(No Model.)

E. L. PATCH.

APPARATUS FOR PILL COATING.

No. 309,243. Patented Dec. 16, 1884.

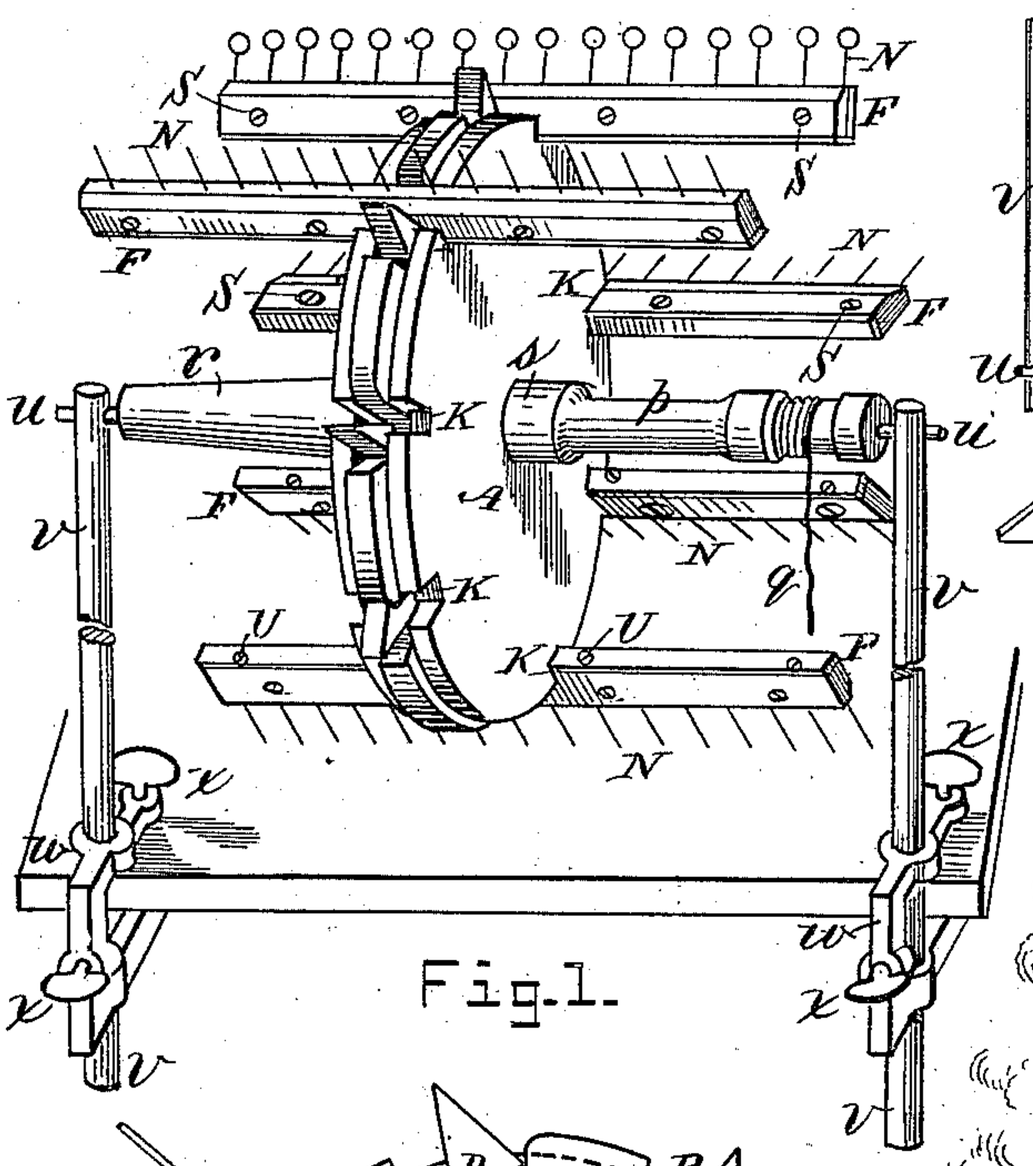

Fig. 1.

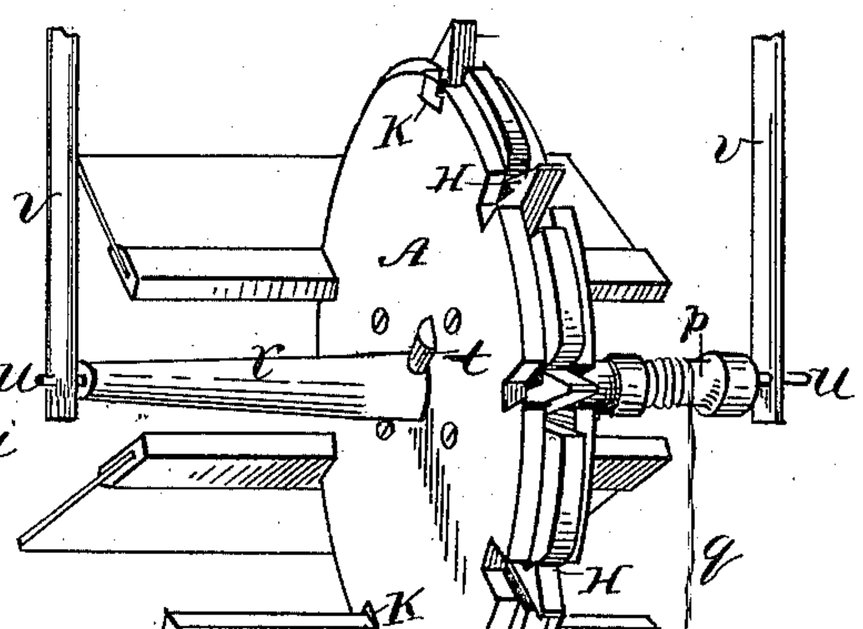

Fig. 6.

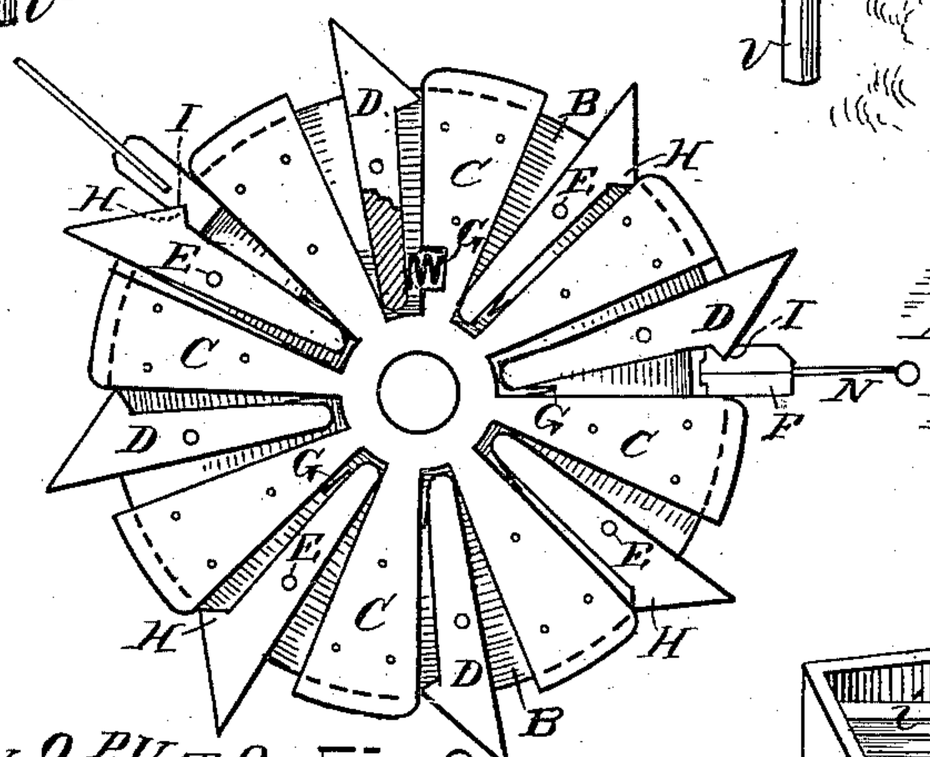

Fig. 2.

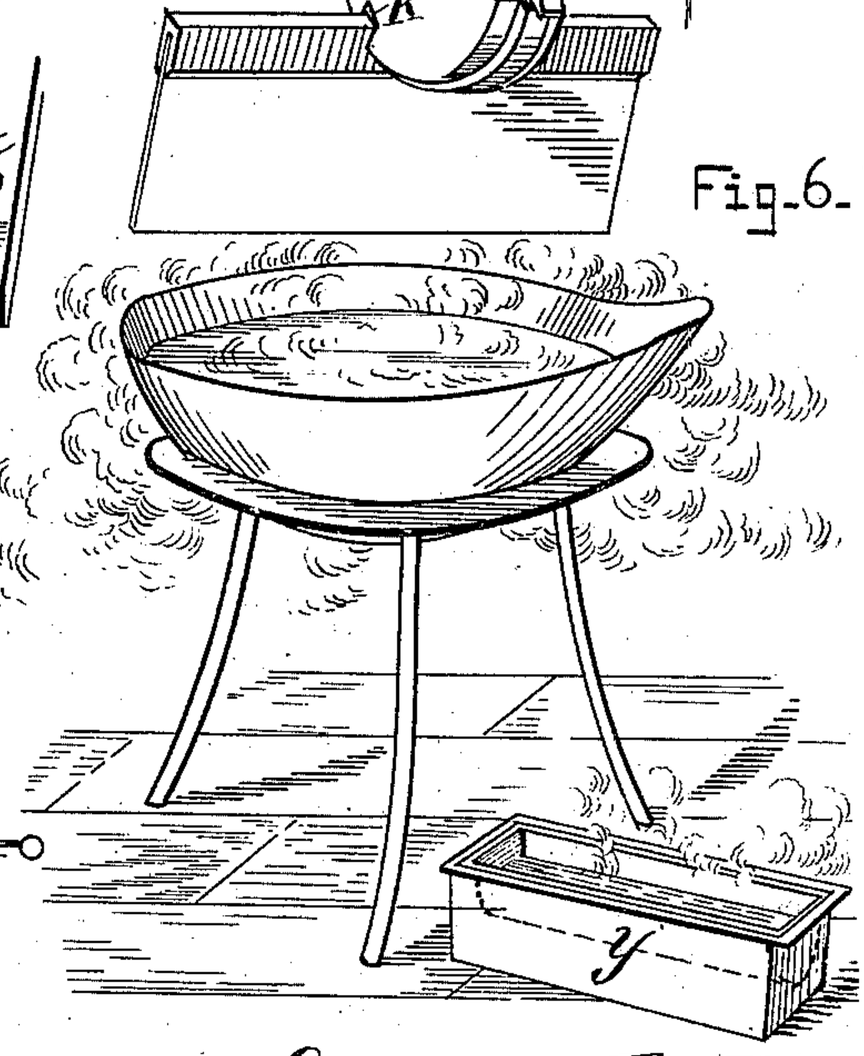

Fig. 7.

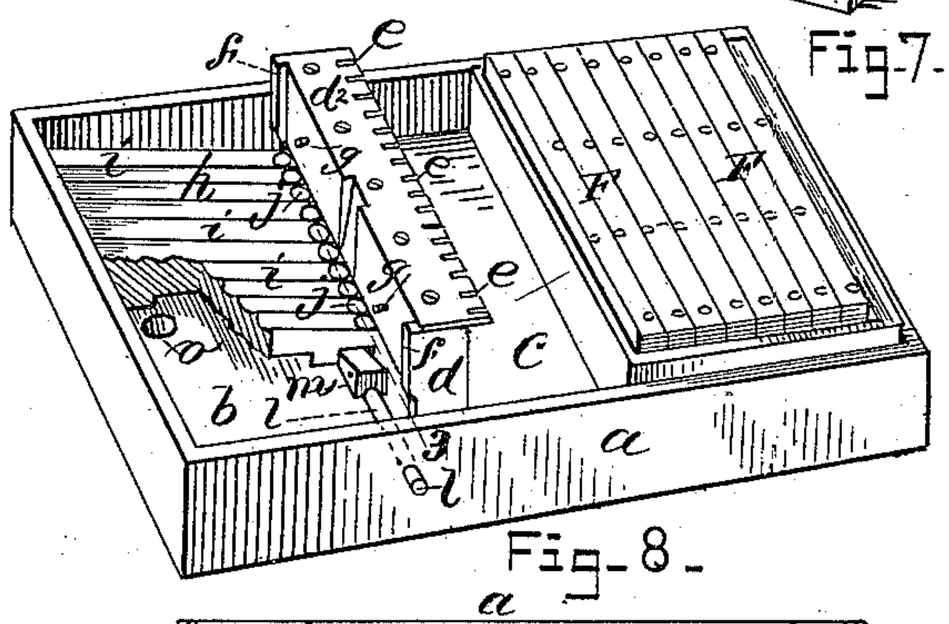

Fig. 8.

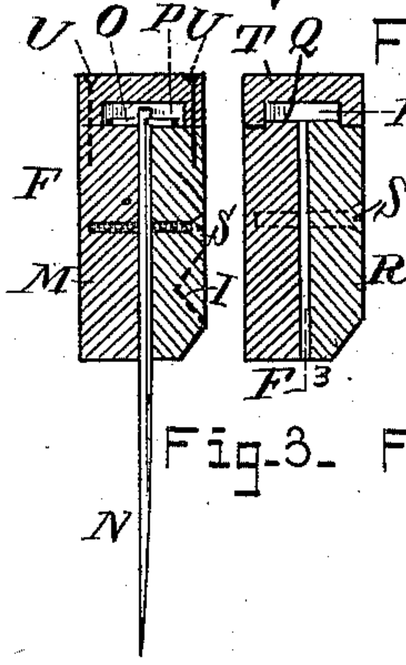

Fig. 3.

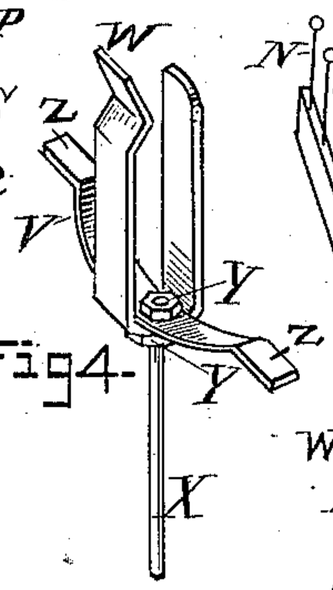

Fig. 4.

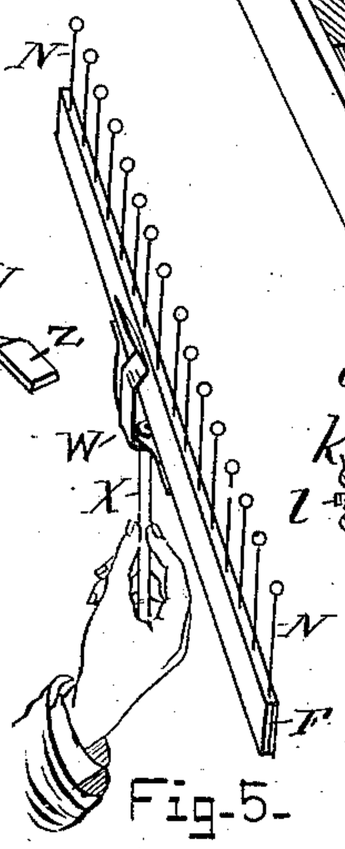

Fig. 5.

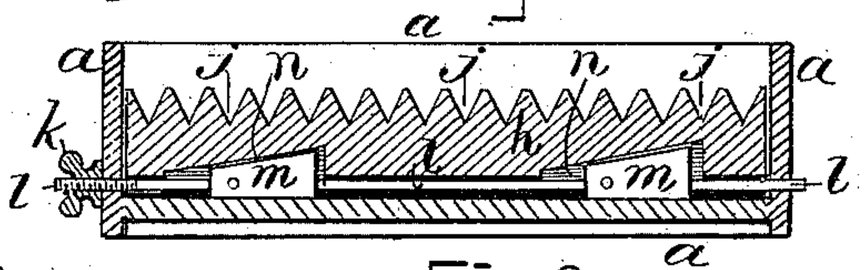

Fig. 9.

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UNITED STATES PATENT OFFICE.

EDGAR L. PATCH, OF BOSTON, MASSACHUSETTS.

APPARATUS FOR PILL-COATING.

SPECIFICATION forming part of Letters Patent No. 309,243, dated December 16, 1884.

Application filed March 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDGAR LEONARD PATCH, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and Improved Apparatus Designed to Facilitate the Process of Covering Pills with Plastic Coatings; and I do hereby declare the same to be fully described in the following specification and illustrated in the accompanying drawings, forming a part thereof.

The object of my invention is to produce an apparatus for the purpose of dividing, impaling, dipping, drying, and separating pills in the process of applying to them plastic coatings.

My improved invention comprises a dividing and separating tray, an alternate rotating drying-disk, impaling-bars, and dipping-handle. A specific description of the various improved parts, their functions, and construction is as follows, with due reference to the drawings accompanying, in which—

Figure 1 is a view in perspective of the drying-disk having several of the impaling needle-bars thereto attached. Fig. 2 exhibits the interior construction of said drying-disk with one impaling-bar and one fan attached. Fig. 3 embraces transverse sectional details of the impaling-bars. Fig. 4 is a view of the dipping-handle detached from the impaling-bar. Fig. 5 illustrates the facility with which the impaling-bars are rotated by hand in the preliminary process of partial cooling before they are set in the drying-disk. Fig. 6 is descriptive of my improved invention suspended and utilized for hastening evaporation. Fig. 7 is a drawing in perspective of the solution-dish containing heated compound. Fig. 8 is a perspective view of the dividing and separating tray. Fig. 9 indicates a transverse vertical section of said tray on the line 3, Fig. 8.

Further improvements in detail and the construction of the various varts are hereinafter explained by reference to the letters, in which—

A indicates the circular drying-disk, constructed separably, as seen in Fig. 2, and provided with recesses B, the number of which corresponds to the number of impaling-bars the disk is designed to carry, preferably eight. Said recesses or chambers B are constructed by securing to one of the circular parts forming said disk several triangular-shaped blocks, C, of suitable width and depth, extending radially from the center and increasing in width beyond the periphery or circumference of the disk. Each of the said chambers B is provided with holding-clutches D, which oscillate upon the axial pivot E when finger-pressure is applied at their outer or exposed ends to release the impaling-bars F they are designed to secure. To insure the rigid action of said clutches, suitable springs, G, are secured in pockets at the inner (face) ends of the blocks C, whose office is to firmly hold the jaw or nose H of said clutch within and against the V-shaped depression I, formed equidistant from the ends upon one side of the impaling-bars F, which is thus held firmly in conjunction with the mortises K, cut to receive said bars against the rear wall of the recess B. The impaling-bars F are composed of three suitably tongued and grooved parts. The construction thereof is best shown in Fig. 3, wherein the side M is vertically channeled to receive the desired number of impaling-needles N, studding the bar F its entire length, and projecting outwardly when in position for drying, as best illustrated in Fig. 1. Said needles are secured from rotation or withdrawal from their beds F^3 by the insertion of short holding-wires O through the needle-eyes, said wires being embedded in transverse slots P, channeled or grooved across the face of the tongue Q. The impaling-needles are thus held rigidly by the pressure of the side piece, R, secured to the side M through the medium of screws S. The grooved capping-piece T is now placed over the top of the side bars, M R, and held in position by screws U. In this construction the separation of the various parts for convenience of repair is secured.

The construction of the dipping-handle is exhibited in Fig. 4, and embraces two flat spring-metal plates, V W, held transversely upon each other by a threaded rod, X, and

nuts Y. One of said plates, W, is bent to form three sides of a parallelogram with one arm bent upon itself to form a V-shaped jaw fitting the central depression, I, in the impaling-bar F. The remaining plate, V, is molded to form the segment of a circle, the ends Z of which are reflexed on a plane with the back of said bar F, so as to form level bearings for the same. The easy adjustment secured by this construction facilitates the operator in picking up and manipulating the impaling-bars in the process of dipping and in the preliminary cooling, if desired, as in Fig. 5.

a is the tray, having two compartments, *b* and *c*. The former receives the uncovered pills, and the latter contains the coated and finished product. A transverse partition, *d*, separates said chambers, and is provided at the top with a lengthwise attached projecting strip or plate of metal or wood, d^2. Said projecting edge is cut into slots *e*, corresponding in number and width to the size and number of the impaling-needles. When the operator desires to strip the needles, the same are placed into the depressions or slots *e* and then withdrawn with an upward movement, releasing the finished pills, which fall into the compartment *c*. The front wall of said partition *d* has upon its extreme ends two guides or rims, *f*, to properly receive and direct the needle-bars when impaling the pills. Two stops, *g*, arrest the descent of the same at a given height. The compartment *b* is furnished with an adjustable inclined floor, *h*, the upper surface of which is corrugated, dividing it into raceways *i*, which receive the pills strewn upon the incline. The walls of said raceways are divergingly inclined from the bottom, their angle following the angle of the conical pockets *j*, and terminating at their apexes in pointed ridges, the sharpness of which, with the contiguity of the raceways, economizes the working-space, and also brings each pill immediately within its raceway to move unretarded to the pockets *j*. The converging sides of these pockets confine the different-sized pills always in a vertical line with and below the impaling-points. In number these raceways correspond to that of the needles, and are longitudinally arranged parallel with the sides of said tray, and terminating at their lowest point near the partition *d* in circular conical pockets *j*, which receive the pills and present them in a uniform row for impalement on the needle-points N.

To provide for the impalement of variously-sized pills, the end of the inclined floor *h* bearing said pockets is elevated or depressed through the resolution of a motion by the medium of an adjusting thumb-nut, *k*, threaded rod *l*, operating blocks or wedges *m*, keyed thereto and acting upon the opposing inclined surfaces of the recesses *n*, as seen in Fig. 9. The circular opening *o* in the floor of the compartment *b* facilitates the removal of the inclined floor by finger-pressure from below.

p is the rocker-shaft actuating the drying-disk A, which is alternately rotated. The reciprocating motion is imparted through the cord *q* in the hands of the manipulator. Said rock-shaft is slightly tapering from center to one end, as at *r*, to permit its ingress through the drying-disk A until it abuts against the shoulder *s*, where it is firmly secured by the pin *t*. The drying-disks are supported on the bearing-journals *u*, entering the adjustable rods *v*, which are sustained in any position or height by the clamping devices *w*, through which said rods pass, and are secured in position by the thumb-screws, *x*.

In the practical application of my improved invention the drying-disk is placed in the position indicated in the drawings, the tray conveniently placed, and the solution-dish *y* at hand containing the heated coating material. The uncovered pills are distributed over the inclined table, whence running down the raceways and filling the pockets are thence taken up by the impaling-bars in the hand of the operator and transferred to the solution-dish, dipped therein and coated, then, if desired, handled as in Fig. 5, or directly transferred to the drying-disk, which is alternately filled and rotated until the process is completed of pill-coating.

Having described my improved invention, what I wish to secure by Letters Patent, and claim, is—

1. In an apparatus for pill-coating, the circular drying-disks A A, provided interiorly with radial automatic clutches D, confining displaceable bars F, carrying impaling-points N, substantially as and for the purpose set forth.

2. In an apparatus for pill-coating, the combination, with the drying-disks A A, of separable impaling-bars F, rigidly confining a series of impaling-needles, N, said needles extending in a direction radially from the axis, as specified.

3. In an apparatus for pill-coating, the combination of the separable impaling-bars F with a series of extending needles, N, secured rigidly in transverse slots P by short holding-wires O and capping T, for the purpose set forth.

4. In combination with the impaling-bars F, the dipping-handle provided with U-shaped and reflexed spring-arms W and V, as described.

5. In an apparatus for pill-coating, a dividing and separating tray, *a*, in combination with a detachable serrated dividing plane or floor, *h*, sustaining a series of conical depressions, *j*, for the accurate impalement on the same dividing-plane of every size of pill, as herein specified.

6. In an apparatus for pill-coating, the combination of the transverse partition *d* with a dividing-plane, *h*, provided with contiguous serrated raceways *i*, terminating in conical depressed pockets *j*, substantially as shown.

7. In an apparatus for pill-coating, the combination, with the inclined floor *h*, of the aggregate devices *k l m*, acting in conjunction with the depressions *n* in the under side of said incline *h* to depress or raise the pockets *j*, bringing them in juxtaposition with the impaling-points N, for the purpose set forth.

8. In combination with a dividing and separating tray, *a*, the transverse partition *d*, having guides *f f* and stops *g g*, guiding and arresting the descent of the impaling-bars F, substantially as herein specified.

9. In combination with the transverse partition *d*, the end guides, *f f*, and stops *g g*, for the purpose described.

10. In an apparatus for pill-coating, the combination, with the drying-disks A, of a separable impaling-bar, F, embracing the tongued vertically-channeled side M, the tongued and recessed bar R, provided with transverse slots P, tongue Q, and grooved capping-piece T, all uniting to sustain a series of impaling-needles, N, substantially as specified.

In testimony whereof I have affixed my signature in presence of two subscribing witnesses.

EDGAR L. PATCH.

Witnesses:
HENRY CANNING,
HERVEY L. LOGAN.