UNITED STATES PATENT OFFICE.

JACOB DUNTON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN THE MANUFACTURE OF PILLS.

Specification forming part of Letters Patent No. **168,240**, dated September 28, 1875; application filed September 4, 1875.

To all whom it may concern:

Be it known that I, JACOB DUNTON, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Pills; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to certain improvements in the manufacture of pills made by compression in dies or molds. In manufacturing pills according to this method it is found that the pill compressed of materials containing the natural moisture of the air possesses but little cohesion of particles and stability of form, and in removing them from the die the attraction of adhesion is often greater than that of cohesion, and they crumble and break in such a manner as to render this method of compressing certain materials into pills wholly impracticable.

My invention is intended to obviate this difficulty; and it consists in the method of drying the material to be compressed so as to expel the moisture, and insure the more thorough cohesion of particles and the lubrication of the die or mold, as hereinafter more fully described.

In carrying out my invention the powdered materials are first dried, preferably at a temperature of 90° Fahrenheit, so as to deprive them of the natural moisture absorbed from the air, which would have a tendency to decompose them or interfere with the compressibility or stability of compression.

The materials are now in proper condition for compression and the cohesion of particles. In order to compress, however, such substances as sulphate of quinia, and other substances which leave a portion of themselves adhering to the mold after compression, which adherence prevents the formation and withdrawal of a successive pill of the same material in a perfect or merchantable condition, it becomes necessary to get rid of the adherence, and also to prepare the mold before another pill can be made. The ways which may be adopted are, first, after the pill is made, open the mold and brush out with a stiff brush as much as possible of the adhering particles, and then apply to the surface of the mold a thin film of oil, which takes or soaks up any portion of the particles which is left after brushing, and to get rid of the oil a pill of starch or other equivalent material is made, which absorbs the oil, and leaves the mold in a condition to make another pill of the original material; second, instead of lubricating the mold directly, a small portion of a liquid may be added to the powder, (one per cent. being in some cases sufficient,) which under pressure will ooze out at the surface of the pill, and act as a lubricant, so as to allow the pill to be removed from the mold without leaving any particles adhering to the mold, and leaving the latter in fit condition for the next pill.

The liquids used may be alcohol, benzine, ether, chloroform, water, or other volatile liquids, that liquid being preferably selected in which the material is insoluble, or the least soluble, so as to have the least or no effect upon the materials to be compressed. Any trace of the liquid used which may adhere to the pill may be expelled from the same by evaporation in a dry atmosphere.

In lubricating the mold a portion of paraffine, oil of cacao, butter of cocoa, or other equivalent material may also be used, either alone or in solution in alcohol, benzine, or other volatile liquids, the object being to apply the least quantity that will produce the desired effect, and I may also use an oily or unctuous substance combined with an absorbent material, or a material which is of itself both unctuous and absorbent, for cleaning and lubricating the molds.

I am aware of the fact that it is not new to make pills by compression, and I do not claim such broadly, but confine my invention to the particular method of preparing the powders by drying and preventing the adhesion to the mold, in which the drying not only makes the particles cohere better and remain more stable, but in compressing such substances as iodide of potassium, which absorbs moisture from a damp atmosphere, the salt, if compressed in that condition, acts upon the iron, and forms a pink discoloration upon the surface of the pill that interferes with its purity and salability. This said reaction upon the iron dies is not confined to iodide of potassium alone, but occurs with numerous sub-

stances, but is in every case entirely obviated by the previous drying at about 90° Fahrenheit, with 24° of absolute dryness, (Mason's hygrometer.)

Having thus described my invention, what I claim as new is—

In manufacturing pills by compression, the herein-described method of drying the powders, before compression, at a temperature of about 90° Fahrenheit, with 24° absolute dryness, (Mason's hygrometer,) to prevent reaction upon the mold, and insure stability of cohesion, and lubricating the mold to prevent adhesion, and insure the removal of the pill integrally and perfect.

JACOB DUNTON.

Witnesses:

LORENZO WESTCOTT,

CASPER S. CARMELL.