(No Model.)

J. KOELNER.

PACKING AUGER.

No. 591,259. Patented Oct. 5, 1897.

Fig. 1.

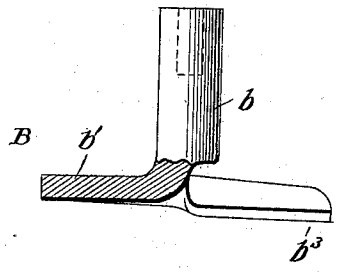


Fig. 4.

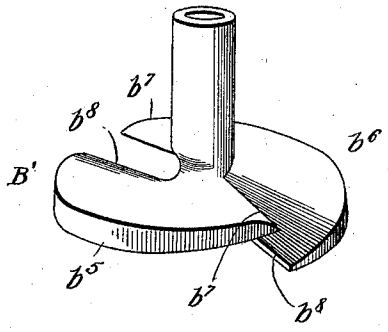


Fig. 2.

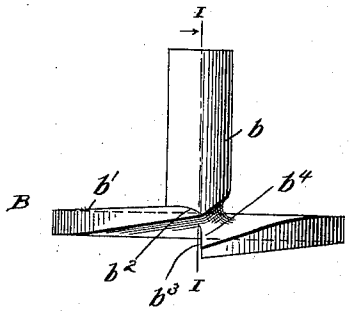


Fig. 3.

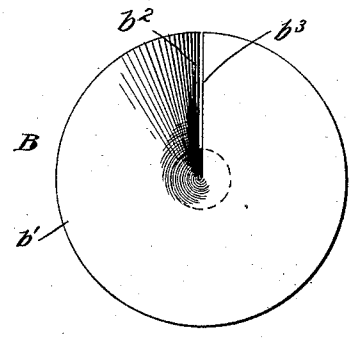


Fig. 5.

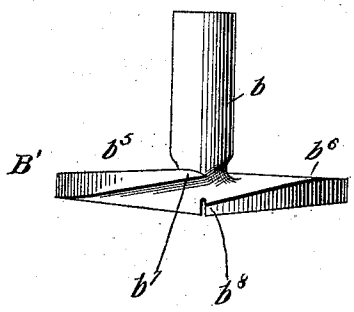
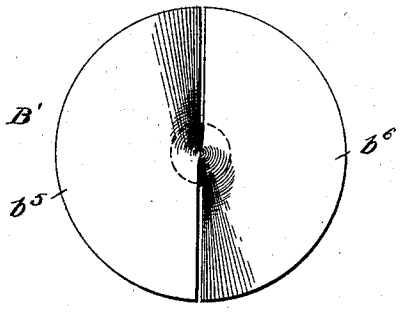


Fig. 6.



WITNESSES

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PACKING-AUGER.

SPECIFICATION forming part of Letters Patent No. 591,259, dated October 5, 1897.

Application filed February 18, 1897. Serial No. 624,070. (No model.)

To all whom it may concern:

Be it known that I, JOHN KOELNER, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Packing-Augers; 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.

This invention relates to packing-augers such as are employed for packing the products of ground grain and other material, but more particularly to augers for packing bran, offal, and meal. In devices of this character as commonly constructed the lower surface of the auger is formed with a central projection or boss forming an extension or continuation of the socket in which the end of the driving-shaft is secured, or the shaft itself is passed entirely through the hollow shank or stem of the auger and secured by a nut screwed thereon or other fastening, so that in both cases a projection is formed which extends into the material below the lower under surface of the auger surrounding said boss, and as the auger is revolved the material directly under such projection is compressed more closely than the material surrounding the same and the pressure is not uniform from the circumference to the center of the auger, but unequal, which results in causing the material to be packed into a solid core centrally of the bag or package and burned or injured by heating, due to the greater pressure at the center.

The primary object of my invention is to overcome these objectionable features, and this I accomplish by providing an auger or packer which will effect an equal distribution of the material and exert an equal pressure thereon at every point from center to circumference, whereby the products of grain and other material may be packed into a smaller compass with greater facility and with less damage to the material than by the devices commonly employed.

The invention will first be hereinafter more particularly described with reference to the accompanying drawings, forming a part of this specification, and then pointed out in the claims at the end of the description.

In the drawings, Figure 1 represents a vertical sectional view, partly in elevation, of a packing-auger embodying my invention. Fig. 2 is a side elevation of the device, looking at its inlet or engaging and discharging side. Fig. 3 is a bottom or inverted plan view of the device shown in Figs. 1 and 2. Fig. 4 is a perspective view of a packing-auger having two inlet and discharge sides instead of one, as in Figs. 1 to 3; and Figs. 5 and 6 illustrate a side elevation and a bottom plan, respectively, of the auger shown in Fig. 4.

The packing-auger may have the material fed thereto and be rotated in the usual manner. It is preferably formed with a stem or shank b, having a socket or recess in its upper end adapted to fit over the end of the operating-shaft, to which it may be secured in any proper manner, so that the shaft may not extend below the lower surface of the spiral feeding and packing device B. This feeding and packing device of the form shown in Figs. 1 to 3 consists of a single spiral blade b', forming a gradual inclined plane from its highest to its lowest point, and is secured to or formed integrally with the shank b in such manner as to provide a substantially plane lower surface without any boss or projection thereon from the highest point of the engaging lip or toe b^2 to the heel or discharging-point b^3. The heel b^3 may be arranged immediately below the toe b^2, and extends from the periphery of the spiral to substantially the vertical axis or center thereof, so as to form an opening b^4, extending to the center of rotation of the spiral, whereby a feed-inlet and discharge portion are formed equal to or quite one-half the diameter of the auger, so as to effect an even distribution of the material from the center to the circumference of the spiral and at the same time to provide an inclined packing-surface of like extent, whereby an equal pressure will be exerted on the material over its entire surface within the plane of rotation of the auger.

The construction shown in Figs. 4 to 6 involves the same principle, but instead of a single spiral a double spiral or two inclined

planes are provided one on each side of the vertical axis of the auger with openings and inlet and discharge portions on opposite sides of the same extent as the single opening and discharge, but the under surface of each flange forming the double spiral or two inclined blades is inclined more sharply than in the case of the single spiral, owing to the fact that said blades or flanges together extend only once around the axis, whereas the single spiral makes a single convolution. In this latter form the device B′ comprises two flanges or blades b^5 and b^6, though more than two might be employed, each having an engaging toe or lip b^7 and being gradually inclined from the highest point of said toe to the heel or discharge-point b^8, which latter may be beneath the toe and extend from the periphery to the vertical axis or center of the auger.

The operation of the invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings. The auger being secured to the lower end of a driving-shaft, so as to be rotated thereby, and arranged within the usual stationary cylinder for receiving the material to be packed, and the material being fed into said cylinder in the usual or in any preferred manner, as the auger revolves the toe b^3 will cut into the material and a width and thickness thereof equal to the length and depth of the opening b^4, or substantially the length of one-half the diameter of the spiral, will be drawn into said opening, and as the auger continues to rotate the lower inclined surface of the blade b' will pass over the material and will gradually force the same downward, thereby firmly packing the same in the sack, bag, or package, and at each revolution of the auger a fresh supply will be taken in and packed, the sack or other receptacle supported on a movable platform below the delivery-surface of the auger gradually receding with the platform as the sack is filled. I thus provide a simple and efficient auger for effecting the equal distribution of the material and equal pressure thereon over the entire surface thereof within the plane of rotation of the auger, whereby the material may be readily and evenly packed into a small compass without injury thereto by heating or from other causes.

It is obvious that the extent or number of convolutions of the spiral blade or blades and the pitch thereof may vary and that the spiral blade or blades may be left instead of right handed without departing from the spirit of my invention.

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

1. A packing-auger for the products of grain and other material, comprising a rotary blade or flange extending outwardly from a stem or shaft and having a heel and toe portion slightly separated from each other and extending inwardly from the circumference of the flange to substantially the vertical axis thereof, so as to adapt the same to receive and discharge the material at the side of the axis on which said opening is located in a sheet of a width substantially equal to the distance from the center to the circumference of the flange; the latter being gradually inclined and having a smooth lower surface from its toe to its heel, whereby the material may be equally distributed and packed without injury thereto, substantially as described.

2. A packing-auger for the products of grain and other material, comprising a shank or stem adapted to be secured to a rotatable shaft, and a spiral flange extending outwardly from said shank and having a discharge-opening extending from the periphery of the flange to substantially the vertical axis thereof, said flange forming an inclined plane or surface which is smooth on the under side thereof from the highest point of the toe to the heel or discharge, whereby the material may be equally distributed and packed without injury thereto, substantially as described.

3. A packing-auger for the products of grain and other material, comprising a shank or stem adapted to be secured to a rotatable shaft, and a substantially disk-shaped feeding device on the lower portion of said shank, consisting of a single spiral blade or flange forming a gradually-inclined plane and provided with an engaging lip or toe and a heel beneath said toe extending from the circumference of the flange to substantially its vertical axis, so as to form a discharge-opening which also extends from the circumference of the flange to substantially the vertical axis thereof, said blade being smooth on the under side thereof from its toe to its heel, whereby the material may be equally distributed and packed without injury thereto, substantially as described.

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

JOHN KOELNER.

Witnesses:
CHARLES E. RIORDON,
WILLIAM B. CROWELL.