Jan. 21, 1958 L. DACHÉ 2,820,619

POWDER BLENDING DEVICE

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Fig. 1.

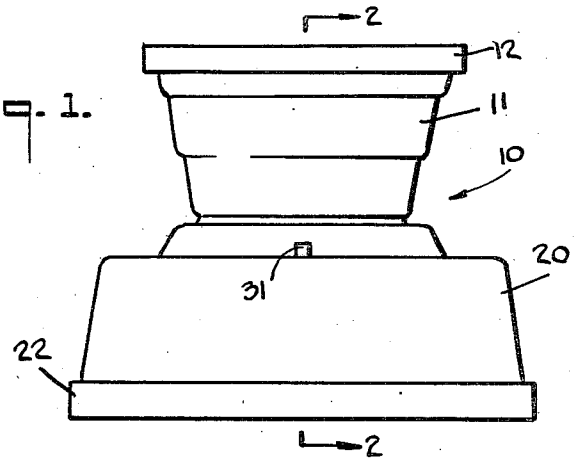


Fig. 2.

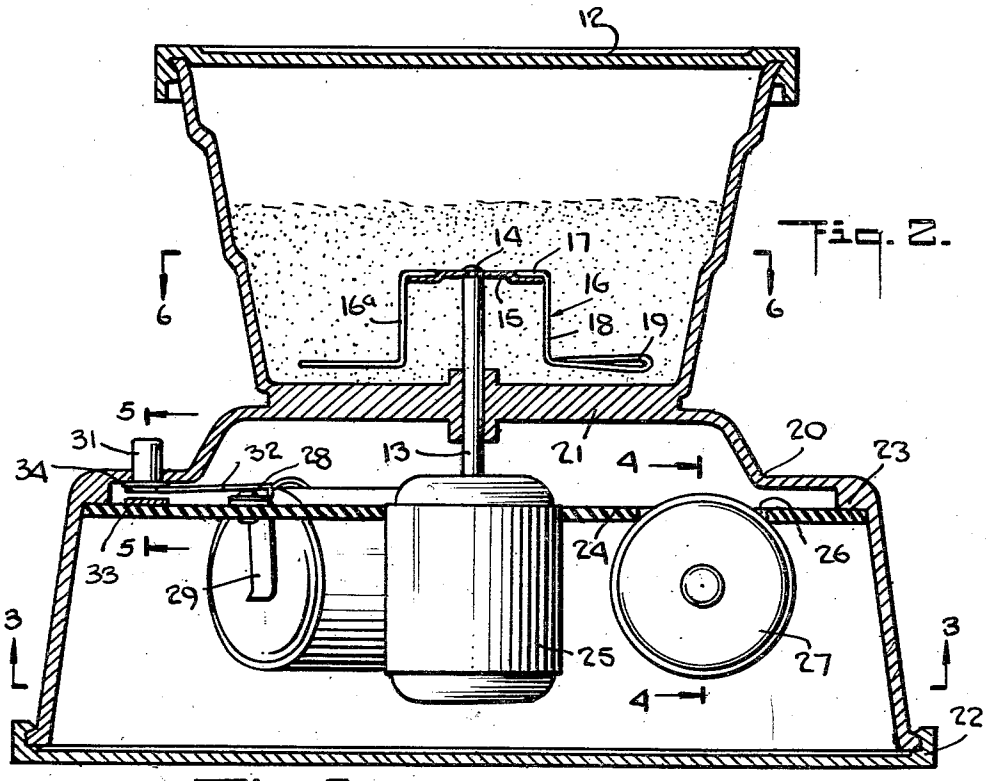
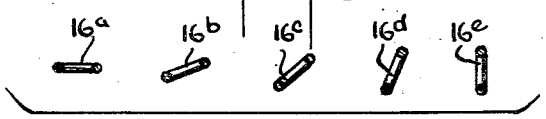


Fig. 7.



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Fig. 3.

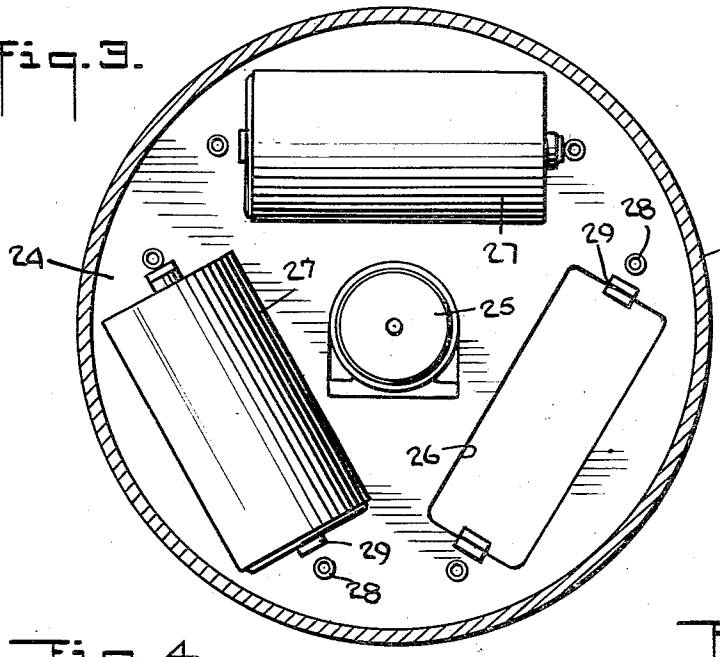


Fig. 4.

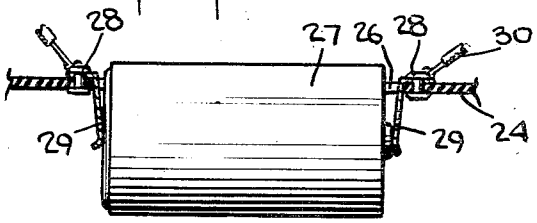


Fig. 5.

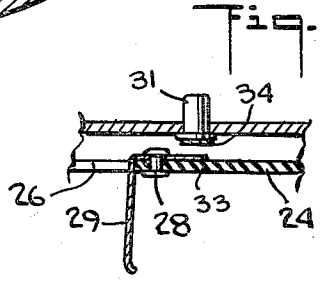
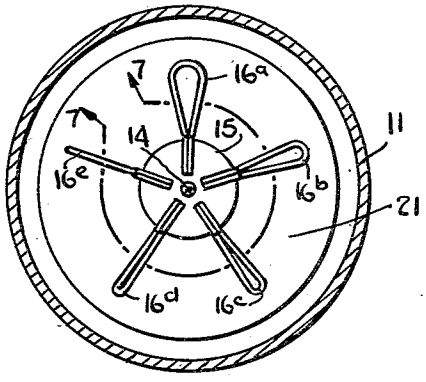


Fig. 6.



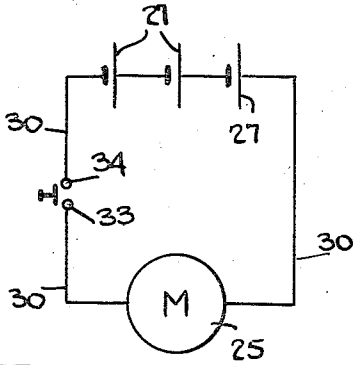


Fig. 8.

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2,820,619

POWDER BLENDING DEVICE

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Application June 24, 1955, Serial No. 517,678

1 Claim. (Cl. 259—107)

This invention relates to powder mixing devices and more particularly to an apparatus for mixing or blending face powders of various shades so as to derive a desired blend. As a general matter, such devices are utilized to produce a "personal" blend or mixture which conforms to an individual's requirements.

Pursuant to the instant invention, a device is disclosed which quickly and efficiently mixes a plurality of powder batches so as to achieve a fine and accurate blending thereof without objectionable streaks. The device utilizes a plurality of beaters or mixers and these are so arranged as to effect uniform blending over a relatively wide area while, in effect, sifting the powder through the beaters themselves which are of substantially loop form. The device is further such as to avoid, as far as possible, such undue vibration of the entire structure as would tend to spill powder or disperse a spray thereof from the device when the device is in operation.

The invention will be further understood from the following description and drawings in which:

Figure 1 is a front elevational view of the improved powder blender;

Figure 2 is an enlarged cross-sectional view as taken along the line 2—2 of Figure 1;

Figure 3 is a cross-sectional view as taken along the line 3—3 of Figure 2;

Figure 4 is a cross-sectional view as taken along the line 4—4 of Figure 2;

Figure 5 is a cross-sectional view as taken along the line 5—5 of Figure 2;

Figure 6 is a reduced cross-sectional view as taken along the line 6—6 of Figure 2;

Figure 7 is a developed view of the beaters per se as taken along the line 7—7 of Figure 6; and

Figure 8 is a schematic view of the power circuit.

The device takes the form of a body **10** which houses the powder as well as the power drive equipment. Body **10** includes a powder receptacle **11** having a cover **12** which fits snugly over the mouth of the receptacle so as to close it against the likelihood of powder sprays while the device is in operation.

The body **10** is preferably but not necessarily, fabricated of plastic material such as cellulose acetate or the like whereby the cover **12** may have a resilient snap-fit over the receptacle mouth. However, any conventional cap means may be employed.

The beating and blending mechanism includes the motor shaft **13** to which is secured as by bolt **14**, the horizontal disk **15**. A number of beaters, herein illustrated as five in number, are radially disposed on the disk **15** and are uniformly angularly spaced thereabout so that in the illustrated instance, the beaters are 72° apart. Each beater **16** comprises a single length of wire which is doubled upon itself but wherein the center portion is formed as a loop. The beaters comprise an upper horizontal portion **17** formed of the adjacent or coincident wire ends and welded or otherwise secured to disk **15**.

The depending portion **18** also comprise opposite wire sections maintained adjacent each other. In the loop section **19**, the wires gradually diverge so as to form the loop.

An important element of the beater arrangement is the plane of the several loops. Considering, for example, beater **16***a*, the loop thereof is in a horizontal plane. Loops **16***b* to **16***e* deviate progressively from the horizontal plane, the loop **16***e* being in a vertical plane. Considering the loops as graduating 90° from the horizontal to the vertical state, the center loop **16***c* is about 45°, loop **16***b* being about 22½° and loop **16***d* being about 67½°. The effect of thus variably tilting and equi-angularly spacing the beaters is to achieve an expeditious and fine blending of the powder mix as will hereinafter be described.

The power drive for the beaters is disposed in the hollow base **20** which is integral with the receptacle portion **11**, a transverse, circular partition **21** dividing them. The bottom of hollow base **20** is enclosed by a bottom cover **22**.

The base is formed with an internal flange **23** to which is secured a circular panel **24**. Panel **24** is formed with a plurality of openings designed to accommodate batteries and a motor **25** of which **13** is the shaft.

The outward openings **26** are shown as three in number and thereby accommodate three batteries which may advantageously be of the usual 1½ volt variety. In the form shown, the three batteries **27** are arranged in series so that the total voltage to the motor is 4½ volts. A convenient method of mounting the batteries is illustrated in Figure 4 where rivets **28** are secured to the panel **24** which is of insulating material while spring clips **29** effect electrical contact with the battery terminals. Wires **30** connect the succession of rivets in a series arrangement. Such a battery arrangement makes it very easy to replace used batteries and the whole arrangement serves to stabilize the device mechanically as will be hereinafter noted.

In order to complete a circuit, a button switch **31** mounted on a spring arm **32** is provided, said spring arm effecting electrical contact with contacts **33** and **34** one of which goes to the motor and the other to the batteries as illustrated in Figure 8. Of course, no claim is made for the circuit itself, this circuit being purely conventional and any conventional system being usable. However, the disposition of the motor **24** and angularly arranged batteries **27** is such as to effect good balance of the device by uniformly disposing the relatively heavy batteries **27** around the periphery of the base and wherein the motor is disposed between them so as to augment such balance and jointly lower the center of gravity of the device as a whole.

The device is operated as follows:

In general, the user will have available a number of different powder batches, each of varying shades. She will estimate the quantities of various shades required to give a particular desired blend. This is, of course, conventional. After having deposited the required powder materials in the receptacle **11**, the operator will press the button switch **31** so as to close the electrical circuit and actuate the motor **25**. Beaters **16** will then rotate rapidly, loops **19** repeatedly sifting and mixing the powder so as to achieve an accurate blend in a very short time. The expedient of graduating the angles of tilt of the loops from horizontal to vertical, insures that a wide area is treated by the loop sides and loop centers of the beaters with practically no area served by the beaters left free of the sifting action. Of course, the loops **19** may be larger than shown in order to increase such area, the size shown being only illustrative.

The combined weight of the motor and uniformly arranged batteries is such as to stabilize the device by lowering the center of gravity, thus avoiding undue vibration. It will be understood that the action of the beaters is such as to produce fine powder sprays which are best confined within the receptacle **11** by avoiding such vibration of the device as would tend to produce minute openings between the cover **12** and receptacle **11** and permit the objectionable dispersal of powder spray.

There has been shown what is now considered a preferred embodiment of the invention but it is obvious that numerous changes and omissions may be made without departing from its spirit.

What is claimed is:

In a powder blending device comprising a hollow receptacle adapted to receive a quantity of powder, a mixer disposed in said receptacle, said mixer comprising a plurality of rotatable beaters radially disposed within said receptacle, each of said beaters being formed with a horizontally extending outer loop whereby powder may be actuated by the sides of the loop and may sift through the center thereof, said loops being tilted at different angles, one of said loops being disposed in a horizontal plane, and another of said loops being disposed in a vertical plane and the remaining loops being disposed at varying and progressively graduating angles between the horizontal and vertical planes.

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