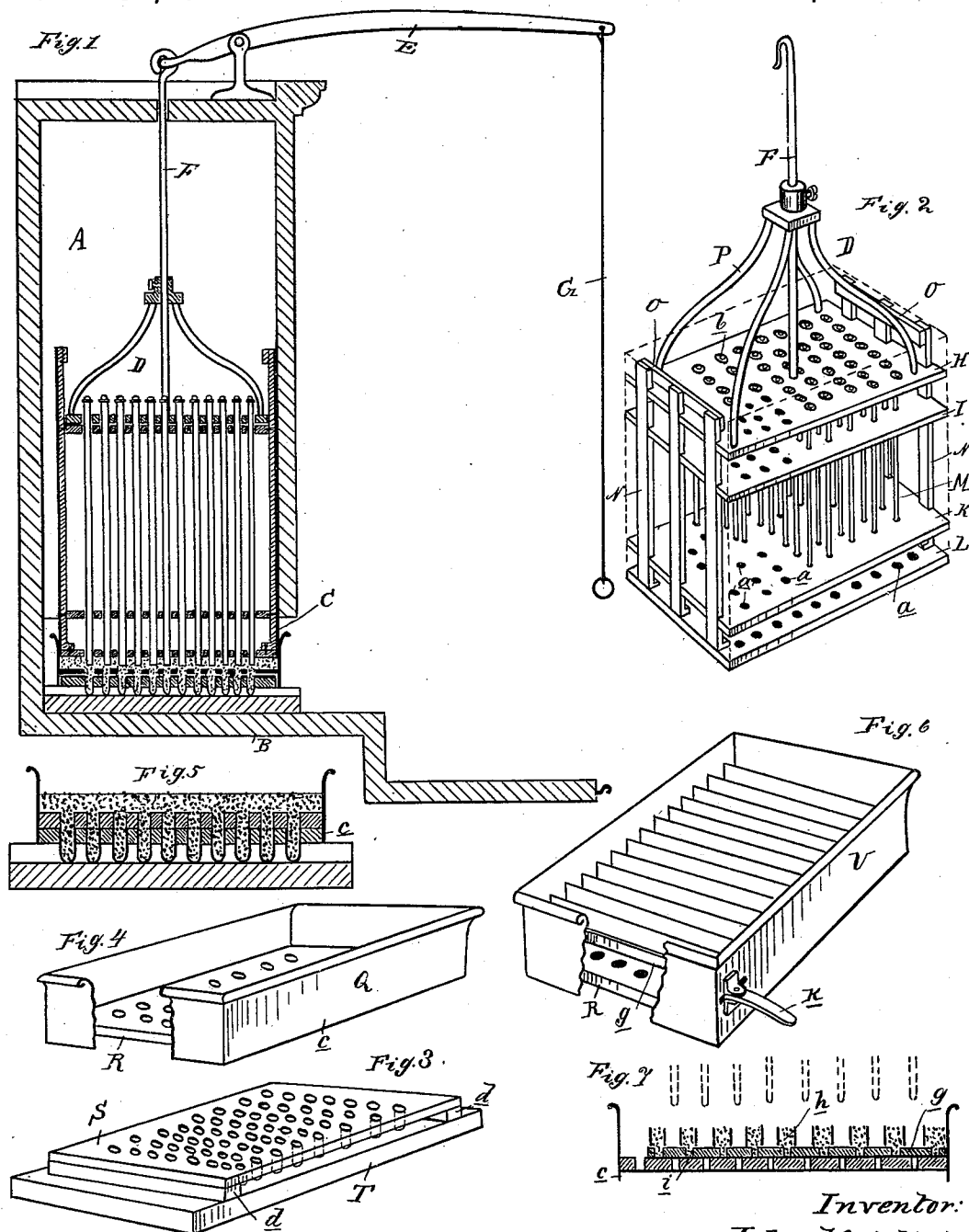


(No Model.)

J. KREHBIEL.
CAPSULE MACHINE.

No. 332,204.

Patented Dec. 8, 1885.



Attest:
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UNITED STATES PATENT OFFICE.

JOHN KREHBIEL, OF DETROIT, MICHIGAN, ASSIGNOR TO THE GLOBE DRUG AND CAPSULE COMPANY, OF SAME PLACE.

CAPSULE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 332,204, dated December 8, 1885.

Application filed May 13, 1885. Serial No. 165,355. (No model.)

To all whom it may concern:

Be it known that I, JOHN KREHBIEL, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Capsule-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

10 This invention relates to certain new and useful improvements in machines adapted to fill empty capsules with dry medicaments; and the invention consists in the construction of the various parts, their arrangement, combination, and operation, as more fully hereinafter described.

Figure 1 is a vertical central section through my machine as it appears in operation. Fig. 2 is a detached perspective view of the follower. Fig. 3 is a perspective view of a perforated plate arranged for holding the capsules in position for filling. Fig. 4 is a perspective view of the supply-receptacle. Fig. 5 is a vertical central section through the supply-receptacle and the capsule-holder as arranged for filling the capsules. Fig. 6 is a perspective view of a modification of the supply-receptacle, which I consider a mere equivalent for the one shown in the other figures. Fig. 7 is a vertical section through the receptacle shown in Fig. 7.

In the drawings, A is an inclosed chamber supported upon a suitable frame or table, B, and provided with an opening, C, at its front side. D is a follower adapted to receive a reciprocating movement in the chamber A by means of the lever E, which is connected to the follower by means of the rod F, and has a handle, G, attached to its front end for convenient operation.

The follower D, which is shown in the detached view in Fig. 2, is constructed as follows: H, I, K, and L are four perforated plates, each provided with a corresponding series of holes, a, through which the follower-pins M pass loosely. The plates I, K, and L are secured together into a frame by means of the vertical bars N, which latter also serve as guides for the loose plate H. The plate H has a vertical play between the plate I and the cross-bars O, which latter connect the up-

per ends of the vertical bars N and serve as stops to limit the independent vertical play of the plate H. The rod F is only connected to the top plate, H, and lateral stays P may be employed to make the connection firm. The follower-pins M are smooth, round pins fitting into holes a in the plates H, I, K, and L just loosely enough to be freely moved up and down, and they are prevented from falling out by having enlarged heads b, which support them from the top plate, H. Q is a receptacle having a perforated bottom, R, with holes corresponding to the holes in the follower-plates. It is also provided on the under side with a flange, c. S is another plate provided with a series of holes corresponding to the holes in the bottom R of the receptacle.

The parts above described are so arranged that the follower D exactly fits with its lower plate, L, into the receptacle Q, while the plate S fits in the same manner against the under side of the receptacle Q, and when the parts are thus brought together all the holes register exactly with each other in the different plates.

In practice the capsule-bodies to be filled are inserted in the holes of the plate S, small cleats d being laid under the edges of the plate to raise the latter sufficiently over a suitable bottom board, T, to bring the rims of the capsules (which are of equal length) flush with the top of the plate S. The receptacle Q is then placed over the plate S, so as to exactly register with it, and charged with a suitable quantity of the filler material, which is evenly spread over its bottom. The parts thus arranged are shown in Fig. 5, and they are now placed through the opening C under the follower D, so that when the latter is brought down its lower plate will register with the receptacle. The operator now unhooks the handle G, and by a quick succession of pulls alternately raises the follower up and lets it fall down by its own gravity. It will be seen that when the follower is raised up the top plate, H, is at the upper end of its vertical play within the follower, as shown in Fig. 2, and the follower-pins are retracted, so that their lower ends are just held in the plate K. Now, if the follower is allowed to drop the parts will fall together in this position, and

the lower plate, L, will first be arrested by its impact with the material in the receptacle Q; but the top plate with the follower-pins still continues to fall until it is arrested by the plate I, while the follower-pins pass through the holes in the lower plate and expend their momentum by each giving an individual impact to the material in the receptacle. This individual impact of each follower-pin packs the material into the capsules, and as each pin has just the same amount of momentum it will be seen that all the capsules are packed alike. The function of the plate L is to fill in and level the material previous to the impact of the follower-pins, and as it fits snugly into the receptacle Q it prevents to a large degree the formation of dust. The follower D is preferably inclosed upon its sides to prevent air-currents from carrying the dust through the follower, and the chamber A is also made tight and fitted close to the follower to prevent escape of the dust. Several applications of the follower will quickly fill the capsules, after which the handle G is hooked on and the receptacle Q withdrawn and then taken off the plate S. After the surplus material is brushed off, the capsules are ready to receive their caps. Coil-springs may be placed around the follower-pins, so as to supplement the action of the weight of such pins. The latter may then be made shorter and lighter. It will also be seen that the function of the plates I and K is merely that of guide-plates for the follower-pins.

When capsules are to be filled only partially, I use the receptacle U. Shown in Figs. 6 and 7. This receptacle has a sliding plate, *g*, placed over its bottom, and a series of compartments are formed in it by the lateral partitions *h*, which are secured to the walls of the receptacle. The sliding plate *g* has the same series of perforations *i* as the bottom plate, and can be brought to register with the latter by means of the lever *k*, secured to it, and passing out through the side of the receptacle. In practice the sliding plate *g* is pushed into the position shown in Fig. 7, in which it does not register with the bottom plate. The material is then filled into such alternate compartments, which allow it to drop into the perforations *i* of the sliding plate. The receptacle is then placed in the same manner as heretofore described over the plate which holds the capsules, after which the lever *k* is moved in the proper direction to

make the sliding plate register with the bottom plate of the receptacle, allowing the material withdrawn by the holes *i* to drop into the capsules.

I am aware of the Patents Nos. 200,846 and 308,687, and make no claim to the construction shown therein as forming part of my invention.

What I claim as my invention is—

1. In a capsule-filling machine, a vertically-reciprocating follower consisting of two parts secured together and constructed to slide one toward the other, and having a series of follower-pins of proper length to normally stand above the bottom plate of the lower part and to project through suitable holes in said bottom plate when the movable parts descend, substantially as described.

2. In a capsule-filling machine, a vertically-reciprocating follower consisting of two parts secured together and constructed to slide one toward the other, and having a series of follower-pins loosely hung from the upper part, and of suitable length to project through holes in the bottom of the lower part when the parts are brought together, substantially as specified.

3. In a capsule-filling machine, the vertically-reciprocating follower D, having loose top plate, H, guide-plates I, K, and L, in combination with the follower-pins M, having heads *b*, and passing loosely through corresponding perforations in the plates, arranged substantially as set forth.

4. In a capsule-filling machine, the combination of the following elements: a vertically-reciprocating follower having follower-pins, a chamber inclosing the follower, a lever and a suitable connection for reciprocating the follower, a receptacle having a perforated bottom and registering with the follower-pins, and a perforated plate registering with the bottom side of the receptacle and serving as a holder for the capsule-bodies, constructed, arranged, and operating substantially as described.

5. In a capsule-filling machine, the receptacle U, having a perforated bottom and partition-walls, the sliding plate *g*, having holes *i*, and the lever *k*, substantially as and for the purposes set forth.

JOHN KREHBIEL.

Witnesses:

H. S. SPRAGUE,
CHARLES J. HUNT.