(No Model.)

# L. T. SNOW.

## ROTARY MEAT CUTTER.

No. 518,047. Patented Apr. 10, 1894.

Fig. 1

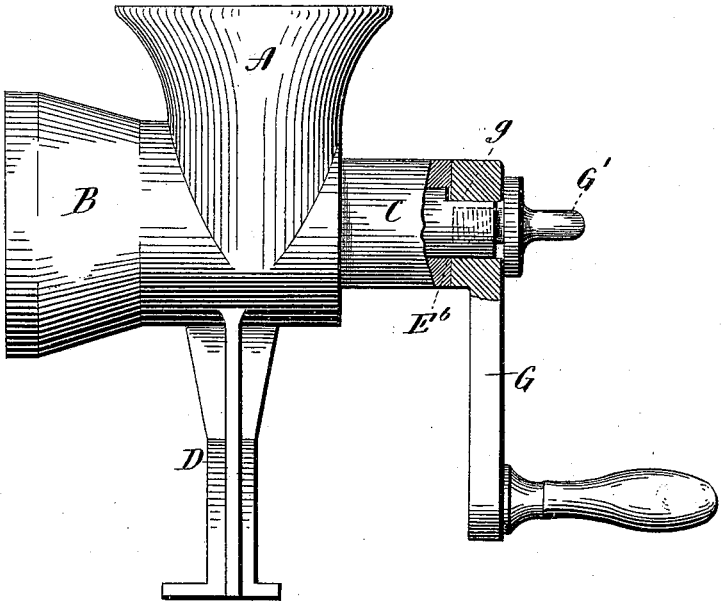



Fig. 2

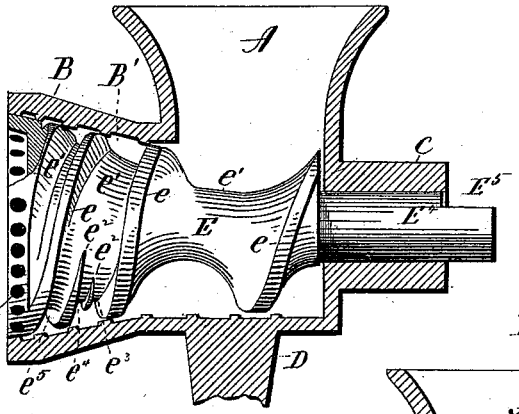



Fig. 4

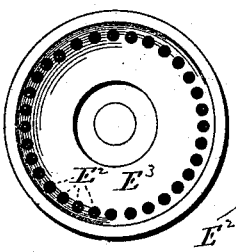



Fig. 3

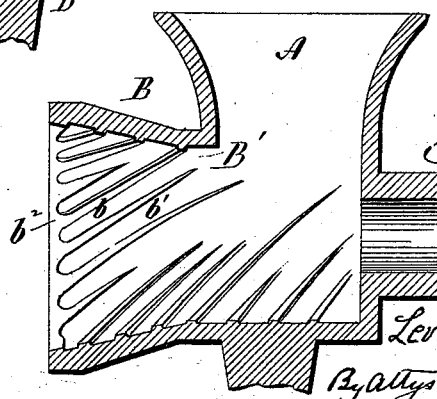
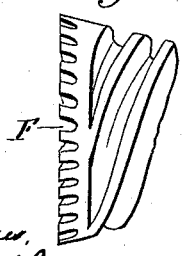



Fig. 5

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# UNITED STATES PATENT OFFICE.

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## ROTARY MEAT-CUTTER.

SPECIFICATION forming part of Letters Patent No. 518,047, dated April 10, 1894.

Application filed November 20, 1893. Serial No. 491,471. (No model.)

*To all whom it may concern:*

Be it known that I, LEVI T. SNOW, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Rotary Meat-Cutters; and I do hereby declare the following, when taken in connection with 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 view in side elevation of the rotary meat-cutter constructed in accordance with my invention; Fig. 2, a broken view thereof, in vertical longitudinal section, with the handle removed and a portion of the foot or standard of the case broken away; Fig. 3, a similar view of the case, with the screw removed; Fig. 4, a detached view in end elevation of the delivery end of the screw; Fig. 5, a detached broken view of the delivery end of a modified form which the screw may assume.

My invention relates to an improvement in that class of rotary meat-cutters in which the meat is cut and then formed into loose strings or ropes, at which time it receives some further cutting, the object being to produce a device in which the number and wear of parts and the friction of operation shall be reduced to the minimum, which shall have a great capacity for work, and be adapted to be readily taken apart and cleaned, and which shall be constructed so that incorrect re-assemblance by the most ignorant user is impossible.

With these ends in view, my invention consists in a meat-cutter having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claim.

My improved device consists in three main instrumentalities or elements, viz: a frame or case, a combined integral forcer, cutter, and former, in the form of a screw, and a handle. Of these three elements the first two are simple elements, that is to say, made in one integral piece, while the last may be termed a composite element, as it comprises the handle proper and the set-screw by means of which it is secured in place. The three elements referred to may vary in size and proportions, but will be constructed substantially as herein shown.

The case or frame comprises a hopper A, a body B, containing a circular operating-chamber B′, a sleeve-bearing C, and a foot or standard D, the said parts being cast in one integral piece. The said operating-chamber is constructed to flare outwardly at its outer end. As herein shown, it begins to flare at a point just forward of the hopper, and is cylindrical in the rear of the said point. If preferred, however, it may be flared outwardly throughout its length, or from any point within its length, provided only that it is flared at its outer end, and for a sufficient distance inward therefrom to secure the reqiured cutting action as will be hereinafter described. The walls of the said chamber are constructed with spirally arranged grooves *b*, separated by narrow ribs *b′* of corresponding arrangement. By preference there are more of the said grooves in the outwardly flaring portion of the chamber than in the cylindrical portion thereof, the grooves being as it were, multiplied in the former portion of the chamber. The outer ends of the grooves terminate in the same or substantially the same vertical plane, at a point just within the edge of the body B, which may be said to end in a solid band $b^2$, as clearly shown in Fig. 3.

The combined integral forcer, cutter and former, has the general shape of a screw, as, for convenience, I shall hereinafter refer to it in describing my improved device. In its main portion E, it corresponds to the form of the operating-chamber B′ already described, its outer end being made to flare outward to fit into the outwardly flaring end of the operating-chamber, and its inner end being made cylindrical to fit into the cylindrical inner portion of the said chamber. Should the chamber be varied in shape from the form shown, the said main portion of the screw will be varied in the same manner. The said main portion of the screw is constructed with a spiral rib *e*, coarsely pitched at its inner end, and throughout the cylindrical portion of the screw, but gradually growing finer in pitch from the time that it enters the outwardly flaring portion thereof. The spiral groove *e′* formed between the coils of this

rib, grow gradually shallower and narrower from the rear end of the said portion of the screw forward to the outer end thereof. As herein shown, and preferably, the flaring outer end of the said portion of the screw is constructed with two additional ribs $e^2$ $e^2$, which form additional grooves $e^3$, $e^4$ and $e^5$. The outer ends of all of the grooves grow gradually shallower until they merge into the full diameter of the end of the screw. But however constructed the outer ends of the ribs and grooves in the screw will terminate at a point within the corresponding ends of the ribs and grooves in the wall of the chamber. Directly adjacent to the outer ends of the grooves and ribs in the screw, I construct the same with a circular series of forming perforations $E^2$, which, when the cutter is assembled, coincide with the groove and ribs in the chamber, and co-operate with the same in forming the cut meat, as well as in additionally cutting the same, the said perforations being arranged radially, and opening at their inner ends into a recess $E^3$, formed in the outer face or end of the screw. If preferred I may construct the forming openings in some other manner, as for instance in the form of radially arranged slots F, shown in Fig. 5 of the drawings, and constructed to deliver the meat inwardly. It will be seen from the foregoing description that the screw, or combined integral part has forcing, cutting, and forming functions. At its extreme inner end the screw is provided with a cylindrical journal $E^4$, which fits within the bearing sleeve C, of the case or frame, and projects beyond the same, its projecting end being faced as at $E^5$, and constructed with a central-longitudinally threaded screw-hole $E^6$.

The third element of my improved device comprises a handle G, which may be of any approved form, and a retaining-screw G′ by which it is held in place. The handle is provided at its inner end with an irregular opening *g*, conforming to the form in cross section of the faced projecting end of the journal $E^4$ of the screw. The retaining-screw G′ is entered into the threaded hole $E^6$ in the said journal, so that the head of the screw impinges against the outer face of the inner end of the handle, as clearly shown in Fig. 1, whereby the handle is not only held in place, but also the screw is held against outward displacement in the case. The journal $E^4$ is adapted in length so that it will not project entirely through to the outer face of the handle, whereby provision is made for the adjustment of the screw, to compensate for wear, and to hold the same in right relation to the chamber of the case. I do not limit myself, however, to constructing the handle as described, or to the described adaptation of the projecting end of the journal $E^4$ of the screw to receive the same, for obviously those details may be varied. Thus, the projecting end of the journal might have a longitudinal groove to receive a pin projecting into a circular opening formed in the inner end of the handle.

The operation of my improved meat-cutter is as follows: The meat is fed in the usual manner into the hopper A, and forced forward by the rotation of the screw, through the medium of the grooves and ribs thereof, and the grooves and ribs of the case. The meat moves along concurrently, as it may be said, in the grooves of both the screw and case, until it reaches the ends of the grooves in the screw, when it emerges from the said grooves in the screw, which terminate, as shown and described, in a plane located within the plane of the extreme outer ends of the grooves in the case. The meat then moves forward solely in the outer ends of the grooves in the case, and over that small plain or solid section of the screw lying between the ends of the grooves in the screw and the circular series of perforations or forming openings therein. The meat then passes directly from the extreme ends of the grooves in the case into the perforations or forming openings in the screw, in which perforations or openings it is finally cut, and through which it is discharged from the device. It will be understood, of course, that in the passage of the meat concurrently as aforesaid through the grooves of the case and screw, it is sheared, particularly at the inner end of the outwardly flaring portion of the screw, for it will be apparent that unless the meat has been very considerably cut by the time it emerges from the extreme ends of the grooves in the screw for entrance into the outer ends of the grooves of the case, it cannot get into the same, and pass over the solid portion of the screw lying between the ends of the grooves therein and the forming openings therein, for at that point the meat, however much flattened, could not possibly find a passage between the screw and case, except through the ends of the grooves in the latter, inasmuch as the plain or solid portion of the screw referred to has direct contact with the faces of the outer ends of the ribs in the case. It will be understood, therefore, that the meat after receiving very considerable preliminary cutting, emerges from the grooves in the screw, and for a short time is located solely in the grooves of the case, which alone feed it into the perforations or forming openings of the screw, from which it is discharged from the meat cutter. I may here explain that the transit of the meat through the outer ends of the grooves in the case and over the solid portion of the screw, is effected by the pressure of the meat moving outward in the case, and also by the drawing action of the perforations or forming openings in the outer end of the screw co-acting with the inclined outer ends of the ribs in the case. It may be explained also that the meat then fed into those perforations or openings is caught and drawn forward by the same, which partake of the rotary movement of the screw.

I wish particularly to call attention to the fact that my improved meat-cutter contains but three elements, two of which are simple elements in the sense that each is an integral structure. I have thus produced a meat-cutter virtually containing only three parts, all of which may be cheaply constructed and which it is impossible, from the nature of their shape for any one to assemble in any except the right way. I would also call attention to the fact that the heaviest cutting is done at the inner end of the outwardly flaring portion of the screw, and therefore at a point comparatively near the longitudinal center of the screw, and to obvious advantage, for at such point the leverage is short, and the power of the screw applied with great effect. In feed-screws having their outer ends oppositely tapered, they are largest in diameter where the greatest cutting action takes place, and therefore in them the power is applied to less advantage. After using the device there are only two parts to be cleaned, the case and the screw, both of which are integral parts, and the portions of those parts in which particles of meat may find lodgment are so exposed that their effective cleaning is a very simple matter. Thus, on the one hand, the outwardly flaring character of the outer end of the operating-chamber B′ of the case, makes the case very easy of access, and therefore easy to clean thoroughly, while, on the other hand, when the screw is removed from the case every portion of it is readily accessible for being cleaned, and moreover, its grooves and perforations are of a character which permit retained particles of meat to be readily dislodged.

By constructing the outer end of the operating-chamber in an outwardly flaring form, and making the corresponding portion of the screw of complementary shape, I am enabled to multiply the grooves and ribs of those parts to such an extent in consequence of the increased area thus presented, that the preliminary cutting of the meat is so far augmented that the cutting action of the perforations or forming openings in the screw, is reduced to the minimum. I may therefore employ very small perforations or forming openings without diminishing the capacity of the machine, or endangering its choking. Under my improved construction, also, the endwise pressure tending to force the screw out of the case is so nearly balanced by the endwise pressure tending to force the screw inward, that there is no necessity of adjusting the parts tightly together, whereby I effect an economy of power and also of undue wear of the parts. For the same reason I am enabled to cut very large quantities of meat in my improved machine, without heating the same, and necessitating its being stopped and allowed to cool. By my improved construction also, the area of the wearing surfaces is so greatly increased that the wear being distributed over a large surface is proportionately reduced at any one point, thus prolonging the life of the machine. What adjustment of the machine is required is easily provided for by means of the adjusting-screw forming a part of the handle, for by turning the said screw in the right direction, the combined forcer, cutter and former is drawn inward to a new bearing, so to speak, within the chamber.

Preferably I multiply the grooves and ribs in the flaring portions of the screw and chamber, because I am enabled in that way to utilize to the best advantage the extended areas secured by outwardly flaring the outer ends of the screw and chamber. A single rib and groove at the rear end of the screw and two or three ribs and grooves at the rear end of the chamber, will answer all purposes for feeding and forcing the meat however, and the simpler the inner end of the said screw and chamber, the freer the action of the cutter, and the less liability to congestion.

In view of the suggestions that I have made of modifications which I may resort to, I would have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

I am aware that it is old to construct the case and screw of a meat cutter with outwardly flaring outer ends containing co-acting spirally arranged grooves and ribs. I am also aware that it is old to construct the case and screw of a meat-cutter with outwardly flaring outer ends containing co-acting spirally arranged grooves and ribs of which those in the screw extend beyond those in the case to convey the cut meat to a series of radially arranged perforations formed in the wall of the case. In the construction first described the meat is finally cut by a separate plate arranged to remain stationary, or to revolve with the screw, while in the construction last referred to the meat is finally cut by the case itself, and discharged upon the outer surface thereof.

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

The herein described rotary meat-cutter comprising three main elements, namely, a case or frame cast in one piece, a combined integral forcer-cutter and former, having the general form and action of a screw, and a handle comprising the handle proper and a retaining screw, the said case being constructed with a circular chamber having its outer end flared outwardly and containing internal spirally arranged grooves and ribs, terminating at their outer ends in the same or substantially the same vertical plane at a point just within the end of the said chamber, and the said screw being constructed with an outwardly flaring outer end to conform to the outwardly flaring outer end of the said chamber, and having spirally ar-

ranged ribs and grooves terminating at their outer ends in the same or substantially the same vertical plane at a point which will be within the outer ends of the ribs and grooves in the said chamber when the parts are assembled, and furnished at a point beyond the outer ends of its ribs and grooves with a circular series of forming openings which fall within the range of the outer ends of the ribs and grooves in the chamber when the cutter is assembled and discharge, and the said handle being applied to the inner end of the screw which projects through the case and which screw is held in place by the said handle and the equalization of endwise thrust upon it, substantially as described.

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

LEVI T. SNOW.

Witnesses:
FRED C. EARLE,
GEORGE D. SEYMOUR.