

T. J. YOUNG.

Machines for Making Pills, Lozenges, &c.

No. 156,398.

Patented Oct. 27, 1874.

Fig. 1.

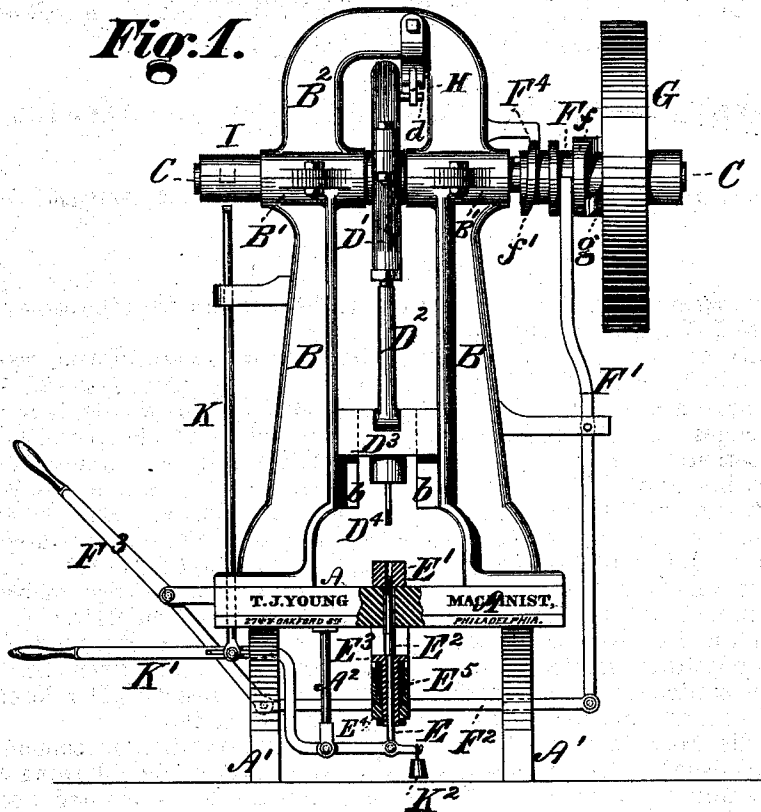


Fig. 2.

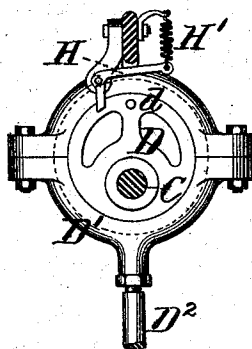
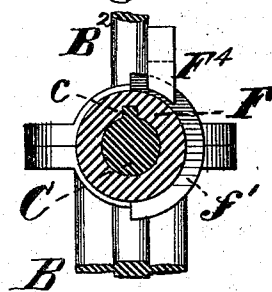


Fig. 3.



Fig. 4.



Witnesses.

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IMPROVEMENT IN MACHINES FOR MAKING PILLS; LOZENGES, &c.

Specification forming part of Letters Patent No. **156,398**, dated October 27, 1874; application filed
October 8, 1874.

To all whom it may concern:

Be it known that I, THOMAS J. YOUNG, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Pills, Lozenges, &c., of which the following is a specification:

The object of my invention is to provide a simple, convenient, and durable machine for compressing powders or preparations of various drugs or other materials into the form of pills or lozenges; to which end my improvements consist in combining, with suitable compressing mechanism, devices designed, respectively, to impart intermittent motion thereto, to hold the plunger stationary while material is being supplied to the die, and to automatically protrude the die from its socket for the withdrawal of the finished pill or lozenge, all as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a side view, partly in section, of a machine for making pills embodying my improvements; Fig. 2, a view, in elevation, of the pressing-eccentric and its spring-detent; Fig. 3, an end view, on an enlarged scale, of the cam which raises the die; and Fig. 4, a transverse section, on an enlarged scale, of the clutch-coupling for the driving-pulley.

To carry out the object of my invention, I provide a substantial table, A, which rests upon legs or standards A¹, and serves as the base or bed-plate of the machine. Housings B, having bearings B¹ at their upper ends, are secured upon the table A, and are connected at top by the arched cap B². A driving-shaft, C, rests and rotates in the bearings B¹, and carries a pressing-eccentric, D, which rotates with the shaft in the space between the housings. An eccentric rod, D², secured to the eccentric strap D¹, connects the same with a cross-head, D³, which slides upon vertical guides b b upon the inner faces of the housings. A plunger, D⁴, is secured to the cross-head, the lower end of which plunger may be either made flat, convex, or recessed in any desired form, according to the shape of the pill or lozenge which is to be manufactured.

It is obvious that a crank might be used in

lieu of the eccentric with the same effect, if desired.

The prepared material is compressed, at each revolution of the driving-shaft, between the plunger D⁴ and a vertical die, E, arranged concentrically with the plunger within a case or socket, E¹, secured upon the top of the table A. A shoulder, E², upon the die E rests upon a follower, E³, secured upon a cross-brace, E⁴, attached to the bottom of the table. The follower serves as a guide for the die, and serves, also, to transmit any excess of pressure to a spring, E⁵, which surrounds it, and upon which a flange on its upper end rests. The die is susceptible of vertical motion, for the purpose of expelling the finished pill or lozenge, as will be presently described.

Intermittent rotation is communicated to the driving-shaft in the following manner: A clutch-coupling, F, is mounted upon one end of the driving-shaft C, and slides upon a longitudinal feather, c, thereon. Adjacent to the coupling F a driving-pulley, G, is mounted loosely upon the shaft, and is rotated continuously by a belt from a line of shafting. Jaws g are formed upon the side of the pulley next the coupling, and engage with corresponding jaws f upon the coupling when the latter are thrown into connection with them, thus imparting revolution to the driving-shaft. The connection is effected by a shifting-lever, F¹, pivoted to the adjacent leg of the housings, and operated by a hand-lever, F³, to which it is connected by a link, F². A spiral collar, f', which is substantially a half-turn of a screw-thread, is formed upon the inner end of the coupling F. A detent, F⁴, secured to the cap B² of the housings, engages with the spiral collar f', and disconnects the pulley and clutch when the shaft has made one revolution. By this means the shaft is stopped after each revolution, to enable the finished pill or lozenge to be removed and fresh material to be supplied to the die; and, in order to stop and hold the eccentric in suitable position to admit of the introduction of the material, I provide a pin, d, upon one side of the eccentric, which strikes against a detent, H, pivoted to the cap B², and held in position by a spring, H'. The

tension of this spring is sufficiently great to prevent the displacement of the detent by the mere weight or momentum of the eccentric and its connections; but upon the application of power to the driving-shaft, as hereinbefore described, the spring yields, and allows the pin to pass the detent.

The die E is automatically protruded from its socket, after each descent of the plunger, by a cam, I, secured upon the driving-shaft, and acting upon a vertical rod, K, connected to a lever, K¹, pivoted to a standard, A², secured to the lower side of the table A, and likewise pivoted to the lower end of the die E. The lever K¹ is slotted at its connection with the rod K, and may carry a weight, K², to retain the die in its position in the socket, except when the die is raised, either in the manner described, or by the application of the hand of the operator to the lever K¹. This movement of the die may, therefore, be effected either automatically by the machine, or by the operator, as preferred.

The machine, as shown in Fig. 1, is ready for operation, and upon the application of power the plunger will descend, compressing the material, and afterward be withdrawn to its original position. The detent F⁴ will then disconnect the clutch and driving-pulley, and the spring-detent H will hold the eccentric at

the upper extremity of its travel, and prevent the accidental descent of the plunger. The cam I and its connections have meanwhile protruded the die from its socket, and the finished pill or lozenge having been removed by the attendant, the weight K² will return the die to the position shown, and the operation can be repeated.

I claim as my invention, and desire to secure by Letters Patent—

1. In a machine for making pills, lozenges &c., the combination of a pressing-eccentric and a spring-detent, substantially as set forth

2. In a machine for making pills, lozenges &c., the combination of a vertically-moving die, pivoted levers, and a cam upon the driving-shaft to protrude the die from its socket, substantially as set forth.

3. The combination of a driving-shaft, a driving-pulley loose thereon, a sliding clutch-coupling provided with a spiral collar, and a stationary detent to engage the spiral collar, substantially as set forth.

4. The combination of the shouldered die E, follower E³, and spring E⁵, substantially as set forth.

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Witnesses:

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