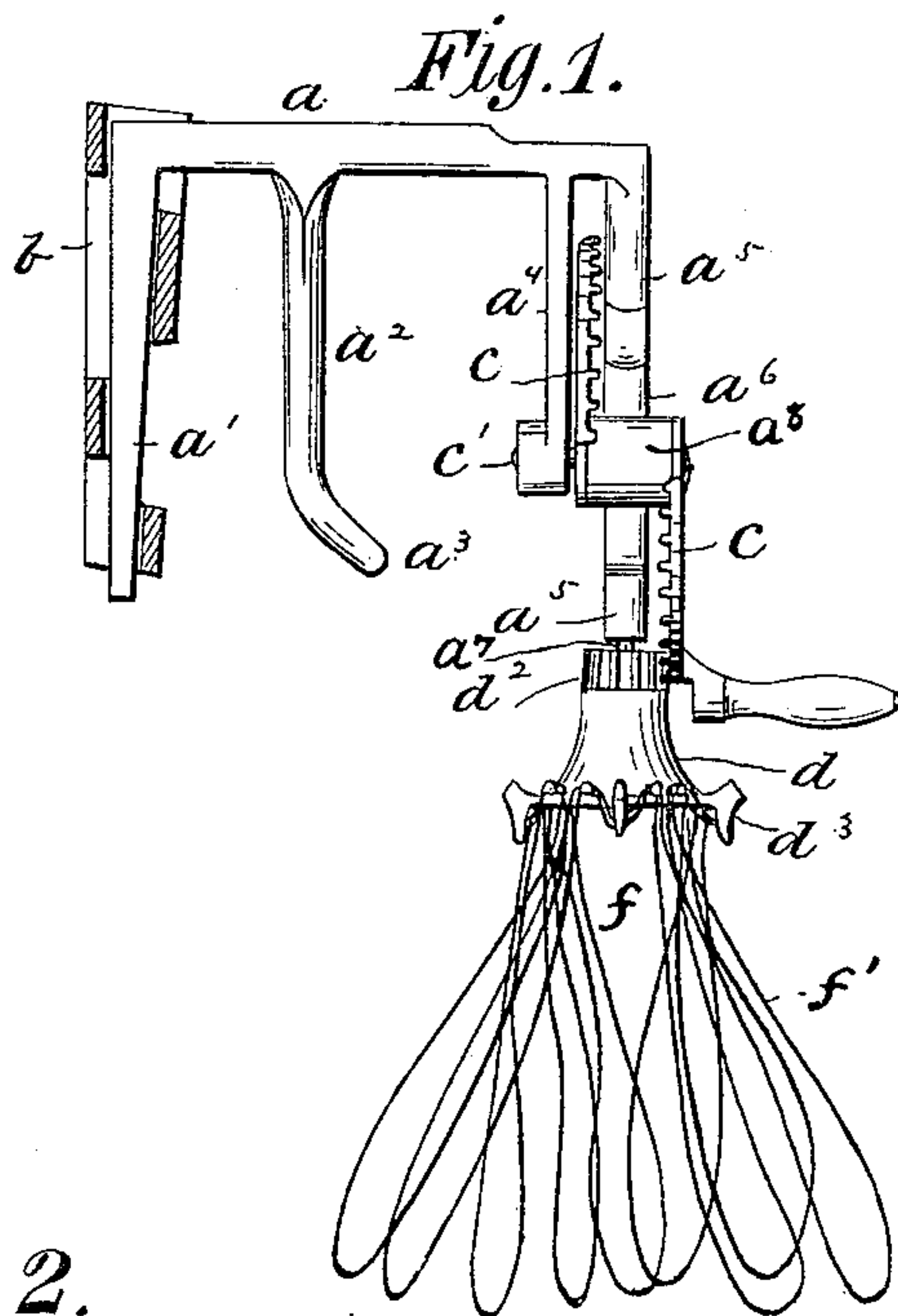


Fig. 2.

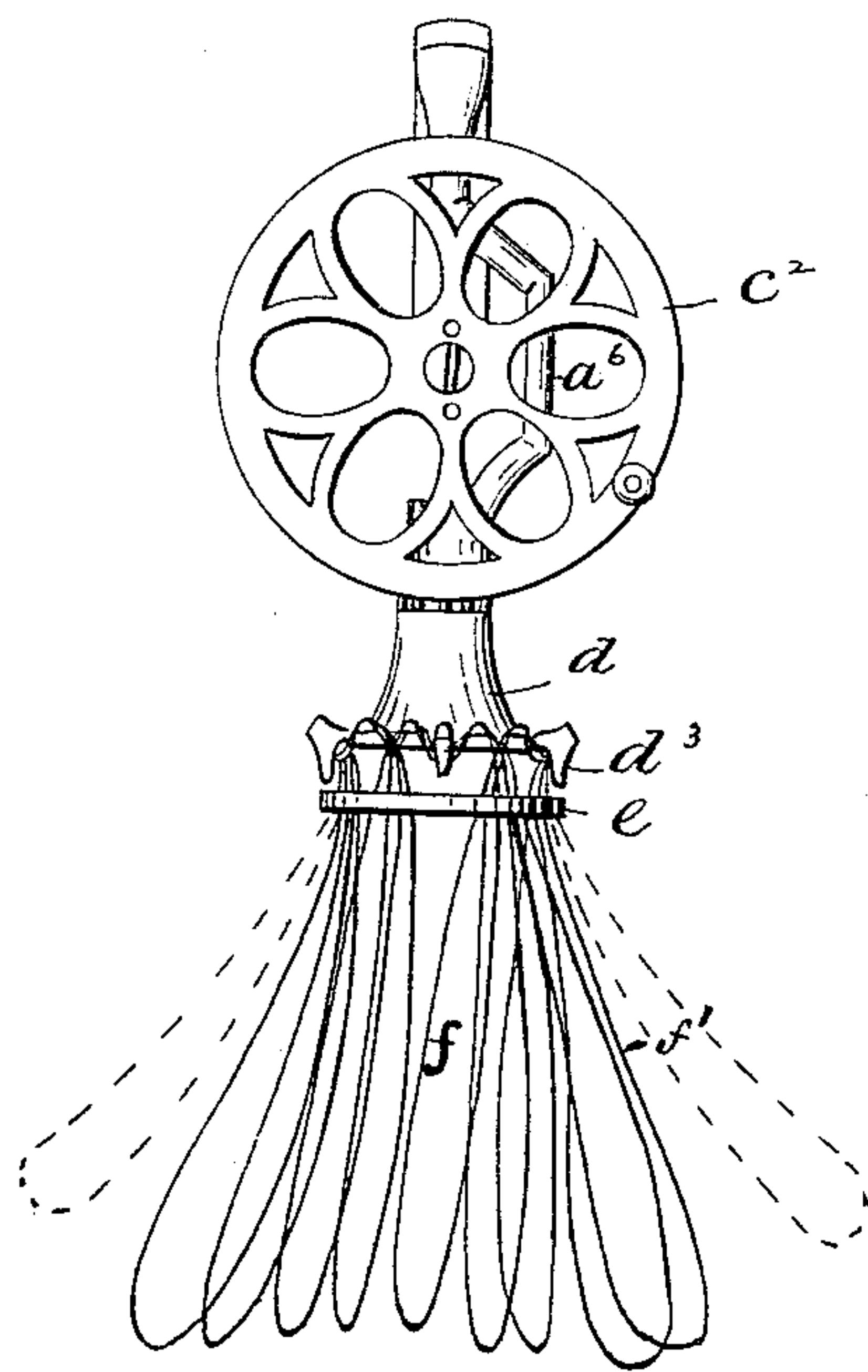
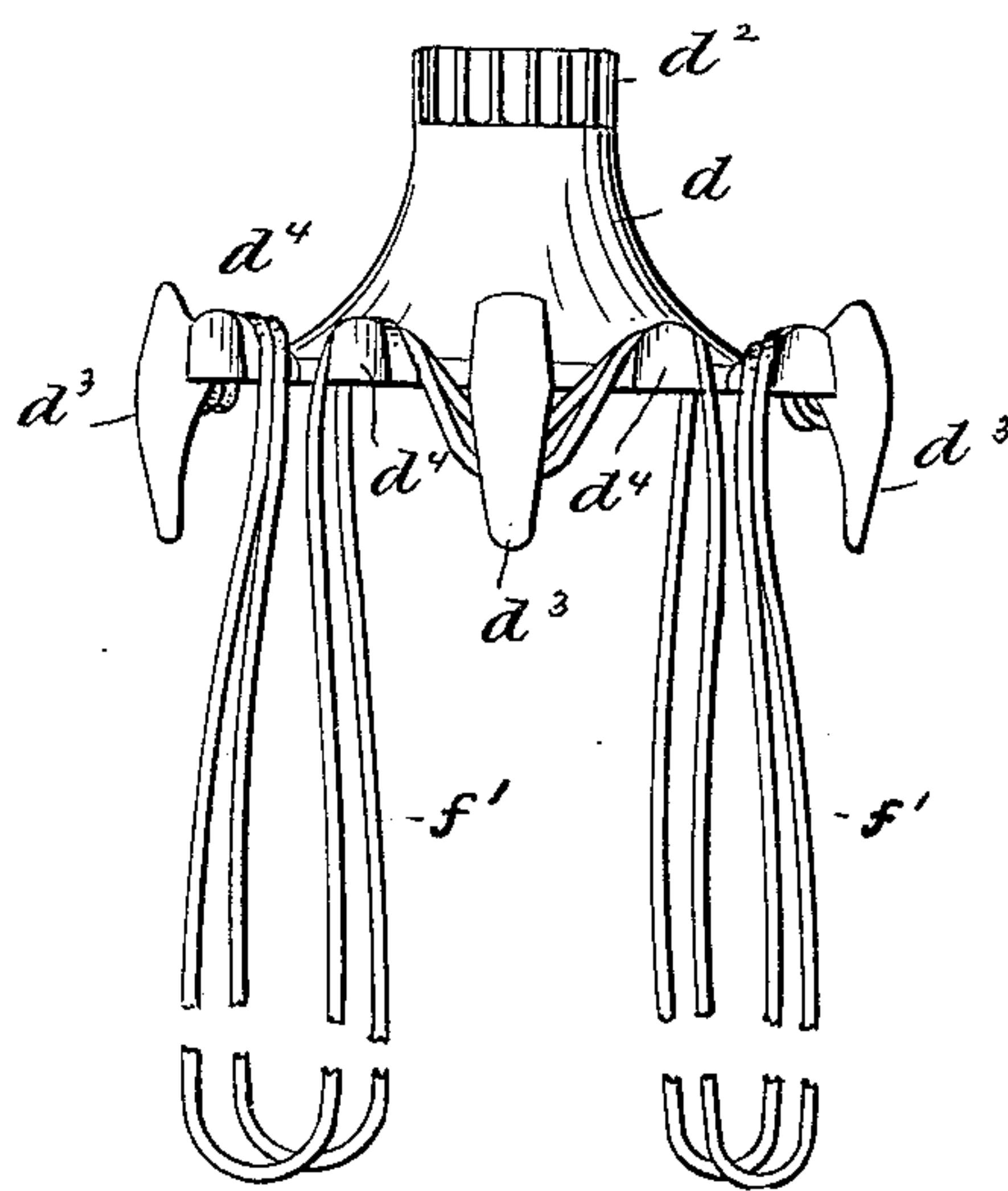


Fig. 3.



Witnesses.
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(No Model.)

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Fig. 4.

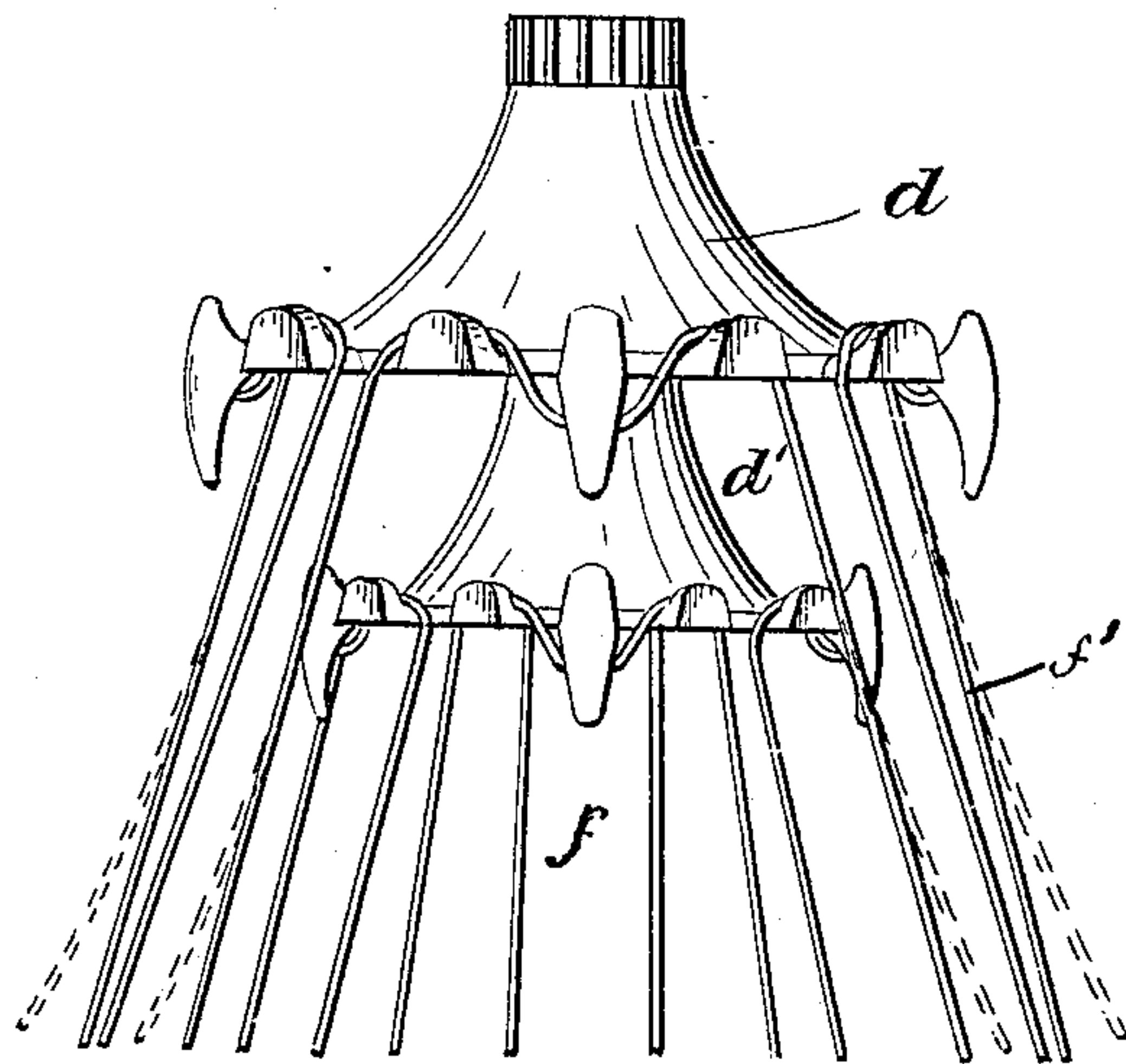


Fig. 6.

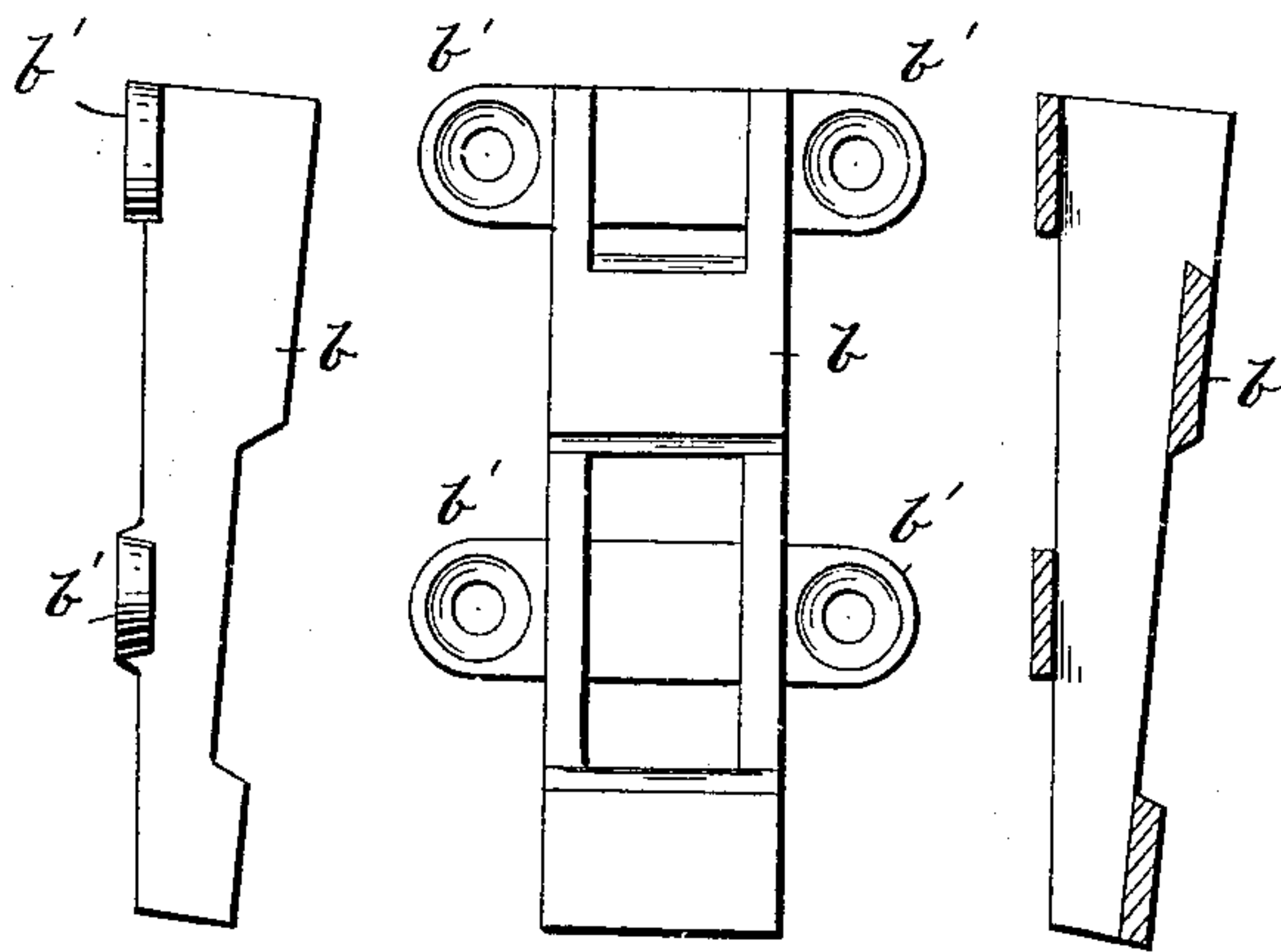


Fig. 5.

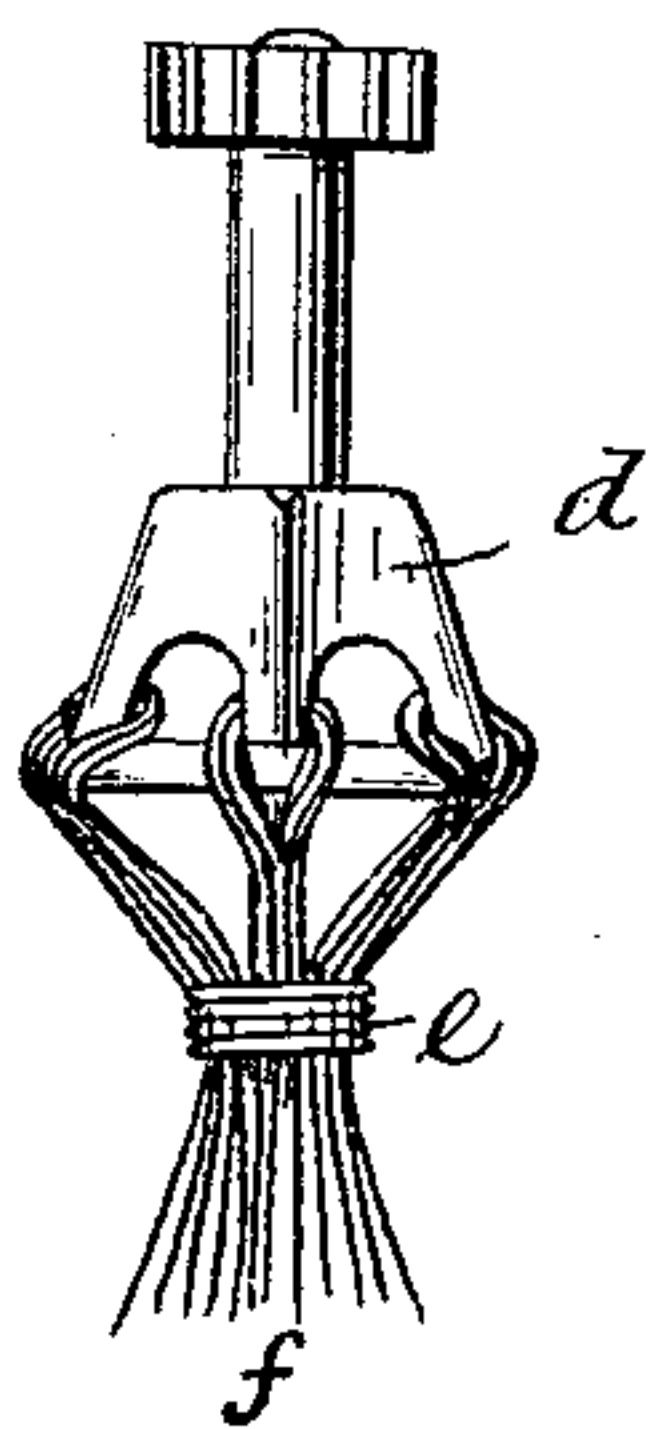
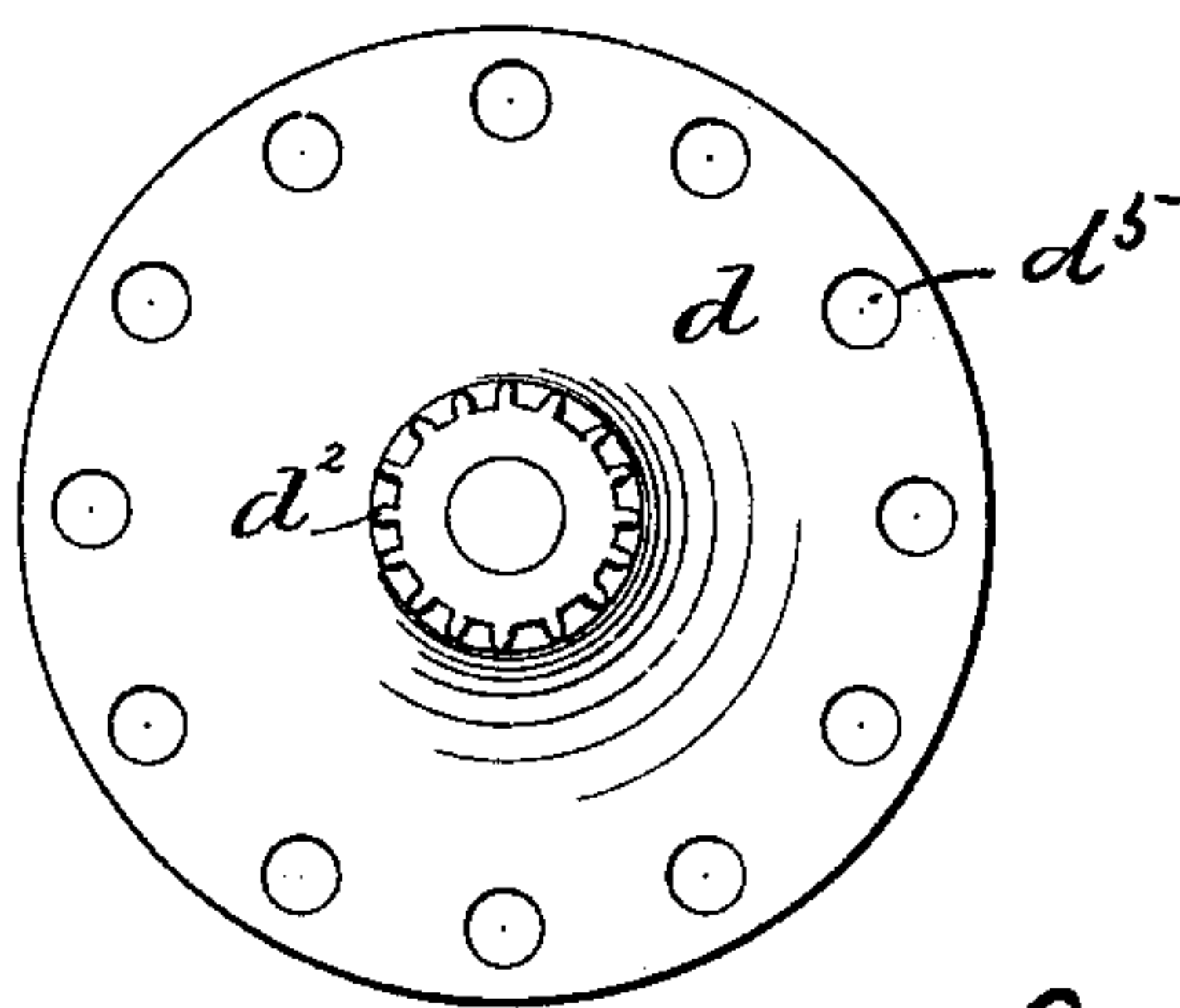


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN BALTZLEY, OF WASHINGTON, DISTRICT OF COLUMBIA.

CULINARY BEATER.

SPECIFICATION forming part of Letters Patent No. 332,375, dated December 15, 1885.

Application filed March 25, 1885. Serial No. 160,114. (No model.)

To all whom it may concern:

Be it known that I, EDWIN BALTZLEY, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Culinary Beaters; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of devices for whipping cream, mixing batters, beating eggs, and other like processes in culinary operations.

The object of the invention is to provide means whereby the material to be operated upon will be drawn or thrown by centrifugal force from the center toward the outer part of the vessel containing it, and then be operated upon by a whipper composed of a series of whipping arms or fingers arranged and operated, as hereinafter more fully explained.

It consists in a revolving beater-head and an expansible whipper secured to the beater-head, and expanding or enlarging by centrifugal force.

It consists, further, in making the whipper of a series of arms or fingers having their upper ends fixed to a revolving head, and having their lower ends detached and free, so that each arm moves independently and uncontrolled by any of the other arms.

It further consists in flexible and expansible whipper-arms, for the purpose of giving a variety of movements to each arm in motion.

It also consists in making the arms in the form of loops.

It consists, further, in the novel construction and arrangement of the several parts, hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation showing the bracket in section, and also showing two segmental cog-racks arranged to give a reverse rotary movement to the beater-head. Fig. 2 is an end elevation in which is shown a simple gear-wheel arranged to give a continuous rotary movement to the beater-head.

Fig. 3 shows the peculiar construction of the beater-head and the method of looping the arms of the whipper around the projections. Fig. 4 shows a double beater-head adapted to carry the two series of whipping-arms. Fig. 5 shows a different construction of the rotary head. Fig. 6 shows in detail the bracket to be secured to the wall, or other suitable support, to receive the shank of the beater-frame. Fig. 7 is a plan of a beater-head having peripheral perforations instead of projections.

a is the frame, having the shank a' adapted to slip into the socket in the bracket b . It is also provided with the depending arm a^2 , arranged near to and having its lever end a^3 bent outward or away from the shank a' . The shank a' and the arm a^2 together provide a handle, which may be grasped and held easily in the hand while the whippers are operated in the bowl containing the material to be beaten. At the opposite or front end of the frame there is a depending outer arm, a^5 , which is bent laterally at a^6 , midway its ends, in order to permit the rotation of the shaft of the operating-gearing. A second depending arm, a^4 , is arranged close to and parallel with the outer arm, a^5 , and has its lower end arranged opposite to the middle of the bend a^6 in the arm a^5 . The arm a^5 is provided with a depending pin, a^7 , on which the beater-head revolves. The arm a^4 has a pin, c' , projected horizontally and beyond the outer face of the arm a^5 , and adapted to carry the operating-gears. I employ two semicircular or segmental gears, c c , or a single gear-wheel, c^2 , as may be preferred. The segment-gears are employed to give reverse rotary movement to the beater-head. The single gear-wheel is used when a continuous rotary motion is desired. I place on the pin c' a sleeve, a^8 , against which the gears are clamped. When the two segment-gears are employed, the sleeve is between them, as shown. When the single gear-wheel is used, the inner end of the sleeve bears against the depending arm a^4 , while the outer end supports the gear-wheel. I so construct the device that the wheel c^2 and the sleeve may be taken off and the segment-gears put on. This change requires only a few moments of time, and the cost of the additional gearing for such interchange is very insignificant. I am thus en-

abled to furnish a machine which can be used in the two movements described.

d is the beater-head, made single, as shown in Fig. 3, or double, as shown at d' , Fig. 4. It 5 revolves in a horizontal plane and is journaled on the depending pin a' on the lower end of the arm a^5 . It is provided on its upper side with a pinion, d^2 , which meshes with the operating-gear. It also has a series of openings 10 on or very close to its periphery or rim, through which the flexible wires, out of which I preferably form the whippers, are passed and bent, so as to hold firmly in the positions given. The opening may be formed by perforating 15 the rim, as shown in Fig. 7, by drilling, or in the casting of the beater-head. The said head may be made open or of skeleton form, as shown in Fig. 5.

While openings, as described, may be employed they are somewhat inconvenient. I 20 prefer to form the openings by a series of peripheral notches or openings between two series of hooked projections, d^3 d^4 . The hooks of one of these series turn upward and the 25 hooks of the other series turn downward. The two series alternate in position. The hooks arranged as described will prevent the whippers from becoming detached. I sometimes, however, employ a small retaining ring or 30 band, e , Figs. 2 and 5, to give greater security to the fastening or hold of the whipper.

The manner of looping the wires will be more fully described hereinafter.

In Figs. 3 and 4 I have shown a larger wire 35 adapted for mixing or whipping stiff batters of any kind. The whipper f is composed of a series of arms, f' , which are secured to the rotary head d by any suitable means, preferably by looping, as shown.

40 I do not confine myself to the use of a long piece of wire looped on the projection on the rotary head. Each arm can be separate from all others, and it could be secured by having its upper end inserted in a small opening or 45 perforation in the rotary head and made fast by any well-known means. I prefer to use a long wire, as shown, because of the ease with which it may be applied. The arms f' are arranged around the rotary beater-head 50 and are flared outward at their lower ends. This arrangement disposes the arms so as to leave a central open space between their lower ends. When a bunch of fine wires are used, as in Fig. 5, no open space appears; but the 55 fine wires are so disposed relatively to each other that they do not interlock, but remain free to be bent outward by the centrifugal force exerted in the rotary movement of the beater-head. The whipper-arm f' may be 60 made straight and of a single wire or bar, as shown in Fig. 4. In this instance they may be made of wood or any other suitable material. They may be made stiff and flexible, or they may be made flexible so that they will 65 bend outward at their lower ends when in motion, as shown in dotted lines.

While a single circumferential row of whip-

per arms, such as is shown in the outer row in Fig. 4, will do efficient work, particularly when used in bowls of small diameter, yet I 70 prefer to so arrange the said arms as to provide two or more rows arranged one within the other. I do not limit myself to the use of a round wire. A flexible flat bar may be used.

In Figs. 1, 2, and 3 I show the whipper- 75 arms composed of two wires united at their lower or free ends, as shown, thus forming a loop. These double arms are made by bending the wire into the form shown. This double arm is set at an angle to the line of motion, 80 so that its wings will not travel in the same path. Each double or looped whipper arm is so arranged that it will not interlock with any other of its series. It is free to bend outward as the beater is revolved. When the loop- 85 whippers are in motion, no one follows in line with the preceding one. Every particle of the material is brought in contact with the whipper-arms in two or three revolutions of the beater-head. By this loop form the wings 90 composing the loop are held apart, a rigidity is given to the arm at its junction with the rotary head, while a flexibility is allowed throughout its entire length. The arms composing the whipper are also arranged upon the rotary 95 head in groups, as shown. The object of this is to stiffen them more effectually at their junction with the rotary head, and a short way down, by making them support each other. This arrangement combined with the loop 100 distributes the flexibility properly throughout the length of the arm.

The wires or arms are applied to a beater-head having hooked projections by bending 105 over the upward-turned and under the downward-turned projections. The projections which are turned downward have a longer hooked end, so that they effectually prevent any jumping of the wires out of position.

In the operation of my invention the mate- 110 rial to be beaten is drawn from the center outward toward the sides of the vessel containing it and concentrated in the path of the whipper-arms, leaving the space immediately below the rotary head clear or without any 115 material. The numerous whipper-arms following so closely one another and in different lines of travel rapidly come in contact with every part of the contents of the vessel and speedily mix and aerate it. The con- 120 tents of the vessel being driven toward the side, leaves the center open or vacant and exposes a much larger portion of the material to the air. The rapidly-revolving arms cause an inward current of air between their upper 125 ends into the central space, and then drive the said air into the batter or contents of the vessel by centrifugal force, the same as the batter is carried to the sides. Eggs and cream require more air than cake-batter to effect a 130 thorough beating. In these cases a vessel of diameter but little greater than the diameter of the circle made by the whippers when in motion and expanded facilitates rapid beat-

ing, for the reason that the eggs or cream is forced high up the sides of the vessel, whereby it is concentrated in a greater degree in the path of the arms and a larger surface is exposed to the action of the agitated air. In very stiff batter the elastic whippers perform a greater variety of movements, whereby a more thorough mixing is effected. This variety of movement is caused by the velocity of revolution and the varying resistance in the ever-changing form and consistency of the batter.

The flexible or expansible arms enable me to use vessels of different sizes, and at the same time get the benefit of the sides of the vessel to facilitate beating.

The whipper can be compressed into a small vessel, while in a large vessel it expands to the sides thereof when rotated.

Instead of the said loop construction the cross-head might be provided with carriers for supporting the whipper-arms, pivoted on one end to the rotary head and swinging outward in the plane and in the direction of revolution of said head.

The free end of the arms may be connected by spring with the cross-head, so that normally they will lie close to said head, but will under centrifugal force move outward or expand.

Other modifications may be effected without despoiling the spirit of the invention. Again, the expansible whipper, instead of being constructed as hereinbefore described, may be made in the following manner: A series of continuous whipper-arms may be extended from one side of the rotary head to the other and properly attached, forming whipper-arms semi-oval in their vertical plane. They should be made thin near their junction with the rotary head, to give them flexibility at that point, and just below these thin portions they may be thickened or enlarged into bulbs to give weight. Again, below and extending between the bulbs they are made thin and flexible. A whipper constructed in this manner will, when rapidly rotated, expand horizontally and will contract in its vertical length.

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

1. A culinary beater or whipper the arms of which are expanded outward and held in their expanded positions by centrifugal force, whereby the said beater or whipper is enlarged in its diametric length, substantially as set forth.

2. The combination of the revolving beater-head having notches or openings formed around its rim, and a whipper composed of depending arms, two or more of said arms being formed from a single rod or wire bent at its middle portions and interlocked in the peripheral notches or openings, whereby the arms are rigidly attached to the revolving beater-head, substantially as set forth.

3. The combination, with the revolving

beater-head having peripheral notches or openings, whereby means are provided for attaching the whipper-arms, of the flexible whipper-arms having their upper ends bent and interlocked in the peripheral notches or openings and arranged in groups, the shanks of the wires composing each group being secured in close contact, whereby the one wire or rod is strengthened or stiffened by its contact with another, substantially as set forth.

4. In a culinary beater, the combination of a revolving beater-head and a series of flexible or elastic springing whipper-arms having their upper ends secured to the rotary beater-head and their lower ends detached, whereby they may bend independently of each other, substantially as set forth.

5. The improved beater hereinbefore described, composed of a revolving beater-head and a series of loop-shaped double whipper-arms depending from the beater-head, and having their lower ends disposed in a circular row surrounding and inclosing a central open space, the said space being in line with the axis of the beater-head, substantially as and for the purposes set forth.

6. In a culinary beater, the combination, with the revolving beater-head, of a series of depending whipper-arms detached at their lower ends and having their upper ends disposed in two or more circular rows concentric with the axis of the beater-head, substantially as set forth.

7. In a culinary beater, the combination of a revolving beater-head and a series of whipping-arms depending from and revolving with the beater-head, and having their lower ends flared outward, substantially as set forth.

8. The combination of the revolving beater-head having notches or openings formed around its rim, and provided with hooked projections arranged between each two adjacent notches or openings, and the whipper-arms, two or more of which arms being formed from a single rod or wire having its middle portions bent or twisted around the said hooked projections, whereby the said arms are secured rigidly to the beater-head, substantially as shown and described.

9. The hereinbefore described beater-head for revolving whippers, provided with a series of hooked projections on its periphery, and arranged transversely to the rim thereof, and having notches or openings formed between the adjacent projections to receive the upper ends of the flexible whipper-arms, substantially as set forth.

10. The combination, with the revolving beater-head and the gearing for operating the beater-head, of a frame adapted to carry the said beater-head and gearing, and having the rear extension provided with the depending shank a' , and a depending arm, a'' , arranged near to the shank a' , as shown, substantially as and for the purposes set forth.

11. The combination, with the revolving beater-head and the gearing for operating

the said head, of the supporting-frame provided with an outer arm, a^5 , bent laterally midway its ends, and with the depending arm a^4 , arranged near to and parallel with the outer arm, a^5 , the said beater-head being supported on the outer arm, a^5 , and the operating-gearing supported on the inner arm, a^4 , substantially as and for the purposes set forth.

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

EDWIN BALTZLEY.

Witnesses:

P. B. TURPIN,
C. S. COTTON.