(Model.)

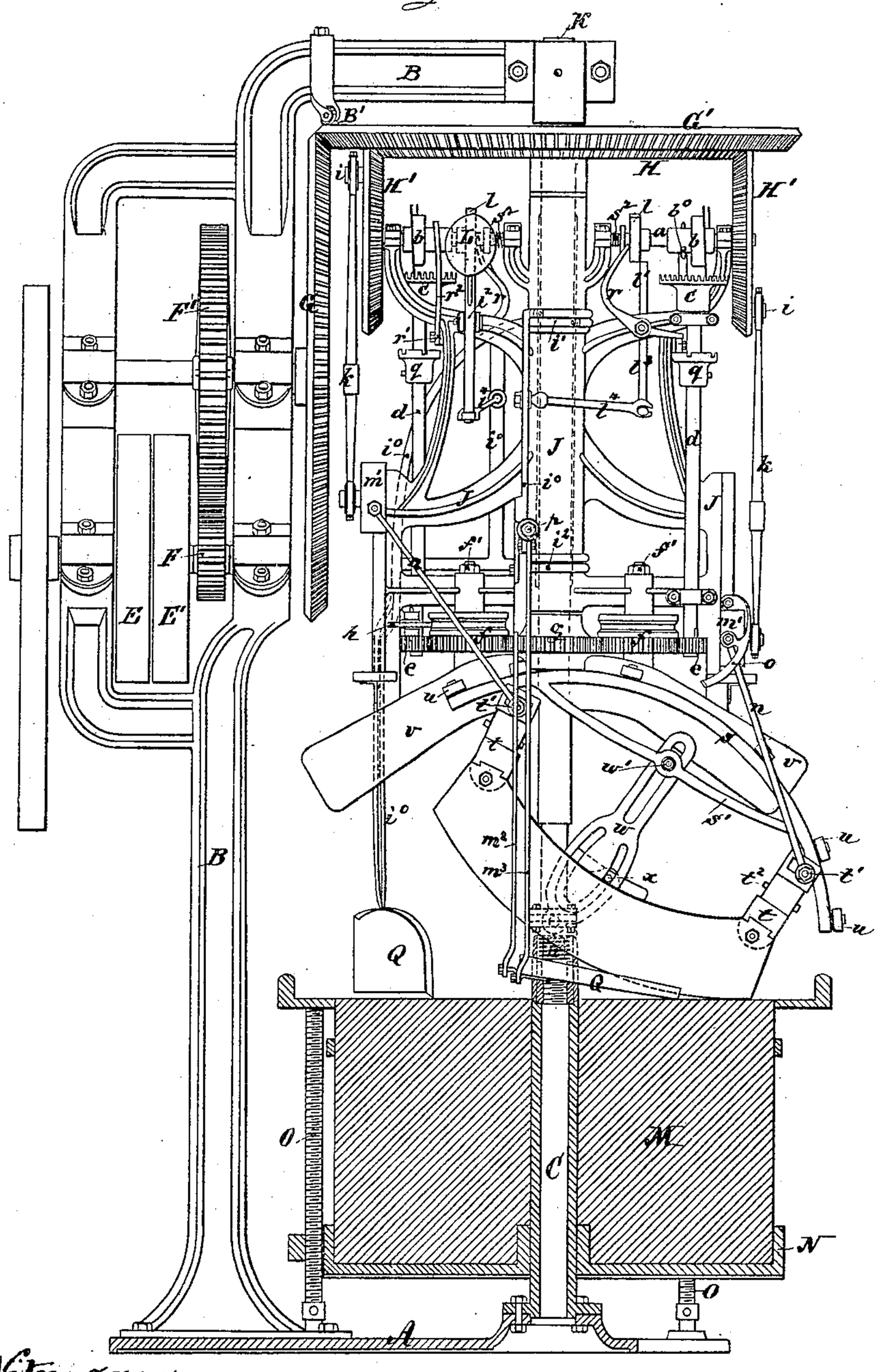
2 Sheets—Sheet 1.

H. P. NISSEN.

MEAT CHOPPING MACHINE.

No. 245,391. Patented Aug. 9, 1881.

Fig. 1.



Witnesses.

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Wm. H. Comee.

Inventor.

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(Model.)

2 Sheets—Sheet 2.

H. P. NISSEN.

MEAT CHOPPING MACHINE.

No. 245,391. Patented Aug. 9, 1881.

Fig. II.

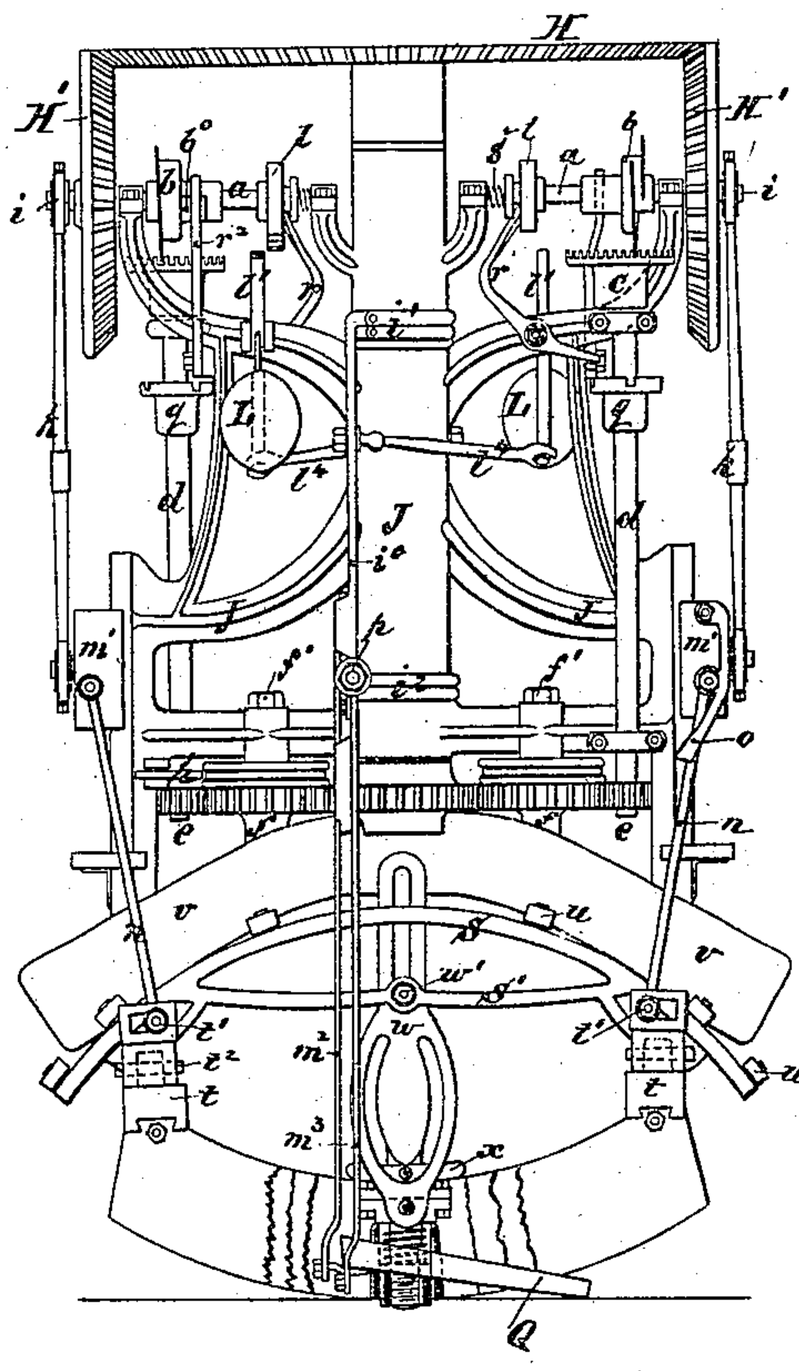


Fig. IV.

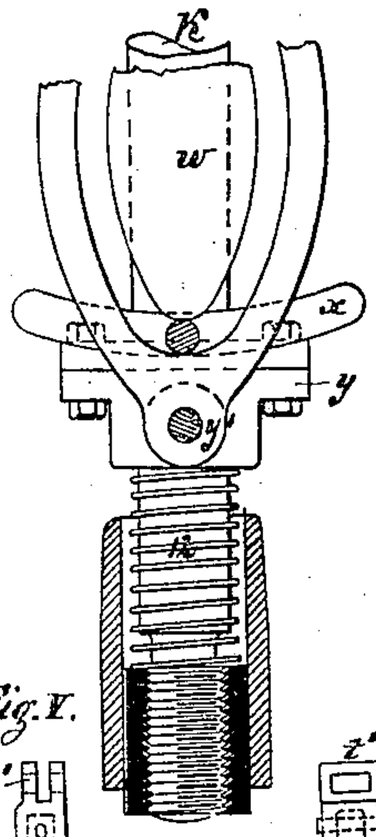


Fig. V.

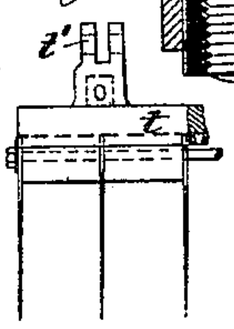


Fig. VI.

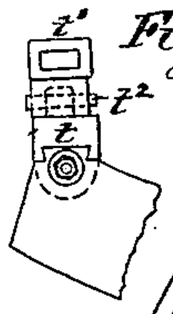


Fig. III.

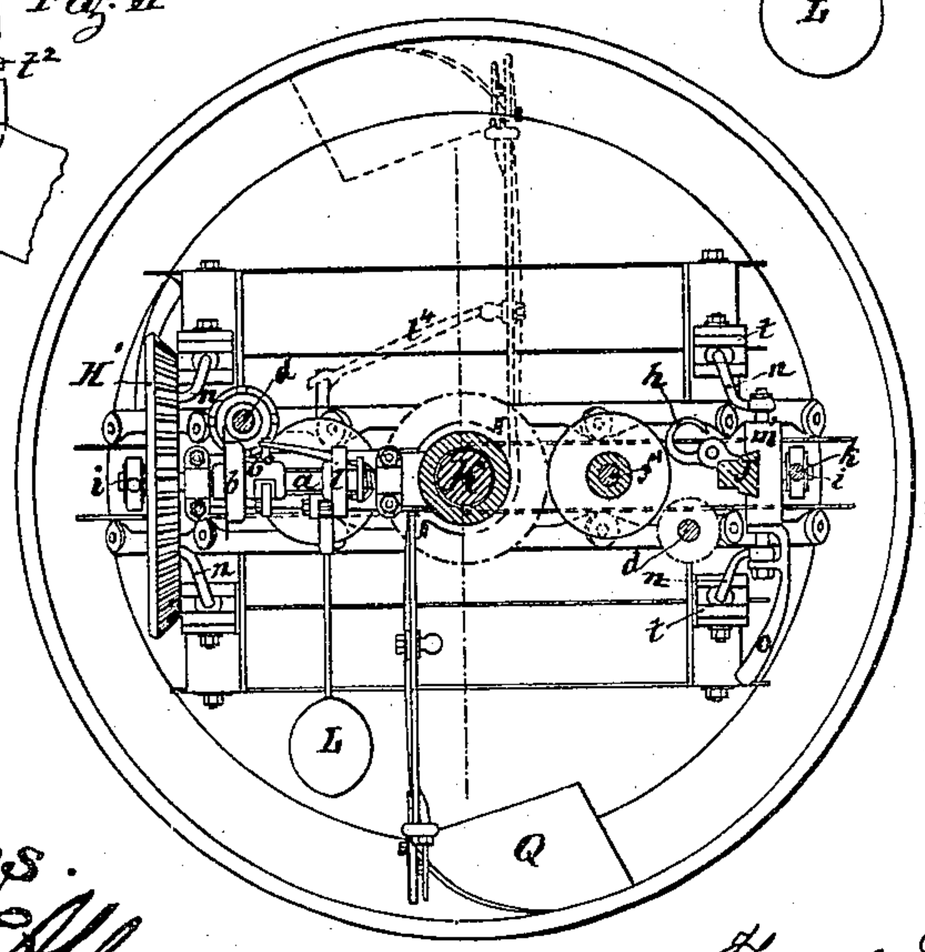
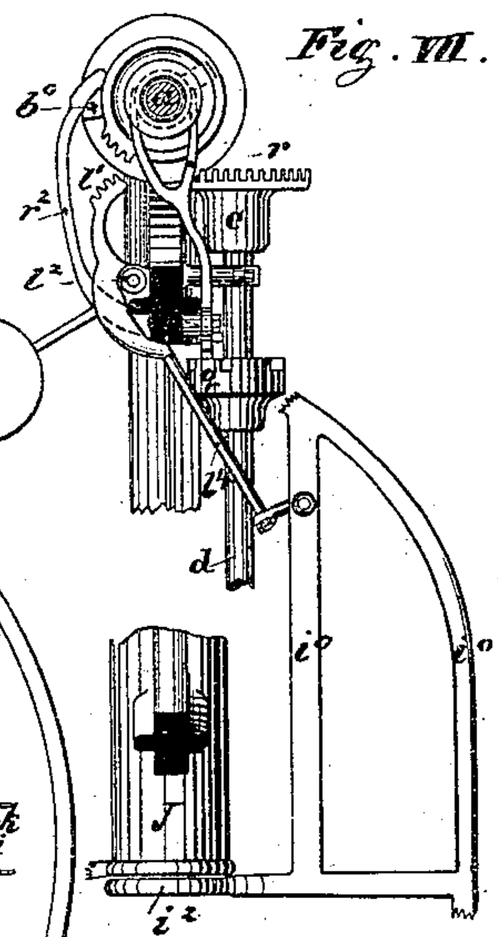


Fig. VII.



Witnesses.

John F. Allen

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Inventor.

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UNITED STATES PATENT OFFICE.

HANS P. NISSEN, OF FLENSBURG, GERMANY.

MEAT-CHOPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 245,391, dated August 9, 1881.

Application filed March 3, 1881. (Model.) Patented in Germany January 23, 1880.

To all whom it may concern:

Be it known that I, HANS PETER NISSEN, of Flensburg, Germany, have invented new and useful Improvements in Meat-Chopping Machines, of which the following is a specification.

In almost all meat-chopping machines with rocking multiple-bladed chopping-knives the block is slowly rotating while the chopping-knives continue their rocking motion. In this machine the block is permanently fixed to the bed-plate, allowing only an adjustment according to the wear and tear of the chopping-knives and working-surface of the block.

In those few machines at present in use where the block is permanently fixed the apparatus for moving the knives is so complicated that the machine very often gets out of order, and a great difficulty is experienced in taking out the knives for grinding or cleaning purposes. All these difficulties are entirely avoided in this machine, in which the knives are guided in such a manner as to move slowly around the center of the block. A new self-acting contrivance, hitherto unknown in meat-chopping machines, is also added—that is, the meat-turners, which, by their quick tilting motion, throw the meat always under the knives—which will be described hereinafter.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure I is an elevation of the machine, with partly vertical section. Fig. II represents the essential moving parts, showing the knives in horizontal position. Fig. III is a top view of the machine. Figs. IV, V, VI, VII are details.

The machine represented is provided with fast and loose pulleys E and E′, both on a shaft journaled in the standard B. The motion is transmitted from here to the bevel-wheels H′ H′ by means of the spur-wheels F and F′ and bevel-wheels G and G′, which latter wheel is cast in one piece with the bevel-wheel H and turns loose on the shaft K. The bevel-wheels H′ H′, keyed on shafts *a a*, carry the crank-pins *i i*, which move the slides *m′ m′*, guided up and down on the frame J by means of the connecting-rods *k k*.

To the slides are attached the rods *n n*, which are connected at the other end with the knife-holders *t t* by means of the journal-boxes *t′ t′*, provided with grooves, in which the pins of the rods *n* can receive a turning and sliding motion. These journal-boxes are fastened to the knife-holders *t t* with the keys t^2 t^2, which can easily be detached, in order to take out the knives for grinding or cleaning.

The blades of the chopping-knives are held together by means of two screws, Figs. V and VI.

To the knife-holders *t t* are screwed the two segments *s s*, carrying six rollers, *u u*, which are intended for guiding the knives sidewise against the guide-plates *v v*. The knives are further guided in two peculiar slotted guide-pieces, *w*, oscillating on the bolt *y′*, Fig. IV.

To give the required motion to the knives two bolts, with long heads *x*, attached to the two inner knife-blades, pass the curved slots of the guide-pieces *w*, while the braces *s′ s′*, by means of the pins *w′*, are guided in the upper straight slot of the guide-pieces *w*.

The bolts *y′* are fastened in a double casing, *y*, (see Fig. IV,) which can turn freely on the shaft K, and is supported by a strong spring, 12. The meat is prevented from touching the spring, which is protected by wooden bushing, made in two parts and held together by a ring driven over the bushing.

The frame J is loose on the shaft K, which is bolted firmly to the standard B, and it is carried by the wheel *g*, which is firmly bolted to the shaft K.

At work, the worms *b b*, keyed on the shafts *a a*, are driving the vertical shafts *d d* by means of the worm-wheels *c c*. On the shaft K is keyed the spur-wheel *g*. On the shafts *d d*, below the worm-wheels *c c*, are the pinions *e e*, which, by means of the intermediate wheels, *f f*, effect a slow rotation of the whole frame J, and consequently of the knives, around the shaft K. The worms *b* are so constructed that this motion only takes place when the crank-pins *i i* are in their highest or lowest positions and the knives are standing on their ends. In order to prevent the return movement of the wheels *f f*, or of the frame J, wedge-shaped springs *h h* slide in grooves of the wheels *f f*, and allow the rotation of the latter only in one direction. The wheels *f f* turn loose on the pins *f′ f′*, which are fastened to the frame J and supported by the guide-plates *v v*. The guide-plates *v* are screwed to the lengthened

slide-bars of the frame J, and rest in the middle against the shaft K. The block M is put loose upon the pin C, and is supported by the casting N and three adjusting-screws, O, which allow the block to be lifted according to its wear and tear.

A is the joint bed-plate for the pin C and the standard B.

B′ are guiding-rollers for the double bevel-wheel G′ H.

The meat-turners Q Q are fitted to the brackets i^0 i^0, which turn with the frame J, and can also, and may, turn, besides, in their journals i' and i^2 around the central cylindrical part of the frame. The rotary motion of the meat-turners is produced by the wheels l l on the shafts a a, having only four teeth arranged on one-sixth of the circumference. By the spiral springs s^2 s^2 the wheels l l may be laterally moved on their shafts a a. The nave of both wheels is provided toward the shaft K with a groove, in which slides the fork-shaped end of one arm of the joint-lever r. The other shorter arm of the latter rests on an arm of the bent lever r^2, arranged at right angles to r, having its fulcrum at r', and sliding with a projection on the teeth of the crown-wheel q until it drops into a space between two teeth.

The crown-wheel q, fastened to the vertical shaft d and driven by the worm b and worm-wheel c, is provided with four teeth. If, for instance, the worm-wheel c has twenty-eight teeth, then the tooth of the lever r^2 would be opposite to a space between two teeth of the crown-wheel q at every seventh revolution of the shaft a. In this movement the tooth of the lever r^2 is caused to drop into a clearance of the crown-wheel by means of the action of the spiral spring s^2, which at the same time moves the four-toothed wheel l on the shaft a until it comes into gear with the toothed segment l' of the double-armed lever l^3, which has its fulcrum at l^2 parallel to r^2, and is provided with a weight, L. The utmost end of the lever l^3 is attached by a universal joint to the connecting-rod l^4, which transfers the sudden pushing motion produced by the action of the four-toothed wheel l, and segment l', and the lever l^3 to the brackets i^0 of the meat-turners Q. This sudden forward motion of the meat-turner only takes place when the chopping-knives are in horizontal position. It is finished as soon as the knives are standing on their utmost ends, when the meat-turner, by a sudden backward motion caused by the action of the weight L upon the lever l^3, will be thrown to its original position.

In order to remove the wheel l and to compress the spiral spring s^2, a tappet, b^0, of the nave of the worm b, while pushing against the upward-bent arm of the lever r^2, will lift the tooth of the other arm out of the clearance of the crown-wheel q. By the same action the lever r is set in activity, which removes the wheel l into its former position and compresses the spring s^2.

The shovel-shaped meat-turners Q, while revolving slowly with the frame J, touch with their reception-edge the working-surface of the block M. Underneath the shovel-surface of each meat-turner are fastened two pivots, which are hinged into the adjustable bar m^2 and into the lifting-rod m^3. The bar m^2 is fastened to the bracket i^0, and transfers the rotary and oscillatory motions of the latter, described above, to the meat-turner Q. The oscillatory movement is effected partly by the wheel l, partly by the weight L acting upon the segment l' of the lever l^3 and the connecting-rod l^4, attached to the bracket i^0 by means of a globe-joint.

The lifting-rod m^3 of the meat-turner is connected with the bracket i^0 by a pin, which slides in a groove or slot at the upper end of the lifting-rod, and is fastened to the bracket i^0. This fastening device allows a free up-and-down motion of the lifting-rod m^3, by means of which the meat-turner Q will be tilted. The tilting of the meat-turner is caused by means of an ascending slope, o, attached to the slide m', upon which runs a small roller, p, of the lifting-rod m^3 during the forward oscillatory motion of the bracket i^0. The roller p, which is attached to the utmost end of the lifting-rod m^3, while ascending the upward-moving slope o forces the lifting-rod to a sudden upward motion, by which the meat-turner Q receives the required tilting motion.

The action of the meat-turners is as follows: At every quarter-turn of the wheel q the tooth-shaped projection of the bent lever r^2 engages, in the manner described, with a corresponding clearance of the crown-wheel q, whereby the wheel l comes into gear with the segment l'. The wheel l on shaft a, continuing its rotary motion, gives the bracket i^0, with its meat-turner, a sudden oscillatory motion of about ninety degrees around the shaft K, which is accomplished by the segment l', lever l^3, and connecting-rod l^4. The meat-turner Q is in the meantime filled, with the meat resting outside of the respective working surface on the block until the roller p meets the ascending slope o. The lifting-rod m^3 will come now in action and tilt the meat-turner Q nearly instantaneously. This quick lifting movement of the rod m^3 is caused not only by the grade of the slope o, but also by the upward movement of the slide m', to which the ascending slope o is attached. The great rapidity with which the meat-turners are tilted prevents the meat from adhering to the former. As soon as the meat-turner is tilted and stands in an upright position the last tooth of the wheel l leaves the segment l', and now the weight L comes into action and causes the bracket i^0, by means of the lever l^3 and rod l^4, to swing back, whereby the meat-turner comes into its original position, while at the same time the tooth-shaped projection of the lever r^2 is lifted out of the space between two teeth of the crown-wheel q. The wheel l is now out of gear with

the segment l' until after seven revolutions of the shaft a, when the described proceeding will again be repeated. The four teeth of the small wheel l must be arranged in such a manner that the last tooth leaves the segment just at that moment when the corresponding slide, m', as well as the respective side of the chopping-knives, are in their highest position.

I claim as my invention—

1. In meat-chopping machines, the oscillating guide-pieces w, each having a straight slot and two curved slots, in combination with the knife-blades, the bolts x, passing into the curved slots, the pins w', which enter the straight slots, the shafts, wheels, slides, and connecting-rods, whereby rocking motion is given to said knives.

2. In a meat-chopping machine, the combination of the slides m' m' with the knife-boxes t, the knives, the frames on which the said slides move, the connecting-rods n, and the journal-boxes t', fastened with keys t^2 to the knife-boxes, substantially as described.

3. In combination with the meat-turners Q, mechanisms, substantially as described, which periodically oscillate and tilt the same, substantially as set forth.

4. In meat-chopping machines, the combination of the grooved and toothed wheels l l with the levers r r^2, crown-wheel q, springs s^2, weighted levers l^3, segments l', brackets i^0, and meat-turners Q, substantially as set forth.

5. In combination with meat-turners Q, a slotted tilting rod, m^3, bar m^2, roller p, slide m', and incline o, substantially as set forth.

6. In meat-chopping machines, the vertical guide-plates v v, fastened to the lengthened guides of the slides m', in combination with the segment s, provided with horizontally-acting rollers u, which bear against said vertical plate.

7. In meat-chopping machines, the wheel l, in combination with spiral springs s^2, the angle-levers r and r^2, the worm-wheels b c, the tappet b^0, the segment l', crank l^3, and crown-wheel q, substantially as set forth.

8. In meat-chopping machines, the bracket i^0, journaled at i' and i^2 in the frame J, in combination with the bars m^2, the lifting-rod m^3, rollers p, slide m', slope o, and meat-turners Q for tilting the meat, substantially as and for the purpose set forth.

HANS PETER NISSEN.

Witnesses:
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