M. L. EDWARDS.

MEAT-CHOPPER.

No. 190,017. Patented April 24, 1877.

Fig. 1.

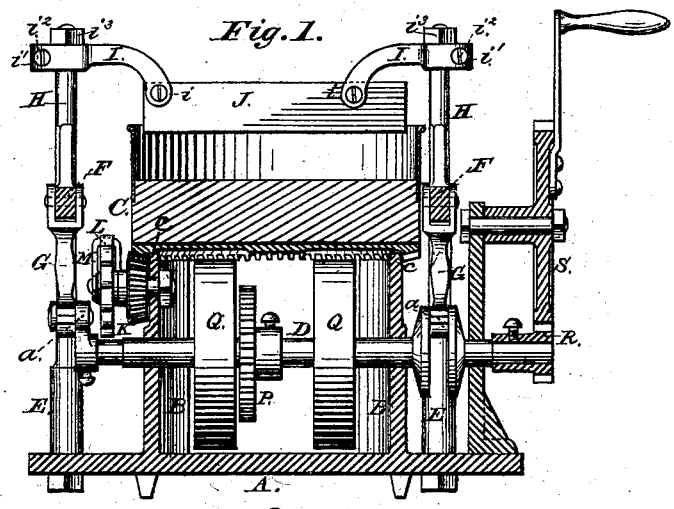


Fig. 4.

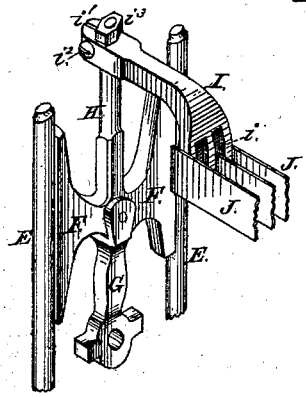


Fig. 2.

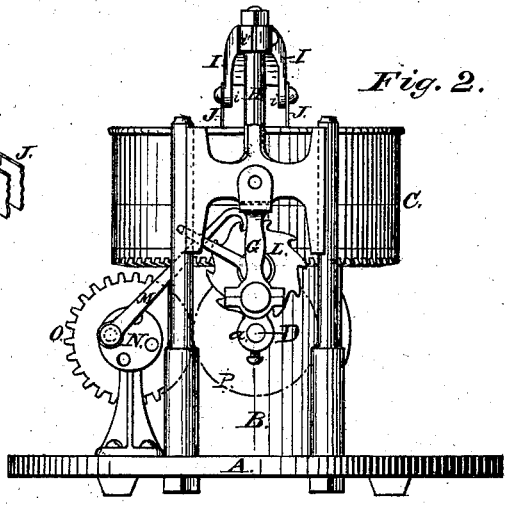
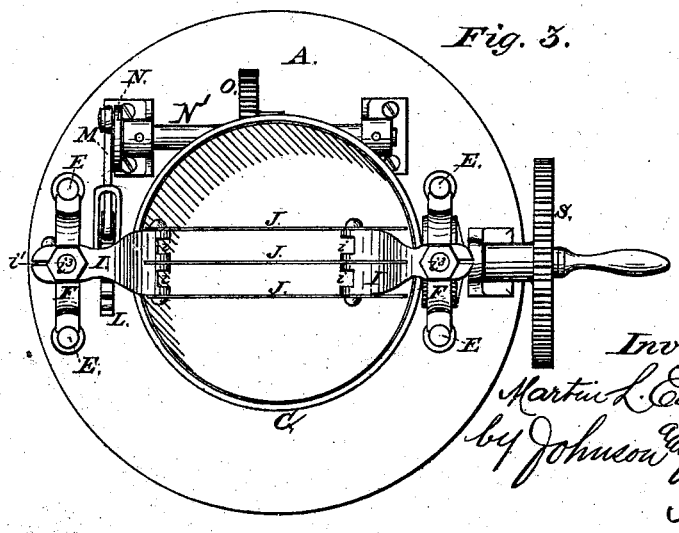


Fig. 3.



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UNITED STATES PATENT OFFICE.

MARTIN L. EDWARDS, OF SALEM, OHIO.

IMPROVEMENT IN MEAT-CHOPPERS.

Specification forming part of Letters Patent No. **190,017**, dated April 24, 1877; application filed January 10, 1877.

To all whom it may concern:

Be it known that I, MARTIN L. EDWARDS, of Salem, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Meat-Chopping Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Long experience in the manufacture of meat-chopping machines has enabled me to see their defects, and my improved machine is designed to remedy them, especially in the particulars of compactness and solidity of the operating parts, in the organization of which novel construction and combinations are made.

Two segmental supports rise from a base-plate, and serve as guide-bearings for the tub, a main crank-shaft, and for the attachment of gearing by which the tub is rotated, while outside of said segmental supports post-guides are arranged upon the base, to receive between them vertically-moving cross-heads, which, having short pitman-connections with the crank-shaft, have also short integral extensions, which support and carry short downwardly-bent arms, which reach over the tub, and to which the ends of the knives are firmly attached. These bent arms form clamps, by which the knives are adjusted and held in a manner to avoid all springing.

The downwardly-bent arms are branched or forked to form holders for the series of knives, and their position therewith and the tub gives the advantage of a vertical resistance for the knives with connections outside of the tub, and lessens the vertical movement of the knives.

Balance-wheels are arranged upon the crank-shaft between the segmental supports, and directly beneath the meat-tub, to give regularity of motion to the knives. The devices which give the intermittent feed to the tub are arranged upon one of the supports, between it and the pitman-connected cross-head, and they are operated by a gear on a counter-shaft driven by the crank-shaft.

The vertically-moving cross-heads, connected, as stated, with the crank-shaft and the carrying-arms for the knives, give a firm movement to the latter and great durability to the working parts.

In the accompanying drawings, Figure 1 represents a vertical section of a meat-chopper embracing my invention; Fig. 2, an end elevation thereof; Fig. 3, a top view; and Fig. 4, a detached perspective view of one of the vertically-moving cross-heads, with its pitman and extension connection, and the forked arm which carries the knives.

From a base-plate, A, rise two or more supports, B B, preferably cast therewith, and in horizontal section their outer vertical sides form segments of a circle.

The meat-tub C rests upon these supports, which, by their curved sides, form guides *c*, which, fitting the inner side of the rim of a circumferential gear, hold the tub centrally in its intermittent revolutions.

These segmental supports furnish bearings for a horizontal shaft, D, provided with cranks *a* at each end, which stand opposite each other in the same radii, in position outside of said supports.

Post-guides E E, arranged in pairs, rise from the base-plate opposite the segmental supports, and a cross-head, F, is fitted to move vertically upon or between said posts. Short pitman-rods G connect the cross-heads with the cranks, while vertical extensions H serve to unite the cross-heads with short arms I, to which the knives are attached. These arms are bent downward at their inner ends, and extend over the tub in suitably-spread branches or forks *i*, to receive the knives J between them, and to which they are secured by screws, or in any suitable way. The downward positions of the arms bring the knives within the tub with a vertical resistance and short outside connections, and with the advantage of lessening the movement of the knives above the tub.

This arrangement avoids the objection of a cross-beam for carrying the knives with their adjusting appliances, because the arms

I are made adjustable upon their cross-head extensions H by splitting the outer ends i^1 of said arms, and forming clamps of them, and binding them upon said extensions by screws i^2, while screw-nuts i^3 upon the upper ends of the extensions bear upon the arms, and hold them against the upward force of the knives. An intermittent rotary motion is given to the tub by means of a bevel-pinion, K, meshing with the bottom gear of the tub. On the hub of this pinion is a ratchet-wheel, L, operated by a pawl, M, attached to a crank or eccentric, N, on a counter-shaft, N′, at a proper distance from the center, and so geared as to give the tub sufficient feed, and a movement only while the knives are above the block and the material being chopped, so that the knives will not scrape upon the block, or the material rolled up against them. The ratchet and pinion are carried by a fixed stud in the support, while the counter-shaft N′ is mounted in standard on the base-plate, and is operated by a spur-wheel, O, engaging with a similar wheel, P, on the crank-shaft. Balance-wheels Q are arranged upon the crank-shaft, between the segmental supports and beneath the tub, so that they are out of the way, and give greater ease and regularity to the operation of the machine. If driven by power, a band-wheel is placed on the crank-shaft, under the meat-tub, or one of the fly-wheels may be used for band-wheel; but the drawings show hand appliances for operating the machine, consisting of a pinion, R, on the crank-shaft, and a crank-handled spur-wheel, S, supported in a standard upon the base.

The cross-heads and operating parts are below the top of the tub, and oil-drippings cannot get into the tub. Lower extension of the cross-heads may take the place of the pitman-rods, in which case said lower extensions have slats to receive the crank-pins, and instead of single upper extensions, the cross-heads may be arched over at the top.

The cross-head crank-connections give a vertical reciprocating movement to the knives during the interval rotations of the tub. One or more knives may be used, as may be deemed best, and they are so adjusted as to work down to the surface of the block.

The balance-wheels may be arranged outside of the segmental supports. The devices which embrace the feed need not be between the pitman cross-head and the support, but can be placed on the main shaft, which would bring the counter-shaft at right angles with the main shaft.

Four supports, B, may be used. One or both of the fly-wheels may be used for band-wheels.

The advantages of making the guide-bearings and supports for the meat-tub in segments are: they lessen the friction of the bearing-surface of the tub; they lessen the weight and the cost of the machine, and provide greater convenience for the arrangement of the balance-wheels upon a through crank-shaft.

It will be observed that the guideway for the power-rod or cross-head acts not only as a vertical guide for the knife-carrying arms, but supports them laterally, and gives a firm movement.

I have described and shown the knives as connected with and operated by two downwardly-bent arms and outside power-rods or cross-heads, with their guideways and crank-connections; but it is obvious that a single knife-arm, cross-head crank-connection, and guideway may be used without departing from the spirit or principle of operation embraced in my invention. In such arrangement, however, the knives need not be so long; but I prefer the arrangement shown, as giving the best results.

The parts, separately considered, are not claimed as new; nor any combination which involves the operation of the power-rod centrally through the meat-tub.

In the organization of my machine it will be observed that the tub is free from all interior obstructions, the knife carrying and operating mechanisms being applied laterally, and beneath the tub.

I claim—

1. The tub and the knives of a meat-chopping machine, the downwardly-bent knife-carrying arms I, adjustably attached to the reciprocating cross-head extensions H, the cross-head or cross-heads F, and their guide-posts E E, arranged and adapted for operation at the side and outside of the tub, substantially as herein set forth.

2. The combination, with the tub-feeding and knife-operating connections, of the crank-shaft D, its balance-wheels Q Q, the tub C, and its segmental supports B B, the several parts being organized, supported, and adapted for co-operation, substantially as herein set forth.

3. The arms I, having split clamps i^1 at their outer ends, and branches i for the knives at their inner ends, and the external side cross-head connections H and guide-posts E, for adjustment and support, all constructed and arranged for operation substantially as herein set forth.

4. The meat-chopping machine comprising the feed device, consisting of the pinion K, ratchet-wheel L, ratchet M, counter-shaft N′, and gears O P, with the tub C and knife-operating connections, all constructed and adapted for co-operation substantially as herein set forth.

In testimony that I claim the foregoing I have affixed my signature in presence of two witnesses.

MARTIN L. EDWARDS.

Witnesses:

THOMAS KENNETT,

PETER AMBLER.