(No Model.)

E. A. COLES.

PILL MACHINE.

No. 332,493. Patented Dec. 15, 1885.

Fig. 1.

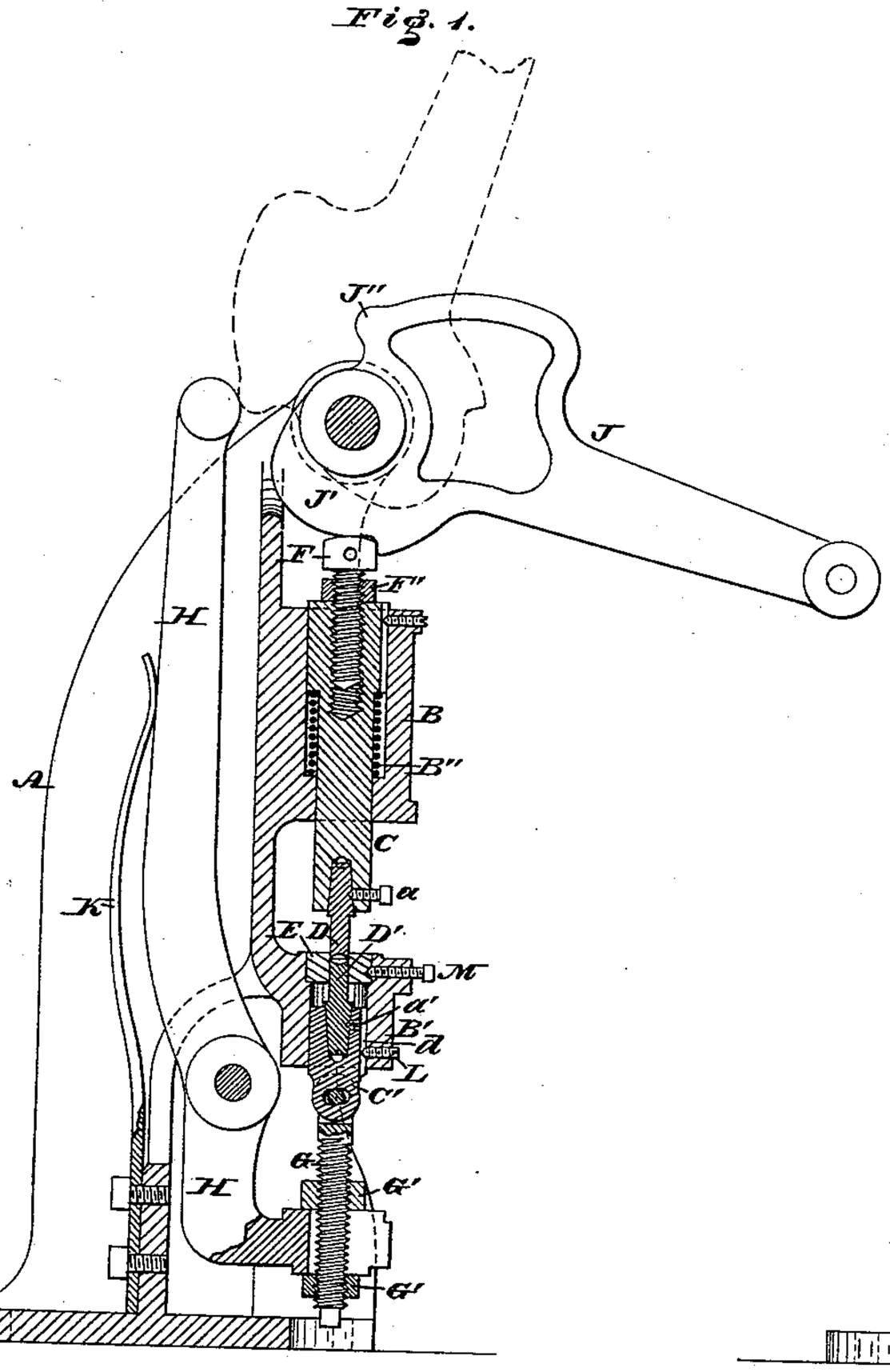


Fig. 2.

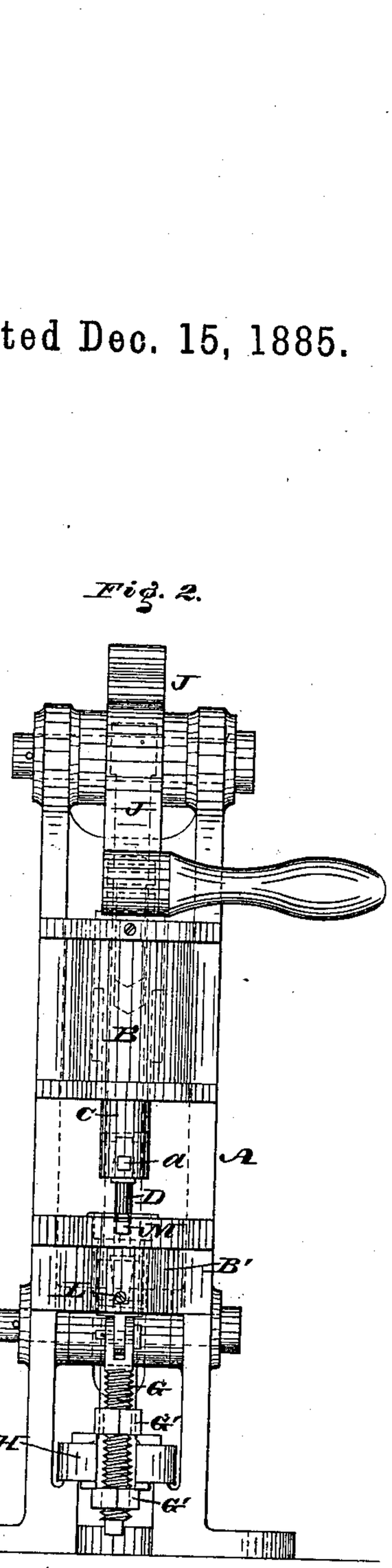


Fig. 3.

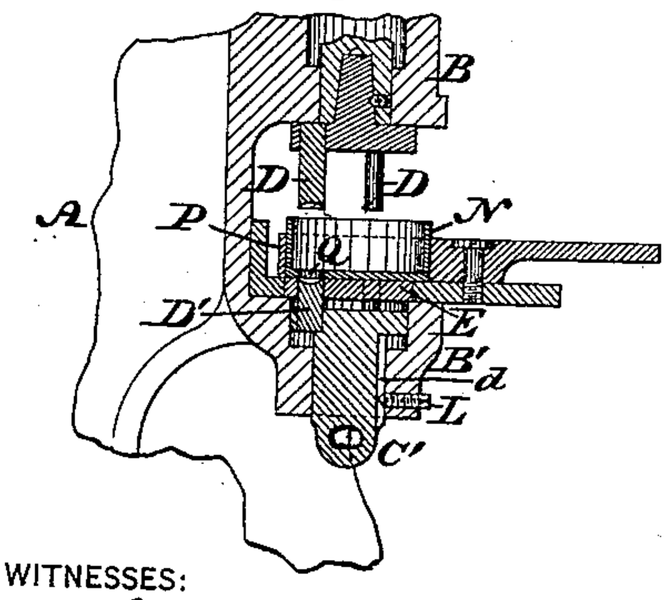
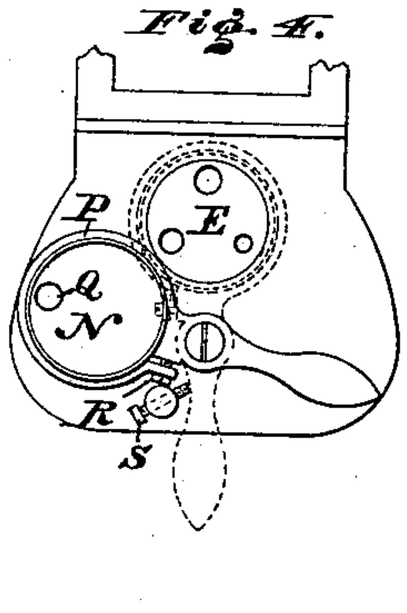


Fig. 4.



WITNESSES:

L. Douville

W. F. Kircher

INVENTOR:

Erskine A. Coles,

BY John A. Wiedersheim

ATTORNEY.

UNITED STATES PATENT OFFICE.

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

PILL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 332,493, dated December 15, 1885.

Application filed February 20, 1885. Serial No. 156,517. (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 Pill-Machines, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a partial vertical section and partial side elevation of a pill-machine embodying my invention. Fig. 2 is a side elevation at a right angle to Fig. 1. Figs. 3 and 4 are views of detached portions.

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

My invention consists of a pill-machine having a two-part cam adapted for causing the operation of both dies thereof, whereby a pill may be compressed and ejected or removed.

It also consists of means for rendering the dies adjustable.

It also consists of means for rendering the lower die removable.

Referring to the drawings, A represents the frame of the machine, and B B′ bosses thereof. In the boss B is fitted a head or socket, C, for holding one of the dies, D, of the machine. In the boss B′ is fitted a head or socket, C′, for holding the other die, D′, of the machine, each die having on its working-face a depression corresponding to the shape of half of a pill to be made. The dies of the sockets C C′ are secured to said sockets by a set-screw or pin, *a*, and screw-stud or pin *a′*, respectively, as shown in Fig. 1. At the upper or outer end of the boss B′ is supported a bed, E, which has an opening for the passage of the end of the die D′ and receives the end of the die D when the dies are closed. In the end of the socket C opposite to the die D is fitted a screw-bolt, F, and connected with the end of the socket C′ opposite to the die D′, by a pivotal or hinged joint, is a screw, G, which latter is passed through one limb of an elbow-lever, H, and attached thereto by nuts G′, the other end of the lever being adapted to be engaged by a cam-lever, J, which is pivoted to the upper part of the frame A, and also adapted to engage with the head of the bolt F, it being seen that the elbow-lever H is pivoted to the frame A and has bearing against it a spring, K, which, secured to the frame, serves to restore said lever, with connected parts, to its normal position. The exterior surface of the socket C′ is formed with a groove, *d*, into which projects a pin, stud, or screw, L, connected with the boss B′, for guiding said socket, and consequently the die D′, in a true and steady manner. The bed E is securely held by a screw or bolt, M, and the bolt F has fitted to it a jam-nut, F′, for holding the same in adjusted position, it being evident that by means of the bolt F and the nuts G′ the dies may be adjusted relatively to each other with nicety and for purposes of the formation of pills of different sizes. The cam-lever J has two swells, J′ J″, the swell J′ being adapted to bear against the head of the bolt F, for depressing the same and advancing the die D. The swell J″ is adapted to bear against the adjacent end of the lever H, and thereby raise the die D′. The dies are shown closed. When the cam-lever J is raised, the swell J′ leaves the head of the bolt F, so that the socket C, under action of the spring B″, is raised, thus raising the upper die. The swell J″ then comes in contact with the head of the elbow-lever H, whereby the lower die is raised, and its working-face appears above the bed E. The cam-lever J is now partly lowered, so that the swell J″ clears the lever H, and the spring K restores said lever to its normal position, thus lowering the die D′ and placing its working-face below the bed E. The material of which the pill is to be made is now placed into the depression at the top of the lower die, and the cam-lever is lowered to a greater extent, so that the swell J′ again bears against the bolt F, thus lowering the upper die, whereby the material between the dies is compressed and formed into a pill. The cam-lever is again raised, and thus the dies first separate or open, and the lower die is raised, whereby the pill is ejected above the bed, and may be removed by sweeping or direct application of the fingers of the operator.

In order to remove the lower die, the nuts G′ G′ are slackened, and as the screw G is passed through an open slot in the end of the limb of

the arm H and has a pivotal connection with the socket C′, it may be swung outwardly clear of said limb, whereby the socket and its connected die may be lowered from the boss B′ and entirely removed therefrom. The stud *a′* is then loosened, and the die may be readily disconnected from the socket and substituted by a different die, or replaced, as desired. The upper die may be removed by loosening the screw *a*.

In order to adapt the machine for the formation of pills of different sizes, the sockets C C′ are provided with dies D D′, the working-faces whereof are of different sizes. The bed E has a number of openings coincident with the dies D D′, so that the latter may enter said openings. On the top of the boss B′ is a feed-box, N, which is secured to a holder, P, the latter being pivoted to the boss, and provided with a proper handle, whereby the feed-box may be swung laterally, clear the dies D D′, and returned over the bed E. An opening, Q, is made in the bottom of the feed-box, and the box is rotatable on its holder, so that said opening Q may be located to register with either of the openings in the bed E, the side or rim of the holder being expansible, so that the box may be liberated, and when the box is restored and adjusted relatively to the opening Q and openings in the bed E said side or rim is tightened by means of a screw, R, thus clamping the box in position. A screw, S, in fitted to the boss B′, in order to limit the return motion of the holder P and adjust the opening Q with precision relatively to the opening in the bed.

When pills of a determined size are to be made, the feed-box is adjusted so that the opening Q registers with the opening in the bed, which conforms to said size. The box is moved over the bed so that the material therein falls through the opening Q into the proper opening of the bed, and thus the latter opening is filled. The box is then moved clear of the path of motion of the dies, after which the lever J is operated similar to that hereinbefore described, whereby the material is compressed and the pill made, and then raised above the bed, as previously stated, it being noticed that the other openings in the bed do not register with the opening Q in the box, and are thus not supplied with material, and consequently no pills are formed therein; but this is possible when the opening Q is made to register with either of said openings.

The machine is adapted to form lozenges, tablets, &c.

I am aware that it is not new in machines of this character to employ several cams rigidly secured to the driving-shaft to successively operate the different dies, nor is it new to employ levers in connection with said cams in the said operation, and such I do not broadly claim.

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

1. The two-part cam J′ and J″, in combination with lever H and dies D D′, the part J′ of the cam being directly in contact with the head of the socket or holder of the die D, substantially as and for the purpose set forth.

2. A two-part cam and an elbow-lever, in combination with the dies and their sockets or holders, the socket of the upper die having an adjusting screw-bolt, against which the cam operates, substantially as described.

3. In a pill-machine, the operating-lever J, having cams J′ and J″, in combination with socket C, provided with screw-bolt F, and having die D, and elbow-lever H, having socket C′, carrying die D′, pivotally secured thereto by the screw G, substantially as and for the purpose described.

4. The grooved socket C′, carrying the die D′, and pivotally hinged by the screw G to the elbow-lever H, in combination with the boss B′ of the frame A and screw L, substantially as and for the purpose described.

5. In a pill-machine, a die pivotally connected with a screw-bolt and detachably connected with an operating-lever, whereby said die may be removed from its boss or guide, substantially as and for the purpose set forth.

6. In a pill-machine, a die having a screw, G, pivotally connected therewith, in combination with an elbow-lever having a slotted limb and the nuts G′ G′, substantially as and for the purpose set forth.

7. A machine with two or more dies of different sizes, a bed having openings registering with said dies, and a feed-box having a discharge-opening which may be set to either of the openings of said bed, substantially as and for the purpose set forth.

8. The dies and bed, in combination with a feed-box having a discharge-opening and a holder in which said box is adjustably held, substantially as and for the purpose set forth.

E. A. COLES.

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