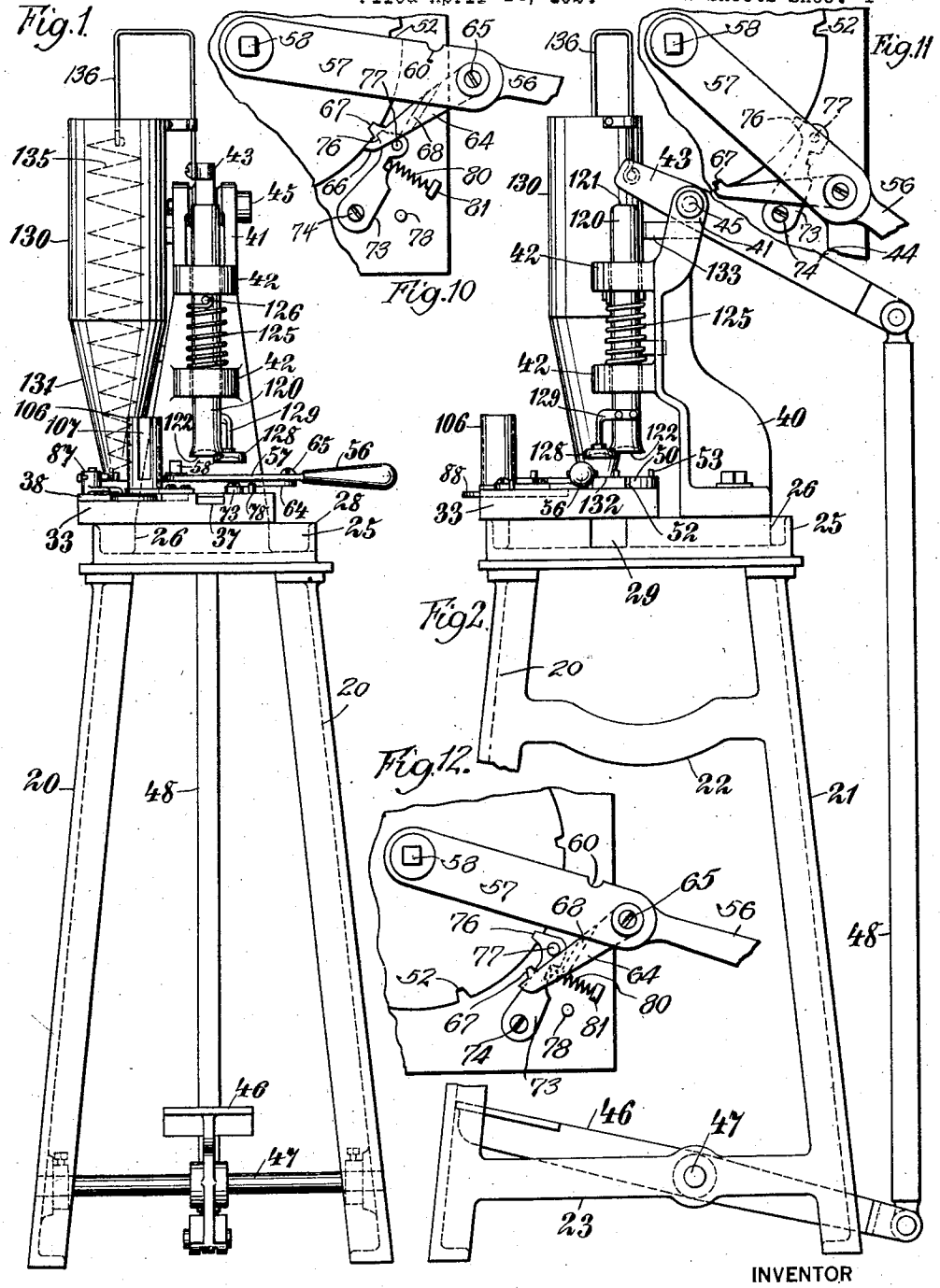
Aug. 23, 1927. 1,640,000

W. G. KENDALL

POWDER PRESS

Filed April 14, 1924 2 Sheets-Sheet 1



INVENTOR

William G. Kendall.

BY Todd Bonneville

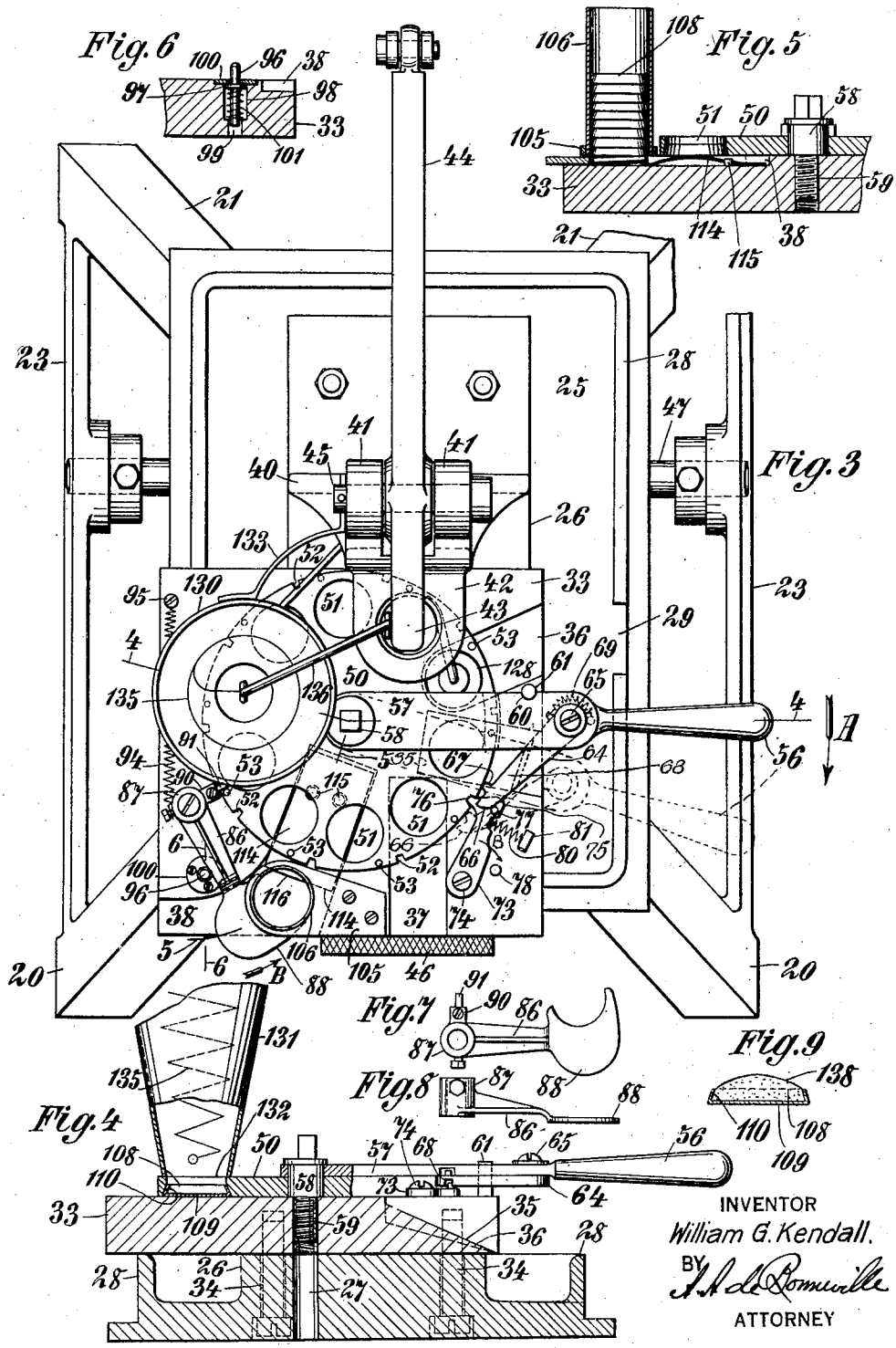
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POWDER PRESS

Filed April 14, 1924 2 Sheets-Sheet 2



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Patented Aug. 23, 1927. 1,640,000

UNITED STATES PATENT OFFICE.

WILLIAM G. KENDALL, OF NEWARK, NEW JERSEY.

POWDER PRESS.

Application filed April 14, 1924. Serial No. 706,379.

This invention relates to a powder press, and is an improvement of the powder press described in my Letters Patent No. 1,244,096, dated October 23rd, 1917.

The object of the present invention is the production of a machine, whereby a plurality of receptacles are filled one after the other with a predetermined measured quantity of powder like rouge, the latter being pressed into the receptacle, with a portion thereof extending above its top edge and disposed with a spherical top surface. The adhesion of the particles of the rouge or other powder suffices to convert the particles of the powder into a compressed tablet, which is available for use by rubbing on its surface with a powder puff, cloth or the like.

The organization of the invention comprises a rotatable disc, with measuring openings, for the receipt at one side of receptacles, and on the other side of powder, to be compressed into and above the top edge of the walls of the receptacles. The thickness of the disc with its holes, provides a measuring means for the requisite quantity of powder for each receptacle. A forming die is provided to enter the openings of the disc to compress the powder, and an ejector die ejects the tablet and receptacle from said openings.

In the accompanying drawings Fig. 1 represents a front elevation of my improved powder press; Fig. 2 shows a right hand side view of Fig. 1; Fig. 3 indicates an enlarged top plan view of Fig. 1 with some of the elements in dotted lines for changed positions thereof; Fig. 4 represents a section of Fig. 3 on the broken line 4, 4; Fig. 5 shows a section of Fig. 3 on the broken line 5, 5; Fig. 6 is a section of Fig. 3 on the line 6, 6; Fig. 7 indicates a top plan view of a detail; Fig. 8 represents a front view of Fig. 7; Fig. 9 shows an enlarged sectional elevation of a receptacle with its tablet; Figs 10, 11 and 12 show fragmentary portions of Fig. 3 with the movable elements in different positions.

The powder press is indicated with the supporting frame consisting of two pairs of legs. Each pair of legs comprises the front leg 20 and the rear leg 21. Each pair of legs is connected by the upper connecting brace 22 and the lower connecting brace 23. A cup shaped head is indicated in its entirety by the numeral 25, and has formed therewith the faced supporting pad 26 with the opening 27 and the flange 28 having the opening 29.

A rectangular supporting plate 33 is supported on the pad 26 and is held in place by the screws 34. The plate 33 has formed in its upper face the inclined waste chute 35, and the discharging chute 36 at one side thereof and the waste chute 37 at its front end. A depression 38 is also formed in the upper face and front end of the plate 33.

A journal bracket 40 with the journal lugs 41 at its upper end and the guide lugs 42 on its front face is fastened to the pad 26. A lever with the front member 43 and rear member 44 is hinged to the lugs 41 by means of the pin 45. A foot treadle 46 is supported on an axle 47 which is supported in bearings formed in the connecting braces 23. A connecting rod 48 connects the member 44 and the treadle 46.

A rotatable supporting and measuring disc 50 is supported on the supporting plate 33. The disc 50 has formed therein a plurality of openings 51 which converge for a predetermined distance from the bottom face of the disc. The centers of the openings 51 are located on a circle described from the axial center of the said disc. A plurality of equidistant vertical slots 52 are formed in the circumferential surface of the disc 50, and a plurality of equidistant trip pins 53, extend up from the upper face thereof. An operating handle 56 with the flat shank 57 is pivoted over the disc 50, by means of the pivot 58, having the threaded shank 59, which latter is in threaded engagement with a threaded opening in the plate 33. The bottom face of the shank 57 bears on the top face of the disc 50. A depression 60 is formed in an edge of the shank 57, and is located to lock with the stop pin 61, which extends up from the supporting plate 33. A latch arm 64 is pivoted to the bottom face of the shank 57 by means of the screw pin 65, and has formed therewith the nose 66 and the heel 67. A guide groove 68 extends up from the lower face of the latch arm 64. A spring 69 on the bottom face of the shank 57 has one end fastened thereto and its other end is fastened to the latch arm 64. The spring 69 tends to draw the latch arm 64 toward the circumferential edge of the disc 50. A second latch arm 73 is pivoted to the supporting plate 33, by means of the screw pivot 74, and has formed therewith the nose end 75 and the heel 76. A pin 77

extends from the upper face of the latch arm 73 and is disposed to engage the guide groove 68 of the latch arm 64. A stop pin 78 for the latch arm 73 extends up from the supporting plate 33. A spring 80 bears between the latch arm 73 and a lug 81, extending up from the supporting plate 33.

A pusher arm 86 has formed at one end thereof the hub 87 and at its other end the depending crescent shaped pusher blade 88. The arm 86 bears on the supporting plate 33 and the pusher blade 88 bears on the face of the depression 38 in said plate 33. A boss 90 extends from the hub 87 and a trip pin 91 is detachably connected to said boss. The trip pin 91 is disposed in the path of the trip pins 53, extending up from the disc 50. A spring 94 has one end fastened to the hub 87 and its other end is fastened to a screw pin 95 extending from the plate 33. A spring actuated stop pin 96 has extending therefrom the circumferential flange 97. An opening 98 reduced in diameter at 99 is formed in the plate 33, and a plate 100 with an axial opening is forced and clamped in a depression in the plate 33 over the opening 98. The stop pin 96 is located in the opening 98 with its flange 97 normally bearing against the plate 100. A spring 101 encircles the pin 96 in the opening 98 and bears between the flange 97 and the bottom of the opening 98. The stop pin 96 normally bears against the pusher arm 86 with the coaction of the spring 94. When the pin 96 is depressed, the arm 86 can be swung on the other side thereof.

Upon the supporting plate 33 is detachably fastened the plate 105, which supports the charging barrel 106 that has formed in its wall the longitudinal opening 107, to easily fill it with the receptacles 108 that are each indicated with the flat bottom 109 and the upwardly and inwardly retaining flange 110.

A plate spring 114 is located in the depression 38 and has formed therein a pair of openings which engage the pins 115 that extend up from the plate 33. The outer end 116 of the spring 114 extends below the opening of the barrel 106.

In the guide lugs 42 is guided the plunger 120 having the rounded top end 121 and the concaved bottom end 122, which latter constitutes a pressing die. The plunger 120 can reciprocate in the guide lugs 42. A spring 125 encircles the plunger 120 and bears between the lowermost lug 42 and a pin 126 extending through said plunger 120. The tension of the spring 125 tends to force the said plunger upwardly. An ejector die is indicated at 128 and has extending from its top the arm 129, which is fastened to the plunger 120. The dies 122 and 128 are spaced so that they will be in alignment with a pair of the openings 51 of the disc, when the latter is swung in proper position therefor.

A charging hopper 130 with the nozzle outlet end 131 is located with its lower end 132 bearing on the upper face of the disc 50, and is held in place by the bracket 133. One end of the latter is fastened to said hopper 130 and its other end is fastened to one of the lugs 41. A helical spring stirrer 135 in the hopper 130, has its lower end fastened adjacent to the outlet end of the nozzle 131, and its other end is fastened to a U-shaped bracket 136, and the later in turn has one end thereof fastened to the member 43.

To operate the powder press the operating handle 56 is swung to the position shown in the drawings (see Fig. 3) with the depression 60 of the shank 57 locking with the stop pin 61. The charging hopper 130 is charged with the powder, rouge or other material operated upon and the charging barrel 106 is filled with the receptacles 108 one over the other as indicated in Fig. 5. The operating handle 56 is next swung in the direction of the arrow A (Fig. 3) and the nose 66 of the latch arm 64 bearing against the pin 77 causes the second latch arm 73 to swing in the direction of the arrow B (Fig. 3), and the heel 76 of said arm 73 is disengaged from the slot 52 of of the disc 50. The operating handle 56 upon a little further swing thereof locates the guide groove 68 opposite the pin 77 (see Fig. 10) and said pin enters said groove and maintains the heel 76 spaced from the disc 50. Upon the further swing of the operating handle 56, the pin 77 disengages from the guide groove 68 and the spring 80 forces the heel 76 into the next or following slot 52 to lock the disc in position. At the same time the heel 67 swings the disc 50 through an angle equal to the angle between a pair of lines extending through the axial center of the pivot 58 and the axial centers of a pair of the openings 51 (see Fig. 11). The operator now swings the operating handle 56 in a direction opposite to the arrow A and the inner edge of the latch arm 64 contacts with the pin 77 and the flexibility of the spring 80 permits the said latch arm to travel against said pin, and when the heel 67 contacts with the pin 77 the spring 80 also permits said heel 67 to clear said pin 77 (see Fig. 12). The operating handle 56 is then brought to its original position as indicated in Fig. 3. At the same time the trip pin 91 which is adjacent to one of the trip pins 53, is swung and the pusher blade 88 is swung under the charging barrel 106 in the direction of the arrow B (Fig. 3) and pushes the lower-most of the receptacles 108 in the path of one of the openings 51 against the pins 115. In this position the plate spring 114 forces the said

receptacle into the lower end of said opening 51, the taper of said opening maintaining the receptacle at the lower portion thereof. When the trip pins 53 and 91 are disengaged, the pusher blade 88 will be swung from under the barrel 106, by the tension of the spring 94. The operations described are repeated and when the receptacles 108 move under the nozzle outlet end 131, powder which has been placed therein will fill the said receptacle and the portion of the opening 51 above said receptacle. The operations resulting from swinging the operating handle 56 are repeated until one of the openings 51 with its receptacle 108 now charged with the powder, is under and in line with the pressing die 122. The operator now bears down on the foot treadle 46 and the member 43 bears on the top end 122 of the plunger 120 which is forced down, and the die 122 enters the opening 51 thereunder and compresses the powder into the receptacle and forms the tablet or compact 138.. The treadle 46 is next released, the plunger 120 rises and the handle 56 having been located in its first position as shown in Fig. 3, is again swung in the direction of the arrow A and the receptacle 108 with its tablet 138 is swung under the next opening 51 in line with the ejecting die 128. The treadle 46 is now again swung down and the ejecting die 128 ejects the receptacle 108 with its tablet from the disc 50 and it moves down the discharging chute 36. While a tablet is ejected by the die 128, a succeeding tablet is formed with the die 122, and thus the tablets are continuously formed and ejected. The waste chutes 35 and 37 are provided to carry away any powder that may be spilled on the disc 50. The shank 57 in its movements scrapes any surplus powder from the face of the disc 50 into said chutes 35 and 37. While the lever with the members 43 and 44 is being swung, the spring stirrer 135 is being elongated and contracted, and thereby the powder in the charging hopper 130 is stirred and prevented from compacting by its own weight, to be easily discharged from the nozzle outlet end 131. The lower end of the nozzle outlet end 131 bearing on the upper face of the disc 50 performs the function of a scraper for the powder operated upon. The volume of the space of each of the openings 51 in the disc 50 constitutes a measuring chamber for the requisite quantity of powder delivered to each receptacle 108.

It will be noted that each time the operating handle 56 is swung through an angle measured by the circumferential distance between the centers of two of the adjacent slots 52 of the disc 50, that one of its openings 51 is located in proper position to force one of the receptacles 28 therein, a second one of the openings 51 is located in proper position for the flow of material operated upon from the charging hopper 130 into said second of said openings and its receptacle, a third opening 51 is located in line with the pressing die for the functioning of the latter and a fourth opening 51 is located in line with the ejecting die for the functioning of the latter.

The opening 27 in the supporting pad 26, provides means for the escape of the fine powder operated upon, from the threads of the shank 59, where it is liable to collect during the operation of the machine, so that said shank can easily be removed, when it is required to clean the machine.

Various modifications may be made in the invention and the present exemplification is to be taken as illustrative and not limitative thereof.

Having described my invention what I desire to secure by Letters Patent and claim is:—

1. In a powder press the combination of a rotatable disc having openings, a charging barrel adjacent to said disc for a plurality of receptacles, a pusher arm with a pusher blade adapted to swing under said barrel and push the receptacles one after the other in position below the openings in the disc, flexible means below the disc to force the said receptacles one after the other into the lower portions of said openings, means to charge said openings and receptacles with a powder to be operated upon and means to compress the powder into said receptacles to form tablets therefrom.

2. In a powder press the combination of a supporting plate, a disc pivoted to the plate, said disc having a plurality of openings with their centers struck on a circle having its center coaxial with the axial center of the disc, a plurality of trip pins extending up from the disc, means to rotate the disc, a charging barrel for a plurality of receptacles extending over the supporting plate with its bottom end spaced therefrom, a pusher arm having a pusher blade formed at one end thereof and a hub at its other end, the said hub pivoted to the plate, a trip pin extending from said hub adapted to coact with the trip pins of the disc during the movement of the latter and thereby swing the pusher blade under the charging barrel to move the lower-most receptacle therein in line with the openings of the disc, a spring on the plate adapted to force the receptacles one after the other into the openings of the disc, means to charge the receptacles with powder and means to press the powder into the receptacles.

3. In a powder press the combination of a supporting plate, a disc supported on the plate, said disc having a plurality of slots in the circumferential face thereof and a plurality of openings circumferentially dis-

tributed therethrough, a pivot extending from said plate through said disc to pivot the latter, an operating handle with a flat shank, said shank bearing on the disc and pivoted to said pivot, a latch arm pivoted to the bottom face of said shank and having a heel disposed to lock with the slots of the disc and having a groove in the lower face thereof, a second latch arm pivoted to said plate and having a heel adapted to lock with the slots of the disc, a pin extending from the upper face of the second latch arm adapted to engage the outer edge of the first latch arm to disengage the heel of the second latch arm from its slot in the disc, the pin of the second latch arm adapted to engage the groove in the first latch arm when the heel of the second latch arm clears the slot in the disc, means to charge the openings of the disc with receptacles, means to charge said receptacles with powder operated upon and means to compress said powder into said receptacles.

4. In a powder press the combination of a disc having a plurality of holes extending therethrough, each of said holes tapering upwardly for a predetermined distance from the bottom face of the disc, a supporting plate for the disc, said supporting plate having waste chutes, means to locate receptacles in the tapered portions of the holes of the disc, means to charge said receptacles with a powder operated upon, means to compress the powder into said receptacles, means to eject the receptacles with their compressed powder from the holes in the disc, an operating handle with a flat shank pivoted over the disc, the said shank bearing on the top face of the disc, means connected to said shank coacting with said disc to rotate the latter and locate it in proper position, said shank when moving over the surface of the disc, forcing any spilled powder into the waste chutes of the supporting plate.

5. In a powder press the combination of a frame, a head for the frame, a journal bracket extending up from said head, a lever pivoted to the top end of said bracket, means to oscillate said lever, a supporting plate fastened to the top face of the head, a rotatable supporting and measuring disc pivoted to said plate, said disc having a plurality of openings extending therethrough, a charging barrel for receptacles to be filled with a powder to be operated upon extending up from said plate, means to locate said receptacles into the openings of the disc, a charging hopper for said powder fastened to said journal bracket with its lower outlet end bearing on said disc in the path of the openings thereof, a helical spring in the said charging hopper with one end thereof fastened to the hopper adjacent to its outlet end and the other end of the spring in connection with said lever, said spring extending and contracting with the oscillations of the lever and thereby stirring the powder in the charging hopper to secure its easy flow therefrom, said powder flowing into the openings of the disc and into the receptacles therein during the rotations of the disc, means actuated by said lever to compress the powder into said receptacles and over the same and means actuated by said lever to eject the receptacles with their compressed powder from the disc.

Signed at the borough of Manhattan, city of New York in the county of New York and State of New York this 11th day of April A. D. 1924.

WILLIAM G. KENDALL.