(No Model.)

2 Sheets—Sheet 1.

J. L. COLHAPP.

MACHINE FOR MANUFACTURING PLUG TOBACCO.

No. 348,617. Patented Sept. 7, 1886.

Fig. 1.

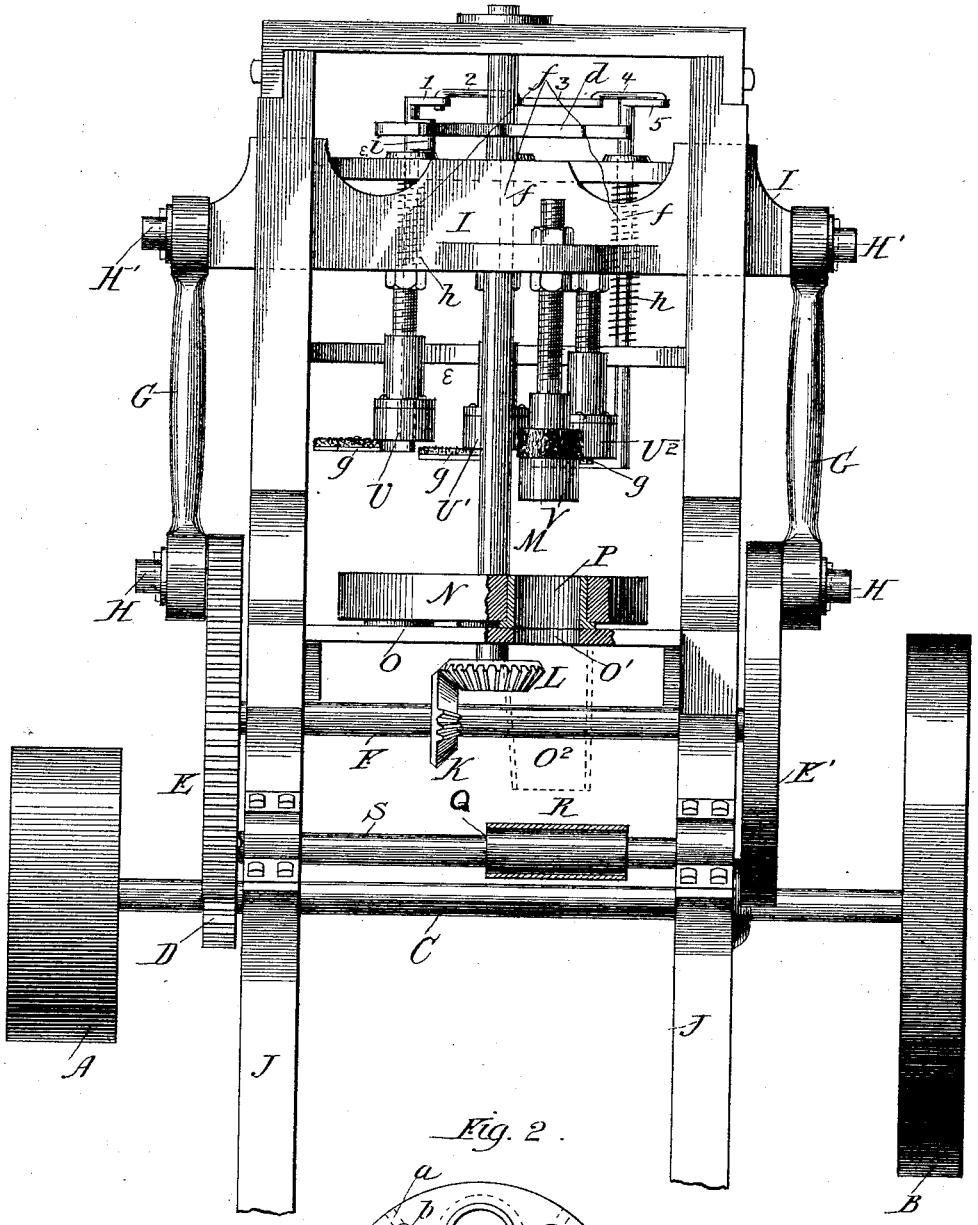
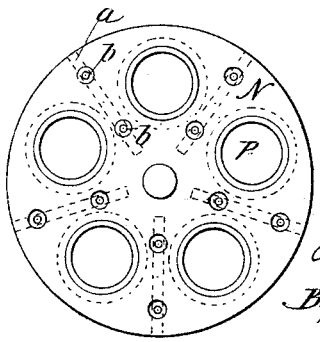


Fig. 2.



Witnesses:

Frank J. Blanchard

Chas. D. Burton

Inventor:

John L. Colhapp

By Francis W. Parker

Attorney.

(No Model.) 2 Sheets—Sheet 2.

J. L. COLHAPP.

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Fig. 3.

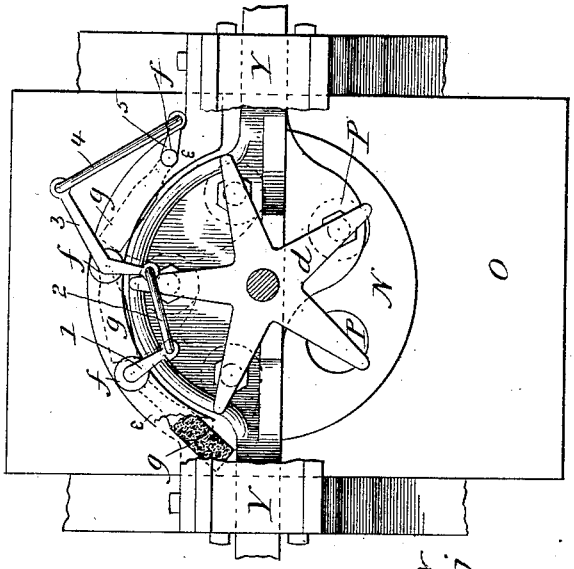


Fig. 5.

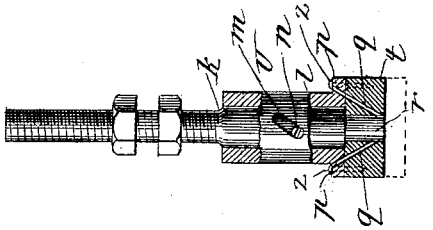


Fig. 6.

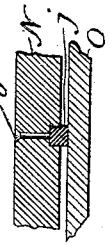
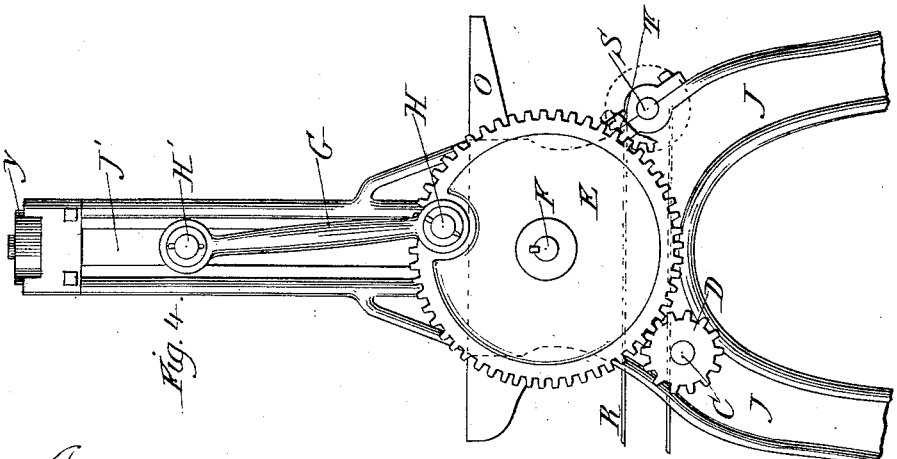


Fig. 4.



Witnesses:
Frank J. Blanchard
Chas. E. Burton

Inventor:
John L. Colhapp
By Daniel W. Roper
Attorney

UNITED STATES PATENT OFFICE.

JOHN L. COLHAPP, OF CHICAGO, ILLINOIS.

MACHINE FOR MANUFACTURING PLUG-TOBACCO.

SPECIFICATION forming part of Letters Patent No. 348,617, dated September 7, 1886.

Application filed July 16, 1885. Serial No. 171,745. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. COLHAPP, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Machines for Manufacturing Plug-Tobacco, of which the following is a specification.

My invention relates to machines for making plug-tobacco into plugs of such size and shape as the demands of trade may require, and has for its object to provide a machine which shall compress the plug by successive pressures until it has acquired the proper density, which shall permit the air to escape from the cavity in which the plug is situated up to the moment when the heavy pressure begins to be applied, which shall have means to oil the pressure-table and the ends of the pressure-plungers, and which shall be simple in construction and rapid in operation. These results I obtain by means of the mechanism illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of the machine with certain parts broken away. Fig. 2 is a plan view of the forming-cylinder, with parts shown in dotted lines. Fig. 3 is a plan view of the machine with certain parts broken away. Fig. 4 is an end view of the machine. Fig. 5 is a detail view of one pressure-plunger. Fig. 6 is a detail of part of the forming-cylinder.

Like parts are indicated in all figures by like letters and the parts will be described as they are lettered, beginning with Fig. 1.

A is the drive-wheel; B, a fly-wheel; C, the shaft on which they are secured; D, a pinion on the shaft meshing with the crank-pinion E.

E′ is a crank-wheel, and F the shaft, which carries the wheels E and E′.

G G are arms secured by pins H H to the crank-wheels, and by pins H′ H′ to the vertically-sliding cross-head I.

J J are the frame side pieces, in which the various shafts are journaled.

K is a mutilated bevel-gear on the shaft F, arranged so as to engage the bevel-gear L on the shaft M. This shaft supports the forming-cylinder N, and is journaled in the pressure-table O and the top cross-piece of the frame, and passes through the cross-head. The forming-cylinder is provided with pressure-chambers P, which may or may not be lined, and with radial slots *a*, into which oilers *j*, of any suitable material, may be inserted, and oil cups and holes *b*, which serve to keep the oilers full of oil.

Q is a pulley, which carries the belt R, and is secured on the shaft S. This shaft is driven by means of the pinion E.

U, U′, U², and V are pressure-plungers adjustably secured to the cross-head in vertical positions and projecting therefrom, each at a different length, and V considerably farther than the others.

Y is the top cross-piece of the frame.

J′ is a slide-way in each side frame-piece to permit the cross-head to reciprocate vertically.

O′ is an aperture through the pressure-table, and O² is a guide thereunder.

V is a simple plunger; but the plungers U U′ U² are made each as shown in Fig. 5, wherein *k* is the plunger-stem; *l*, a sleeve thereon; *m*, a diagonal slot in the sleeve; *n*, a pin on the stem projecting through the slot; *p p*, inclined apertures through the end of the sleeve; *q q*, similar and connecting apertures through the end piece, *t*; *r*, an aperture in the end piece through which the small end of the stem passes, and into the extreme lower inner walls of which the apertures *q q* open. The sleeve and end piece are secured together by screws *z z*.

e e are arc-shaped pieces rigidly secured to the side frame-pieces. In them are journaled three vertical shafts, *f f f*, which may be seen in dotted lines in Fig. 1, and the ends of which may be seen in Fig. 3. On the lower ends of these shafts are oiling-shoes *g g g*. These shafts are connected above by a system of arms and links, 1, 2, 3, 4, and 5, whereby all are rotated in the same direction and by the same power at the same time.

h h are spiral springs which encircle these shafts, and are secured each at one end to the arc *e* and at the other to the shaft, so as to hold the shoes in the positions shown in Fig. 3. One of these shafts has a projection, *i*, which is engaged to operate the system, and thus the shoes, by the ends of the star-wheel *d*. This wheel is secured on the shaft M.

The use and operation of these several parts are as follows: The machine is set in motion by the driving-belt in the usual manner. The relation between the various parts is such that when the cross-head moves up into the posi-

tion shown in Fig. 1 the shaft M is turned one-fifth around, thereby moving the forming-cylinder N through one-fifth of a circle or bringing the next aperture or pressure-chamber P exactly over the aperture O′, and at the same time turning the star-wheel an equal distance, so that one of its points operates the oiling system. By this means the oilers *g* brush over the ends of the plungers U U′ U² and then return to their normal positions. Now, a sufficient quantity of tobacco is placed in the pressure-chamber P, which has last passed the aperture O′. The first pressure-plunger compresses it to a certain density. The operation is continued until all the pressure-chambers are filled, and then the last chamber is relieved of its charge by the long plunger V, which drives the finished plug through the guide O², aperture O′, and onto the belt R, which carries it off. The increase of pressure may be regulated by adjusting the lengths of the plungers. It will be seen that as there are four plungers and five pressure-chambers, one chamber will always be free for the operator, and this will always be the chamber just freed from its charge. As the forming-cylinder rotates the oilers *j* oil the pressure-table O. As the plungers rise the end piece, *t*, and sleeve *l* drop away, the sleeve moving on the pin *n* with a twisting motion. As the plunger descends, the end piece first strikes the plug, and all the air in the cavity or pressure-chamber rushes into the aperture *r* as the pressure is being applied by the pin *n*. This air is of course discharged through the inclined apertures until just at the moment when the heavy pressure begins, and then the end of the stem exactly fills up the aperture and causes the plunger to present a solid pressure-surface to the tobacco.

I have shown my machine as designed to operate in a vertical position, though I have also designed it for operation in a horizontal position, the essential features being the same in both cases.

Some of the features of my machine may be changed without departing from the spirit of my invention.

There are certain common and well-known devices which are used in connection with my machine—as, for instance, devices to bring the pressure-chambers exactly under the plungers, which, not being new or indispensable, have not been here described or shown. They form no part of my invention, and are not claimed. The oilers may carry also flavoring or scenting extracts, and thus the machine may flavor or scent the tobacco as it is manufactured.

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

1. In a machine for manufacturing plug-tobacco, the combination of a series of reciprocating pressure-plungers of different lengths with a forming-cylinder provided with pressure-chambers to receive the plungers, a pressure-table against which the forming-cylinder rotates, and mechanism adapted to reciprocate the plungers and rotate the cylinder, so that each pressure-chamber will successively receive each pressure-plunger.

2. A plunger composed of a central stem provided with a pin, a slotted sleeve surrounding the stem having apertures which open at its lower interior extremity and at a line somewhat back on the same, and a perforated pressing-head attached to the sleeve, as and for the purpose set forth.

3. A compound pressure-plunger provided with a central cavity in its pressure-surface, air-ports leading therefrom, and a central stem which closes the cavity and air holes or apertures at the moment the heavy pressure begins to be applied.

4. In a machine for making plug-tobacco, a forming-cylinder provided with pressure-chambers and vertical oil-holes and radial oiler-slots, as shown.

5. In a machine for making tobacco plugs, the combination of reciprocating pressure-plungers with parallel shafts, each provided at its lower end with an oiling-shoe, and all connected at their upper ends, and a star-wheel which rotates as the plungers reciprocate, so as to operate the vertical shafts and cause the shoes to oil the pressure-surfaces of the plungers.

6. In a machine for making tobacco plugs, the combination of pressure-plungers, a forming-cylinder, oiling-shoes to oil the pressure-surfaces of the plungers, oilers on the bottom of the cylinder, and a pressure-table having one aperture.

Chicago, July 11, 1885.

JOHN L. COLHAPP.

Witnesses:

CHAS. S. BURTON,

FRANCIS W. PARKER.