

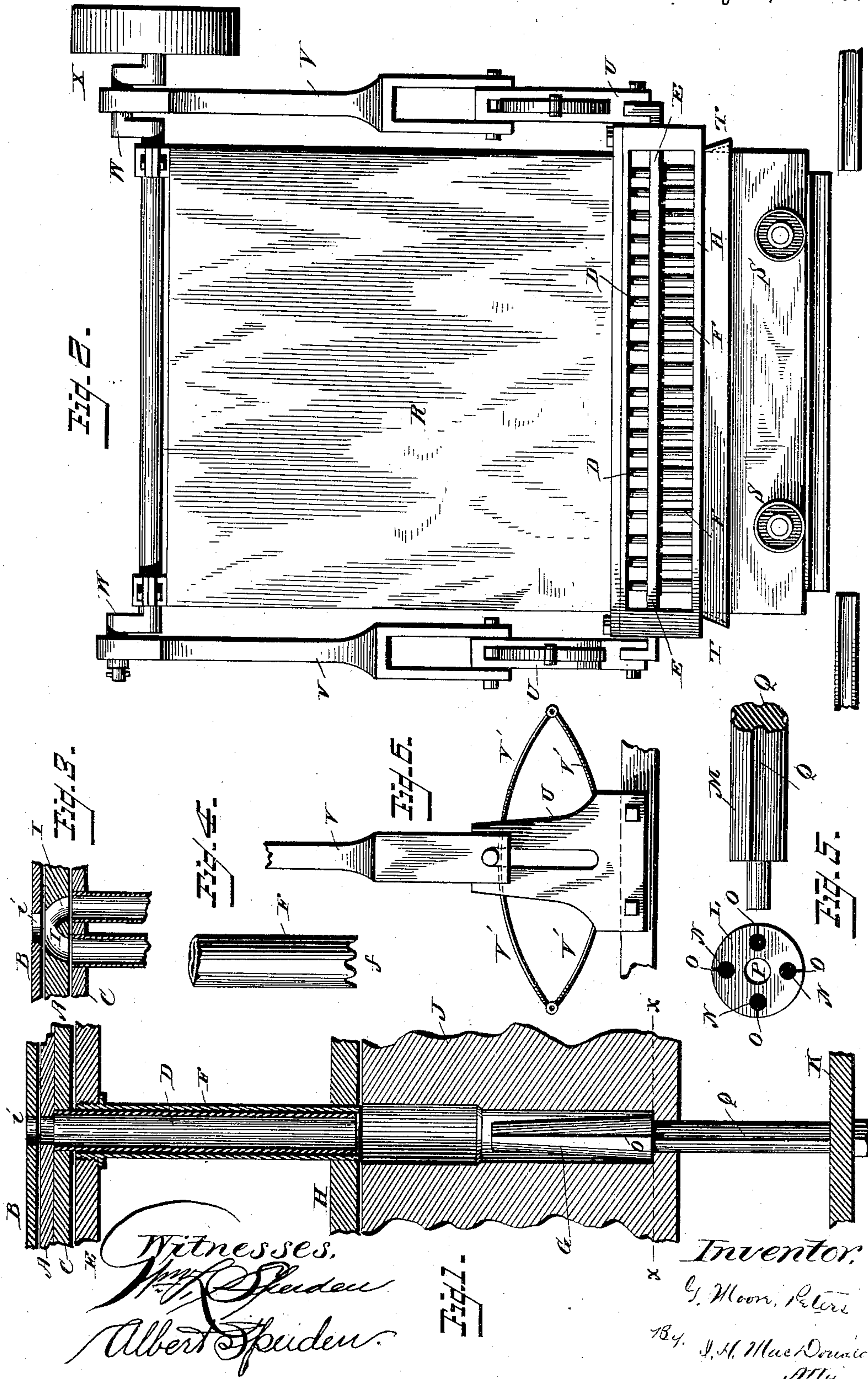
(No Model.)

G. M. PETERS.

MANUFACTURE OF CARTRIDGE SHELLS AND OTHER RECEPTACLES  
FROM PAPER OR WOOD PULP.

No. 321,849.

Patented July 7, 1885.





# UNITED STATES PATENT OFFICE.

G. MOORE PETERS, OF XENIA, OHIO.

MANUFACTURE OF CARTRIDGE-SHELLS AND OTHER RECEPTACLES FROM PAPER OR WOOD PULP.

SPECIFICATION forming part of Letters Patent No. 321,849, dated July 7, 1885.

Application filed April 23, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, G. MOORE PETERS, a citizen of the United States, residing at Xenia, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in the Manufacture of Cartridge-Shells and other Receptacles from Paper or Wood Pulp; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My device relates, generally, to improvements in the manufacture of cartridge-shells and other receptacles from paper or wood pulp, and particularly to the filling of the molds.

In another application (now pending and numbered 151,407) I have described a machine and method for filling the molds in which centrifugal force is employed to force the pulp into the molds and at the same time create a suction for draining them.

In my present application the molds are stationary and filled by the natural gravity of the liquid pulp, and as said pulp flows into the molds it is rammed down the sides of the molds by means of a tubular rammer or plunger that fits over the forming center of the molds. The objects sought for, and means for attaining these objects, will be hereinafter more fully set forth in the specification, and pointed out in the accompanying drawings, in which—

Figure 1 is a vertical section of a single mold with tubes and the former; Fig. 2, an end view of the machine; Fig. 3, a detail section of the pulp-inlet tubes leading to the pulp-vat; Fig. 4, detail view of tubular rammer or plunger; Fig. 5, detail view of the former, and Fig. 6 an end view of the device for operating the rammers or plungers.

Referring more particularly to the drawings, the tank A, which contains the pulp, has its lower part perforated at suitable intervals with holes or openings for the outflow of the pulp. A sliding plate, B, with corresponding openings, *i*, moves laterally back and forth,

so as to alternately open and cut off the flow of pulp. This plate may be operated by any convenient lever arrangement or other suitable mechanical movement connected with the upper part of the tank. A plate, C, has attached to it a series of stationary tubes, D, through which the pulp flows to the mold. Another plate, E, provided with a series of tubes, F, is placed below the plate C. These tubes F slip over the tubes D as sleeves, and are also large enough to slip over the shoulders of the formers G. They generally have a thickness equal to the space between the formers and the sides of the mold at the bottom, say one thirty-second of an inch. During the flow of the pulp the plate E is caused to move up and down with rapidity, thus causing the tube F to descend on the pulp, thoroughly packing it and pressing the water out of it. In order to prevent the pulp from forming into smooth layers, the bottom of the tube F is preferably made saw-toothed or fluted, as at *f*, Fig. 4, thus aiding in the binding together and interlocking of the fiber. The tube F, which fits closely about the tube D, is kept cleaned of any adhering pulp on its inner surface by its rising movement, and cleaned on its outer surface by its closely-fitting bearing in plate H.

It will be generally found necessary, as described in my previous application before referred to, to cleanse the molds by the injection of steam or water, or both, before being filled. For this purpose the carriage S may be brought up against an inverted cast-iron box with steam or water connections; or, preferably, the plates A and C may be separated a few inches, so as to afford a steam-tight compartment between them, having steam and water connections, and the injection for cleansing be made just before the pulp is started to flow. This will serve several useful purposes—viz: cleansing the tubes D as well as the molds—thus avoiding the necessity of branching outlets in plate A, and saving extra time, labor, and devices.

Should the molds be placed so closely together as not to allow sufficient solid metal in plate B between the openings to cover the openings in plate A, when it is desired to cut off the flow of pulp, the openings in the up-



per surface of plate A may be made less numerous by branching them out, as at I, into two or more openings or tubes as they come through the lower surface. The mold J does

5 not differ materially from that shown and described in my application before referred to. As to the centers or formers of the molds, I propose, when they are arranged together in numbers, to fix their lower ends in a common

10 plate, as K, which has suitable bearings, and by which all the formers can be raised and lowered together.

In Fig. 5, L is the upturned base of the former, with the stem or lower end, M, re-  
15 moved. In its construction a solid piece of metal is used. Two or more drainage-holes, N, are drilled along the sides near to the top and back from the surface, say, the sixteenth of an inch. Into these holes are cut narrow  
20 slots O, running the entire length of this portion of the former. These slots may be the same width their entire length, or widened slightly toward the top, to aid in extracting the shell. These tubular rammers are only  
25 used for the filling. The piston is afterward to be used in compressing the shell as a whole, forming the base, and also the seat for the primer, and the opening for the flash into the powder. A large hole, P, is drilled into the  
30 center to a depth, say, of half an inch, so that the stem M may be fitted therein and firmly held, which is usually accomplished by heating and shrinking L over the portion to be fitted in. The stem M is preferably grooved,  
35 as at Q, to furnish outlets for the drainage-holes N; or there may be holes corresponding to these drainage-holes made in the bottom of the mold-plate.

The tank R, Fig. 2, contains the pulp in its  
40 liquid form. Inside the tank there is a revolving paddle-wheel for keeping the pulp stirred and a steam-coil for heating the pulp, similar to that described in my application before referred to. The tubes D F—such as  
45 shown in Fig. 1—are here arranged in series for filling the molds in quantity. Against the plate H the carriage S, containing the mold-plates, is firmly brought into position by means of a suitable lever or screw, such as  
50 described in my former application. The plate H is provided on the under side with flaring projections T, which aid in bringing the carriage exactly in position for the molds to be in line with the tubes. The plate E,  
55 containing the tubular rammers F, and having suitable bearings, is moved up and down by means of the connections U V, with the cranks W revolved by the pulley X. It is obvious, however, that this plate can be actu-  
60 ated by any other suitable mechanical movement without departing from the spirit of my invention. In order that the plate E, with the tubular rammers may give back as the molds fill, I have used the elliptical springs  
65 V', upon which the arms V rest, (shown in end view, Fig. 6,) the springs compressing as the plate E rises, while the stroke of the arms

remains the same. The tension of the springs may be regulated by a screw or other regulating device. It is obvious that the molds  
70 must be drained while being filled, and for this purpose a suction-box such as is commonly used in paper-mills may be brought against the bottom of the carriage S. To complete the operation after the molds have  
75 been withdrawn from the oven, and while the shells are still in the molds, a second press is brought to bear upon the shells for the purpose of giving them a smooth surface and widening them out to the full capacity of  
80 the mold as a die. It is evident that this same filling device in its essential features may be used in the manufacture of various kinds of receptacles from pulp.

Having thus described my invention, what  
85 I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for forming cartridge-shells and other receptacles from paper or wood pulp, a pulp-tank having a perforated bot-  
90 tom, said perforations being alternately opened and closed by a sliding perforated plate, a series of tubes leading to the molds, the formers having drainage-outlets, a series of tubular rammers, and means for operating said  
95 rammers, as set forth.

2. In a machine for making cartridges from paper or wood pulp, the combination, with the mold and rammer, of a former provided with drainage-holes communicating with the  
100 surface by means of slots, also a stem with grooves, said grooves leading to the drainage-openings, as set forth.

3. In a machine for making cartridges from paper or wood pulp, the combination, with  
105 the pulp-tank having a perforated bottom, of a perforated sliding plate for opening and closing the perforations in the tank, a stationary plate below the tank provided with inlet-tubes leading to the mold, and a mova-  
110 ble plate, E, having a series of tubes which serve as rammers for compressing the pulp, substantially as and for the purpose set forth.

4. In a cartridge-making machine, as described, a tubular rammer, F, having the  
115 fluted or serrated ends f, whereby the pulp in the mold is prevented from forming into smooth layers and the fiber compressed and interlocked, substantially as and for the pur-  
120 pose set forth.

5. In a machine for manufacturing cartridge-shells from paper or wood pulp, the combination, with the pulp-tank, of a series of pulp-tubes, a series of tubular rammers, as described, mechanism for actuating said ram-  
125 mers, and a series of sliding molds with formers having drainage-outlets, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

G. MOORE PETERS.

Witnesses:

GEO. K. HALLADAY,  
JUSTIN H. McKIBBEN.