2 Sheets—Sheet 1.

D. J. TITTLE.

PILL MACHINE.

No. 50,288. Patented Oct. 3, 1865.

Fig: 1.

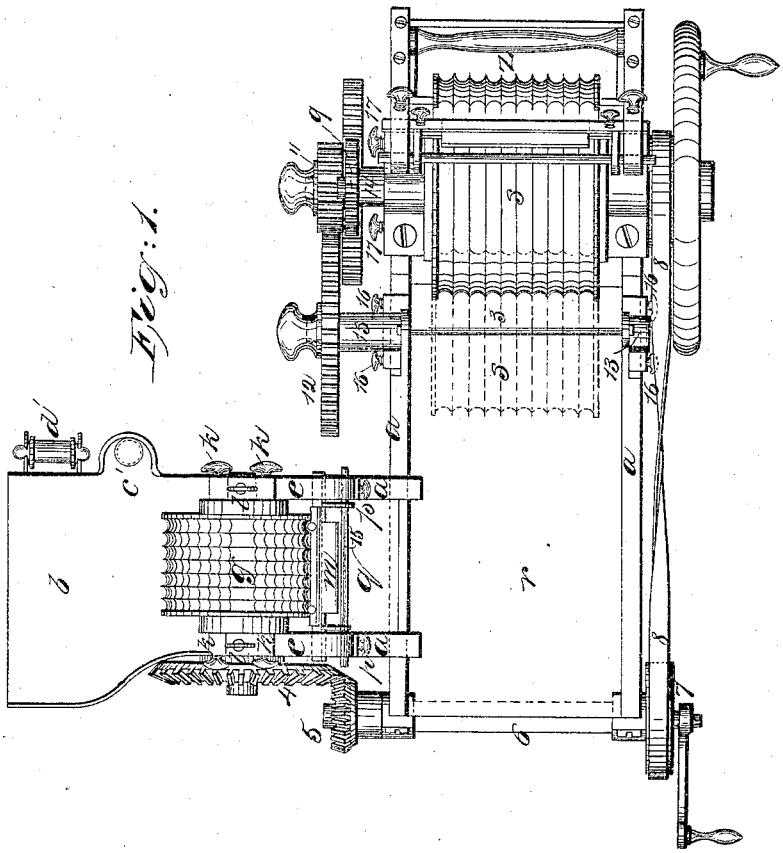
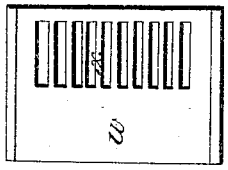


Fig: 4.



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Inventor:
Daniel J. Tittle

2 Sheets—Sheet 2.

D. J. TITTLE.

PILL MACHINE.

No. 50,288. Patented Oct. 3, 1865.

Fig: 2.

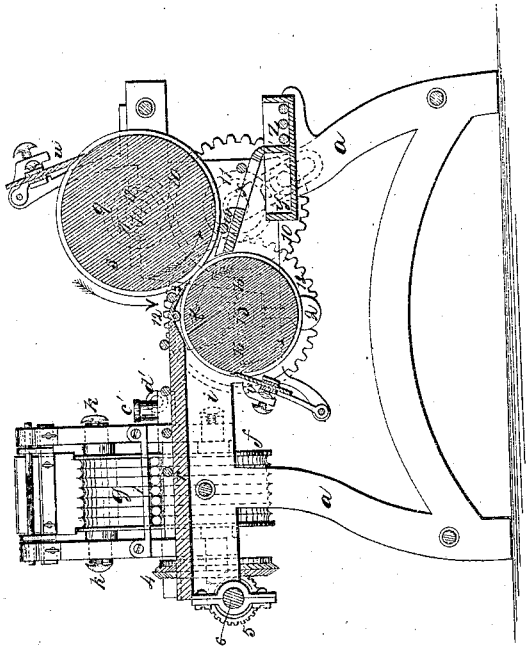
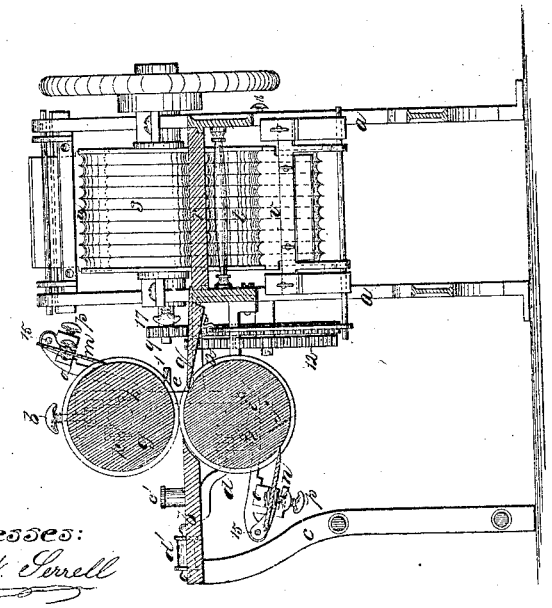


Fig: 3.



Witnesses:
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Inventor:
Daniel J. Tittle

UNITED STATES PATENT OFFICE.

DANIEL J. TITTLE, OF ALBANY, NEW YORK.

IMPROVEMENT IN PILL-MACHINES.

Specification forming part of Letters Patent No. **50,288**, dated October 3, 1865.

To all whom it may concern:

Be it known that I, DANIEL J. TITTLE, of Albany, in the county of Albany and State of New York, have invented, made, and applied to use a certain new and useful Improvement in Machinery for Making Pills; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a plan of said machine. Fig. 2 is a longitudinal section, and Fig. 3 is a cross-section, of said pill-machine.

Similar marks of reference denote the same parts.

My invention consists in a pair of rollers, peculiarly constructed, that separate the pill-mass into cylindrical strips, which strips are passed successively and transversely in between a pair of rollers whose surfaces revolve in opposite directions, but at different speeds, so as to separate the strip into globules.

In the drawings, *a* represents a frame, of suitable size and shape, from which standards *e e* project, carrying grooved rollers *f g*.

b is a bed, sustained by the legs *c*, and hooked to the standard *e* by the side pieces at *d*. (See Fig. 3.) Upon this bed *b* the pill-mass is to be rolled out to the proper thickness by a suitable rolling-pin with gage-flanges, as seen at *d'*, and a dusting or dredging box, *c'*, is to be constantly employed to prevent the pill-mass adhering to the bed, rolling-pin, or grooved rollers *f g*. The grooves in the rollers *f g* are to be semicircular and of such a size as to separate the pill-mass into cylindrical strings, or strips of a diameter adapted to being formed by the rollers *s t*, hereinafter referred to, into the globular pills of the desired size, and for this purpose the grooves in *f* and *g* must be smaller than those in *s t*. As the rollers *f g* are turned the strips of pill-mass are passed over the small movable bed *q* to the main bed *r* of the machine, to be dusted over to prevent their sticking, and then passed directly between the rollers *s* and *t*, as hereinafter specified, the cylindrical strips simply having to be rolled along by hand, the pairs of rollers *s t* and *g f* standing at right angles to each other to facilitate this operation.

The bed *q* is made movable, so as to allow access to the lower roller, *f*, and a cross-bar, 1, prevents any of the strips of pill material adhering to the roller *g*.

The roller *f* has a set-screw, *i*, at one end, passing through the standard *e*, (see dotted lines Figs. 1 and 2,) which screw prevents end motion in case of the journals wearing, and the upper roller, *g*, has screws *k k* at each end passing through *e*, in order to adjust the said roller *g* longitudinally and cause its grooves to correspond accurately with those in the roller *f*.

I form the standards *e* as open boxes for the rollers *f g*, (see dotted lines in Fig. 2,) so as to allow the rollers to be removed easily for the introduction of others having grooves of different sizes, and above the journals of the roller *g* I introduce movable blocks, with pieces of rubber between their upper ends and the lower ends of the screws *l*, passing through *e*, to apply the compression necessary to keep the rollers *f* and *g* tightly together and cause the upper roller, *g*, to revolve by contact, as I only apply power to rotate the lower roller, *f*, through the wheels 4 and 5 and shaft 6, that is revolved by a treadle or other convenient means.

In order to clean out the grooves in the rollers *f* and *g* whenever it may become necessary, I employ the scrapers *m n*, standing diagonally, and with serrated edges corresponding to the surfaces of the grooves. These scrapers are connected at their ends to arms from the standards *e* by the cross-rods 15, and projections at the ends of the scrapers rest on blocks of rubber at *o o*, while screws *p p*, on the opposite sides of said projections, are employed to press the scrapers to the rollers when required for cleaning them, and when the pressure of the said screws is relieved the rubber blocks raise the scrapers sufficiently to prevent their creating friction against the rollers.

The rollers *s* and *t* are mounted on shafts 13 and 14, and can be easily changed so as to introduce rollers with grooves of different sizes, for which object the bed *r* is made to rest on ribs, so that it can be lifted off, and the boxes of the shaft 13 are made adjustable by the screws 2, so as to bring the surfaces of *s* and *t* close together, but not in absolute contact.

The roller *t* is provided with adjusting-screws 16 at both ends, and the roller *s* with adjusting-screws 17 at one end, to bring the grooves

of the respective rollers properly into position relatively to each other and prevent endwise movement of the rollers.

The roller *s* is provided with a scraper, *u*, and the roller *t* with a scraper, *v*, to remove when necessary any powder or other substances that may adhere to the rollers. These scrapers *u* and *v* are fitted and applied the same as the scrapers *m* and *n*.

Rotation is communicated to the roller *s* by the belt 8 from the pulley 7 on the shaft 6, or in any other convenient manner.

The shaft 14 (of *s*) has on its end a pinion, 9, that rotates the wheel 10, which by its pinion 11 turns the wheel 12 on the shaft 13, so that the contiguous surfaces of *s* and *t* travel in opposite directions, as denoted by the arrows; but the roller *s* travels much the fastest, the object of this being to rotate the cylindrical strip of pill material as it rolls off the incline 3 upon the roller *t*; hence the said strip is divided up and formed into spherical pills with great speed and certainty. The roller *s*, traveling the fastest, carries the pills through between the rollers *s* and *t*, and there is no check to the rotary movement acquired by the strips as it is rolled down the incline *s*. The roller *t*, carrying the bottom of said strip in one direction as the roller *s* moves the top in the other direction, insures the revolution of each pill while between the rollers, so that a perfect spherical form must be produced. The pills are received on an incline, *w*, and continue to revolve in the same direction they had previously acquired as they pass down said incline.

x is a grating, (see Fig. 4) formed in the incline *w* by bars sufficiently close together to support the pills and cause them to pass into the receptacle *z*, while any imperfect pills or end pieces of the pill-strips fall through said grating into a receptacle, *y*.

The gears 9, 10, 11, and 12 are to be set upon feathers with clamping-nuts at the ends of the shafts, so that said gears can be applied to other cylinders with different sizes of grooves.

This machine may be employed for making pills or any other articles, such as medicated and other confectionery, and also balls and shot; and in cases where the article is desired to be longer in one direction than another, the grooves may be shaped accordingly, so as to cut off and form a short cylindrical or spheroidal article.

The roller *t* might be stationary if desired, but it would in that case require to be turned separately by hand whenever the grooves needed to be cleaned.

The rollers *f*, *g*, *s*, and *t* may be made of metal or any suitable material.

What I claim, and desire to secure by Letters Patent, is—

1. The arrangement of two pairs of grooved rollers at right angles to each other, so that the strips of pill material delivered from the first will be in position for being passed into the second pair, as set forth.

2. The mode of fitting the scrapers *m u v* upon a cross-shaft with a spring to keep the scraper off the roller, but which will yield when the screws are applied to press the scraper to the roller for cleaning the same, as specified.

3. The bar 1 and bed *q*, in combination with the rollers *f* and *g* and bed *r*, for causing the delivery of the cylindrical strips of pill material from the rollers *f g* upon the bed *r* in the proper position for passing them to the next pair of rollers, as set forth.

4. An incline, 3, combined with a pair of grooved rollers and operating, as specified, to give a rotary movement to the strip of pill material as it passes in between the rollers, as set forth.

5. The combination of the incline *w* and grating *x* with the grooved rollers *s* and *t*, for receiving the pills as they are delivered from said rollers, and causing them to continue to revolve in the direction before acquired while passing down the incline *w* and over the grating *x*, for separating the imperfect pills, as set forth.

In witness whereof I have hereunto set my signature this 8th day of February, 1865.

DANIEL J. TITTLE.

Witnesses:

LEMUEL W. SERRELL,

CHAS. H. SMITH.