No. 846,751. PATENTED MAR. 12, 1907.

C. T. MELVIN.

MIXING DEVICE.

APPLICATION FILED APR. 3, 1906

Fig. 1.

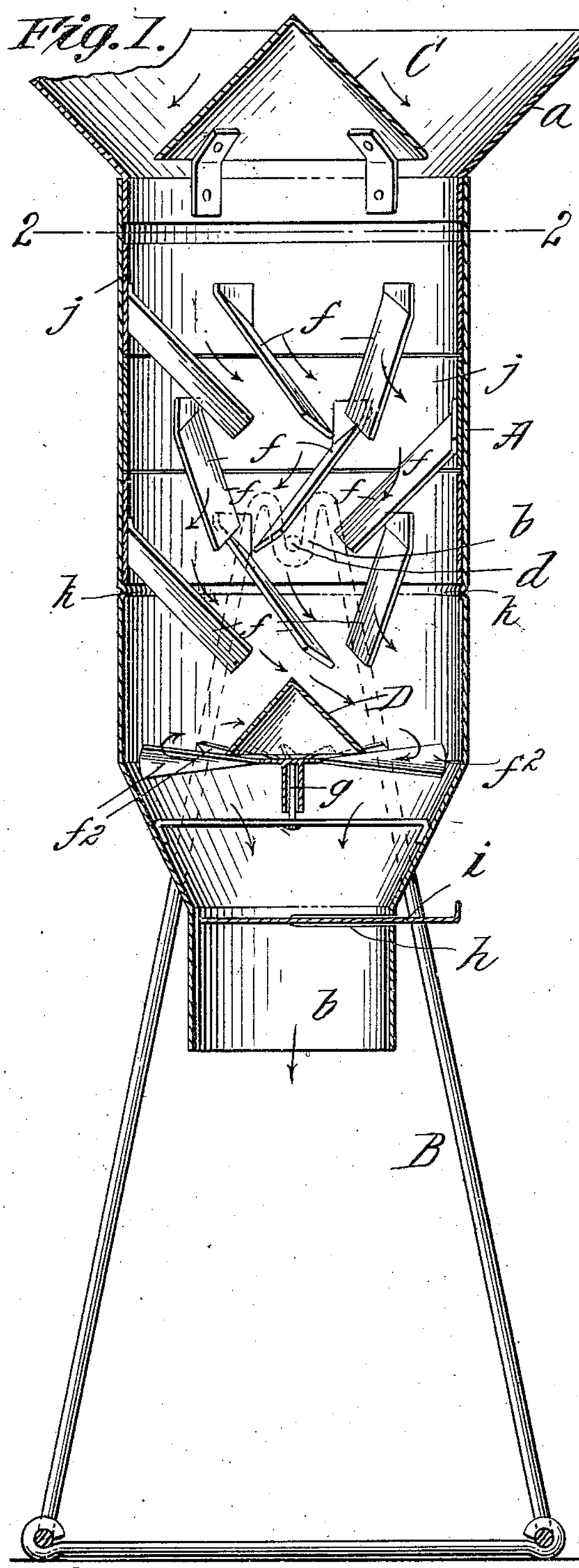


Fig. 2.

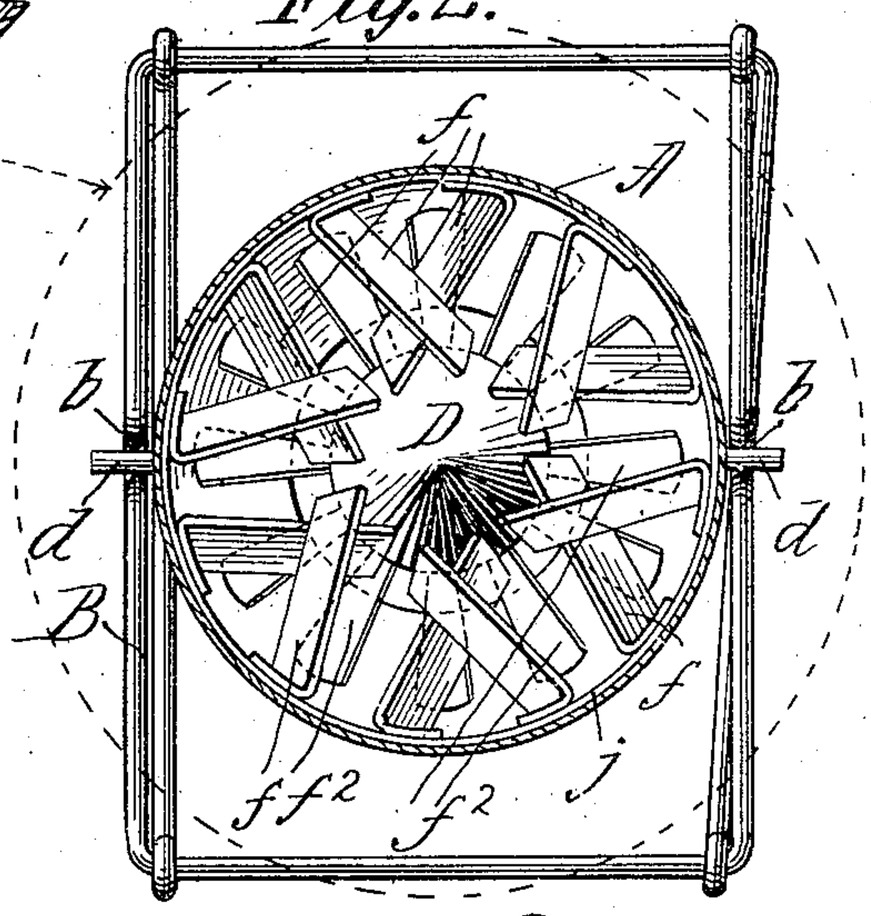


Fig. 3.

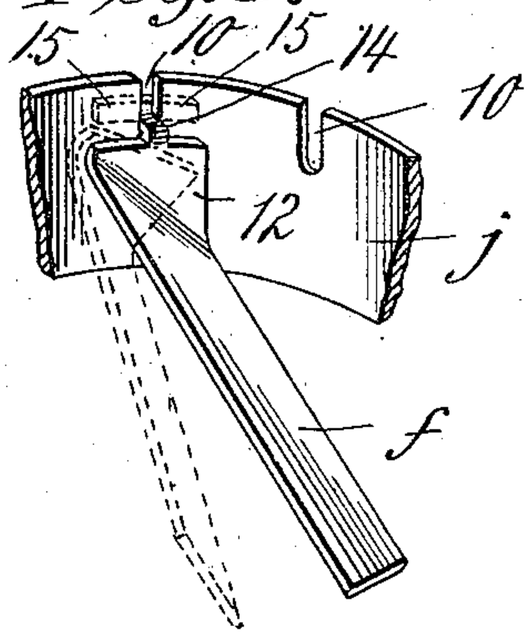
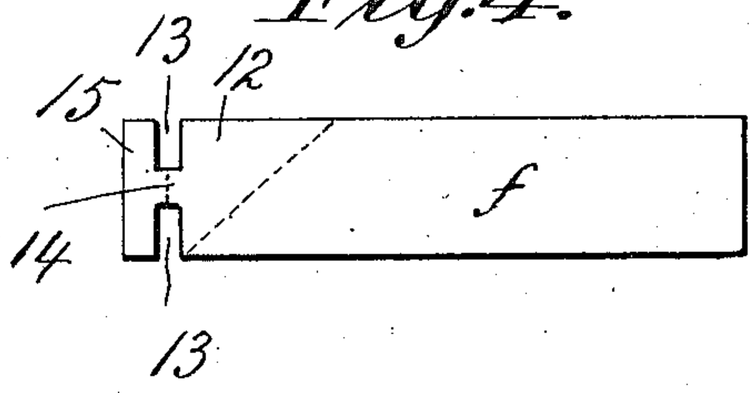


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES T. MELVIN, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ELMER BEEBE, OF HOLYOKE, MASSACHUSETTS.

MIXING DEVICE.

No. 846,751. Specification of Letters Patent. Patented March 12, 1907.

Application filed April 3, 1906. Serial No. 309,606.

To all whom it may concern:

Be it known that I, CHARLES T. MELVIN, a citizen of the United States of America, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Mixing Devices, of which the following is a full, clear, and exact description.

This invention relates to a device for thoroughly mixing and intercommingling various materials and commodities—such, for instance, as teas, ground coffees, or different kinds of flours or meals.

An object of the invention is to provide a means which is not only effective for the most complete and thorough mixing of the materials, but enables the accomplishment thereof without the necessity of the hands coming in contact with the material which is mixed.

As an example of the availability of the device made in accordance with this invention, it will be mentioned that in tea-stores it is a common practice for the clerk at the time of selling mixed teas to place a portion of two kinds of tea in the scoop or receiver of the weighing-scale and to then with the hands effect the mixing before the tea is packaged and delivered. This custom is in many cases obnoxious, owing to the uncleanliness of the hands of the salesman, and therefore by the use of the present mixer the tea of different kinds placed and weighed in the scale is poured from the latter through my mixer, which also advantageously serves as a funnel for directing the material into a bag and is seen by the purchaser to come to him free from possible pollution.

The invention consists in a device having the parts in combination and arrangement hereinafter fully described, and set forth in the claims.

In the drawings, Figure 1 is a central vertical sectional view through the mixer. Fig. 2 is a plan view as seen below the section-line 2 2, Fig. 1. Fig. 3 is a perspective view showing details of construction hereinafter particularly referred to, and Fig. 4 is a plan view of a form of blank from which one of the blades of the mixer is made.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents an axially-vertical casing of cylindrical form having a flaring top portion *a* and a lower end delivery portion *b*, which is contracted or of decreased diameter.

This mixer, as shown, is supported on a frame B, which may practically be composed of wire, including opposite side uprights having in the upper portions thereof the sockets or bearings *b'* for trunnions *d*, provided at opposite sides of the casing A.

f f represent blades in series at different levels supported by and extended both downwardly and inwardly from the wall of the inclosing casing, and the blades of a given tier are inclined, as to their widths, reversing relatively to the cross-sectional inclination of the blades of the tier next therebelow. The blades in their inward and downward extensions are preferably non-radial relatively to the axis of the casing, but are extended in lines tangential to an imaginary circle somewhat outside of the casing-axis. The manner of the inward, the downward, and the transversal extensions and inclinations of the blades and the reversal of the relations of those of one tier relatively to the other will be clearly understood from the drawings, it being stated, however, that in the present drawings for the purpose of clearness a lesser number of blades are indicated than are actually usually used in the device.

C and D represent conical deflectors, the one, C, being shown as located within the top portion of the casing, while the one, D, has its location in the lower portion of the casing and below the lowest tier of deflector-blades. One of the conical deflectors is represented as made unitary with and rotatable in unison with a series of revoluble deflector-blades f^2, mounted on and revoluble about an axially-vertical shaft or bearing *g*. In the present instance the combined gate D and revoluble deflector-blades f^2 are represented as located in the lower part of the mixer-casing, while the cone C is represented as immovably supported; but the relations of these parts C and D f^2 may be reversed, or a conical deflector combined with revoluble deflector-blades like those f^2 may be mounted in the top portion of the casing in a similar manner to the parts rotatably mounted in the lower portion of the

casing and additional to such latter provisions.

The casing is shown as made with a slotway *h* horizontally within its wall near its bottom, in which a slide or gate *i* is movable to open and close the passage through the mixer-casing.

Usually the passing of the materials to be mixed through this apparatus once suffices for a thorough mixing thereof; but in some cases it may be desirable to place the same receptacle from which the material had been poured into the mixer under the latter for receiving again thereinto such material for an additional mixing before permitting the material to be delivered from the mixer into the paper bag, and in such cases the gate or slide valve *i* is made use of.

This device is preferably made by constructing a given set or series of the deflector-blades in combination with a supporting-ring *j* therefor fitting and engaging the rings and the sets of blades carried thereby one above the other within the casing-wall, the retention of such rings in their positions being by means of a supporting shoulder or bead *k*, on which the lower one of the several rings rests, while the rings thereabove are edgewise supported one from another.

By leaving the rings unconfined relatively to the wall of the casing they may be circumferentially adjusted so that the blades of one set may have their most advantageous relation to the reversely-inclined blades of the next set.

As represented in Figs. 3 and 4, the ring-sections are constructed with upwardly-opening slots 10, and the sheet-metal blades are made each with an attachment member 12, having opposite edge recesses or slots 13 13 with an intermediate neck 14, the blade proper, *f*, being in its length extended angular to the face of the attachment portion 12 and also properly inclined as to its width, and a detachable engagement is made with the ring-section slot by having the neck portion 14 bent in relation to the portion 12, as represented in Fig. 3, passed through one of the slots 10, the end portion 15 of the blank engaging against the outer side of the ring at opposite marginal portions of the slot 10.

By making the sectional rings *j* with a comparatively large number of slots 10 a greater or lesser number of blades may be detachably connected to the ring-sections, as the efficiency of the mixing device may require, and, as will be clear from the dotted lines in Fig. 3, the blades are capable of adjustment relatively to the rings which support them, so as to change their position radially and also their angle of transverse inclination in order to obtain a more efficient distribution and intercommingling of the materials to be mixed by the use of the device.

As manifest, the described device is of especial utility located adjacent the scales in a tea or other store, may be advantageously employed by chemists, and will be found very convenient as a household utensil.

I claim—

1. In a mixing device an axially-vertical cylindrical casing, open at top and bottom having therewithin several series of blades annularly arranged at different levels supported by and extended both downwardly and inwardly from the casing-wall, and the blades of a given series being inclined as to their widths reversely relatively to the cross-sectional inclination of the blades of the series next thereto.

2. In a mixing device an axially-vertical casing, open at top and bottom having therewithin several series of fixed blades annularly arranged at different levels, those of one series being inclined reversely from those of the series next therebelow, and also having therewithin an axially-rotatable shaft provided with a series of revoluble inclined deflector-blades.

3. In a mixing device an axially-vertical casing, open at top and bottom having therewithin several series of fixed blades annularly arranged at different levels, those of one series being inclined reversely from those of the series next therebelow, and having therewithin an axial shaft mounted on which is a series of revoluble inclined deflector-blades and also an upwardly-tapered conical deflector adjacent one of the end openings of the casing.

4. In a mixing device an axially-vertical casing, open at top and bottom having therewithin several series of fixed blades and arranged at different levels, those of one series being inclined reversely from those of the series next therebelow, and also having therewithin an axial shaft mounted on which is a series of revoluble inclined deflector-blades near one of the end openings of the casing and upwardly-tapered conical deflectors within the upper and lower portions of the casing.

5. In a mixing device an axially-vertical casing, open at top and bottom having therewithin several series of fixed blades annularly arranged at different levels, those of one series being inclined reversely from those of the series next therebelow, and also having therewithin an axial shaft mounted on which is a series of revoluble inclined deflector-blades and a centrally-located upwardly-tapered conical deflector made unitary and rotatable with said blades.

6. In a mixing device an axially-vertical cylindrical shell or casing open at top and bottom, having fitted and engaged therewithin a plurality of ring-sections one above another, each ring-section supporting a series of blades extended both inwardly and downwardly, and one series of the blades be-

ing inclined as to their widths reversely relatively to the cross-sectional inclination of the blades of the next series.

7. In a mixing device an axially-vertical cylindrical shell or casing open at top and bottom, having removably fitted and engaged therewithin a plurality of separate and independently-movable ring-sections one above another, each ring-section supporting a series of blades inwardly extended therefrom, several of the blades being as to their widths inclined downwardly reversely relatively to the transverse inclination of other of the blades.

8. In a device of the character described, a cylindrical casing open at top and bottom, a plurality of ring-sections fitted and confined at different heights therewithin and each constructed with upwardly-opening slots, and sheet-metal blades, each having an attachment member made with opposite edge recesses and an intermediate neck for detachable engagement with the slots of said ring-sections, the blades proper being as to their lengths extended angularly to the inner face of the ring-section, and inclined as to their widths, the inclinations of one set of the blades being reversed from those of the next set.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

C. T. MELVIN.

Witnesses:
WM. S. BELLOWS,
G. R. DRISCOLL.