

No. 643,547.

Patented Feb. 13, 1900.

E. F. SMITH.
MEAT CUTTER.

(Application filed Jan. 3, 1899.)

(No Model.)

2 Sheets—Sheet 1.

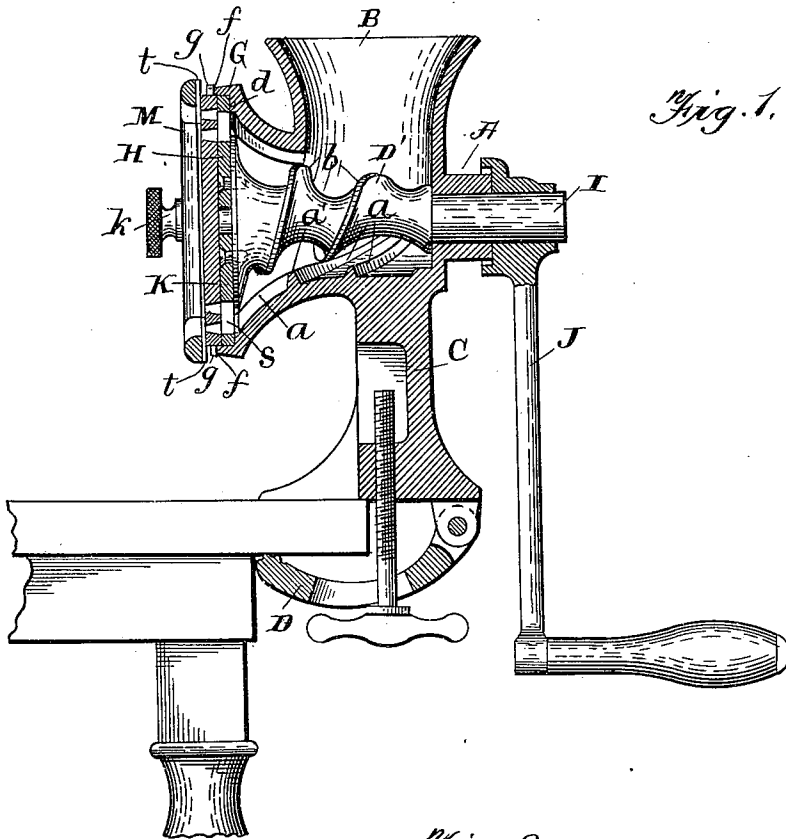


Fig. 1.

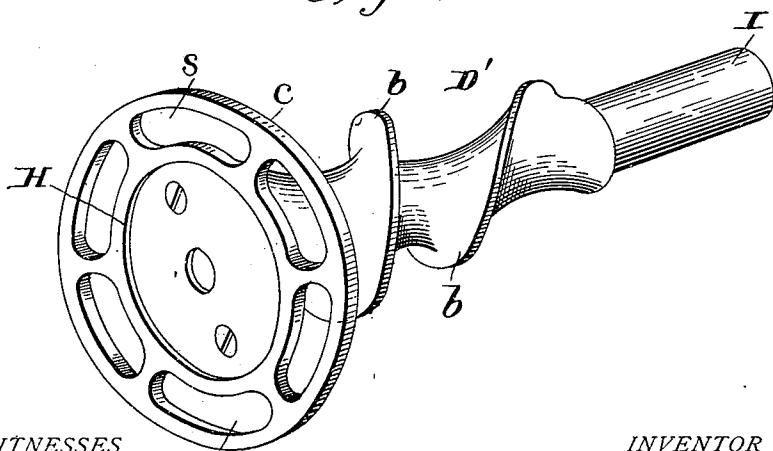


Fig. 2.

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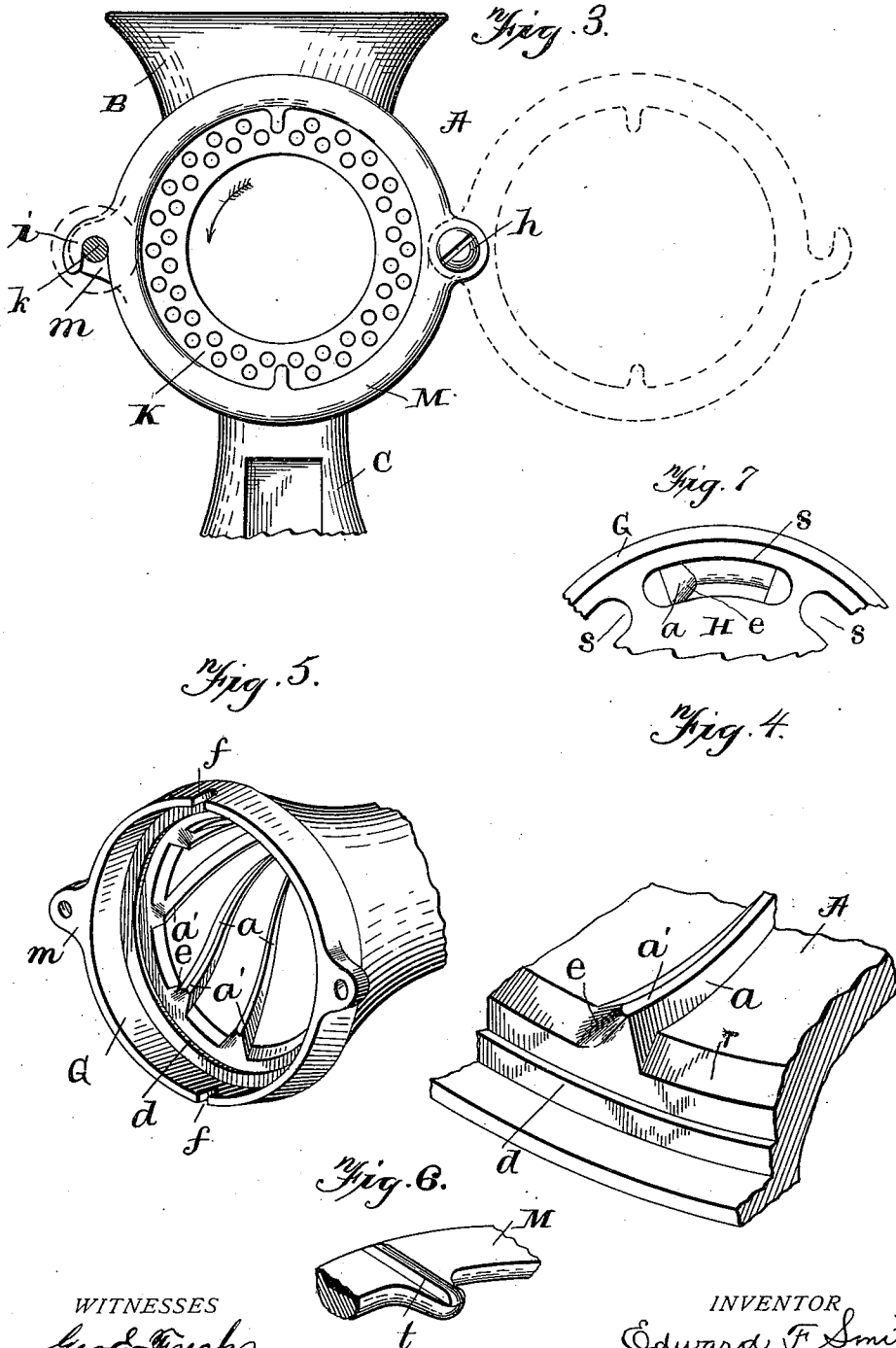
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UNITED STATES PATENT OFFICE.

EDWARD F. SMITH, OF ROCHESTER, NEW YORK, ASSIGNOR TO JOSIAH ANSTICE, OF SAME PLACE.

MEAT-CUTTER.

SPECIFICATION forming part of Letters Patent No. 643,547, dated February 13, 1900.

Application filed January 3, 1899. Serial No. 701,078. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. SMITH, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented new and useful Improvements in Meat-Cutters, of which the following is a specification.

My invention relates to improvements in meat-cutters, and pertains to that type of meat-cutting machines in which a cylinder is provided having a ribbed inner surface, a screw-forcing shaft extending therethrough, and a cutting member or members, all of which will be fully described hereinafter and particularly referred to in the claims.

In the accompanying drawings, Figure 1 is a longitudinal vertical sectional view of a meat-cutter embodying my invention. Fig. 2 is a detached perspective view of the forcer and cutter. Fig. 3 is a front elevation of the exit end of the cylinder, showing the clamping-ring closed in solid lines and open in dotted lines. Fig. 4 is a perspective view of the outer ends of the ribs upon the inner surface of the cylinder, showing their specific construction. Fig. 5 is a perspective view of the exit end of the cylinder with the forcer removed, showing the specific formation of the exit end of the cylinder and the ends of the ribs. Fig. 6 is a detached perspective view of a portion of the ring M, showing one of the ribs at the inner side thereof. Fig. 7 is a front view of a portion of the cutting-flange and the exit end of the cylinder, showing the relative sizes of the openings in the cutting-flange and the spaces between the ribs of the cylinder.

Referring now to the drawings, A indicates a tapered cylinder; B, a hopper in communication with the inlet end thereof; C, a supporting-standard at the under side thereof, and D a clamping member of any desired form, by means of which the implement is attached to a table, shelf, or other object.

The interior of the cylinder A is provided with the angularly or spirally arranged ribs *a*, which terminate in a parallel plane at right angles to the length of the cylinder, and the inner edges *a'* of these ribs at their outer portions are flattened, thus forming a cutting edge adapted to coact with the spiral thread *b* upon the forcer-shaft D' and which effects

a preliminary cutting of the material as it passes through the cylinder.

The exit end of the cylinder A is provided with a longitudinally-extending flange G, situated outside of the ribs upon the inner side of the cylinder A, forming a recess for the reception of the cutting-flange H of the forcer. This cutter-flange is preferably integral with the forcer, as shown in Fig. 6, though it may be separate and secured thereto, as shown in Fig. 2. In order to hold the inner side of the cutting-flange *c* of the forcer out of contact with the ends of the ribs of the cylinder, and thus prevent any cutting action between the ends of the ribs and the inner side of the cutting-flange *c*, I provide a bead or ridge *d*. This bead or ridge is situated at a point circumferentially outside of the ends of the ribs, and thereby out of the line of feed of the material, and constitutes a separating element between the ends of the ribs and the cutting-flange H. In order to further insure a non-cutting action between the inner face of the cutting-flange *c* of the forcer and the ends of the ribs, one edge of the ends of the ribs is rounded, as shown at *e*, and this edge is the edge which is presented to the cutting-flange as it rotates in the direction indicated by arrow in Fig. 3, and which if not rounded, as described and shown, would act as a cutting edge with the inner surface of the cutting-flange, provided the cutting-flange was in contact therewith. It will thus be seen that by providing the ridge or offset *d* at the outer end of the cylinder for holding the inner face of the cutting-flange *c* of the forcer out of contact with the ends of the ribs and by rounding those edges of the outer ends of the ribs which would tend to cut the material I provide a construction which absolutely prevents any cutting action between the ends of the ribs and the inner face of the cutting-flange *c*. The object of this construction is to avoid two cuttings of the material after it has received the preliminary cutting given by the forcer and ribs. I find in practice that it is advantageous to get the material acted upon to the cutter as quickly as possible, and this is accomplished by the construction above defined. I desire to cut the material finally by means of a removable perforated plate at the outer end of the cylinder and a rotating

knife against the inner side thereof and accomplish the preliminary cutting by the longitudinal edges of the forcer and cylinder-ribs and avoid the unnecessary friction of two cuttings, which occurs where the ends of the cylinder-ribs act as a knife or where other cutting means is provided at the inner side of the rotating knife of the cutting-flange. Now since the material is given a rotary movement as it moves to the cutter I avoid friction by providing a separating-space between the inner side of the knife and the ends of the ribs and further provide against increased friction by rounding the edges of the ends of the ribs, as at *e*. I also find that the machine more thoroughly cleans itself by avoiding any cutting at the inner side of the knife, and this is a very desirable feature in meat-cutters, and that by rounding the edges of the ends of the ribs the material passes directly to the cutter more quickly and with less friction.

The operating end I of the forcer-shaft projects through the rear end of the cylinder and carries an operating handle or crank J, which is held or clamped thereto in any desired manner.

The projecting flange G at the outer end of the cylinder A is sufficiently wide to receive a removable perforated cutting-plate K, which rests against the entire outer cutting face or surface of the cutting-flange *c* of the forcer. To prevent this perforated plate from having any relative rotation in respect to the cylinder, the flange is provided with one or more recesses *f*, which receive a projection or projections *g* upon the periphery of the perforated plate.

In order to hold the perforated plate in position against the outer cutting-face of the cutting-flange *c*, a swinging locking-ring M is provided. One side of this swinging locking-ring is pivoted to one side of the flange by means of a screw or bolt *h*. The other side is provided with a hook *i*, which embraces an adjustable thumb-screw *k*. This thumb-screw *k* passes into a projecting lug *m* at the opposite side of the cylinder from the pivotal point of the locking-ring. From this description it will be readily understood that by swinging the locking-ring around in the position shown in dotted lines the perforated cutting-plate can be lifted from the end of the cylinder for the purpose of cleaning the machine or for the purpose of substituting another perforated plate having larger and fewer openings, which will thus cut the meat into larger pieces. This arrangement therefore provides means for cutting the meat fine or coarse, according to the size of the openings in the detachable plate, and a machine can be provided with as many of these plates as are required for practical purposes for varying the size of the pieces of meat or other material acted upon by the machine. This arrangement also serves as the means for holding the perforated plate in contact with

the outer cutting-surface of the cutting-flange *c*.

Attention is called to the fact that the perforated plate projects slightly beyond the outer edge of the flange G, so that the tension of the cutting-plate against the outer cutting-surface of the cutting-flange *c* can be varied at will by the turning of the thumb-screw. The thumb-screw and the clamping-ring therefore serve the double function of holding the perforated plate in position and for regulating the tension of the perforated plate against the cutting-flange. This is a simple, cheap, effective, and durable arrangement for accomplishing these results, and it permits the ready and quick removal of the forcer-shaft and its cutting-flange, thus permitting free and ready access to the interior of the cylinder for cleaning it and to the perforated plate, forcer, and cutting-flange when they are removed for the same purpose.

The cutting-flange *c* is provided with the peripheral elongated opening *s*, the outer edges of which perform the cutting action in conjunction with the inner face of the perforated plate. It will be noted that the entire outer cutting-flange *c* rests flatly against the inner face of the perforated plate, and the perforated plate being held in contact with the outer surface of the cutting-flange in the manner before described the rotation of the forcer serves to force the material to the exit end of the cylinder through the elongated openings of the cutting-flange *c* into the perforated plate, where it is severed by the cutting-flange. The elongated openings in the cutting-flange are preferably longer than the space between the outer ends of the ribs of the cylinder, and they are of a width equal to the depth of the outer ends of the ribs. In operation, owing to the openings in the cutting-flange being elongated, the ends of the ribs never close any one of the openings, so that the openings are always in communication with the space between the ribs through which the material or meat is being continually forced and into the openings in the perforated plate to be severed, as before described. Attention is also called to the fact that the groove formed by the spiral flange *b* upon the forcing-shaft extends to the inner face of the cutting-flange *c* and that the inner edges of the elongated openings *s* are about in a line with the inner edge of the wall of said forcing-shaft groove, which brings these openings in direct line with and in direct communication with the line of feed of the meat in the groove of the forcing-shaft and also in the direct line of feed of the grooves and spaces between the ribs upon the cylinder. This arrangement causes the meat to be fed directly through the elongated openings and forced into the smaller openings of the outer perforated plate with the least possible friction and in the most direct manner, thus affording a cutter which offers no resistance to the feed of the meat excepting that which is

offered by the dividing-walls of the openings s , which dividing-walls form the cutters of the machine. The end of the cylinder between the ends of the ribs is cut away to incline outward, as shown at r , which permits the free and unobstructed passage of the meat from the interior of the cylinder into the elongated openings of the cutting-flange of the forcer. This construction therefore affords a passage way or ways between the ends of the ribs of a size greater than the space between the ribs, owing to the fact that it is deeper than the ribs, which tends to free the material as it passes from the exit end of the cylinder. Owing to this freeing action the machine instead of clogging or backing up as the material passes out the exit end of the cylinder it has the reverse tendency, thus providing a construction which is easy in operation and yet effective for cutting the material into pieces of the desired size, which is regulated, as before stated, according to the size of openings in the perforated plate.

The perforations in the perforated plate are preferably enlarged inward, as illustrated.

While I have shown the bead or shoulder for holding the cutting-flange out of contact with the ends of the ribs as being formed upon the cylinder, it will be readily understood that this bead or shoulder may be formed upon the cutting-flange itself and serve the same purpose without departing from the spirit of that part of my invention.

It will be understood that the cutting-flange of the forcer need not be integral or rigid therewith so far as its cutting operation and its coöperation with the other elements of the machine are concerned, and therefore to make the cutting-flange detachable I would not depart from my present invention so far as its coöperation with the other elements of the machine is concerned.

The removable perforated plate is preferably cast metal and may not always be of equal thickness, and hence it is desirable to provide a clamping member or ring of a construction which will hold the perforated plate against the cutting member with equal tension throughout its entire surface. I accomplish this by providing the clamping-ring at its inner side with the ribs or projections t , which are situated diametrically opposite each other on a line drawn through the center of the perforated plate. From this it will be noted that the clamping-ring only engages the perforated plate at two points radially arranged in respect to the center of the plate, whereby it will be caused to bear equally throughout its surface against the adjacent face of the cutting member, whether it be of equal thickness or not, said plate being permitted to turn upon these beads as upon an axis.

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

1. A meat-cutter comprising a cylinder hav-

ing feeding-ribs upon its inner surface, a feed-shaft coacting with said ribs and carrying a cutting-flange projecting circumferentially across the ends of said feeding-ribs, a non-cutting separating element situated between the cutting-flange and the outer ends of said ribs and at a point circumferentially outside of the ends of said ribs and thereby out of the line of feed and against which the said cutting-flange rests, a cutter-disk held against rotation and loosely placed at the end of said cylinder and against the outer side of said cutter-flange, and a clamping member for said cutter-disk.

2. A meat-cutter comprising a cylinder having feeding-ribs upon its inner surface, a feed-shaft carrying a cutting-flange projecting circumferentially at right angles to said shaft and beyond said feeding-ribs, and an annular bead situated outside of and beyond the ends of said ribs and serving as a bearing for said cutting-flange and to separate the flange from the end of said ribs, and out of the line of feed, and a cutter-disk situated outside of, parallel to and coacting with said cutting-flange.

3. A meat-cutter comprising a cylinder, a forcing-shaft therein having at its exit end an outwardly-projecting annular cutting-flange provided with openings in a line with the spaces between the ends of the ribs, a perforated plate situated outside of the cutting-flange, a clamping-ring pivoted at one side to one side of the exit end of the cylinder and out of lateral contact with the side thereof to permit it to swing, and provided with a hook at the opposite side, and an adjustable screw receiving the said hook and adapted to hold the perforated plate adjustably against the outer cutting-face of the cutting-flange, substantially as described.

4. A meat-cutter comprising a cylinder, a forcer therein carrying at its outer end a cutting member, a perforated plate situated outside of and against the outer surface of the cutting member, and a clamping member having at its inner side two radially-arranged bearing-points t engaging directly said perforated plate, substantially as described.

5. A meat-cutter comprising a cylinder, a forcer within the cylinder carrying a cutting member at its outer end, a perforated plate situated against the outer side of the cutting member and coacting therewith, and a clamping-ring situated outside of the perforated plate and carrying two bearing-points t situated at diametrically-opposite points and engaging the outer surface of the perforated plate, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWARD F. SMITH.

Witnesses:

J. W. CHAPMAN,
JOSIAH ANSTICE.