

C. J. MATTISON.

MACHINE FOR PACKING GRANULATED OR POWDERED SUBSTANCES.

No. 571,492.

Patented Nov. 17, 1896.

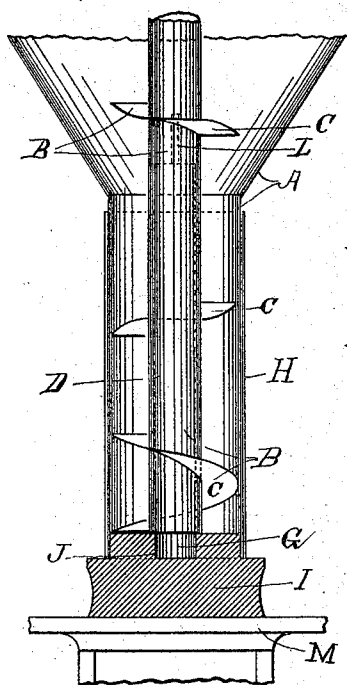


Fig. 1.

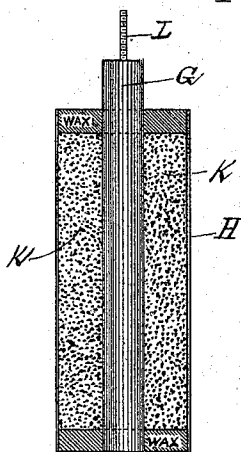


Fig. 4.

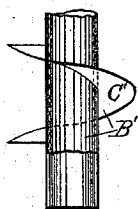


Fig. 5.

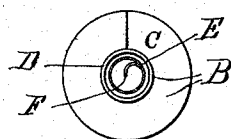


Fig. 3.

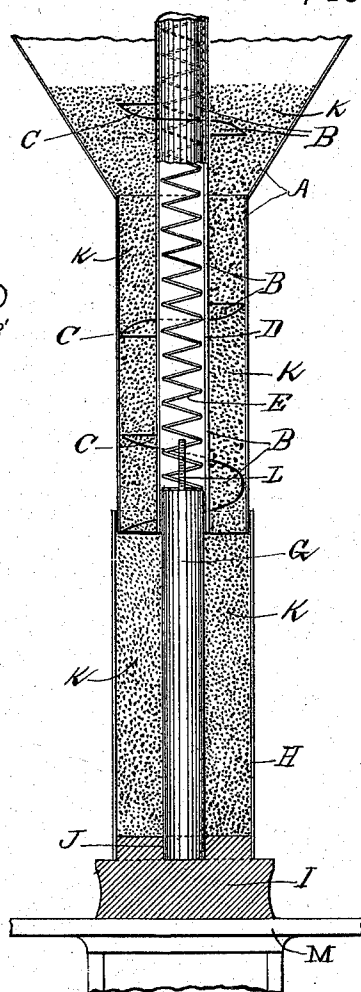


Fig. 2.

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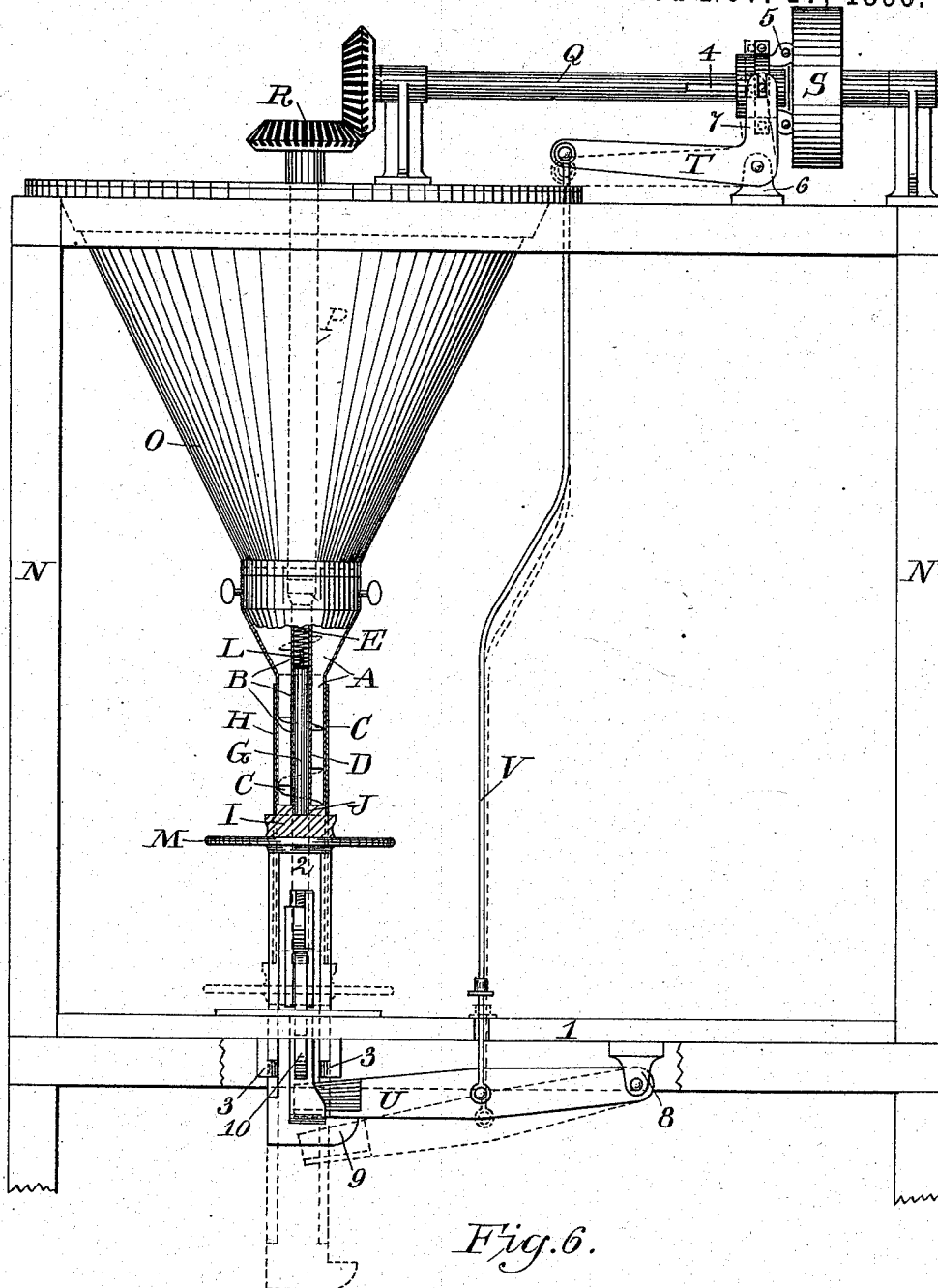


Fig. 6.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR PACKING GRANULATED OR POWDERED SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 571,492, dated November 17, 1896.

Application filed January 7, 1896. Serial No. 574,599. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. MATTISON, of Oswego, in the county of Oswego and State of New York, have invented new and useful
5 Improvements in Machines for Packing Comminuted Material Around a Solid Core, of which the following is a specification.

This invention relates to improvements on the machine for packing pulverulent substances for which Letters Patent No. 383,136
10 were granted to me on the 22d day of May, 1888; and the object of my present invention is to mechanically effect the packing of granulated or powdered material around a solid
15 core in a suitable shell or casing, said core being made to either form a permanent fixture in the package, or, when preferred, it may form part of the containing-shell for the package and be removable from the package
20 when said shell is removed therefrom.

In the accompanying drawings, which are herein referred to and form part of this specification, Figure 1 is a vertical section of part of a packing-tube for my machine, a
25 shell open at top and bottom for containing the packed material, and a block on which said shell temporarily rests in the operation of packing, the packing-auger being shown in side elevation and the several parts arranged as preparatory to the packing of the
30 material in the containing-shell; Fig. 2, a vertical section of said packing-tube, shell, block, and the packing-auger, with the solid core shown in side elevation and the several
35 parts arranged as after the packing of said shell has been completed; Fig. 3, an inverted plan view of my improved packing-auger detached from the packing-machine; Fig. 4, a vertical section of a filled shell, with the solid
40 core shown in side elevation; Fig. 5, a side elevation of the lower part of my improved packing-auger in a modified form, with the lower portion of the tubular center broken away; and Fig. 6, a front elevation of a pack-
45 ing-machine adapted to effect my method of packing comminuted material around a solid core.

As illustrated in the drawings, N designates the framework of a packing-machine that is
50 essentially like the one above referred to herein, said framework including a table or platform 1 for holding unfilled shells for pack-

ages and for other purposes; M, a yielding platform that is secured in a horizontal position to the upper end of a slide 2, which
55 moves vertically in guides 3, secured to the framework. The downward movement of said yielding platform is resisted by a counter-weight (not shown in the drawings) for the purpose of obtaining a required density of
60 the packed material.

O is a hopper for containing a supply of the comminuted material preparatory to packing the same into shells or cases. Said hopper is secured to the framework N in such
65 manner that its lower end will be directly over the yielding platform M.

A is a packing-tube that is removably attached to the lower end of the hopper O, so that the center line of said tube will range in
70 line with the center line of the hopper. The upper end of said packing-tube is made to fit the lower end of said hopper, and the interior of the lower portion of said packing-tube should be cylindrical and of a diameter cor-
75 responding to the diameter of a packing-auger which rotates therein. The outer form of the lower portion of said packing-tube should conform in shape and size to the shell or case
80 it is designed to fill.

B is a packing-auger that is fitted to revolve in the packing-tube A to effect the packing of granulated or powdered material around the
85 sides of a solid core G when loosely inserted in a tubular center D of said packing-auger. Around said tubular center an interrupted screw-thread is generally formed by means of inclined segmental sections C, which are se-
90 cured to said tubular center; but, when preferred, a continuous screw-thread may be secured to the outer side of said tubular center to form the packing-auger, and in either form of said packing-auger the lower end of its
95 tubular center should remain open, but its upper end may be closed, either by a closure that forms an integral part of said tubular center or by attaching the packing-auger to the lower end of a packer-shaft P. Usually the solid core G is fed downward by a spring
100 E, that is contained in the bore of the tubular center D and will feed the solid core G downward in a positive manner, or if the solid core is properly made it can be fed downward by its gravity; but in either case the

feeding movement of the solid core should correspond to the compression of the material into the shell provided for the finished package.

5 P is a packer-shaft arranged vertically in the center of the hopper O. To the lower end of said packer-shaft the packing-auger B is removably attached, so as to substitute packing-augers of different sizes and suited to
10 different grades of material. The upper end of said packer-shaft is provided with a bevel-gear R, that meshes into a like gear secured to a horizontal driving-shaft Q, which is provided with a friction-pulley S, that derives
15 motion by a belt from any proper motor. The pulley S is arranged to revolve loosely on the shaft Q, and the latter is provided with a spline 4, on which a friction-clutch 5 is fitted to slide. Said clutch is adapted to
20 engage in frictional contact with the pulley S and connect the shaft Q to said pulley. An operating-lever T is fulcrumed to a bracket 6 on the framework N, and an arm 7 on said lever is fitted to move said clutch to
25 effect a connection or disconnection of said pulley with the driving-shaft Q according to the requirements then existing. By disconnecting said clutch from the pulley S a stoppage of the motion of the packing-auger B
30 will be effected.

U is a releasing-lever that is fulcrumed to a bracket 8 on the framework N. Said releasing-lever is connected to the operating-lever T by a rod V, so that by raising the
35 yielding platform M to the extremity of its upward movement a lug 9 on the slide 2 will take against the free end of said operating-lever and swing the latter into a position (shown by full lines in Fig. 6) whereby the
40 friction-clutch 5 will be engaged with the pulley S to impart motion to the driving-shaft Q. The operating-lever T is retained in its raised position by a locking-lever (not shown in the drawings) until the releasing-lever U is moved by a cam 10 on the slide 2
45 to disengage said releasing-lever from the locking-lever and allow the releasing-lever U to tilt downward into a position (indicated by dotted lines in Fig. 6) that will effect a
50 disengagement of the friction-clutch 5 from the pulley S, and thereby the motion of the packing-auger B will be stopped automatically.

H is a shell or case for containing the comminuted material and the solid core after the
55 packing has been accomplished. Said shell may be made of any suitable material in any preferred form—either tubular, polygonal, rectangular—and with either one or both of
60 its ends open until the operation of packing has been completed, but if either of its ends must be closed it should be the lower one, so as to allow the open end to be slid onto the packing-tube A, and in such construction the
65 solid core G can be centrally attached to the bottom of the shell H, so as to effect an insertion of said core into the tubular center D

simultaneously with the placing of the shell H on the exterior of the packing-tube A.

I is a block which is designed to form a temporary bottom for the shell H during the operation of packing the comminuted material into the latter if said shell is made with an open lower end. When a recess is to be
70 formed in the lower end of a package during the operation of packing the comminuted material therein, the upper portion of said block should be formed to shut into the lower end of the shell H to a distance that will equal
75 the depth of the recess to be formed thereby, and the upper face of said block should have a recess J formed centrally therein to receive the lower end of the core G and position the
80 latter in the shell H. When a recess is to be formed at the upper end of a package, the packing-auger B should cease its rotations when the lower end of said auger has reached a point where the bottom of the recess is to be located.

K designates a filling of comminuted material which, as shown in Figs. 2 and 4, is packed into a shell H between the wall of the latter and the periphery of a solid core G, which is usually located centrally in said shell.

When my invention is applied to producing porous cups for electrical batteries, the filling K consists of comminuted carbon or material suited to that purpose, and under the same conditions the solid core G should be a solid bar of carbon or an equivalent material, and said core should be provided with a screw L for securing a binding-post of an old and well-known construction to said core for the purpose of connecting thereto electrical conducting-wire in the usual manner.

The modified form of my packing-auger (shown in Fig. 5) only differs from the packing-auger B, hereinbefore described, by having the lower end of its tubular center D' extended downward below the lower end of the screw-threads of the packing-auger B', and the object of this modification is to facilitate the inserting of a central core in the tubular center of a packing-auger while the latter is retained in the packing-tube of the machine.

The filled shell H (shown in Fig. 4) is designed for use as a porous cup for electrical batteries, and the recesses formed in the upper and lower ends are filled by pouring in melted wax or paraffin.

The arrangement of my invention as shown in the drawings and described herein is designed for filling porous cups for electrical batteries, whether the central core is a permanent part of the cell or is removable therefrom.

My invention is applicable, without further improvement, to the purpose of making non-conducting jackets for steam-pipes or other pipes needing such protection, which jackets are usually made of granulated cork. For that purpose a metallic shell is provided with a closed lower end having a solid core formed on or secured to said bottom. The diameter

of the bore of said shell is made to suit the diameter of the jacket required, and the diameter of the solid core corresponds to the bore of said jacket, the height of the shell corresponding to or nearly to the length of the tubular section of the jacket, the packing-auger being formed to suit the bore of the shell and the diameter of the solid core. The granulated cork is packed by a packing-machine into said shell, and the latter, with its filling, is then placed in a furnace and heated until the cork is transformed into a solid consistent mass, after which the shell is taken off and the core removed, leaving a tubular cork jacket. While I have described my invention as applied to two special purposes, it is applicable to many others where granulated or powdered material is to be packed around a solid core of any size or form.

Being aware that it is old and well known to provide a packing-machine with a movable platform for holding a barrel or other receptacle during the operation of packing granulated or powdered material thereinto, said platform being arranged to yield under a pressure that exceeds the means employed for resisting such yielding movement, I do not claim *per se* that feature in packing-machines, the same being fully shown and described in Letters Patent No. 19,572, that were granted to Judson Mattison on the 9th day of March, 1858; but

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

1. In an apparatus for compressing comminuted material into a shell or case around a solid core, the combination, with a revoluble packing-auger provided with a tubular center adapted to temporarily hold a solid core during the operation of compressing the com-

minuted material, of a yielding platform arranged to hold said shell or case and to move downward in opposition to a movable resistance, as herein specified.

2. In an apparatus for compressing comminuted material into a case or shell around a solid core, the combination, with a revoluble packing-auger provided with a tubular center that is adapted to temporarily hold a solid core during the operation of packing the comminuted material; said packing-auger being constantly surrounded by a packing-tube, and a spring contained in said tubular center and arranged to feed down the solid core correspondingly to the filling of said shell or case and to move downward against the opposition of a movable resistance, as herein specified.

3. In an apparatus for compressing comminuted material into a shell or case around a solid core, the combination, with a revoluble packing-auger provided with a tubular center that is adapted to temporarily hold a solid core during the operation of compressing the comminuted material, of a yielding platform arranged to move downward against the opposition of a movable resistance, and a block placed or fixed on said yielding platform and provided with a recess for retaining the lower end of said core during the operation of compressing the comminuted material in the case or shell; said block being adapted to form a recess in the lower end of a package of said material, as herein specified.

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