

(No Model.)

3 Sheets—Sheet 1.

F. M. LA BOITEAUX.
MACHINE FOR MAKING BUNGS.

No. 382,004.

Patented May 1, 1888.

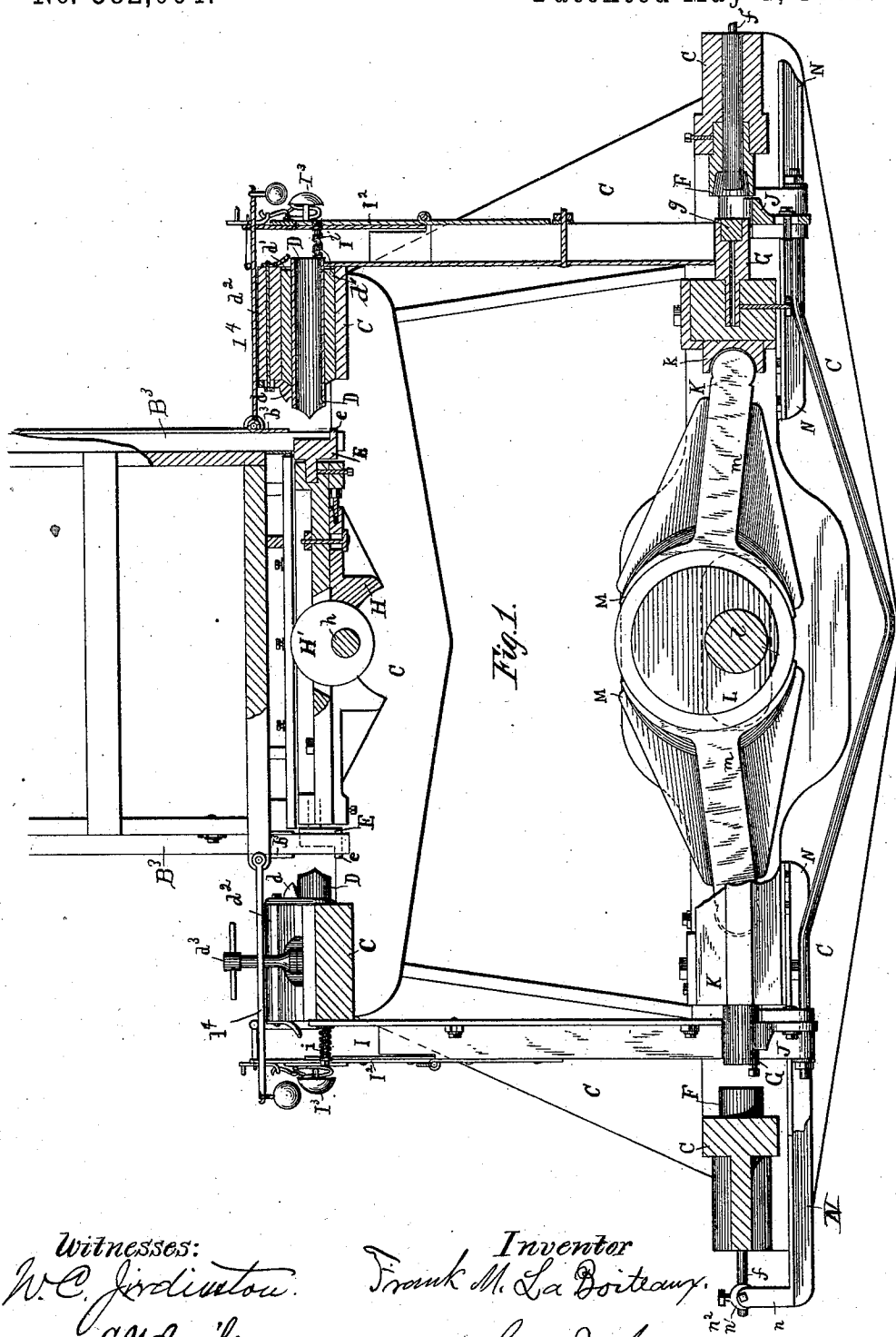


Fig. 1.

Witnesses:
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C. M. Miles.

Inventor
Frank M. La Boiteaux.
by Geo. J. Murray, Attorney.

(No Model.)

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Fig. 2

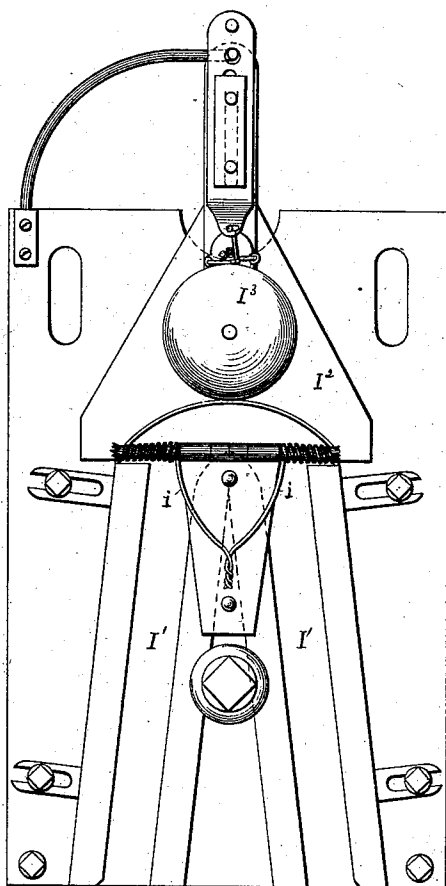


Fig. 3

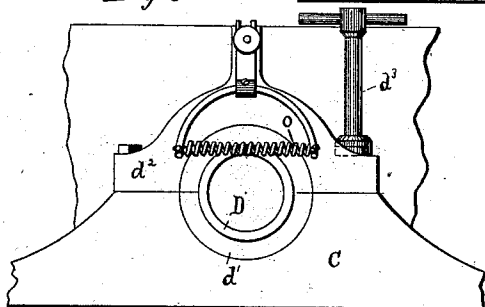


Fig. 4

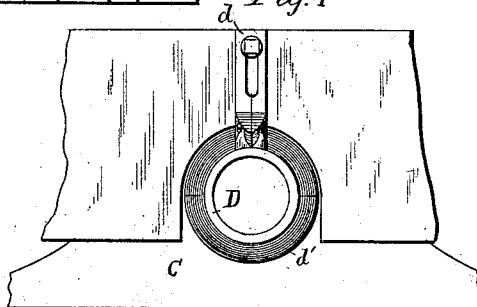
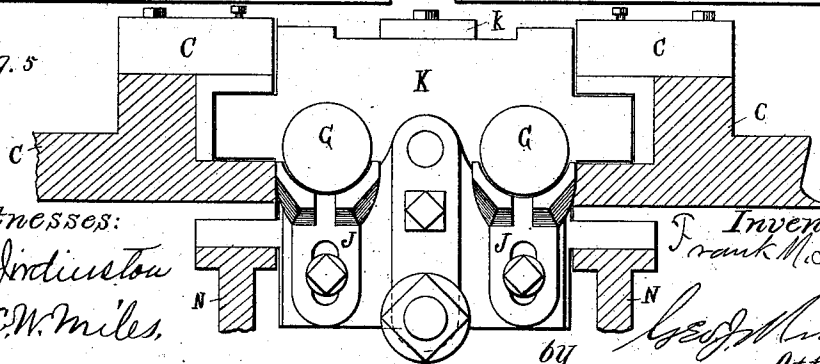


Fig. 5



Witnesses:

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C.W. Miles

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(No Model.)

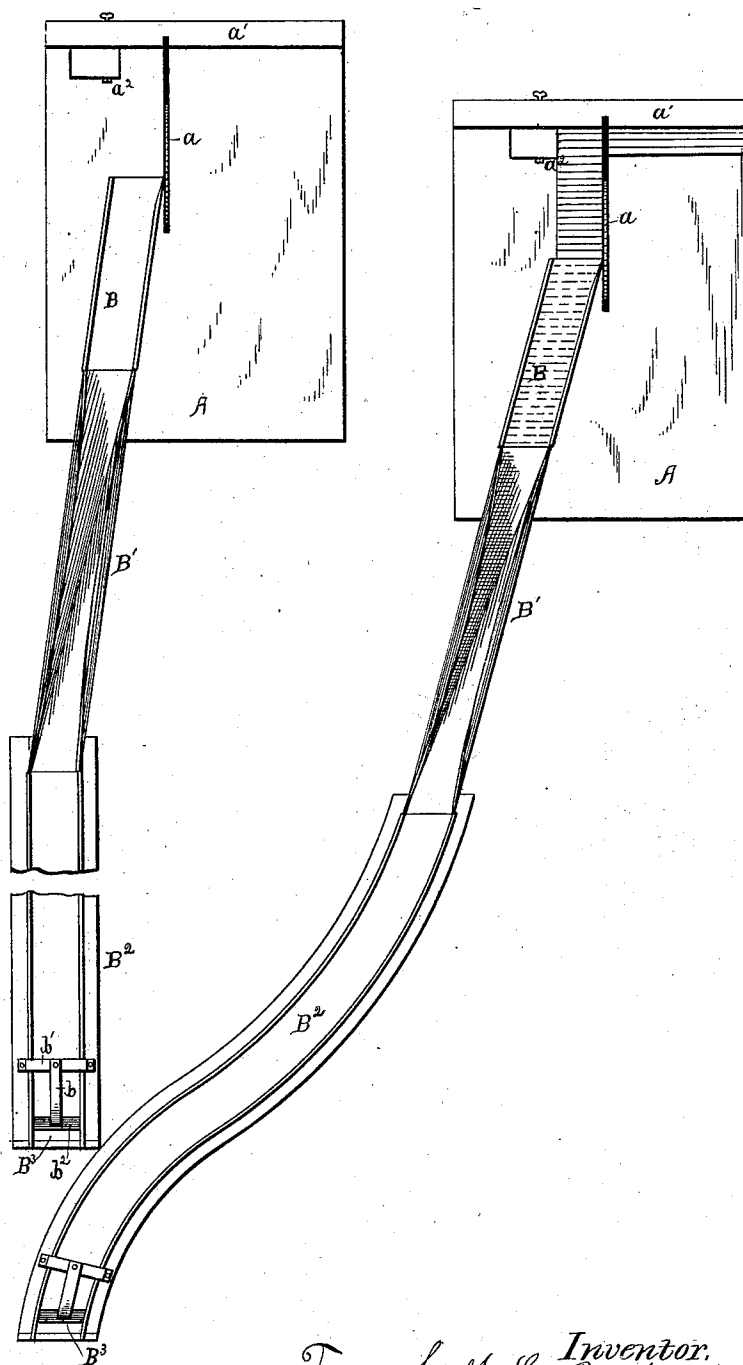
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Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANK M. LA BOITEAUX, OF CINCINNATI, OHIO.

MACHINE FOR MAKING BUNGS.

SPECIFICATION forming part of Letters Patent No. 382,004, dated May 1, 1888.

Application filed June 19, 1886. Serial No. 205,674. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. LA BOITEAUX, a citizen of the United States; and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Machines for Making Bungs, of which the following is a specification.

My invention relates to machines for making bungs. Its object is an arrangement of devices by which the bung-blanks are severed from strips automatically fed to the cutter, cut, compressed, stamped, and discharged ready for use.

The invention consists in cut-off saws to sever the blanks from strips; in tubes to feed them forward and turn them quarter-round, so as to bring the grain of the wood vertical and insure their regular feed to the cutting-tool; in devices to cut the blanks to a circular form, sever the waste, and discharge it from the machine; in devices to insure a steady feed to the compressing devices and give an alarm when the machine from any cause becomes clogged, and in peculiar compressing and discharging devices whereby the bung is finished.

The invention will be first fully described in connection with the accompanying drawings, and its novel features particularly referred to and pointed out in the claims.

In the accompanying drawings, forming part of this specification, in which like parts are represented by similar reference-letters wherever they occur in the various views, Figure 1 is a view, partly in side elevation and partly in vertical section, of my bung cutting, compressing, and finishing mechanism. Fig. 2 is an enlarged elevation of a portion of one end of the machine above the bung-compressing devices. Fig. 3 is an enlarged detail view in end elevation of that part of the machine which holds one of the cutters in place, looking at the discharge end of the cutter. Fig. 4 is a similar view looking at the cutting-edge. Fig. 5 is an enlarged detail view taken through lines $x x$ of Fig. 1 and looking toward the center of the machine. Fig. 6 is a plan view of the saw-tables, feeding-troughs, and attachments by which the blanks are severed from strips into square blocks, turned, and delivered in proper position to be acted upon by the cutters.

Referring, first, to Fig. 6, A A represent the

sliding tops of two ordinary crosscut-saw tables, with the saws a projecting through them. Any suitable number of strips of the proper width to form a bung-blank are placed edge up upon the table and against the back guide-piece, a' . These are fed to the saw and severed into squares in the usual manner. The severed blanks pass into the troughs B and are fed forward by the succeeding blanks, which are pushed into the trough as the sliding tables move under them. The troughs are rigidly supported above the tables and their mouths are beveled to a feather-edge to freely receive the blanks. The center portion, B', of the trough is preferably made of sheet metal and has a spiral twist in it from the receiving to the discharge end—that is, the bottom which is in a horizontal plane at the receiving end gradually inclines until it assumes a vertical position at the discharge end, while the bottom which is horizontal at the discharge end is in a vertical plane at the receiving end. It is evident that the blanks as cut and fed into the trough have the grain of the wood running horizontally, and in this position they are fed into the receiving end of the spiral feed B'. As they are fed through this tube, the corner will keep in the diagonal groove in the bottom of the spiral feed B', so that when they reach the middle of this part of the trough the blank will be turned one-eighth way around—that is, one corner would be vertically above the opposite corner. As the blanks progress through this spiral feed, they are turned one-fourth around, so that when they pass the discharge end of the spiral feed they pass on through the part B² with the grain of the wood vertical, in which position it is necessary that they be fed to the cutters, in order that the waste may be conveniently discharged from the machine and the machine be prevented from clogging. As a number of strips are fed together to the cut-off saws, the severed blanks are liable to adhere together by reason of the burr turned up on the ends of the blanks by the saws, and if there were no provision for their separation they would be carried against the end of the vertical feed-tube B² without dropping down it to the cutter and the feed stopped. To insure the separation of the leading block from the one next following in the part B², I have

provided a spring, *b*, secured at one end to a cross-brace, *b'*, which brace is secured on top of the trough *B*². The free end of this spring is curved, so as to press upon the top edge of the leading block and force it down the tube *B*³. The mouth of the tube *B*³ is inclined backward at *b*², and the bottom of the trough *B*², near the discharge end, inclines upward, so that the blocks are inclined and the separation of the leading block insured by the pressure of the spring on top of it.

It will be understood from the above description that the device described for severing and feeding the blanks to the vertical tubes which lead the blanks to the cutters must be located above the bung cutting and compressing devices.

The devices represented in Fig. 6 I have placed in the story above the bung cutting and compressing machine. It will also be observed that there are two independent severing-saws and feeding-troughs, which lead to different vertical feed-tubes. These tubes lead to opposite ends of the bung cutting and compressing machine. This machine is double acting—that is, the opposite sides have identically the same devices for cutting, compressing, and stamping the bungs and feeding the severed blanks to the cutters and compressors; but there is only one set of devices for operating the plungers which force the blanks through the cutters and into the compressors, so that while the plungers are acting upon the blanks upon one side the plungers upon the opposite side are being retracted preparatory to receiving other blanks in front of them, and vice versa.

Referring now to Fig. 1, *C* is the head-stock or stationary frame of the machine, in which are mounted the cutting and compressing devices. Two sets of the compressing devices are arranged upon each end of the frame. *D* are the tubular cutters, through which the bung-blanks are forced by the followers *E*, and *F* represents compression-cups, into which the circular blanks are forced and compressed by the followers *G*, the front ends of which are bored out to receive the die *g*, which has upon it in raised letters the card of the manufacturer or the party ordering the bungs. The cutters *D*, followers *E*, cups *F*, and followers *G* are detachably secured in place, so that they can be removed and replaced, so that the machine can be used for making the different sizes of bungs required for the trade. The followers *E* are secured in the opposite ends of a carriage, *H*, which slides longitudinally in the frame *C* and is actuated by a wheel, *H'*, which is secured eccentrically upon a shaft, *h*, which has its bearings in the edges of the frame. The wheel *H'* protrudes through an opening in the carriage-frame *H*, and as it is revolved reciprocates the carriage alternately in the direction of one or the other of the tubular cutters *D*. The pieces *E*, which fit into each of the frames, have an angular projection, *e*, at their lower sides, upon which the bung-blank rests

as it is fed from the tube *B*³ until it is carried forward by the sliding bed and forced partially into the tubular cutter. In the position shown in the drawings the sliding bed is at the center of its stroke, and the blanks falling from tube *B*³ will rest upon the upper edge of the piece *E*, and when the sliding bed is retracted from one side and forces the bung-blank forward upon the opposite side the bung-blank which was resting upon the top of the piece *E* will drop down upon its lower L-shaped projection, *e*, and there remain until the reverse stroke of the piston carries it against the blank which has been partially forced through the tubular cutter, and as the carriage progresses to the end of its stroke upon this side the blank which had been held in the circular cutter is forced forward and the next blank forced partially into the tube, and there held until the next stroke. By this means the blank that is forced into the mouth of the cutter serves as a cushion for the blank in advance of it and prevents the edge of the wood from fraying out, thus insuring a smooth cut. The tubular cutters, as seen, are ground or sharpened back upon the upper and lower sides, leaving the pointed projection upon each side, so as to produce a drawing cut upon the blank operated upon.

Above the cutters *D* are cutters *d*. These are beveled upon each side from the vertical center, so as to separate the waste and discharge it from each side of the cutter through suitable troughs or ways. The bungs are forced through the tubular cutters *D* and discharged at the outer ends into the tubes *I*, which tubes upon each end of the machine are forked, forming the tubes *I'*, having the pointed projection between them. The blank dropping down from the tubular cutters will fall into one or the other of these tubes *I'*, depending upon which is filled, and through these tubes they are fed in the first place upon the plunger *G*, and as it is retracted they drop upon a projection, *J*, where they are held until the plunger *G* forces them into the compressing-cup *F*, which gives them the tapering shape required, and at the same time stamps the card upon the top or large end of the bung.

The plungers *G*, of which there are two upon each end of the machine, are fitted into the end of a sliding frame, *K*. This frame is reciprocated in its bearings by an eccentric, *L*, which is secured upon a shaft, *l*, and the shoes *M*, which hug the eccentric and have arms *m* extending to the ends of the frame. The ends of the arms are fitted into semicircular bearing-boxes *k*, which are secured to the inner ends of the frame *K*. At each end of the machine are sliding frames *N*, (as these are identical upon each side of the machine portions of it have been omitted from the right-hand side of Fig. 1,) which frames are connected to and move with the sliding frame *K*. These frames have standards *n* projecting up from each outer corner, and between the up-

per ends of these standards, upon each side, is a cross-bar, n' , which is perforated to receive the diminished shanks of followers f , which are held in place by set-screws n^2 . The bar n' is also held in the standards n by set-screws, so that the followers f may be readily removed. It will be seen that as the plungers G force the circular bung-blank into the conical cup F the followers f will recede from the cup, and when the plungers recede they force the compressed blank out of the cup. Below the cups and below the circular cutters are troughs (not shown in the drawings) which receive the finished bungs and convey them to a suitable receptacle and convey the waste from the machine.

The plungers G E and cups F are held in place by set-screws, and the cutters D are clamped between split bushings d' . The plungers and cups for the different sizes of bungs all have shanks of the same size, so that any of them will fit the machine, and all the bushings for the cutters are of the same diameter; but, with their bores varying for the different sizes, the cutters are clamped in place by the removable cap d^2 , a key or wrench, d^3 , being employed for the purpose. The bearing-blocks J and splitting-blades d are vertically adjustable by means of slots and set-screws to suit the various sizes of bungs made by the machine. The lower front walls of tubes B^3 are provided with hinged gates, which are held in the position shown by a weighted lever, l^4 . Should any of the square blanks fed down through the tube stick or be caught by the plungers E before it has dropped down upon the projection e , the gate b^3 will yield and permit it to pass to the cutter. Without this provision the front of the tube would be liable to be forced out or broken. In front of the discharge end of the cutter, at the top of the feed-tube I , is hinged gate I^2 , held closed by a spring, i , which is provided with an alarm, I^3 . Should the feed to the compressors become clogged, this will be forced back and an alarm sounded, so that the attendant may remove the obstruction without stopping the machine. Across the upper part of the discharge end of the cutters D are arranged coiled springs, which are stretched tight between the ends of a semicircular frame, o . As the circular blank is discharged from the cutter, the spring slips on top of it, separating it from the following blank and forcing it down into the tube I . This spring is also vertically adjustable by a set-screw which passes through the upper forked shank of its frame.

The operation of the machine is as follows: A suitable number of strips the proper width for the bung-blanks and usually from eight to ten feet long are first placed side by side and edge upward upon the saw-tables A . The ends of these are first jointed and then all moved together against the stop a^2 , which is set the proper distance to sever the blanks into square blocks. As the first set are severed and fed into the trough B , the table is withdrawn, the

strips again pushed against the stop a^2 , and the table again pushed forward, severing a new set of blanks. These are by the forward movement of the table severed and forced into the trough B , advancing the first set severed, and so on. As the blanks are forced through spiral tube or trough B' they are turned one-fourth around and fed into the tube B^2 , from whence they are carried forward into the feed-tube B^3 . They are then carried down and drop upon the projection e . As the plunger E moves in the direction of the hollow cutters D , the blanks are forced through it and discharged in the form of plain cylinders into tube I , from which they are conveyed to one or the other of the tubes I' , as before described, and drop upon the stops J in position to be forced into the conical cups F and compressed into the desired shape of the finished bung. From this cup they are discharged by the followers f , as before described. As there is but one hollow cutter upon each end of the machine, while there are two sets of compressors, it is evident that the sliding bed H must travel at twice the speed of the sliding beds K and N . This result is attained by suitable gearing, which is so well known that it requires no description.

The particular form of the hollow cutters I do not claim; nor do I claim, broadly, every means for cutting, compressing, and stamping the bungs in one machine; but

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

1. The combination, substantially as specified, of a machine for making bungs and a cut-off saw for severing the blanks from strips, with feed tube or trough to convey the blanks from the saw to the cutting devices, said tube having between its receiving and discharge end a spiral section or part, as B' , to turn the said severed blanks a quarter-revolution to bring the grain of the wood vertical.

2. The combination, substantially as specified, of the cut-off saw for severing square bung-blanks from a strip or strips, the feed-trough B B' B^2 B^3 , with the hollow cutters D , sliding bed H , and piece E e , the said saw and trough B B' B^2 being arranged above the cutters, said part B having a spiral curve to turn said blanks a quarter-revolution, and devices for forcing the blanks through the same and the vertical part B^3 of the trough leading from the horizontal trough B B' B^2 to the cutters.

3. The combination, substantially as specified, with a bung-machine, of a feed-trough a part of which is horizontal and part vertical, as shown, said horizontal part having an intermediate spiral section, B' , with a spring, as b , at the discharge end of the horizontal part to bear upon the leading block passing through said trough to force it into the vertical part which leads to the cutter.

4. Compressing mechanism for bung-machines, consisting of the following parts, in combination, to wit: the frame C , the bed K , mounted in ways to slide within said frame, the plungers G , secured in each end of said

sliding frame, the cam L, shaft l, shoes M, and arms m, extending from said shoes to the ends of the frame to actuate the frame in its ways, the cups F, secured in the ends of frame C, the 5 adjustable stops J, and the followers f, to discharge the finished bung, substantially as shown and described.

5. In a bung cutting and compressing machine, the combination of the stationary hollow cutters D, secured in each end of the machine-frame, the sliding bed H, the followers E, secured in each end of the sliding bed, the eccentric H', and shaft h, to reciprocate the said bed between the opposite cutters, with the 10 cups F, secured in the ends of frame C, the sliding frame K, and plungers G in each end of said frame, and mechanism, such as shown,

to move the sliding frame between the cups, the tubes B', to convey blanks to the cutters, and the tubes I I', to convey the circular 20 blanks from the cutters to the compressors, the said cutting mechanism being located above the compressing mechanism, substantially as shown and described.

6. In a bung-machine, the combination of 25 the hollow cutter, the means shown to force blanks through it, the tube I, to deliver said blanks, and the spring-pressed gate I', and alarm I'', to sound when the gate is forced by the feed clogging, substantially as set forth.

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Witnesses:

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