(No Model.)

2 Sheets—Sheet 1.

E. A. COLES.

MACHINE FOR MAKING PILLS, LOZENGES, &c.

No. 332,494. Patented Dec. 15, 1885.

Fig. 1.

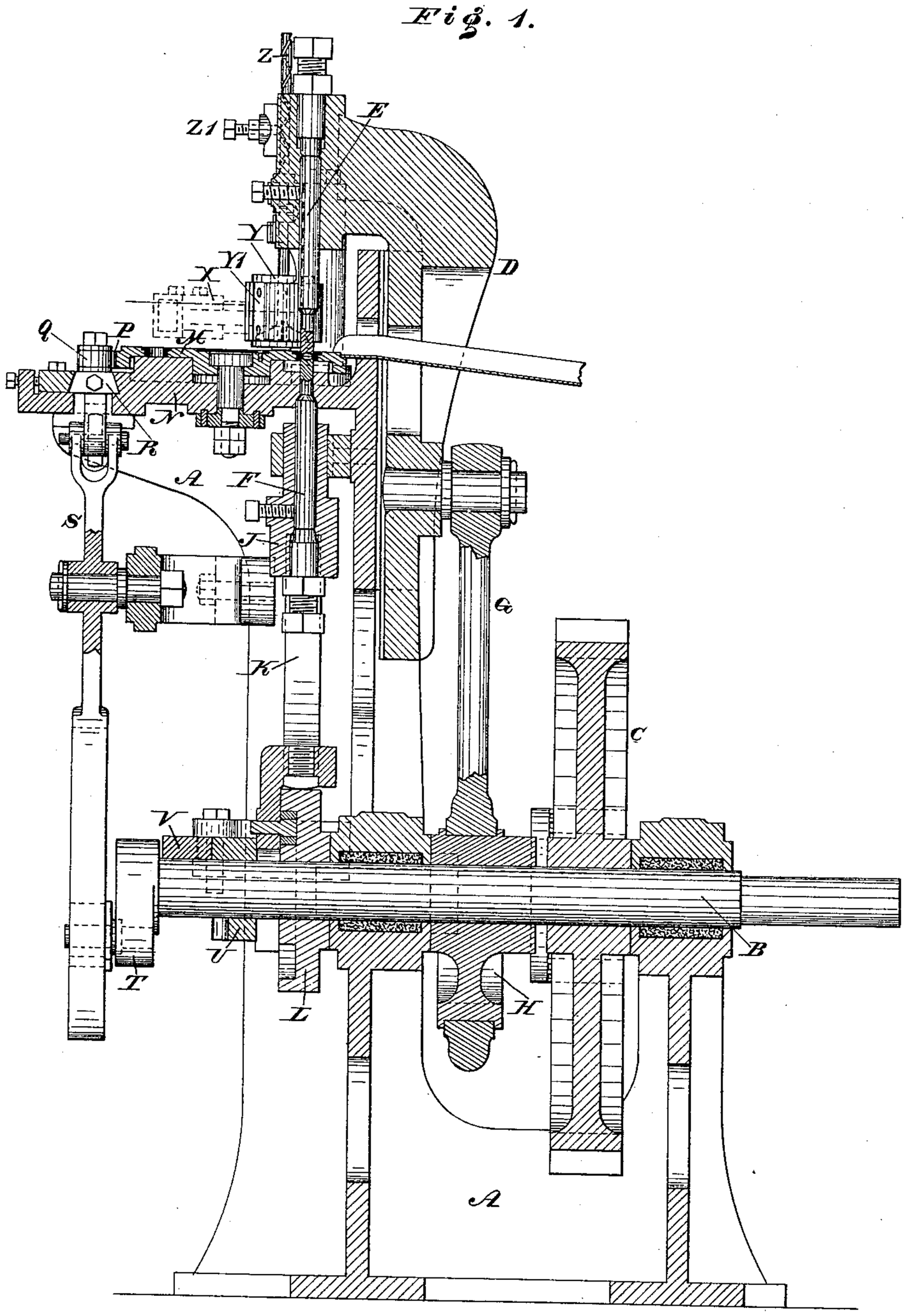
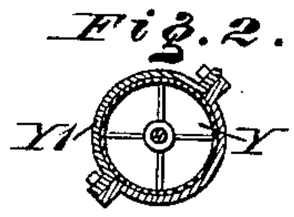


Fig. 2.



WITNESSES:

L. Douville

W. F. Fitches

BY

INVENTOR:

E. A. Coles

John A. Wiedersheim

ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

E. A. COLES.

MACHINE FOR MAKING PILLS, LOZENGES, &c.

No. 332,494. Patented Dec. 15, 1885.

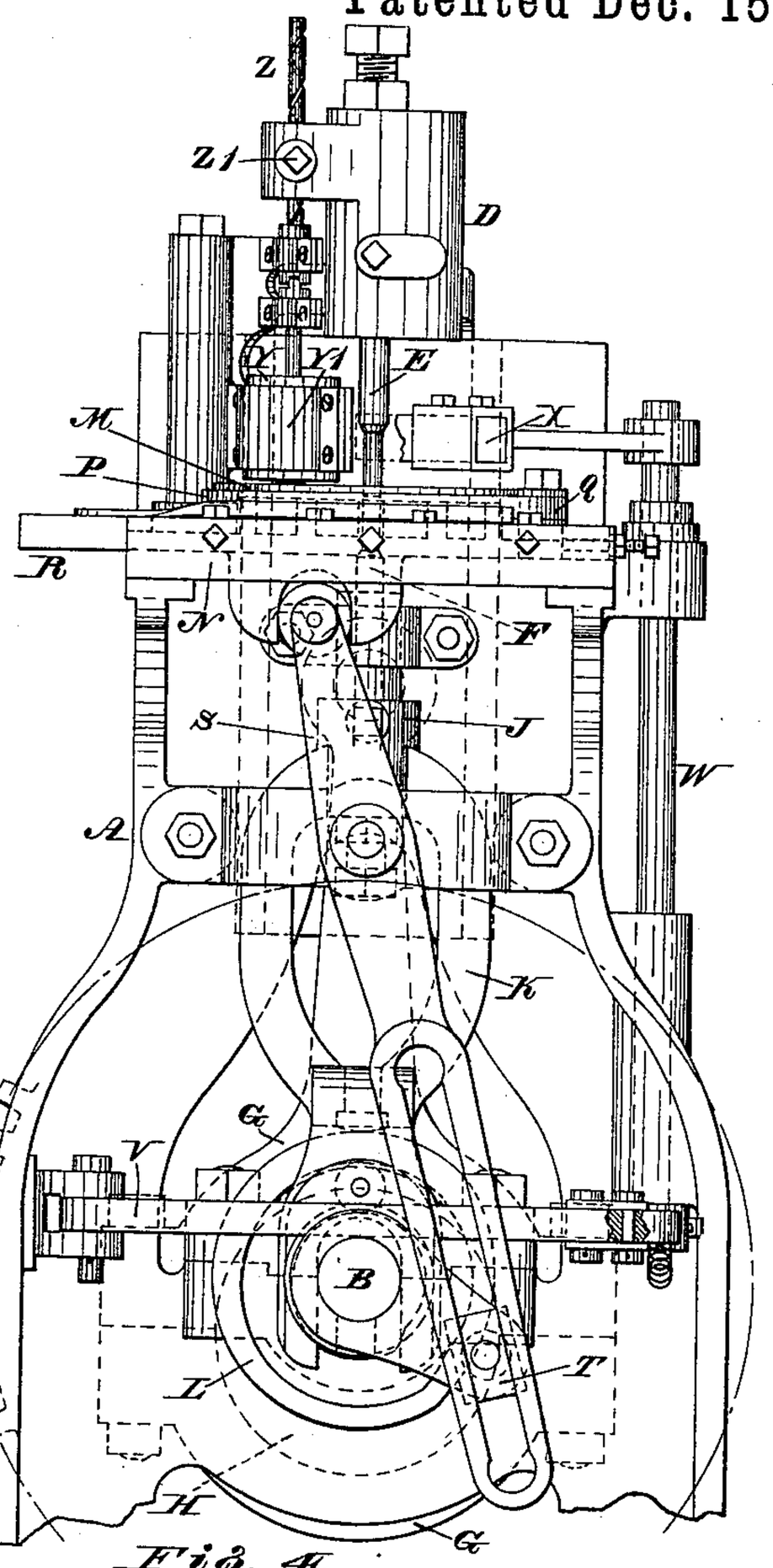
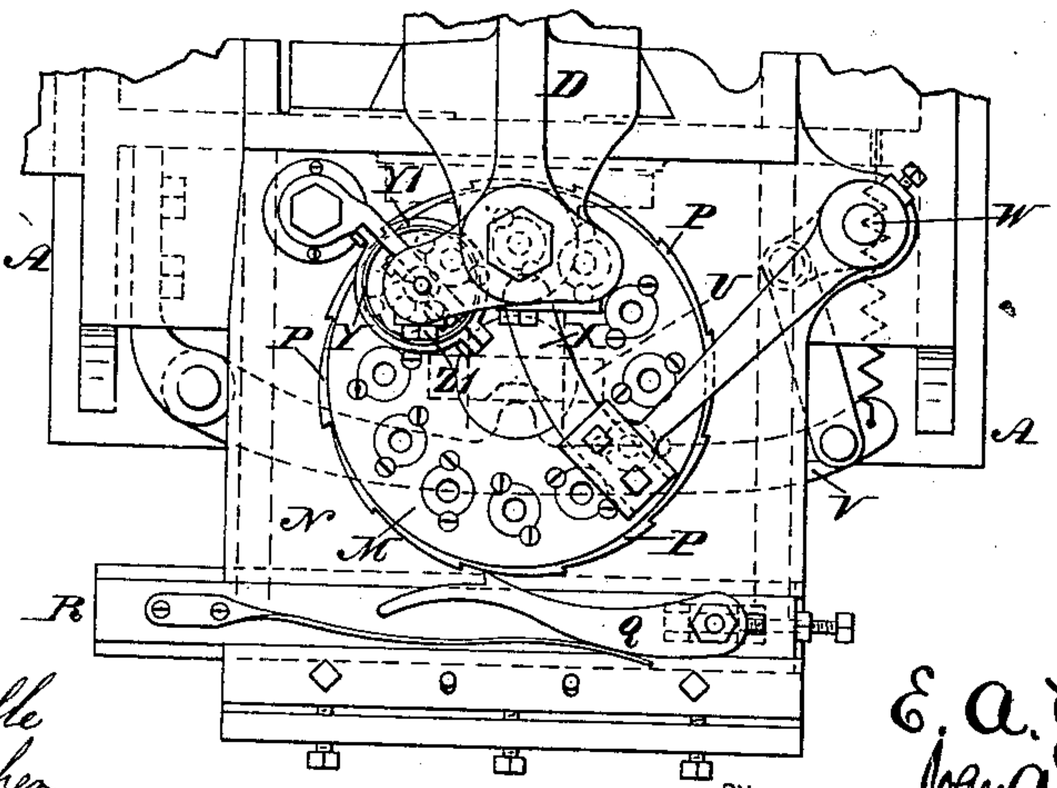


Fig. 3.

Fig. 4.



WITNESSES:

L. Douville

W. F. Kircher

INVENTOR:

E. A. Coles

by Louis Widersheim

ATTORNEY.

UNITED STATES PATENT OFFICE.

ERSKINE A. COLES, OF PHILADELPHIA, ASSIGNOR OF ONE-HALF TO WILLIAM D. BILLMEYER, OF YORK, PENNSYLVANIA.

MACHINE FOR MAKING PILLS, LOZENGES, &c.

SPECIFICATION forming part of Letters Patent No. 332,494, dated December 15, 1885.

Application filed February 24, 1885. Serial No. 156,698. (No model.)

To all whom it may concern:

Be it known that I, ERSKINE A. COLES, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Machines for Making Pills, Lozenges, Tablets, &c., which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 represents a vertical section of a machine for making pills, lozenges, tablets, &c., embodying my invention. Fig. 2 represents a section of a detached portion. Fig. 3 represents a view of a portion at a right angle to Fig. 1. Fig. 4 represents a top or plan view of a portion thereof.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a machine for making pills, lozenges, tablets, &c., embodying mechanism for properly supplying the dies with material, operating the dies to compress said material, separating the dies, removing the pills, &c., as formed.

Referring to the drawings, A represents the frame of the machine, and B represents the main shaft thereof, properly mounted on said frame and carrying a wheel, C, to which power is communicated in any suitable manner.

D represents a vertically sliding or moving head, which is guided in ways at the top of the frame A, and having secured to it the upper die, E, of the machine.

F represents the lower die of the machine, both dies being vertically arranged, and having on their working-faces a depression or cavity of the contour of a pill, lozenge, &c., to be made. Connected with the head D is a pitman or rod, G, the lower end whereof is connected with an eccentric, H, on the main shaft B, whereby rising and falling motions are imparted to said head and consequently to the upper die, E. The lower die, F, is attached to a head or support, J, which is vertically guided on the frame of the machine, and is connected with an adjustable yoke, K, the latter being engaged by a cam, L, on the main shaft, whereby rising and falling motions are imparted to said support J, and consequently to the lower die. The lower part of the yoke K is L-shaped or angular, one limb carrying an adjusting-screw, the head whereof rests on the outer face of the cam L, and the other limb having a stud or roller, which plays in the groove in the side of said cam, whereby the yoke is positively operated in both directions.

M represents the table of the machine, the same being of circular form and rotatably mounted on a bed, N, of the frame A, and formed with a series of pockets arranged in curvilinear direction, which when the table is rotated register with the opening in said head through which the lower die is passed. On the rotary table M is a ratchet, P, with which engages a spring-pressed pawl or dog, Q, the latter being adjustably pivoted to a slide, R, which is mounted on the bed N of the frame, and has connected with it a swinging rod or arm, S, whose axis is on the frame A, and whose lower end is slotted to receive a wrist-pin of a crank or crank-wheel, T, which is keyed or otherwise connected with the main shaft B, it being seen that the operation of the arm S imparts motions to the slide R, and by means of the pawl or dog Q causes rotation of the table M, the motion being intermittent. To the shaft B is secured a cam, U, which is adapted to engage with and operate a lever, V, formed of jointed sections, one section being fixed to a vertical shaft, W, whose bearings are on the frame A, and whose upper end carries a wiper, X, (shown in dotted lines, Fig. 1, and full in Fig. 4,) said wiper being formed of a piece of felt or other suitable material held by a clamp on the end of an arm which is attached to the shaft W, as shown in Figs. 3 and 4, the piece of felt or material being adapted to move between the working-faces of the dies when the latter are separated and clean the same and sweep over the table M, so as to direct the pill, &c., as made to a discharge-chute.

Y represents a distributer or agitator, which is connected with a rotary stem, Z, the latter passing freely through a vertical opening in the head D, and having spiral grooves in re-

versed direction, the same being adapted to be engaged by a screw, Z′, fitted to said head. The distributer Y is located in a feed-box, Y′, which is secured to the frame A, and located above the table M and adjacent to the die E, it being noticed that as the head D rises and falls the screw Z′ thereon entering the spiral grooves of the stem Z causes the latter to rotate alternately in opposite directions, whereby the distributer Y causes a proper discharge of material from the box Y′ and the filling of the pockets, and prevents packing of the material in the feed-box.

The operation is as follows: When power is communicated to the shaft B, the dies separate, and a quantity of material drops from the box Y′, the same filling one of the pockets in the table M, it being noticed that the bottom of said pocket is closed by the bed N. The table rotates, and the pocket as charged is carried beneath the upper die, a dwell of the table then occurring, and the lower die rising through its guide in the frame A and entering the charged pocket of the table. The upper die quickly descends and the material between the dies is compressed, the pill, &c., thus being formed. The dies now rise and then separate, it being noticed that the necessary motions of the lower die are occasioned by the cam L and those of the upper die by the eccentric H. The wiper quickly enters between the dies, removes the pill, &c., from the lower die, and directs it to the discharge-chute, and also sweeps or cleans the faces of both dies, after which it returns to its normal position, it being noticed that its motions are due to the shaft W, lever V, and cam U. The lower die now descends and clears the table M, when the dog or pawl Q takes a fresh hold of the ratchet of the table and moves the latter the distance of one tooth, so that another pocket charged with material from the box Y′ reaches the dies, when the latter are again advanced and the material is compressed, the dies afterward separating, the pill, &c., as formed being removed, the face of the dies are swept or cleaned, and the pill, &c., directed to the discharge-chute or other place of collection.

The cam L is compound in its nature, so as first to advance the lower die into the charged pocket, the compression then taking place, and next raise said die above the table, so that the pill, &c., may be removed and the face of said die cleansed, said die being afterward lowered by said cam L and returned to its normal position.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for making pills, &c., a feed-box provided with a distributer which is rotated alternately in opposite directions, substantially as and for the purpose set forth.

2. The distributer Y, having a stem which is spirally grooved in opposite directions, and a rising and falling head having a screw or pin engaging with the grooves of said stem, substantially as and for the purpose set forth.

3. The rotary table M, having pockets and provided with a ratchet, in combination with the slide R, having a dog or pawl, Q, attached thereto, means to operate said slide, dies E and F, secured in heads D and J, respectively, means for raising and lowering said dies, and the frame having an opening for the passage of the die F, coincident with the charged pocket of the table, substantially as described.

4. The dies E and F and means for operating said dies, in combination with the shaft B, cam U, lever V, formed of jointed sections, vertical shaft W, and wiper X, substantially as described.

5. The wiper, in combination with the shaft W, jointed levers V, and cam U, substantially as and for the purpose set forth.

6. In a pill-machine, the lower die, in combination with the compound-cam L and the yoke K, having an angular end, one limb of which rests on the outer face of the cam and the other limb carries a roller which rides in a groove on the side of said cam, substantially as described.

E. A. COLES.

Witnesses:
JOHN A. WIEDERSHEIM,
A. P. GRANT.