(No Model.)

O. D. WOODRUFF.

MEAT CUTTER.

No. 529,149. Patented Nov. 13, 1894.

Fig. 1

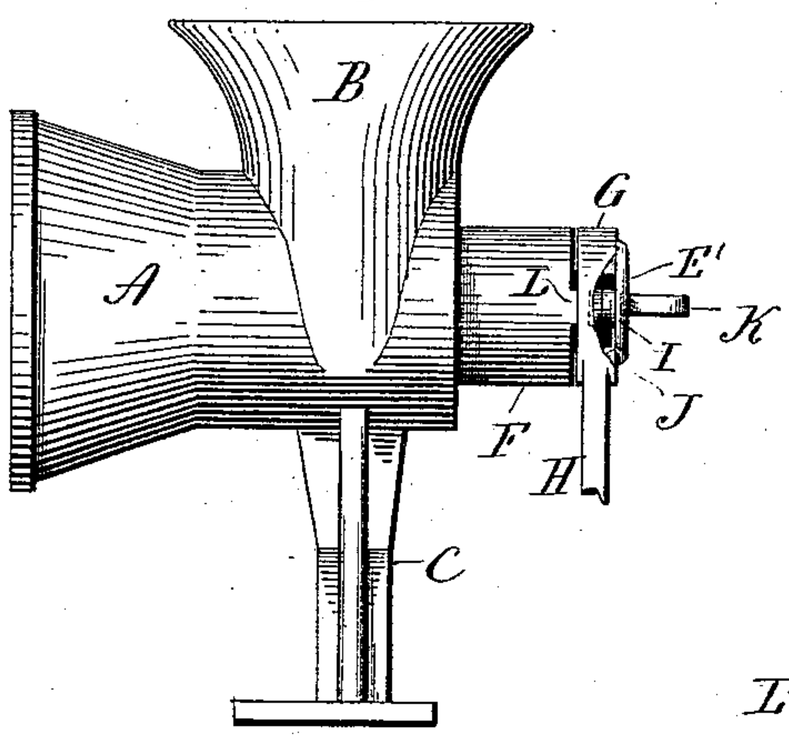


Fig. 5

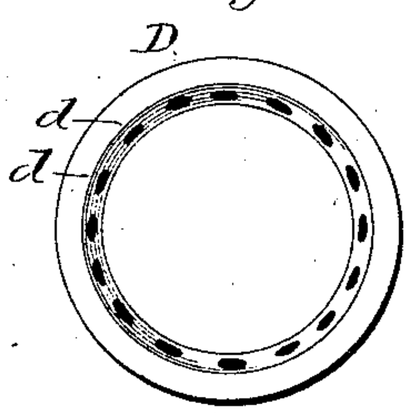


Fig. 6

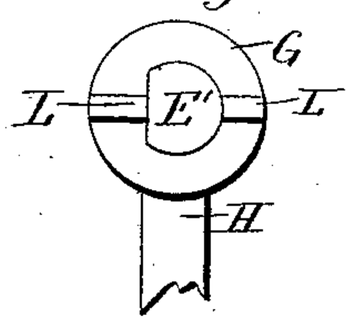


Fig. 2

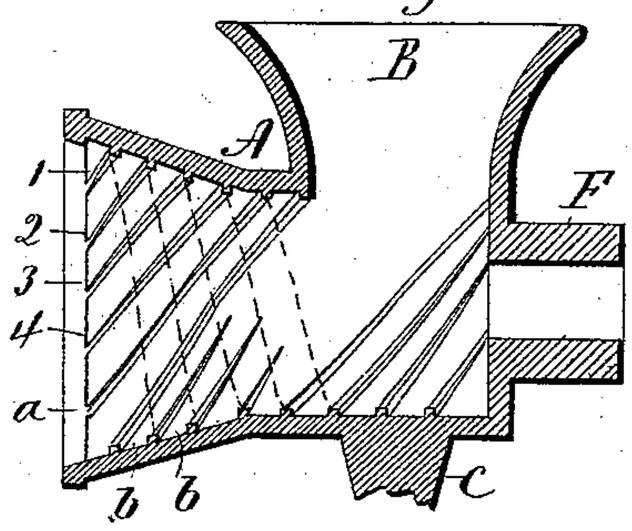


Fig. 4

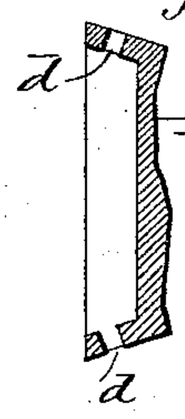


Fig. 7

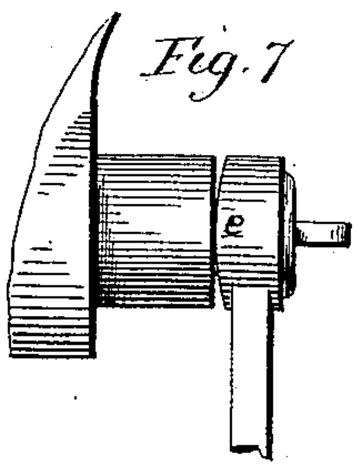


Fig. 3

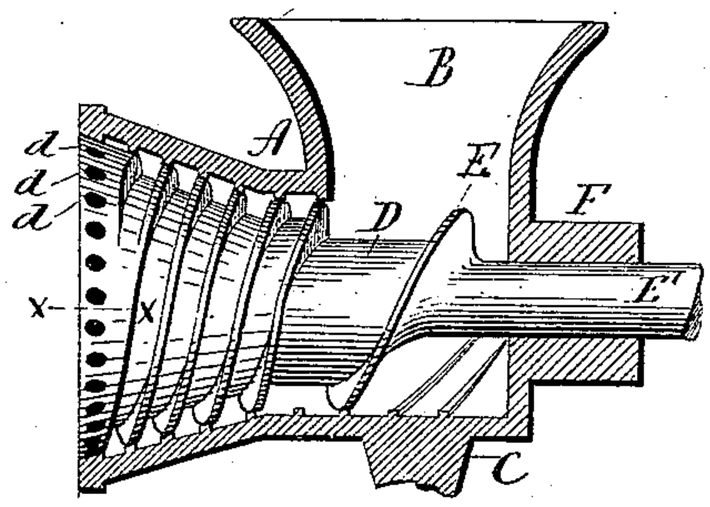
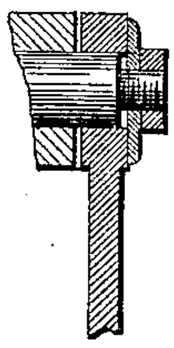


Fig. 8



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UNITED STATES PATENT OFFICE.

OLIVER D. WOODRUFF, OF SOUTHINGTON, CONNECTICUT.

MEAT-CUTTER.

SPECIFICATION forming part of Letters Patent No. 529,149, dated November 13, 1894.

Application filed October 24, 1892. Renewed June 29, 1894. Serial No. 516,071. (No model.)

To all whom it may concern:

Be it known that I, OLIVER D. WOODRUFF, of Southington, in the county of Hartford and State of Connecticut, have invented a new Improvement in Meat-Cutters; and I do hereby declare the following, when taken in connection with the accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of a machine complete; Fig. 2, a longitudinal section through the case, the forcer removed, broken lines indicating the ribs of the forcer as they work against the ribs of the case; Fig. 3, a longitudinal section of the case showing the forcer in place in side view; Fig. 4, a longitudinal section cutting through the delivery end of the forcer, on line *x*—*x* of Fig. 3; Fig. 5, a delivery end view of the forcer; Fig. 6, an inside view of the crank-head; Fig. 7, a modification in the shape of the crank-head; and Fig. 8, a modification in the adjusting-screw.

This invention relates to an improvement in that class of machines for cutting meat and like purposes, in which the machine consists of a case, having a hopper at one end for the introduction of the material to be operated upon, the case expanding in diameter from the hopper toward the opposite or delivery end of the machine, with a forcer within the case of corresponding increasing diameter, the forcer having spiral ribs upon its surface, adapted to coact with corresponding spiral ribs in the case, and so that the meat introduced through the hopper, and forced through the machine, will pass out at the delivery end completely cut and disintegrated. In such machines it is necessary that the forcer shall be adjustable longitudinally, so as to permit the ribs of the forcer to work in substantially close contact with the ribs of the case, the adjustment being necessary so as to regulate the closeness of contact between the ribs of the forcer and the ribs of the case to produce the best results, as well as to take up any wear which may occur between the ribs of the forcer and the ribs of the case, the object of the invention being a simple construction for such adjustment, and the invention consists in the construction as hereinafter described, and particularly recited in the claims.

A, represents the case of the machine, which is preferably made tapering, or of conical shape, expanding toward the delivery end, it being constructed with a hopper B, at the smaller end for the introduction of the meat, or material to be operated upon, and is formed as a part of a bracket C, or other suitable support for the machine when in operation.

Upon the inside of the case the surface is constructed with a series of spiral ribs, 1, 2, 3, 4, &c., more or less, these ribs inclining from the hopper toward the opposite or larger end of the case, and terminate near the open end, but so as to leave a plain annular surface *a*, around the inside at the other or delivery end. These ribs produce corresponding recesses *b*, between them, and are arranged so near together as to attain the greatest practical number of such spiral ribs within the case, all inclined from the hopper toward the other or delivery end of the case. Within the case the forcer D, is arranged, in the usual manner. The forcer is adapted to revolve within the case, also in the usual manner, and it is constructed with a spiral rib E, at the hopper end, which under the revolution of the forcer, will force the meat from the hopper end, toward the opposite or delivery end. The forcing-rib is spiral, and inclined in the same direction as the ribs of the case. Beyond the hopper, the body of the forcer is somewhat smaller in diameter than the internal diameter of the ribs of the case. Longitudinally this surface of the forcer is substantially parallel with the inner surface of the case, but at the outer or delivery end, the forcer is made of an external diameter substantially corresponding to the internal diameter of the ribs at that end of the case, and of the plain surface *a*, as clearly seen in Fig. 3, and so that this delivery end portion of the forcer will run substantially in contact with the surface *a*, and the corresponding surface of the ribs within the case. Near the outer end of the forcer, and through the said plain surface of the forcer, openings *d*, are formed, leading outward through the forcer, as seen in Figs. 4 and 5. The openings *d*, work in conjunction with that portion of the spiral ribs of the case over which they

pass as the forcer is revolved. The body of the forcer from the hopper to the said plain surface at the end of the forcer, is constructed with spiral ribs, inclined in the same direction as the spiral ribs in the case, and like the ribs in the case, should be as near together as they practically may be, and also like the ribs in the case, are substantially parallel with each other. They terminate at the said plain surface of the forcer, that is, circumferentially, in a plane substantially at or near the inner side of the openings *d*, as seen in Fig. 3.

As the ribs on the forcer incline in the same direction as the ribs of the case, it follows that in revolving, the ribs on the forcer work diagonally across the ribs of the case as indicated in broken lines Fig. 2, the said broken lines indicating the ribs on the forcer in the position in which they revolve against the ribs in the case, and the ribs on the forcer thus working in conjunction with the ribs in the case, serve as cutters, and produce a shearing cut upon the material which may be passing between the revolving forcer and the case.

In operation, the meat is introduced through the hopper, in the usual manner, and the forcer revolved. The spiral rib E, forces the meat forward into the spaces between the ribs of the case and the ribs on the forcer, and as it is so forced, the spiral ribs on the forcer working against the spiral ribs of the case, as before described, cut or shear the meat as it so passes, producing a continuous cutting of the meat from the time it passes into the case until it reaches the openings *d*, of the forcer, so that when it reaches this point, it has been practically and thoroughly cut, and the meat so cut continues its advance movement between the ribs of the case, into the space between the plain surface of the forcer, and the case at the delivery end, and thus forced into this space, it is driven into the openings *d*, and thence out through the said openings, and delivered from the machine. The openings *d*, work in connection with the spiral ribs over which they pass in the revolution of the forcer, so that the meat is still further cut by the edges of the openings working against the corresponding edges of the spiral ribs, which cut is a shearing cut, as is the entire cutting of the machine, and such cutting is made with the least possible power.

To adjust the forcer so that it may maintain its proper cutting relation to the interior of the case, and to increase or diminish the closeness of the fit, as occasion may require, or take up the wear which may occur from the continued use of the machine, the forcer is constructed at the receiving end of the machine, with a projection E′, which forms a shaft or arbor, and extends through a bearing F, on that end of the case, the projecting end E′, of the shaft being adapted to receive the head G, of the crank H.

The shaft E, is constructed of non-cylindrical shape, here represented as a cylinder flattened upon one side, and the hub or head G, of the crank has an opening through it, of corresponding shape, as seen in Fig. 6. The inner face of the crank-head rests against the outer end of the shaft bearing F, and then into the outer end of the shaft E′. An adjusting-screw I, is introduced, which carries a collar J, larger than the end of the shaft, and so as to bear upon the surrounding surface of the crank-head, as seen in Fig. 1, and so that the screw turned inward, will force the crank against the end of the bearing F, of the case, and thereby tend to draw the forcer toward that end of the case, and this drawing effect may be greater or less according to the extent to which the screw is so turned. Consequently the forcer may be adjusted with relation to the case by simply turning the adjusting-screw accordingly. The screw is provided with a finger-piece K, by which it may be conveniently turned by the hand of the operator.

The length of the projecting shaft E′, should be such with relation to the thickness of the head of the crank, that the collar J, of the adjusting-screw will not reach that end of the shaft, and so that the bearing of the collar will come fully upon the crank-head. In turning the crank by hand, it is difficult to continue the revolution of the crank without producing thereon more or less force longitudinally of the machine. If the head of the crank bore upon the surface of the bearing on the ends adjacent to it, such swinging of the crank would produce a considerable leverage longitudinally on the forcer, tending to draw the forcer into the case, and sufficient to greatly increase the friction of the revolving forcer. To avoid such action of the crank, the face of the crank next to the surface of the bearing of the case, is constructed with a diametrical rib or projection L, at right angles to the line of the crank, as seen in Fig. 6. The face of this rib or projection should be rounded, so that contact between the crank-head and the face of the bearing F, is made by the said rib or projection, and that bearing is in a central diametrical line at right angles to the line of the crank, and without other contact between the crank-head and the surface of the bearing F. Consequently any swinging movement which the crank-head might receive in the direction of the length of the machine, would be of a rocking character upon the rib or projection L, and that being in a diametrical line, would produce no strain upon the forcer tending to draw it into the case, or to give to it any longitudinal movement.

As seen in Figs. 1 and 6, the bearing between the face of the crank and the adjacent surface of the shaft-bearing, is represented as a rib formed on that surface, but the face of the crank may be made convex in the direction of the length of the crank, as seen in

Fig. 7, and so that the bearing of the crank will come on a diametrical line across its face, at right angles to the line of the crank.

While preferring to make the adjusting-screw with the collar as a part of it, and so that the collar may bear upon the face of the crank, the shaft may be provided with a projecting screw, as seen in Fig. 8, with a nut and collar to bear upon the outer face of the crank. The said Fig. 8 does not show the rib L, but it does show the space between the outer end of the bearing F and the inner face of the hub of the handle, resulting from the provision of the said hub with the rib L, shown in Fig. 6.

The illustration of the invention as applied to one conical forcer within the correspondingly conical case, will be sufficient to enable others to apply the said adjusting device to machines having a similar conical case and forcer, and in which the cutting is otherwise produced. The invention of the adjustment is, therefore, not to be understood as limited to any particular construction of cutting devices, further than that the case shall be of substantially conical shape, increasing in diameter from the hopper end toward the delivery end, and the forcer of corresponding shape, whereby the adjustment will impart to the forcer a longitudinal movement to vary the closeness of its fit within the case.

It may be desirable, in some cases, to construct the crank so that it may take a bearing between its face and the adjusting-collar as it does between its inner face and the end of the bearing around the shaft, in which case the outer surface of the crank-head will be constructed with a diametrical projection corresponding in every respect to the projection L, as shown by Fig. 6, and not therefore requiring special illustration. Instead of making this projection on the face in the form of a rib, as seen in Fig. 1, it may be made by rounding the face of the crank-head, as indicated in broken lines Fig. 7. The single bearing between the crank-head and the shaft-support will accomplish a good result without the application of the same device to the face of the crank-head.

I am aware that a meat-cutter having an internally ribbed case and an exteriorly ribbed feed-screw fitting into the case and longitudinally movable therein is old, and I do not claim such construction broadly, but only when in combination with a handle having a rocking lateral movement with respect to the projecting journal of the screw.

I claim—

1. In a rotary meat-cutter, the combination with a case, of a longitudinally adjustable feed-screw or forcer located therein and provided at one end with a journal having bearing in the case from which the said journal projects, a crank-handle applied to the projecting end of the said journal, and having the inner face of its hub constructed to have rocking engagement with the bearing of the case, and an adjusting-screw entering the said projecting end of the journal, and taking a bearing upon the outer face of the hub of the crank-handle, substantially as set forth, and whereby a space is formed between the adjacent faces of the bearing of the case and the hub of the crank handle, in which space the said hub may have rocking movement to relieve the feed-screw from tension, substantially as described.

2. In a machine for cutting meat and similar purposes, the combination of a case provided with a hopper near one end and through which the meat may be supplied to the case, a longitudinally adjustable revolving forcer within the case, and the case and forcer adapted to cut the meat and discharge it through the delivery end, the end of the forcer opposite the delivery end constructed as a shaft, projecting through a bearing in that end of the case, the projecting end of the shaft of non-cylindrical shape, a crank having a head adapted to set upon the said non-cylindrical end of the shaft, the face of the crank next the end of the bearing constructed with a diametrical projection across it at right angles to the line of the crank, with an adjusting-screw at the end of the shaft, adapted to bear against the outer face of the crank-head, substantially as and for the purpose described.

3. In a machine for cutting meat and similar purposes, the combination of a case provided with a hopper at one end, and through which the meat may be supplied to the case, a longitudinally adjustable revolving forcer within the case, and the case and forcer adapted to cut the meat and discharge it through the delivery end, the end of the forcer opposite the delivery end constructed as a shaft projecting through a bearing in that end of the case, the projecting end of the shaft of non-cylindrical shape, a crank having a head adapted to set upon said non-cylindrical end of the shaft, an adjusting-screw at the end of the shaft adapted to bear against the outer face of the crank-head, the two faces of the crank-head constructed with a projection diametrically across them at right angles to the line of the crank, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

OLIVER D. WOODRUFF.

Witnesses:
J. H. SHUMWAY,
GEO. D. SEYMOUR.