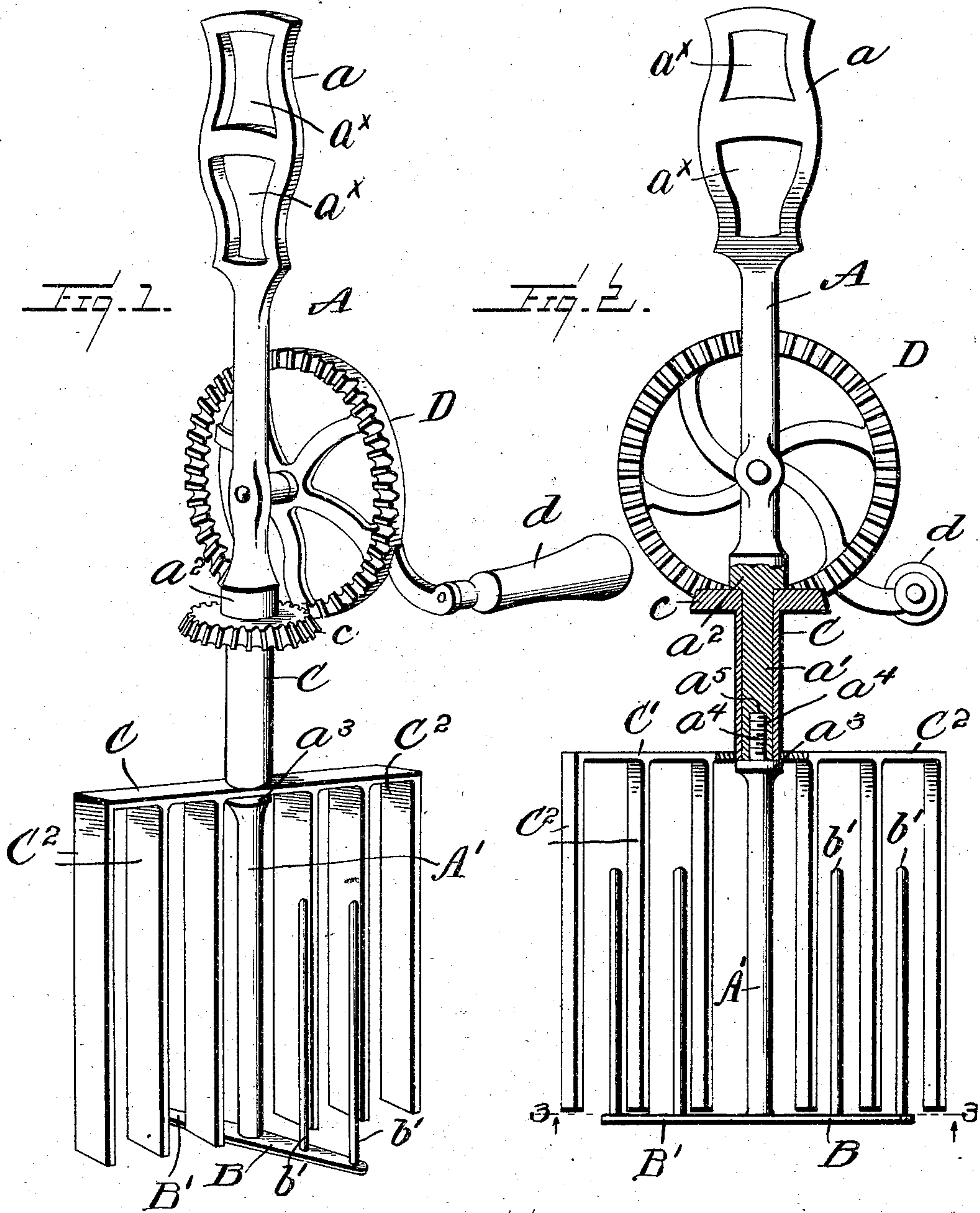


No. 785,249.

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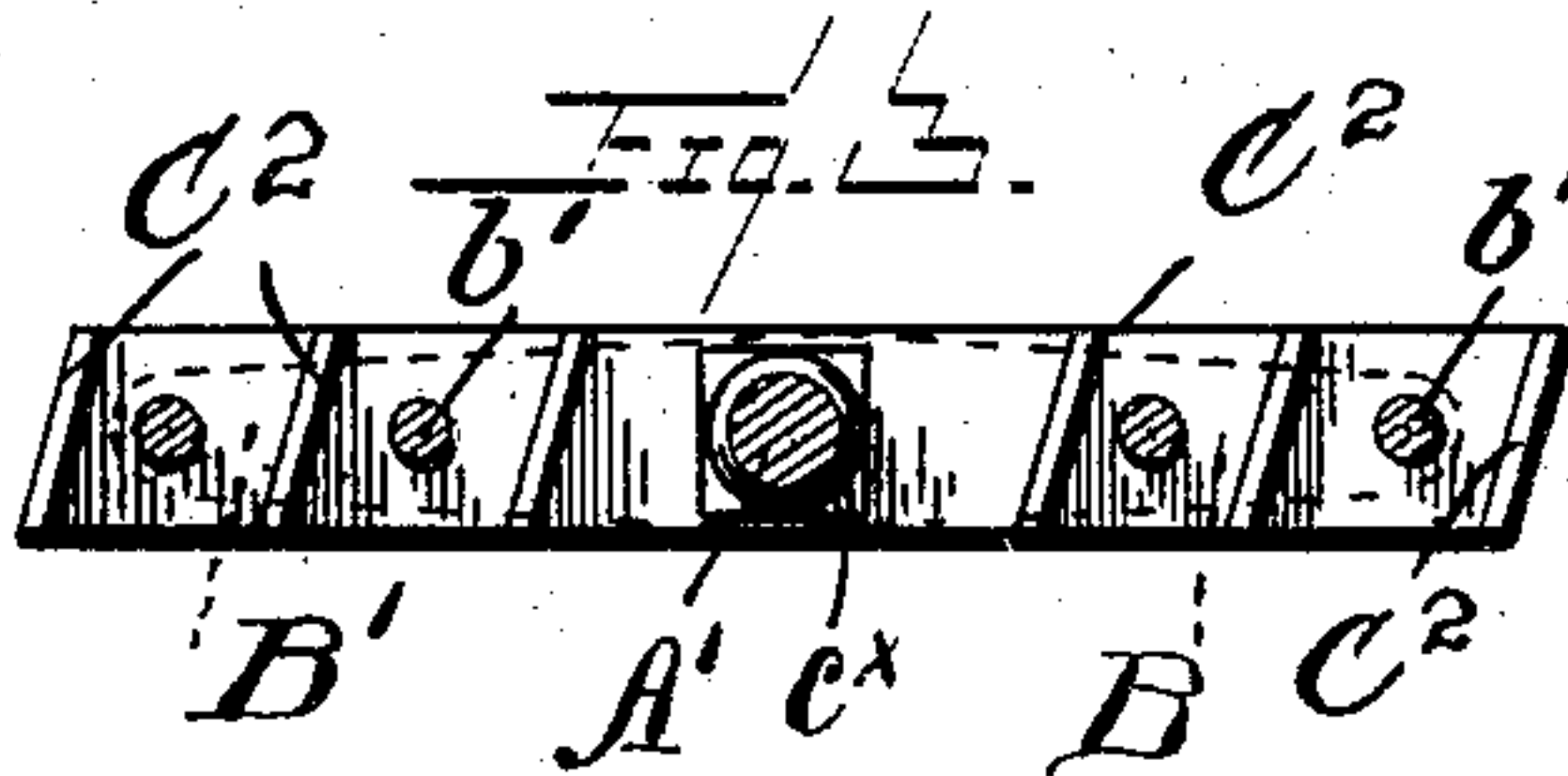
N. C. BURNHAM.
MIXING DEVICE.

APPLICATION FILED JUNE 11, 1904.



WITNESSES:

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UNITED STATES PATENT OFFICE.

NAOMI C. BURNHAM, OF JOHNSTOWN, NEW YORK.

MIXING DEVICE.

SPECIFICATION forming part of Letters Patent No. 785,249, dated March 21, 1905.

Application filed June 11, 1904. Serial No. 212,115.

To all whom it may concern:

Be it known that I, NAOMI C. BURNHAM, a citizen of the United States, residing at Johnstown, in the county of Fulton and State of New York, have invented certain new and useful Improvements in Mixing Devices; 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.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and the invention is fully disclosed in the following description and claims.

Referring to the drawings, Figure 1 is a perspective view of a mixing apparatus embodying my invention. Fig. 2 is a side elevation of the same, parts being shown in section. Fig. 3 is a horizontal section on line 3 3 of Fig. 2 looking in the direction of the arrows.

The object of my invention is to provide a machine or apparatus for cutting and mixing or mixing plastic substances, materials, and liquids, or either—such as dough for bread, cake, &c., ice-cream, paint, &c., beating eggs, whipping cream, and the like—which shall thoroughly beat, cut, or mix the material treated without concentrating it at the center or around the periphery of the rotating parts and which will not splash or throw the material out of the receptacle in which it is treated.

In the form of machine or apparatus illustrated in the drawings, A represents a supporting-standard intended in this instance to be maintained stationary and in a vertical position by hand. The upper end of the standard A is provided with a handle portion a , having apertures a^x formed therein for the insertion of the fingers in order to insure a firm grip of the standard by the operator.

The standard A is provided substantially centrally with a bearing portion a' , above which is a shoulder a^2 and below which is a shoulder a^3 . I prefer to form the lower part A' of the standard separate from the upper

part for convenience in assembling the parts of the apparatus, and this detachable lower part A' is provided with the shoulder a^3 , above which is a threaded stem a^4 , which screws into a threaded hole a^5 in the main or upper part of the standard, the threads of the stem a^4 and hole a^5 being made left-hand threads to prevent the accidental disengagement of the parts.

The lower end of the standard is provided with laterally-extending arms B B', each provided with upwardly-extending cleaner-bars $b' b'$, arranged parallel to each other and forming forks which normally remain stationary when the apparatus is in operation.

C represents a sleeve mounted on the bearing portion a' of the standard A and provided with a pinion c for rotating it. At its lower end the sleeve is given a square (or polygonal) form externally and is fitted into and secured by riveting in a square (or polygonal) aperture in a cross-bar c' , as shown at c^x in Fig. 3.

The cross-bar c' is provided on each side of the sleeve C with downwardly-extending parallel knives or blades c^2 , which are perpendicular to the bars c' , but are also arranged at an angle to a radial line passing through the axis of rotation of the sleeve. I have determined by experiment that the angle shown in the drawings gives the most satisfactory results in actual practice. The engagement of the squared portion of the sleeve with the cross-bar carrying the knives or blades affords a strong connection between these parts and prevents any possibility of the cross-bar turning with respect to the sleeve. The knives or blades c^2 extend between the cleaner bars or forks $b' b'$, as shown, and there may be any desired number of the blades and cleaner-bars, as may be found most desirable for special applications of my invention.

The blades are designed to be rotated at considerable speed through the material to be treated and between the cleaner-bars. In operation the leading or forward edges of the blades cut through the material and the inclined lateral faces stir and mix the same, while the cleaner bars or forks serve to clean the knives or blades as they pass between them

and prevent the material from adhering too greatly to the blades where a plastic or sticky material is treated.

In the present instance the sleeve C and blades c^2 are rotated by hand by means of a driving gear-wheel D, mounted on standard A above the pinion c and having peripheral gear-teeth engaging the teeth of the pinion. The driving-wheel is provided with an operating crank or handle d for rotating the same. The knives or blades may, however, be rotated in other ways and by power, if desired.

I have found by practical experience that this apparatus is very effective and advantageous for use in mixing dough, in which its operation is so effective that the grains of flour are uniformly surrounded by the yeast or other moisture, making the resulting product light and easily digestible. The apparatus is also very effective in beating eggs, churning, creaming butter for cake or sauces, and for many other purposes which will suggest themselves.

In use it is found that there is no tendency of the material under treatment to concentrate at the center, to adhere unduly to the knives or blades, or to slop over the sides of the vessel in which the material is contained.

What I claim, and desire to secure by Letters Patent, is—

1. In a mixing device, the combination with a rotary part, provided with a series of parallel blades, located at different distances from the axis of rotation of said rotary part, and disposed obliquely to a radial line passing through said axis, of a series of independent vertically-disposed cleaner-bars arranged at different distances from the axis of rotation of said rotary part, the said blades being arranged to pass between said cleaner-bars, whereby the material treated will be cut by the leading edge of each of said blades and mixed by the lateral faces thereof, substantially as described.

2. In a mixing device, the combination with a rotary part provided with a series of parallel blades located at different distances from and on both sides of the axis of rotation of said rotary part and disposed obliquely to a radial line passing through said axis, of a series of independent, vertically-disposed cleaner-bars, located at different distances from the

axis of rotation of said rotary part and on both sides of the same, the said blades being arranged to pass between the said cleaner-bars, whereby the material will be cut by the leading edge of each of said blades and mixed by the lateral faces thereof, and whereby concentration of the material treated, at the center or outer edges of the rotary part, is avoided, substantially as described.

3. In a mixing apparatus, the combination with a vertically-disposed standard, provided at its upper end with a handle for holding it stationary and in a vertical position, of laterally-extending arms connected to the said standard at its lower end, and provided with upwardly-extending stationary cleaner-bars, of a sleeve mounted on said standard, a cross-bar secured thereto and a series of knives or blades secured to said cross-bar and extending downwardly therefrom and alternating with the said cleaner-bars, said knives or blades being parallel and disposed obliquely to a radial line from their axis of rotation and means for rotating said sleeve and knives, substantially as described.

4. In a mixing apparatus, the combination with the standard provided with a bearing portion, terminating at its upper end in a shoulder and a detachable lower portion provided with a shoulder adapted to engage the lower end of said bearing portion and having a threaded connection with the upper part of said standard, of lateral arms secured to the lower end of said standard and provided with a series of vertically-disposed cleaner-bars, a sleeve mounted on said bearing portion of the standard and having a polygonal portion at its lower end, a cross-bar having a polygonal aperture engaging the polygonal portion of the sleeve, a series of depending knives or blades secured to said cross-bar, and alternating with said cleaner-bars, said blades being disposed obliquely to a radial line from the axis of rotation of said sleeve and means for rotating said sleeve, substantially as described.

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

NAOMI C. BURNHAM.

Witnesses:

GEORGE B. COLE,
KITTE WARNER.