

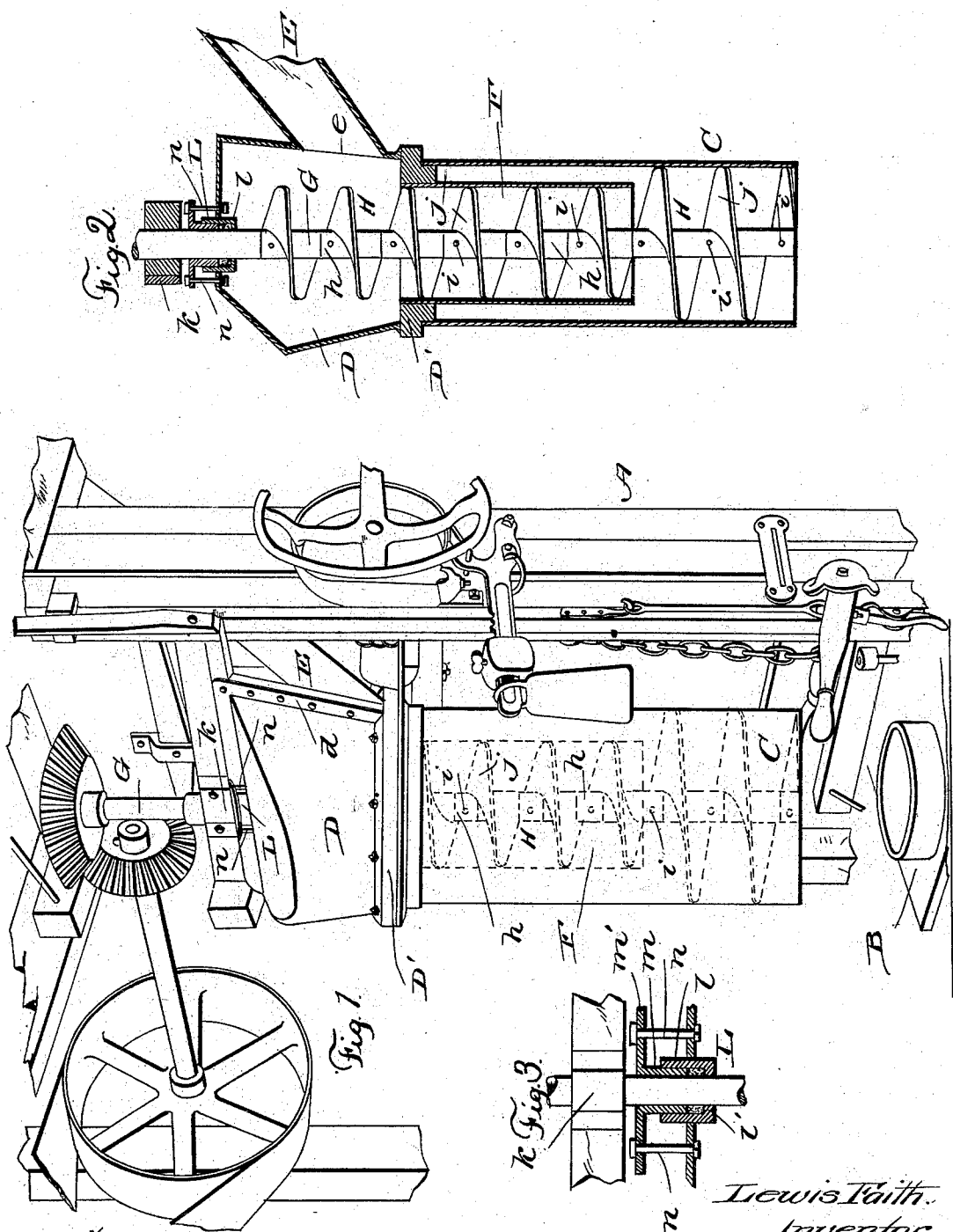
(No Model.)

L. FAITH.

MACHINE FOR PACKING CEMENT IN BARRELS.

No. 505,758.

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Witnesses:

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UNITED STATES PATENT OFFICE.

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MACHINE FOR PACKING CEMENT IN BARRELS.

SPECIFICATION forming part of Letters Patent No. 505,758, dated September 26, 1893.

Application filed May 31, 1893. Serial No. 476,133. (No model.)

To all whom it may concern:

Be it known that I, LEWIS FAITH, a citizen of the United States, residing at Hancock, in the county of Washington and State of Maryland, have invented certain new and useful Improvements in Machines for Packing Cement in Barrels; 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.

My invention relates to machines for packing pulverized or powdered substances, particularly for packing cement in barrels, of that class which employs a vertical auger or screw housed within a fixed vertical jacket or tube and a vertically movable platform constructed to carry a barrel or other receptacle in which the substance is to be packed by the auger or screw, said platform being sustained in proper relation to the tube and packer screw by devices which permit the platform and barrel to descend as the substance is packed therein.

It is well known to those skilled in the art of packing cement that it is difficult to control the passage of cement through a machine and to pack it in barrels owing to the tendency of the dry, finely-powdered cement to become precipitated through and by the packing screw or auger, and to flow out upon the platform and floor when the barrel is removed from the platform.

In the construction of a practical machine of the class referred to for filling and packing cement in barrels I have found it necessary to organize and arrange certain novel supply and packing mechanisms in the machine to control the passage of the cement around the packer screw and to retain the cement in the vertical jacket or tube after the barrel has been filled, packed, and removed and while another barrel is being placed in position on the platform.

To the accomplishment of these ends, the improvement consists, first, in the combination with an outside vertical jacket having a closed upper end and an inclined conduit or chute leading from an elevated bin and opening into said vertical tube at a point below its upper closed end, an internal tube of less di-

ameter than the outside jacket and sustained within the same at a point below the discharge opening of the inclined chute and a continuous packer screw which extends through the jacket and internal tube and terminates at a point above the discharge opening from the inclined chute to the vertical jacket, whereby the cement is discharged from said chute around the upper part of the packer screw and the latter when rotated is adapted to convey the cement through the tube and jacket and pack the same in a barrel, but when the screw is stopped, to permit the filled barrel to be removed and replaced by an empty barrel, the cement is retained in the machine by the peculiar construction and organization of the screw, the internal tube, and the jacket.

In the preferred embodiment of my invention I construct the upper part of the packer screw of less diameter than the lower part of said packer screw, and the smaller screw blades fit snugly within the internal tube while the lower larger screw blades, which lie below the internal tube, operate snugly within the outside vertical jacket.

My improvements further consist in the peculiar construction of the packer screw, and in the combination and construction of parts which will be hereinafter more fully described and pointed out in the claims.

I have illustrated the preferred embodiment of my improved machine in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view showing the packer screw and internal tube by dotted lines. Fig. 2 is a vertical sectional view through the machine, showing the inclined chute and the construction of the packer screw and the internal tube. Fig. 3 is an enlarged detail sectional view of the stuffing box showing it applied to the jacket and the screw shaft.

Like letters denote corresponding parts in all the figures of the drawings, referring to which—

A is the main frame of the machine and B is the vertically movable platform which is sustained by any suitable devices that permit the platform to descend as the barrel is

filled; but as these devices form no part of my invention and as they are familiar to those skilled in the art, I do not deem it necessary to herein particularly describe and illustrate said sustaining and adjusting devices for the platform.

C is the vertical jacket which is sustained by the frame above the platform, in vertical line with the latter, and the diameter of said jacket is such that it is adapted to fit snugly into the barrel. The lower end of this jacket C is open, but the upper end thereof is closed by means of the hood D, said hood and jacket being firmly bolted to a suitable support D', braced at *d* to a cross bar of the frame A; to one side of this hood D is fastened or united the inclined feed chute E. This inclined feed chute E extends laterally from the hood in an upward direction, and it is fastened to and communicates with a supply bin or hopper (not shown) in which the cement is contained. The lower end of this inclined feed chute opens into and communicates with the vertical jacket through a discharge opening *e* which lies or is situated below the upper closed part of the hood D so that the cement is supplied to the jacket and hood below the upper extremity of the packer screw.

Within the upper part of the outside jacket C is arranged an internal tube F which is of less diameter than the jacket and which lies concentric with the latter. This internal tube is below the hood D and its upper end is fastened in place by any suitable means, preferably by having a circumferential flange bolted to the support D' that sustains the hood and vertical jacket, although this is not essential. The space between the upper end of the outside jacket and the internal tube is closed to cause the cement from the hood and the chute E to pass into and through the internal tube, and the lower end of this tube F terminates above the lower open end of the outside vertical jacket, as shown by Figs. 1 and 2 of the drawings.

G is the vertical shaft which extends centrally through the outside jacket, the internal tube and the hood D, the lower end of the shaft terminating substantially on a line with the lower end of the jacket, but the upper end of said shaft is extended through the closed head D and above the cross beam of the frame A to enable said upper end of the shaft to be geared to a suitable power shaft by which the vertical shaft G is rotated, suitable clutch mechanism being provided for throwing the shaft G out of gear with the power shaft so that the shaft can be stopped.

H is the packer screw which is fixed to and rotates with the vertical shaft G, and this packer screw on the shaft extends from the lower end of the outside jacket, through the internal tube, and up into the hood D above the opening *e* from the inclined feed chute into the hood. The upper part of the screw

within the internal tube and the hood is of such diameter that it fits snugly within the tube, but the lower part of the screw below the internal tube and within the jacket is of greater diameter than the upper part of the packer screw, as shown in Fig. 2, whereby the packer screw is constructed for service within the internal tube and the lower part of the inclosing jacket. This screw H notwithstanding the difference in diameter between its upper and lower parts is practically continuous and to enable the screw to be easily applied to the shaft and to be repaired or replaced should any of its blades become damaged, I make the screw in sections. Each section of the screw consists of a hub *h* provided with a set screw *i*, and the spiral blade *j* integral with the hub; and each spiral blade makes a complete twist or turn around the hub so that when the section is fastened to the shaft by the screw clamping the hub thereto, the upper and lower ends of one blade align or coincide with the corresponding ends of adjacent blades to preserve the continuity of the screw. It is evident that the sections can be quickly applied to the shaft, and in event of injury to any of the sections it can be detached from the shaft and replaced by a new section.

The shaft is journaled in a bearing *k* on the cross beam of the frame A and has collars which bear against said bearing *k*; and to afford a firm steady support for the shaft in the hood D I provide the stuffing box L which also serves to prevent the cement from passing or flying out through the opening in the top of the hood provided for the passage of the shaft. This stuffing box L consists of the sleeve *l* seated or fitted in the top of the hood, the gland *m* fitted snugly around the shaft and within the sleeve, and the bolts *n* which press the gland tightly into the sleeve; a packing may be provided between the ends of the gland and sleeve if desired. The sleeve has a flange *l'* at its lower end to fit snugly around the shaft, and the gland has a similar flange *m'* at its upper end through which pass the bolts *n* that are fastened in the top of the hood.

The operation of my invention is as follows:—A barrel is placed on the platform B, and the latter is raised so that the lower end of the jacket C fits therein. The cement is fed from the elevated bin or hopper through the chute into the hood D and around the packer screw, and the latter is revolved to feed the cement from the chute and hood through the internal tube and the jacket into the barrel. The lower large part of the screw serves to pack the cement in the barrel, and as the latter is filled it descends with the platform until it reaches the limit of its downward movement. The shaft and screw are now stopped, the barrel removed, and an empty barrel placed on the platform which is again raised into position; and while this is

going on, the cement is retained within the machine by the internal tube and the packer screw.

I am aware that changes in the form and proportion of parts and details of construction of the devices herein shown and described as an embodiment of my invention can be made without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes and alterations as fairly fall within the scope of the same.

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

1. In a machine for filling and packing cement in barrels, the combination of a vertical jacket, having a closed upper end, a screw shaft extending longitudinally through said jacket, and a feed chute which discharges into the jacket below its upper closed end and below the upper extremity of the packer screw, substantially as and for the purposes described.

2. In a machine for filling and packing cement in barrels, the combination of a vertical jacket provided with an internal tube, the feed chute which discharges into said jacket above the internal tube, and a screw shaft extending longitudinally through said jacket and its internal tube, substantially as and for the purposes described.

3. In a machine for filling and packing cement in barrels, the combination of a vertical jacket having the closed upper end, an internal tube fixed within said jacket at a point between its ends, a packer screw extending through said jacket and tube, and a feed chute which discharges into the jacket at a point above the internal tube and below the upper end of the packer screw, substantially as described.

4. In a machine for filling and packing cement in barrels, the combination with a vertical jacket and a feed chute connected thereto, of the internal tube fixed within the jacket below the point of discharge of the feed chute, and a longitudinal screw having its smaller part operating within the internal tube and

its larger part operating within the lower part of the jacket, substantially as and for the purpose described.

5. In a machine for filling and packing cement in barrels, the combination with a vertical jacket and a feed chute, of a longitudinal screw having its upper part of less diameter than its lower part, and the internal tube fitted snugly around the smaller upper part of the screw and fixed within the jacket to close the space between itself and said jacket, for the purpose described, substantially as set forth.

6. In a machine for filling and packing cement in barrels, the combination of a vertical jacket having the closed hood at its upper end, the shaft passing through said jacket and hood and carrying a screw with an enlarged lower part operating in the lower end of the jacket, a feed chute arranged to discharge into the hood at a point below the upper end of the screw and an internal tube partially inclosing the smaller upper part of the screw and fixed within the jacket below the point of discharge of the feed chute into said hood, substantially as and for the purposes described.

7. In a machine for filling and packing cement in barrels, the packer screw composed of a series of sections formed of the spiral blades and hubs clamped on the shaft, certain of said blades being of less diameter than the blades on other sections and said blades aligned to form a continuous screw, of small diameter at one end and larger diameter at the other end, combined with an internal tube inclosing that part of the screw of small diameter, a jacket inclosing the screw and tube, and provided with the hood at its upper end, and the feed chute connected with the jacket to discharge above the internal tube, substantially as and for the purpose described.

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

LEWIS FAITH.

Witnesses:

ROBERT BRIDGES,
CHARLES W. HENDERSON.