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(54) **Tablet grinding device**

(57) A device for grinding tablets includes a body in which is housed an electric motor (26). A power source (22) is connected to the electric motor (26) via a switch (9) and a grinder (29) is driven to rotate by the electric

motor (26). Tablets are delivered to the grinder (29) via a tablet chute (30) and the tablets are ground into particles by the grinder (29). A particle bin (6) is attached to or formed integrally with the body and receives particles from the grinder (29).

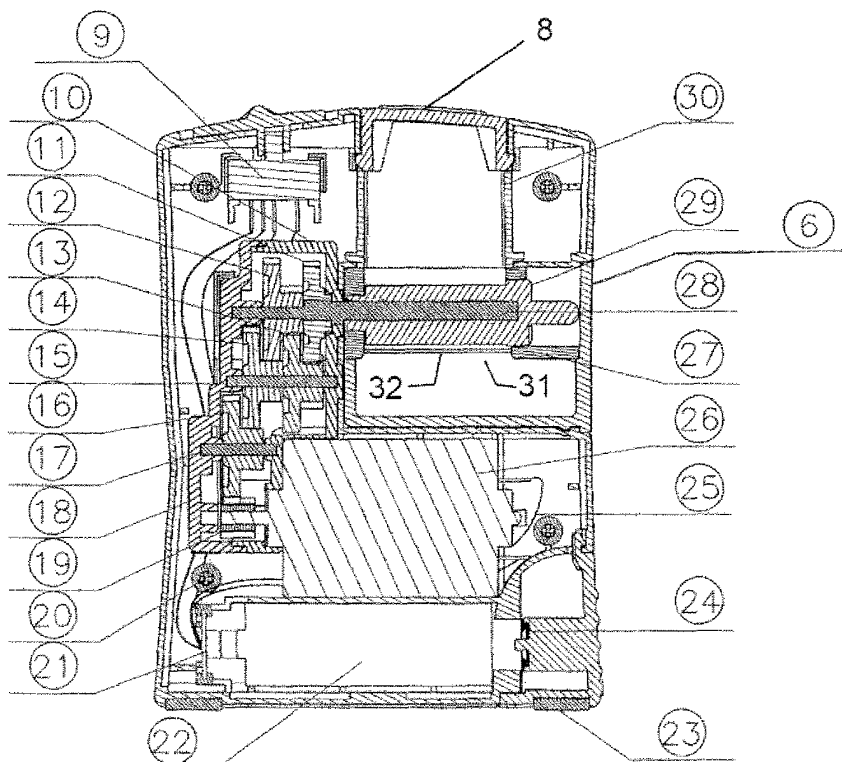


Fig. 2

Description

Background of the Invention

[0001] The present invention relates to a device for grinding tablets/pills. More particularly, although not exclusively, the invention relates to a handheld device into which whole tablets can be inserted for grinding into particulate form.

[0002] Tablets come in different sizes depending upon the prescribed or desired dosage. Some tablets are provided with a score line to facilitate easy breakage into two parts. Where a dosage smaller than half a tablet is desired, further breakage becomes difficult - especially for elderly people or people with arthritic conditions for example. For this reason, it is often desired to grind tablets into powdered form for subsequent ease of portioning.

[0003] Some tablets are not rapidly absorbed into the body after being taken. Grinding of tablets into granular or powdered form increases the rate of absorption in the body.

Objects of the Invention

[0004] It is an object of the present invention to provide a handheld device with which consumers can grind tablets into smaller particles.

Disclosure of the Invention

[0005] There is disclosed herein a device for grinding tablets, comprising:

a body,
an electric motor housed within the body,
a power source connected to the electric motor via a switch,
a grinder driven to rotate by the electric motor,
a tablet chute to the grinder, and
a particle bin attached to or formed integrally with the body for receiving particles from the grinder.

[0006] Preferably, the grinder is substantially cylindrical and rotates about a longitudinal axis thereof.

[0007] Preferably, the device further comprises a substantially cylindrical grinding cavity within which the grinder rotates.

[0008] Preferably, the tablet chute extends radially of the longitudinal axis of the grinder.

[0009] Preferably, the tablet chute extends tangentially of the grinding cavity.

[0010] Preferably, the grinder includes a pair of diametrically opposed, longitudinally extending blades.

[0011] Alternatively, the grinder includes four longitudinally extending blades in respective diametrically opposed pairs.

[0012] As a further alternative, the grinder can include

a peripheral helical blade.

[0013] As yet a further alternative the grinder can comprise an abrasive grinding surface.

[0014] Preferably, the grinding cavity includes an exit port communicating with the particle bin.

[0015] Preferably, the particle bin comprises a sliding drawer.

[0016] Preferably, the device further comprises a door covering the tablet chute.

[0017] Preferably, the device further comprises a gearbox for transmitting torque of the motor to the grinder.

Brief Description of the Drawings

[0018] Preferred forms of the present invention will now be described by way of example with reference to the accompanying drawings, wherein:

Fig. 1 is a schematic perspective illustration of a tablet grinding device,

Fig. 2 is a schematic cross-sectional side elevation of the device of Fig. 1,

Fig. 3 is a schematic cross-sectional end elevation of the device of Figs. 1 and 2 having a first tablet chute configuration,

Fig. 4 is a schematic cross-sectional end elevation of a tablet grinding device having an alternative tablet chute configuration,

Fig. 5 is a schematic depiction of a twin blade cylindrical grinder,

Fig. 6 is a schematic depiction of a four blade cylindrical grinder,

Fig. 7 is a schematic depiction of a helical blade cylindrical grinder, and

Fig. 8 is a schematic depiction of a cylindrical grinder having an abrasive grinding surface.

Description of the Preferred Embodiments

[0019] In the accompanying drawings there is depicted schematically a tablet grinding device G. The grinding device comprises a pair of body halves 4 and 7 typically of moulded ABS plastics material and connected together to form a casing to which a footplate 23 is affixed. A number of rubber finger grips 2 and 3 are provided at the casing exterior.

[0020] Internally of the casing above the footplate 23, there is a battery compartment which houses a pair of batteries 22. An access door 5 encloses the battery compartment.

[0021] The batteries bear against a set of contact

plates 21 and 24 from which wires extend to a switch 9 at the top of the casing. The switch 9 is in contact with a switch knob 1 that is exposed at the top of the casing.

[0022] Electrical wire 25 extends from the switch 9 to a DC electric motor 26 situated within the casing above the battery compartment.

[0023] A gearbox including casing parts 10 and 18 houses a number of reduction gears 11, 12, 13, 14, 16 and 19 and shafts 15 and 17. The output shaft of motor 26 is input to the gearbox and the final gear 12 of the gearbox is mounted upon a grinder shaft 28 upon which a cylindrical grinder 29 is fixed so as to rotate therewith.

[0024] The grinder 29 is located within a cylindrical grinding cavity 27. The grinder 29 is typically made of steel and in one embodiment (Fig. 5) includes a pair of diametrically opposed, longitudinally extending straight blades 32. In another embodiment (Fig. 6), the cylindrical grinder 29' comprises four longitudinally extending straight blades 32' in respective diametrically opposed pairs separated by 90°. In a third embodiment (Fig. 7), the cylindrical grinder 29" includes a single helical blade 32" extending from one end of the grinder's cylindrical surface to the other. In another embodiment (not shown), two or more helical blades might be provided either extending in the same direction or crossing one another in opposite directions. In a fourth embodiment (Fig. 8), the outer surface of the cylindrical grinder 29''' has an abrasive surface 33 somewhat like the surface of sandpaper against which the tablets wear.

[0025] A tablet entry chute 30 extends from the top of the casing beneath a tablet chute door 8 to the cylindrical grinding cavity 27. In the embodiment depicted in Fig. 3, the entry chute 30 of tablet grinder G1 extends substantially tangentially from the grinding cavity 27, whereas in the embodiment G2 of Fig. 4, the grinding chute 30 extends radially of the grinder shaft 28.

[0026] The cylindrical grinding cavity 27 has an exit passage 31 communicating with a particle bin 6. The particle bin 6 attaches to the casing like a drawer which can be opened by sliding to reveal ground tablet particles, or removed completely for inversion to dispense ground particles therefrom.

[0027] In use, whole tablets are inserted into the tablet chute 30 after having opened the tablet chute cover 8. Either before inserting the tablets into the chute or thereafter, the user slides the switch knob 1 to activate the motor, which in turn drives the gearbox to rotate the cylindrical grinder 29. The blades 32, 32', or 32" disintegrate the tablet to form particulate material which falls downwardly via exit passage 31 to the particle bin 6. Once no further grinding sound is heard by the user, the switch knob 1 can be returned to its OFF position.

[0028] The switch knob 1 might have three positions. For example, it could have a central OFF position and FORWARD and REVERSE positions at either side of the OFF position enabling the user to reverse rotate the grinder 29 if necessary. To this end, the switch 9 can be

connected electrically to motor 26 to energise it in either polarity.

[0029] It should be appreciated that modifications and alterations obvious to those skilled in the art are not to be considered as beyond the scope of the present invention. For example, the device might be provided with a tablet magazine for containing a plurality of tablets for individual delivery to the grinding cavity.

Claims

1. A device (G) for grinding tablets, comprising:

a body (4,7),
an electric motor (26) housed within the body (4,7),
a power source (22) connected to the electric motor (26) via a switch (9),
a grinder (29) driven to rotate by the electric motor (26),
a tablet chute (30) to the grinder (29), and
a particle bin (6) attached to or formed integrally with the body (4,7) for receiving particles from the grinder (29).

2. The device of claim 1, wherein the grinder (29) is substantially cylindrical and is rotatable about a longitudinal axis thereof.

3. The device of claim 2, wherein the grinder (29) includes a pair of diametrically opposed, longitudinally extending blades (32).

4. The device of claim 2, wherein the grinder (29') includes four longitudinally extending blades (32') in respective diametrically opposed pairs.

5. The device of claim 2, wherein the grinder (29'') includes a peripheral helical blade (32'').

6. The device of claim 2, wherein the grinder (29''') comprises an abrasive grinding surface (33).

7. The device of any one of claims 2 to 6, further comprising a substantially cylindrical grinding cavity (27) within which the grinder (29) rotates.

8. The device of claim 7, wherein the tablet chute (30) extends radially of the longitudinal axis of the grinder (29).

9. The device of claim 7, wherein the tablet chute (30) extends tangentially of the grinding cavity (27).

10. The device of claim 7, 8 or 9, wherein the grinding cavity (27) includes an exit port (31) communicating with the particle bin (6).

11. The device of any preceding claim, wherein the particle bin (6) comprises a sliding drawer.
12. The device of any preceding claim, further comprising a door (8) covering the tablet chute (30).
13. The device of any preceding claim, further comprising a gearbox for transmitting torque of the motor (26) to the grinder (29).

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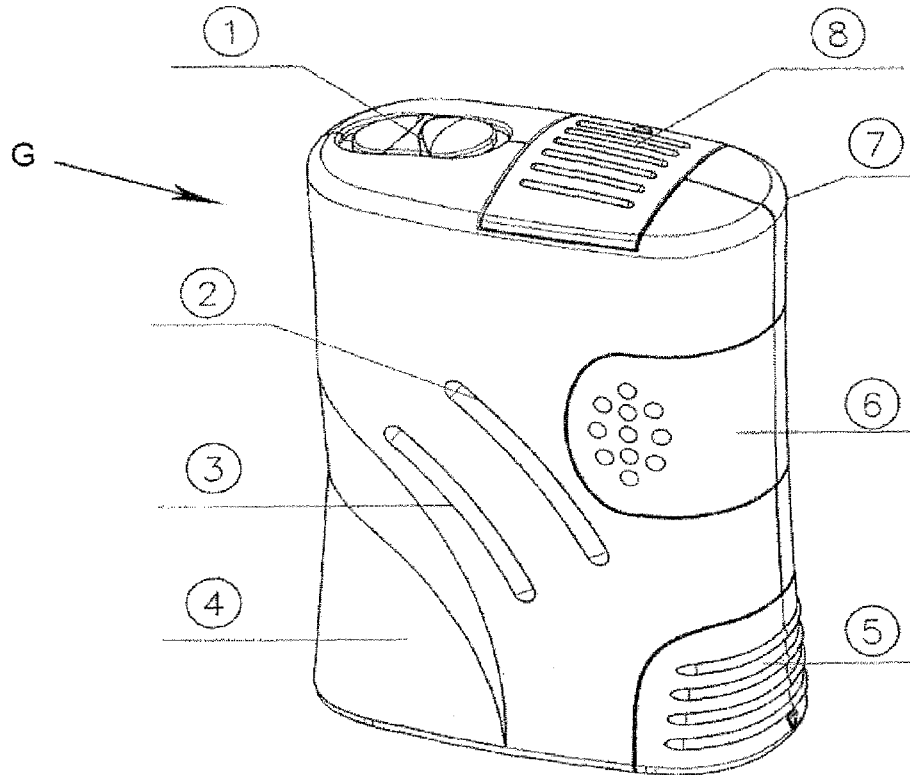


Fig. 1

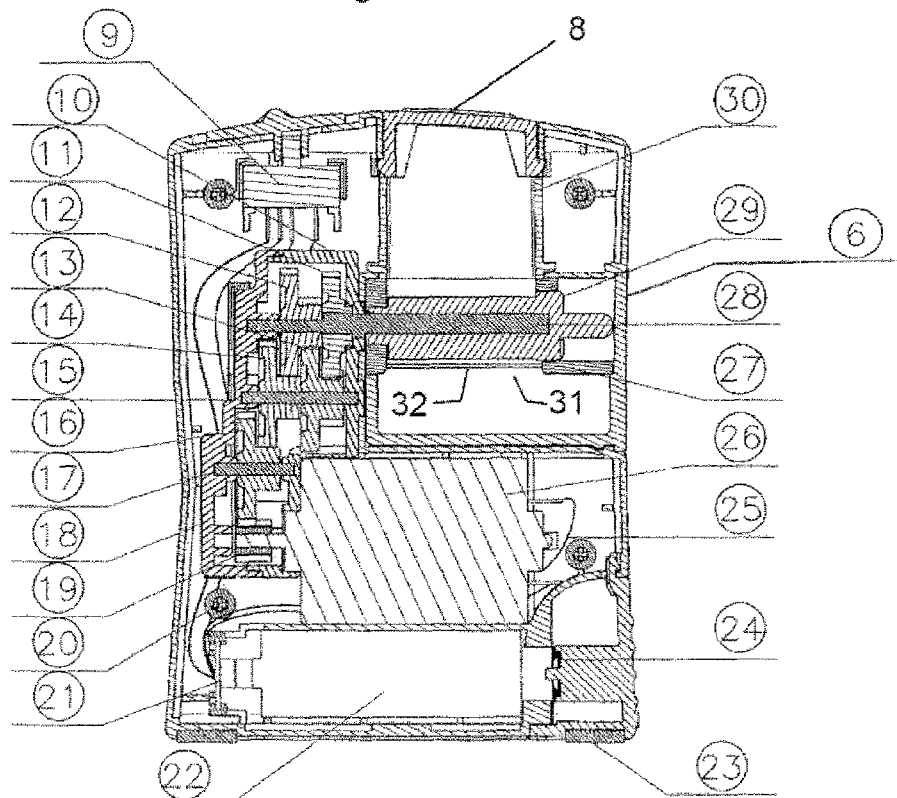


Fig. 2

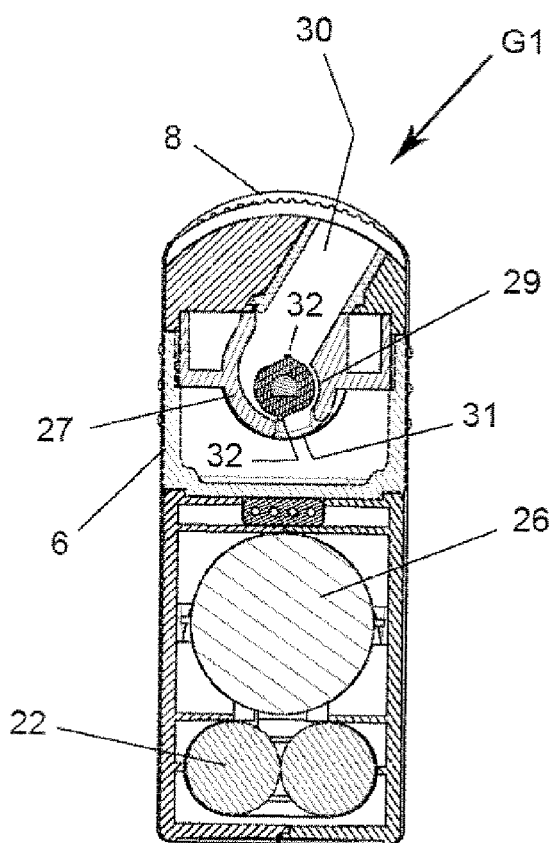


Fig. 3

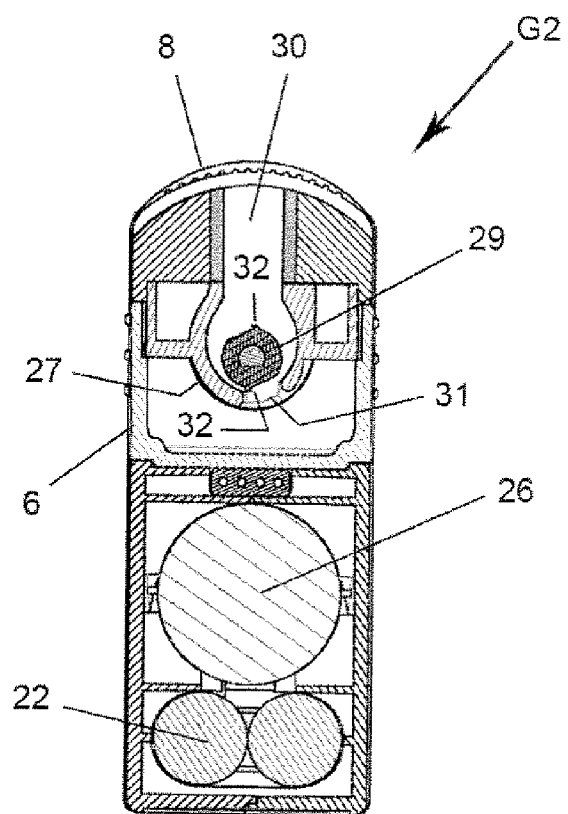
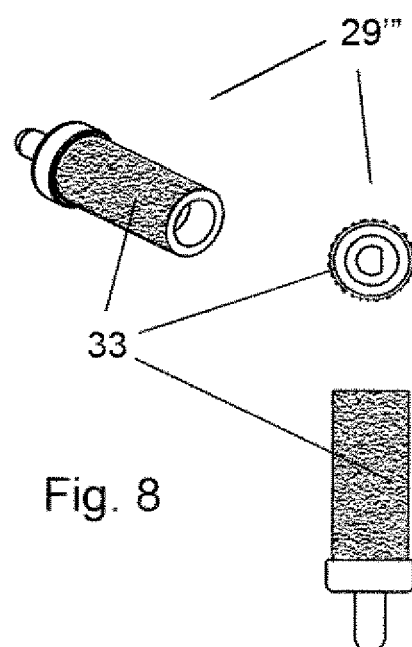
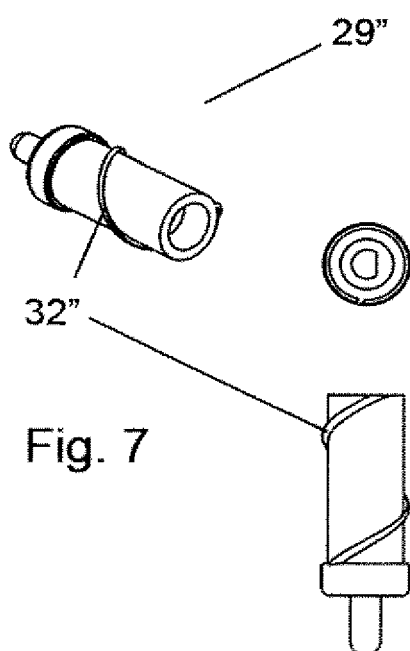
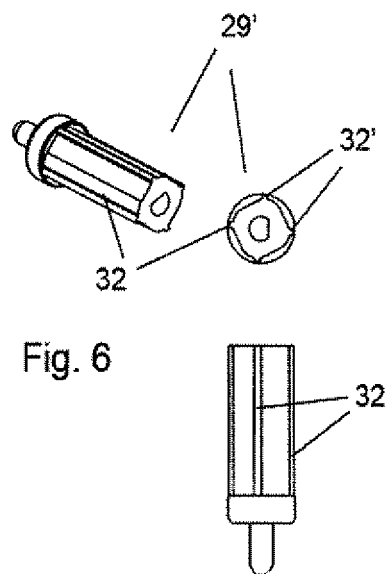
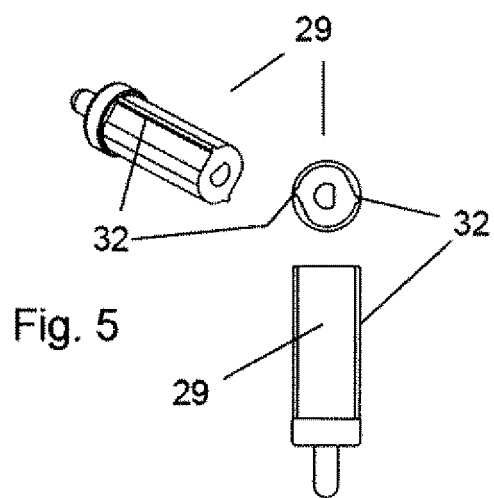


Fig. 4





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 08 15 4946

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			TECHNICAL FIELDS SEARCHED (IPC)
			B02C A61J A47J
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 September 2008	Examiner Leitner, Josef
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 08 15 4946

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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