

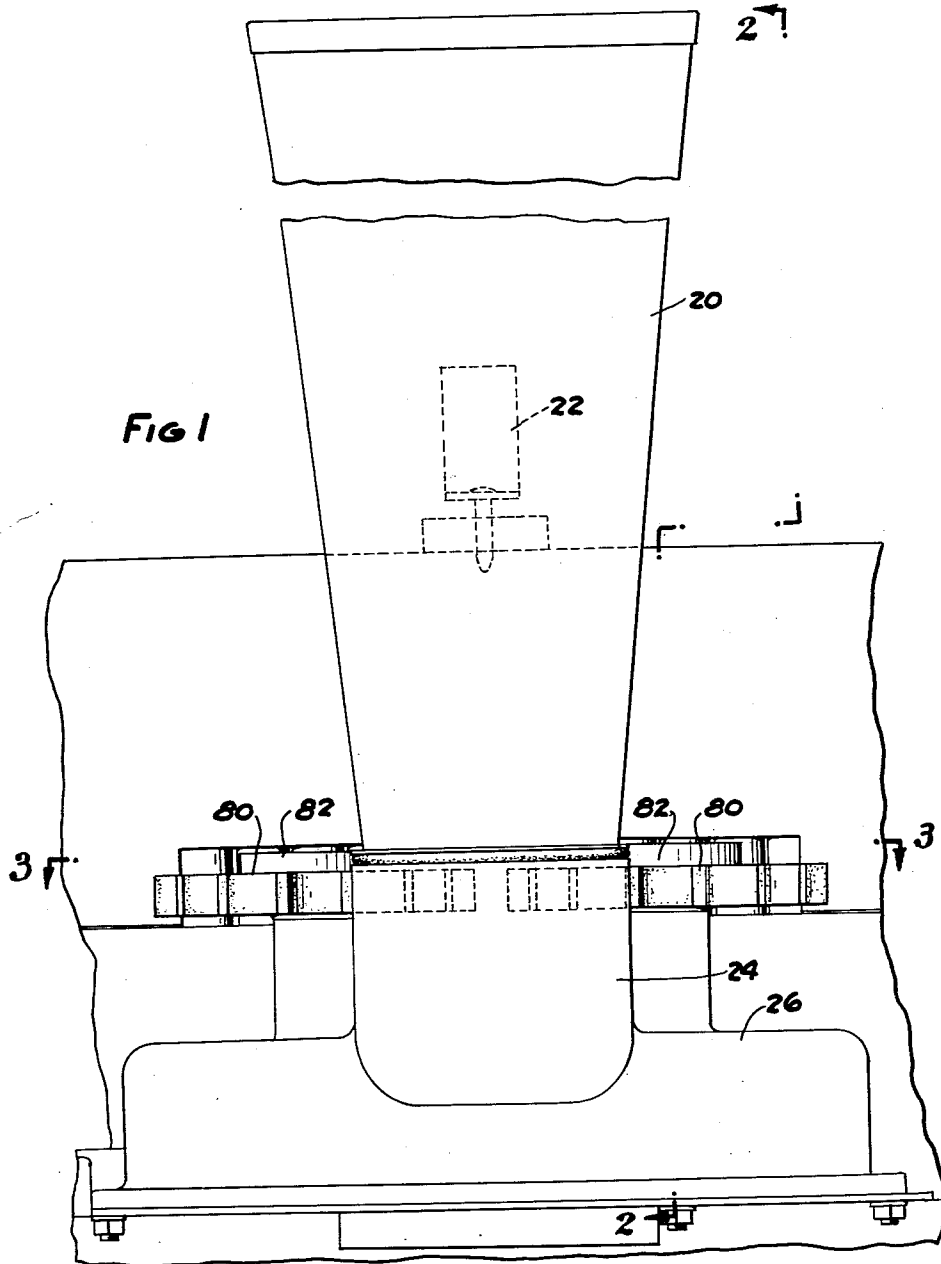
Jan. 9, 1962

H. C. EDGAR ET AL
TABLET FORMING MACHINE

3,016,027

Filed March 4, 1959

3 Sheets-Sheet 1



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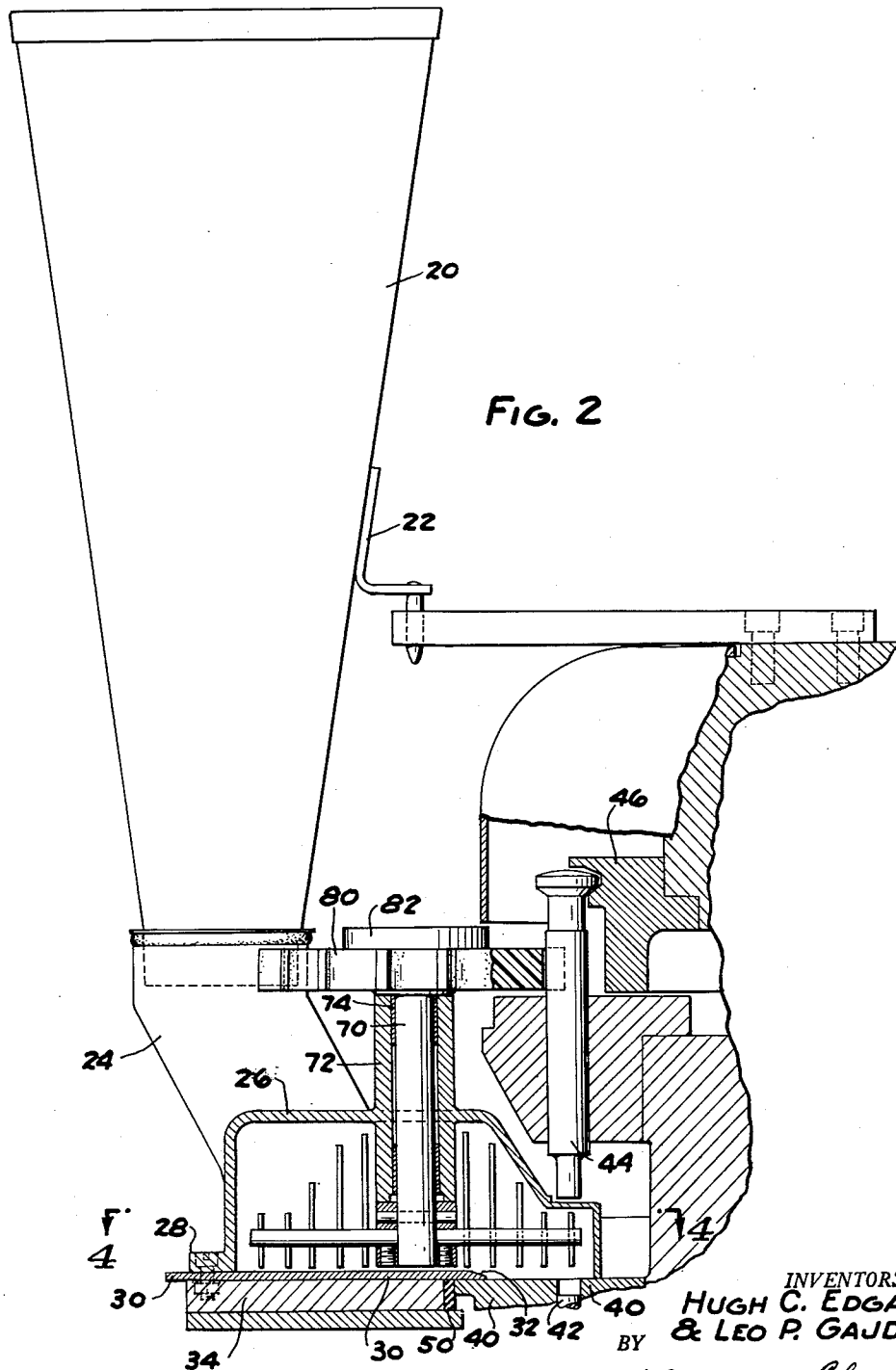
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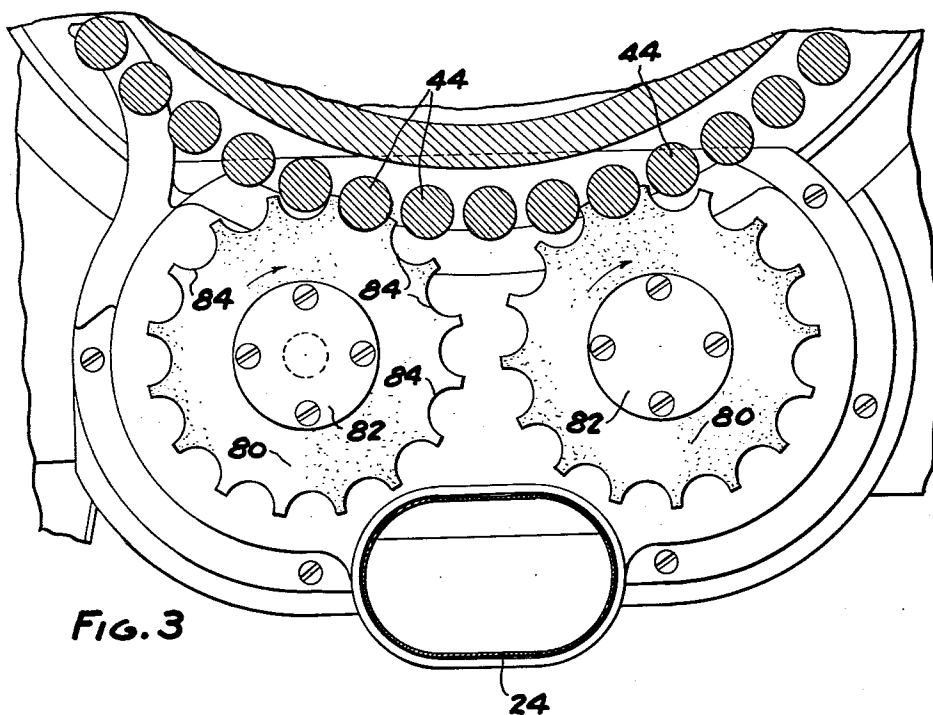


FIG. 3

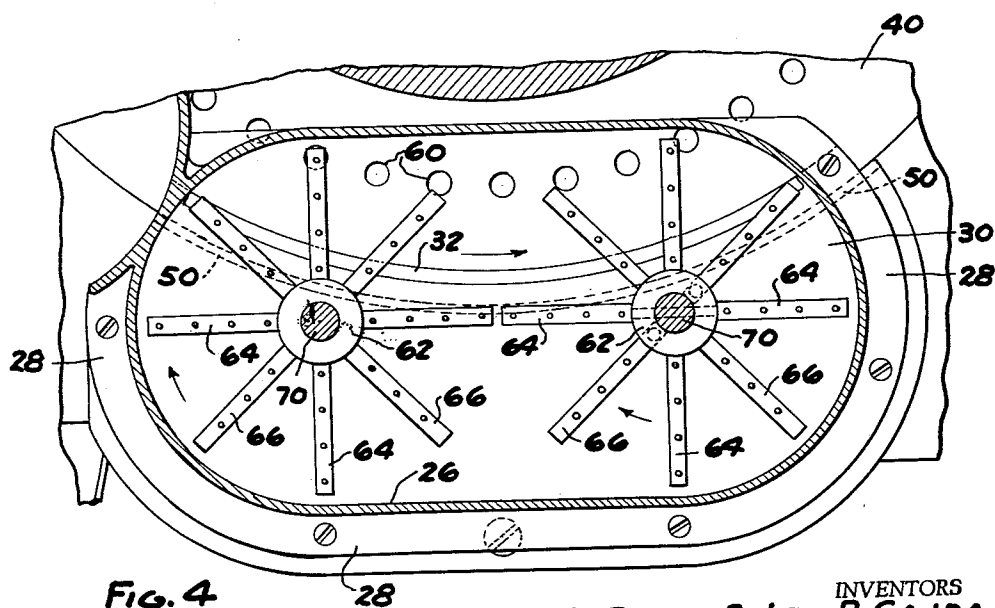


FIG. 4

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3,016,027

TABLET FORMING MACHINE

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6 Claims. (Cl. 107-17)

This invention relates to a tablet forming machine and particularly to that type of machine where tablets or tablet coatings are created from powdered material by the application of pressure.

Reference is made to co-pending application of Adolf Gustav Gross, Serial No. 791,660, filed February 6, 1959, for a disclosure on this type of machine.

It is an object of the present invention to provide an improved design of a means for feeding powdered material to the die pockets of a tablet forming machine.

It is a further object to provide a simplified drive mechanism for the movement of parts of the assembly and an improved bottom design for the support of the material as it moves into the dies.

Other objects and features of the invention relating to details of construction and operation will be apparent in the following description and claims.

Drawings accompany the disclosure and the various views thereof may be briefly described as:

FIGURE 1, an elevation of the assembly of the device.

FIGURE 2, a sectional view on line 2-2 of FIGURE 1 showing certain details of the operating parts.

FIGURE 3, a sectional view on line 3-3 of FIGURE 1.

FIGURE 4, a sectional view on line 4-4 of FIGURE 2.

A capsule forming machine utilizing revolving die pockets and punches is known in the industry and the details of a capsule coating machine are fully illustrated and described in co-pending application, Serial No. 696,200, filed November 13, 1957, now Patent No. 2,946,298, dated July 26, 1960. These devices utilize a feed hopper for the powdered material along with what is called a "feed shoe" which is an enlarged flat chamber overlying the rotating die pockets. The present disclosure is related to this type of machine.

In FIGURE 1 the fill hopper 20 is shown supported above the machine by suitable bracket 22, this feed hopper having a throat portion 24 leading downwardly into the chamber 26 commonly referred to as a "feed shoe." In FIGURE 4, the horizontal sectional outline of the feed shoe 26 is shown more plainly, this being in the shape of an oval shaped chamber, the housing having an outer flange 28 for clamping the feed shoe down against a kidney-shaped base plate 30. The base plate has a concavically curved forward edge 32 with a chamfer formation, the base plate being mounted on a base frame 34. The curvature of the edge 32 of the base plate corresponds to the circumference of the rotating die pocket ring 40 and the edge of the base plate 30 overlies the edge of the rotating ring as shown in FIGURES 2 and 4.

The ring 40 has traveling punches 42, FIGURE 2, sometimes referred to as "bottom dies" and above the rotating ring or die pocket plate are the upper die punches 44, these punches being controlled by cams such as shown at 46. Between the rotating die pocket ring 40 and the base frame for the bottom plate 30 is a strip of plastic material 50, such as Teflon, which is a relatively tough plastic with a good bearing characteristic and also slightly flowable. This Teflon strip is clamped closely between the periphery of the die ring 40 and the supporting frame 34 of the base plate. In the working-in of the parts this Teflon will conform itself to the die ring and

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create a very tight fit between this ring and the bottom surface of the plate 30, thus providing a very effective seal for any powder that may work under the edge 32 of the plate 30.

The object of the device is to fill the die pockets 60 of the die ring 40 and to obtain a constant uniform charge in each of these die pockets. This is facilitated by the location in the shoe chamber 26 of two rotors 62 each of which has radial spokes 64 and 66. These spokes are spaced upwardly from the bottom plate 30 and each has a number of vertical pins equally spaced on the spokes and extending downwardly and upwardly in the feed shoe chamber. Spokes 64 have four pins and spokes 66 have three pins, these three pins being spaced radially to fall in the area between the four pins.

The rotors are each mounted on a rotating shaft 70 passing up through a bearing housing 72 containing a bushing 74. On the top of the shaft in each case is a gear 80 preferably formed of a material such as nylon held by a plate 82. The gears 80 are formed with spaced peripheral pockets 84 adapted to engage the upper die punches or plungers 44 as they rotate around with the die pocket ring. Thus both the rotors will rotate in the same direction clockwise as shown in FIGURES 3 and 4. With this arrangement the faster the machine is operated the faster will the rotors move in the feeding chamber. It is an object to move the powdered material into the feeding chamber in a manner that a gentle pressure will be built up over the rotating die pocket plate so that material will be packed in uniformly without air pockets to insure complete filling in each case.

We claim:

1. In a tablet forming machine of the type utilizing a rotatable die ring having circumferentially spaced pockets, a filling device for moving charges of compactable material into said pockets comprising a chamber to overlie said die ring including an open-bottom housing extending both inwardly and outwardly over a segment of the outer peripheral portion of said die ring, a material feeding inlet located in said housing, a bottom for said housing closing the portion of said housing outside of said die periphery and extending into overlying relation with the peripheral portion of said die ring outwardly of said spaced pockets, said overlying portion having an edge curved similar to the periphery of the die, and rotatable means in said chamber moving over said die ring to carry material into said die pockets.

2. In a device of the type defined in claim 1, a means underlying said bottom and in close peripheral contact with the die ring comprising a strip of plastic material having characteristics of flowability under pressure, said means serving to seal said area against escape of material being handled.

3. In a device of the type defined in claim 1, a frame means underlying said bottom to support the same having a contour similar to said die ring, and a bearing strip tightly interposed between said ring and said frame means and subjacent the bottom, said strip being formed of a plastic material having characteristics of flowability under pressure, whereby said strip conforms to the periphery of said die ring and the surface of said bottom to seal said area against escape of material being handled.

4. A device as defined in claim 1 in which bearing means are mounted in said housing, a bearing shaft in said bearing means, said rotatable means comprising a star wheel on said shaft having a path sweeping over said bottom plate and over said die pockets of said die ring.

5. A device as defined in claim 4 in which rotatable, circumferentially spaced die punches are mounted to rotate with said ring, and gear means on said bearing shaft having peripheral recesses to mesh with said punches

to effect a turning motion of said star wheel at a speed related to the motion of said die ring.

6. In a tablet forming machine of the type utilizing a rotatable die ring having circumferentially spaced pockets, a filling device for moving charges of compactable material into said pockets comprising a chamber to overlie said die ring including an open-bottom housing extending both inwardly and outwardly over a segment of the outer peripheral portion of said die ring, a material feeding inlet located in said housing, a bottom for said housing closing the portion of said housing outside of said die periphery and including a means in close peripheral contact with said die ring, said means comprising a strip of plastic material having characteristics

of flowability under pressure, said means serving to seal said area against escape of material being handled, said bottom having an edge curved similar to the periphery of the die, and rotatable means in said chamber moving over said die ring to carry material into said pockets.

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