

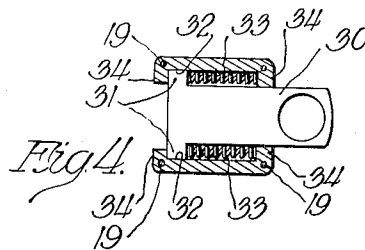
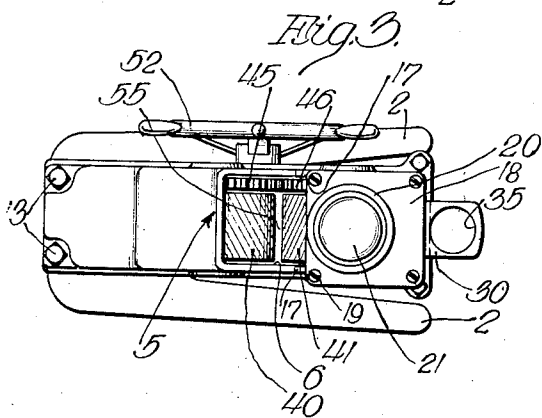
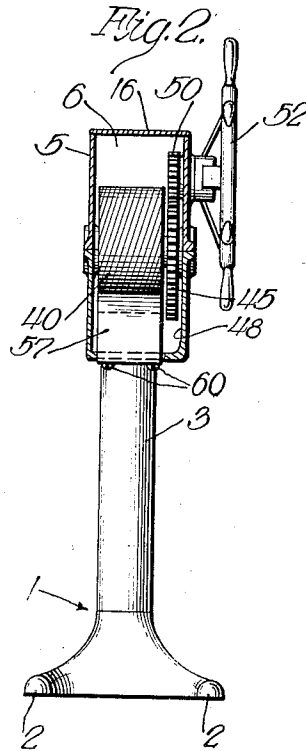
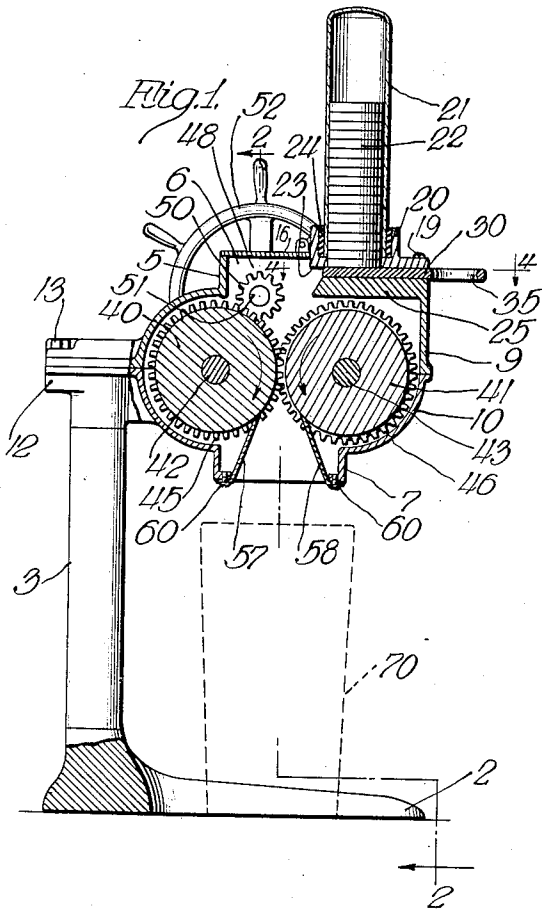
Nov. 30, 1937.

F. A. LOBLEY

2,100,860

TABLET CRUSHING AND DISPENSING DEVICE

Filed Feb. 25, 1933



Inventor:
 Frederick A. Loble
 By *Drum Jackson, Dettcher & Dummer*
 Attys.

UNITED STATES PATENT OFFICE

2,100,860

TABLET CRUSHING AND DISPENSING
DEVICE

Frederick A. Lobley, Elkhart, Ind., assignor to
Dr Miles Laboratories, Inc., Elkhart, Ind., a
corporation of Indiana

Application February 25, 1933, Serial No. 658,514

13 Claims. (Cl. 83—12)

The present invention relates generally to dispensing devices and is particularly concerned with the provision of a combined crushing and dispensing device for crushing and dispensing tablets, such as, for example, effervescent tablets used in making carbonated drinks and the like on a soda fountain counter. In utilizing crushed effervescent tablets a better carbonated drink is obtained than is possible when the whole tablet is allowed to dissolve slowly. The present invention is therefore particularly concerned with the provision of a small size portable combined crushing and dispensing device for use at soda fountains and similar establishments where it is desired to be able to quickly and conveniently make carbonated beverages from effervescent tablets and the like on the fountain counter and in the presence of the customer. In this connection it is also an important object of the present invention to provide a device in which the tablet container is substantially air-tight so as to prevent excessive deterioration of the tablets by contact with the air. The tablets come sealed in a bottle, which is opened and the bottle then immediately applied to the device of my invention.

Other objects of the present invention are concerned with the provision of new and improved supporting means for the tablet container and of the means for feeding the tablets in predetermined quantities of one or more to the crushing rolls. In addition, the present invention is also concerned with the provision of new and improved stripping means in the form of scraper blades for removing the crushed material from the crushing rolls.

A further object is the provision of improved operating means whereby the machine may be employed to crush tablets with ease without the necessity for clamping the same to a rigid support. These and other objects of the present invention will be apparent from the following detailed description of a preferred embodiment, taken in conjunction with the accompanying drawing illustrating such embodiments.

In the drawing:

Figure 1 is a vertical section taken through a combined crushing and dispensing device constructed according to the principles of the present invention;

Figure 2 is a section taken along the line 2—2 of Figure 1;

Figure 3 is a top plan view of the machine shown in Figure 1; and

Figure 4 is a fragmentary section taken along the line 4—4 of Figure 1.

Referring now to the drawing, the numeral 1 indicates a base member including supporting feet 2 and a vertically arranged standard 3. The device is adapted to stand without fastening means upon any supporting surface such as a table top or counter. The standard carries at its upper end a hopper 5 having an upper end portion 6 which is open, and a lower portion which terminates in a spout or discharge outlet 7. The hopper may be formed of one casting or it may consist of a pair of complementary castings, as indicated in Figure 1 by the reference numerals 9 and 10. Also, the hopper 5 includes a bracket portion 12, preferably formed integral therewith, and which receives and is secured to the upper end of the standard 3. Any means, such as bolts 13, may be used for securing the hopper to the standard 3. The machine is supported in stable equilibrium inasmuch as the base portion 2 is directly below the main part of the machine, although the standard 3 is offset.

A portion of the upper open end 6 of the hopper is provided with a hinged closure 16 which is pivoted in lugs 17 carried by a web or bracket 18 secured to the upper part of the hopper by screws 19 or the like. The bracket 18 merges into or carries an upwardly extending flange or collar 20 which is adapted to receive the lower open end of a tablet container 21 in the form of an inverted tubular casing of glass or the like adapted to contain the effervescent tablets 22, or whatever commodity it is desired to dispense. An inwardly directed flange 23 supports the container. The lower end of the container 21 is received in substantially air-tight relation by the collar 20 through the use of gasket means 24. Preferably, the gasket means takes the form of a rubber ring or the like and is so constructed and arranged as to provide for the removal of the tablet container 21 for the purpose of refilling the same.

The preferred manner of recharging the machine after the tablets are exhausted is to remove the empty bottle 21, turn the machine on its side or upside down, and insert in the ring 24 the mouth of a full bottle of the tablets.

Just underneath the container supporting bracket 18 is a horizontal ledge 25 which is preferably formed integral with the hopper 5, or at least the upper half thereof. The upper surface of the ledge 25 is flat and is spaced downwardly from the lower open end of the container 21, or the inwardly directed flange 23 which supports the container 21, a distance substantially equal to the thickness of at least one of the tablets 22. A manually operable slide ejector 30 is movable

over the ledge 25 and across the lower open end of the tablet container 21 and fits snugly between the adjacent surfaces on the bracket 12 of the collar 20 and the ledge 25. The slide 30 is maintained in proper relation on the hopper by means of ears 31 which are received within suitable guiding channels or slots 32 formed in the lower portion of the bracket 18. Springs 33 may be utilized for returning the slide 30 to a position closing the open end of the tablet container. The end walls 34 of the channels or slots determine the extent of permissible reciprocation of the slide 30. The outer end of the slide member terminates in an eye 35 to provide for convenient manual operation of the slide.

A pair of crushing rolls 40 and 41 are journaled for rotation in the hopper 5 and for this purpose shafts 42 and 43 are provided, these shafts having their ends received in suitable bearings or journal boxes formed on or carried by the hopper 5. The crushing rolls 40 and 41 are geared to rotate together by meshed gears 45 and 46, these gears being preferably disposed in the hopper 5 adjacent a side wall 48 thereof, as best shown in Figure 2. If desired, the gears may be separated from the crushing zone of the hopper by an intermediate wall or the like.

The crushing rolls 40 and 41 are adapted to be power or manually operated or rotated by means of a pinion 50 disposed adjacent the wall 48 of the hopper 5, and meshed with one of the crushing roll gears, as, for example, the gear 45. The pinion 50 is fixed to a stub shaft 51 journaled in the wall 48 and provided at its outer end with a hand wheel 52 keyed or otherwise suitably secured thereto. This hand wheel is provided with peripheral projections to keep the thumb and fingers of the hand from slipping. The particular wheel is shown as formed like a tiller wheel, i. e., with handle-like projections extending radially from the rim of the same. The periphery of the wheel is adapted to be gripped between the thumb and fingers of the right hand and the projections serve to prevent slippage. The wheel is adapted to be grasped by the right hand of the operator and turned in a direction to move the top half of the wheel away from the operator, that is, in a clockwise direction as viewed from the left of Figure 2, by twisting of the wrist. This turns the top of the rolls 40—41 towards each other to bite or crush the tablets between them. If desired, power means of any suitable character may be substituted for or connected to drive the wheel 52.

The crushing rolls 40 and 41 are so disposed in the housing that they are closely spaced with respect to each other, as indicated by the reference numeral 55 in Figure 3 to crush the tablets to the desired size of granules. To strip the crushed material from the rolls 40 and 41 a pair of scraper blades 57 and 58 are provided, one cooperating with the roll 40 and the other cooperating with the roll 41 and both extending upwardly in converging relation, as best indicated in Figure 1. The lower end of each of the scraper blades 57 and 58 carries a laterally directed flange which is suitably apertured to provide for the reception of securing screws 60 threaded into suitable openings in the lower portion of the spout 7. If desired, the spout 7 may be provided with inturned flanges or the equivalent, to receive the screws 60.

The rolls are not brought into contact with each other, but are spaced apart to provide a resultant granular size of the crushed or broken tablets

which will give the desired speed of solution and effervescence. It is desirable that the tablets be crushed into a relatively coarse granular form so that the solution will be carried on vigorously while the drink is being prepared and handed to the customer. If the tablets be crushed too fine it is too difficult for the retailers to dispense it either readily or accurately. Also, it tends to be more easily disintegrated by contact with the atmosphere. Tablets are therefore resorted to as a convenience in measuring, packing, shipping and retailing the material. However, the preparation of the drink according to the desired manner requires more rapid solution of the material than occurs by merely dropping the whole tablet in the liquid.

For coarse crushing the rolls 40 and 41 can be formed with smooth surfaces and of suitable material to operate satisfactorily with the tablets to be crushed. For finer crushing the rolls may be line knurled very shallow, and the clearance between the rolls may be less, if desired, than is indicated in Figure 3. Where the rolls are knurled, the knurling is preferably formed at a slight angle so as to prevent the scraper blades from catching in the knurls on the rolls where substantially straight scraper blades are used. If desired, the blades may be disposed at a slight angle, in which case the knurls on the rolls may be straight.

Pulling out the slide 30 to the extent permitted by the channels 32 allows the tablets 22 to lower in the container 21, so that the lowermost tablet rests upon the supporting ledge 25. The slide is then pushed inwardly back, either manually or by the springs 33, to the position shown in Figure 1, and in so doing the slide carries the lowermost tablet or tablets forward and drops them over the edge of the ledge 25 and in between the rolls 40 and 41. If ingredients other than the tablets in the container 21 are desired they may be introduced by opening the closure 16. Thus, such additional ingredients may be crushed by the rolls 40 and 41 at the same time the tablets are crushed. Of course, any ingredients may be introduced into the crushing rolls by opening the lid 16, regardless as to whether or not the slide 30 is actuated to throw in one or more of the tablets 22. The hand wheel 52 is then turned, which causes the rotation of both of the rolls in the direction indicated by the arrows in Figure 1. Upon turning the rolls the tablet and/or other ingredients are drawn through the rolls and crushed, the crushed material falling through the spout 7 and being directed thereby and by the scraper blades into a glass or other receptacle disposed underneath the spout and guided in register under the spout or chute 7, between the supporting feet 2. In Figure 1 the glass is indicated by the reference numeral 70. The stripper or scraper blades 57 and 58 scrape off from the rolls any of the crushed material which adheres thereto.

Preferably the fit between the slide 30 and the ledge 25 is such that the tablet container 21 is substantially airtight. Figure 1 illustrates how the slide 30 closes the lower end of the tablet container. It is important to note that the parts are so correlated that not only are the tablets kept in practically hermetically sealed relation, but also the feeding of the tablets into the crushing rolls is performed entirely within the casing 5. The

tablets are thus never exposed to dust, dirt and the like in the air but are fed from the closed container 21 directly to the rolls 40 and 41 in the closed casing 5. The operator's hands never touch the tablets, and the latter are never accessible to the operator in the normal operation of the device.

While I have described above the structure in which the principles of the present invention are preferably embodied, it is to be understood that my invention is not to be limited to the specific details shown and described, but that, in fact, widely different means may be employed in the practice of the broader aspects of my invention.

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

1. A portable dispensing and crushing machine adapted for counter use for preparing material in tablet form for drinks and the like comprising a substantially closed container comprising an inverted tubular bottle adapted for holding the tablets, a substantially closed casing having a short tubular socket with a resilient annular sealing and gripping ring mounted therein and into which the lower portion of said container extends and is resiliently held and sealed, means in said casing for crushing said material, and feeding means comprising a reciprocable slide operating within said casing for carrying and delivering given quantities of the material within the casing from the lower portion of said container laterally to said crushing means along a path of movement within said casing which is normally inaccessible to contamination and the like.

2. A portable dispensing and crushing machine adapted for counter use for preparing an ingredient for drinks and the like comprising a substantially closed container adapted for holding the ingredient, a hopper on which said container is mounted, the lower end of said container opening into the hopper below the upper edge of the latter, means for crushing said ingredient including a roll disposed within said hopper below the lower end of said container, a reciprocable transfer device forming feeding means disposed within said hopper at the lower end of said container and below the upper edge of the hopper and adapted to remove given quantities of said ingredient from the container and deliver the same within the hopper to said crushing roll for each reciprocation, closure means for the upper portion of said hopper, means secured to said hopper for sealing the lower portion of said container to said hopper, and means outside said hopper for operating said feeding means.

3. A portable dispensing and crushing machine adapted for counter use for preparing an ingredient for drinks and the like comprising a hopper having an opening at the top thereof, a generally horizontally disposed ledge carried near the upper portion of the forward edge of said hopper, a pair of crushing rolls disposed in said hopper below said ledge, a tubular glass container for tablets supported upon said hopper and above said ledge and including an open end, a resilient sealing ring for securing the open end to said hopper ledge, a horizontally reciprocable slide supported on the upper surface of said hopper ledge and movable across the lower opening of said tablet container between the open end thereof and said ledge, said slide being adapted when withdrawn forwardly to provide for the removal of one of said tablets from said container and the disposition thereof on the upper surface of the ledge of said hopper, said slide being movable across the open end of said container rearwardly of the

hopper ledge to eject said tablet rearwardly from said ledge and into said crushing rolls, means serving as a spout carried by said hopper below the adjacent portions of said crushing rolls, and a base including a standard supporting said hopper in elevated position to provide for the disposition of a drinking glass under said spout.

4. A portable dispensing and crushing machine adapted for counter use for preparing an ingredient for drinks and the like comprising a hopper having an upper open portion provided with a substantially horizontally disposed flat ledge at its forward upper portion and a lower portion terminating in a dispensing spout disposed rearwardly of and below said ledge, a pair of tablet crushing rolls disposed in said hopper with the bite of the rolls substantially vertically in line with said spout and one of said rolls being disposed substantially under said ledge, means carried by said hopper for rotating said rolls, an inverted tablet container bottle mounted on said hopper and having an open lower end, socket means on the hopper to receive and hold frictionally the lower end of said container bottle in substantially sealed relation, a slide reciprocable across the lower open end of said tablet container bottle and between said ledge and the container bottle supporting means on the hopper, the reciprocation thereof serving to eject entirely within the casing a predetermined number of tablets over the rear edge of said ledge above said one roll so that said number of tablets fall directly into the space between said crushing rolls, and a supporting base for the hopper including a pedestal and standard supporting the hopper in a position to permit the disposition of a drinking glass underneath said spout.

5. A portable means for crushing effervescent tablets to substantially a predetermined grain, comprising a hollow frame having substantially parallel end walls, a mounting lug extending from the back wall, a standard having a base, said standard being connected to said lug to support the frame above the base, a pair of crushing rolls journaled in said end walls and being geared together to crush the tablet by rotation toward each other on their top sides, said frame having normally a closed inlet at the top and having a discharge opening at the bottom, said base having a guiding portion for guiding a glass into register with said outlet opening, a pinion meshing with the gear of the back one of said rolls, said pinion being adapted to be turned in a clockwise direction for rotation of the rolls as aforesaid, and a tiller wheel adapted to be turned by gripping the periphery thereof between the thumb and fingers of the right hand and turning in a right hand or clockwise direction as viewed from the right of the machine for the crushing operation whereby the machine may be operated and steadied by one hand alone.

6. A portable means for crushing effervescent tablets to substantially a predetermined grain, comprising a hollow frame having substantially parallel end walls, a mounting lug extending from the back wall, a standard having a base, said standard being connected to said lug to support the frame above the base, a pair of crushing rolls journaled in said end walls and being geared together to crush the tablet by rotation toward each other on their top sides, said frame having normally a closed inlet at the top and having a discharge opening at the bottom, said base having a guiding portion for guiding a glass into register with said outlet opening, a pinion mesh-

ing with the gear of the back one of said rolls, said pinion being adapted to be turned in a clockwise direction for rotation of the rolls as aforesaid for the crushing operation, a tiller wheel adapted to be turned by gripping the periphery thereof between the thumb and fingers of the right hand and turning in a right hand or clockwise direction as viewed from the right of the machine, and scraper blades extending angularly from the sides of the discharge opening into contact with the bottom parts of the rolls to scrape the crushed material from said rolls.

7. A portable crusher for tablets or the like, comprising the combination of a hollow casing having a normally closed hopper at the top and a discharge opening at the bottom and having side and end walls, a pair of crushing rolls in said casing journaled on said end walls and having meshing gears within the casing, a driving pinion journaled on one of said end walls and meshing with one of said gears and a hand wheel having peripheral projections, said wheel being adapted to be gripped by the thumb and fingers of the operator for rotation in a direction to cause the top of the wheel to travel away from the operator and to cause the tops of the crushing rolls to move toward each other, and a supporting standard connected at its upper end to the casing and having a supporting base portion providing a guide for guiding a receiving glass into register under the discharge opening of the casing, said wheel when grasped by the hand of the operator serving both to operate the rolls and to steady the entire device on its base.

8. A portable crusher for tablets or the like, comprising the combination of a hollow casing providing a normally closed hopper at the top thereof and a discharge opening at the bottom thereof and having side and end walls, tablet feeding means comprising a tablet receiving socket, a passageway from said socket to the inside of the hopper, a slide for feeding tablets one at a time from said socket through said passageway into the hopper without contact with the hands of the operator, a pair of crushing rolls in said casing journaled on said end walls and having meshing gears, a driving pinion journaled on one of said end walls and meshing with one of said gears and a hand wheel having peripheral projections, said wheel being adapted to be gripped by the thumb and fingers of the operator for rotation in a direction to cause the top of the wheel to travel away from the operator and to cause the tops of the crushing rolls to move toward each other, and a standard connected at its upper end to the casing and having a base portion providing a guide for guiding a receiving glass into register under the discharge opening of the casing.

9. A portable crushing machine for tablets and the like suitable for counter use, comprising a hollow casing having side walls and end walls and an outlet opening, a hopper at the top, a cover for the hopper, a pair of crushing rolls in the casing directly below the hopper, said rolls being journaled on the end walls of the casing and having gears within the casing for causing conjoint rotation of the rolls, a pinion in the casing meshing with one of said gears, said pinion having a shaft journaled on one end wall, a hand wheel having a rim provided with peripheral projections for engagement of the fingers and thumb of the hand for turning the wheel by

twisting of the wrist and simultaneously steadying the device upon its base, a support comprising a standard secured to one of the outer walls of the casing, and a base for supporting the machine in stable equilibrium, said support having means for guiding a glass into register with the outlet opening.

10. A portable crushing machine for tablets and the like, comprising a hollow casing having side walls and end walls and an outlet opening, a hopper at the top, a cover for the hopper, feeding means comprising a manually controlled reciprocable slide for delivering from a closed container a tablet at a time to said hopper without contact with the hands of the operator, a pair of crushing rolls in the casing journaled on the end walls of the casing and having gears within the casing for causing conjoint rotation of the rolls, a pinion in the casing meshing with one of said gears, said pinion having a shaft journaled on one end wall, a hand wheel having a rim provided with peripheral projections for engagement by the fingers and thumb of the hand for turning the wheel by twisting of the wrist, a support comprising a standard secured to one of the outer walls of the casing, a base for supporting the machine in stable equilibrium, said support having means for guiding a glass into register with the outlet opening, said casing having a short vertical tubular socket above said slide and in register with one end thereof containing a resilient gripping and sealing ring, and a bottle of tablets having its open end introduced into and resiliently held by said gripping and sealing ring, whereby operation of the slide may discharge the tablets one at a time into the hopper.

11. A device of the class described comprising a substantially closed casing having a tubular socket at the upper end thereof adapted to receive and grip the mouth of a tubular container, a tubular container comprising a closed end cylindrical bottle in which tablets are adapted to be provided in a single stack, a pair of rolls mounted in said casing with the bite of the rolls disposed laterally of said tubular socket, a transfer slide operable from outside the casing for transferring within the casing a tablet laterally from said socket to said rolls, and means external to the casing for operating said rolls, said slide normally closing off the passageway between said socket and the interior of the casing, said casing having an outlet below said rolls for discharge of the crushed material.

12. A device of the class described comprising a substantially closed casing having a tubular socket at the upper end thereof provided with a resilient gasket adapted to receive and grip frictionally the mouth of a tubular container in which tablets are adapted to be provided in a single stack, a pair of rolls mounted in said casing, a transfer slide disposed within the casing and being operable from outside the casing for transferring a tablet from said socket to said rolls wholly within the casing, means external to the casing for operating said rolls, said slide normally closing off the passageway between said socket and the interior of the casing, said casing having an outlet below said rolls for discharge of the crushed material, and an offset standard having a base for supporting said casing and for guiding a drinking glass into register with the outlet of the casing.

13. A portable dispensing and crushing machine suitable for counter use comprising a closed hollow casing in which are mounted two crushing

rolls geared together, said rolls being provided with driving means external of the casing, said casing having an outlet at the bottom for discharging the product of said rolls into a receptacle, a stand for the casing, said stand having means for guiding a receptacle directly under said opening, said casing having a short open tubular neck with a resilient ringlike gasket fixed on its inner surface, said neck being spaced laterally with respect to the bite of the rolls, an inverted bottle with an open mouth disposed in and gripped by said ring and adapted to contain material to be crushed by said rolls, and a carrier slide guided for reciprocation in said casing be-

low the tubular neck and above the rolls, said carrier slide having an operating handle extending outside the casing, said casing having a substantially horizontal wall disposed below said slide to halt the flow of material from the bottle, said carrier on its inner movement displacing a charge of the material laterally and dropping it into the bite of the rolls, and preventing the escape of further material from the bottle until the slide is returned, said material being transferred wholly within the casing to eliminate contamination.

FREDERICK A. LOBLEY.

CERTIFICATE OF CORRECTION.

Patent No. 2,100,860.

November 30, 1937.

FREDERICK A. LOBLEY.

It is hereby certified that the name of the assignee in the above numbered patent was erroneously described and specified as "Dr. Miles Laboratories, Inc." whereas said name should have been described and specified as Miles Laboratories, Inc., of Elkhart, Indiana, a corporation of Indiana, as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of February, A. D. 1938.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.