Sept. 5, 1967 F. H. M. SCHMITT 3,339,604

APPARATUS FOR PACKING MERCHANDISE IN THE FORM OF PIECES

Filed March 16, 1965

5 Sheets-Sheet 1

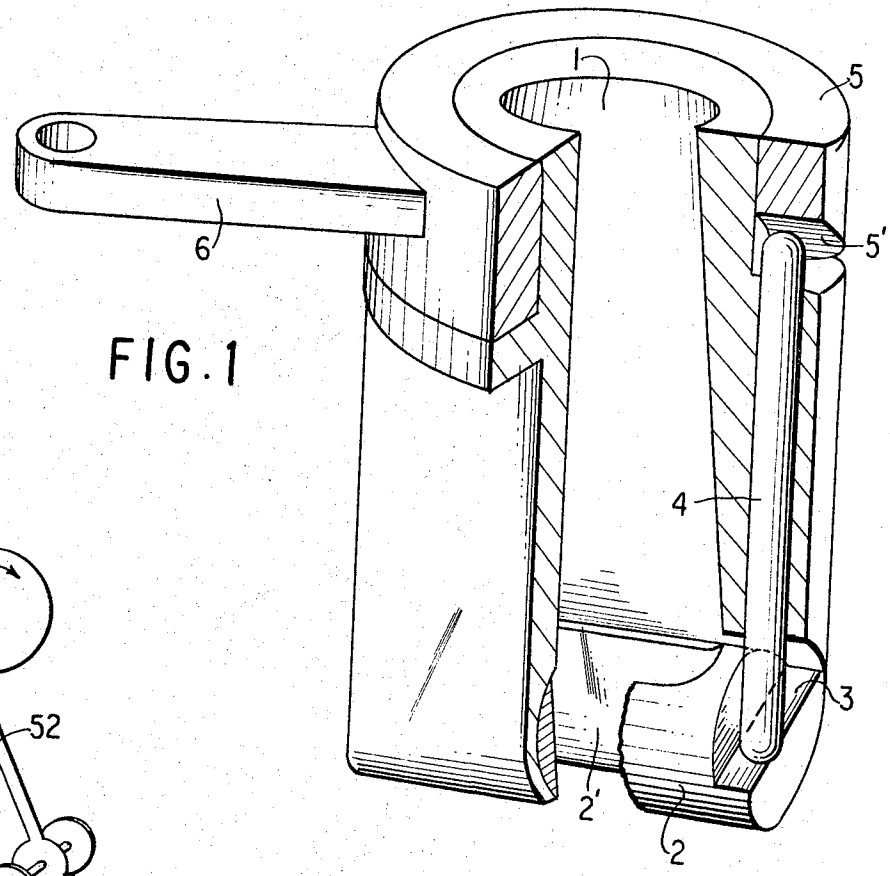


FIG. 1

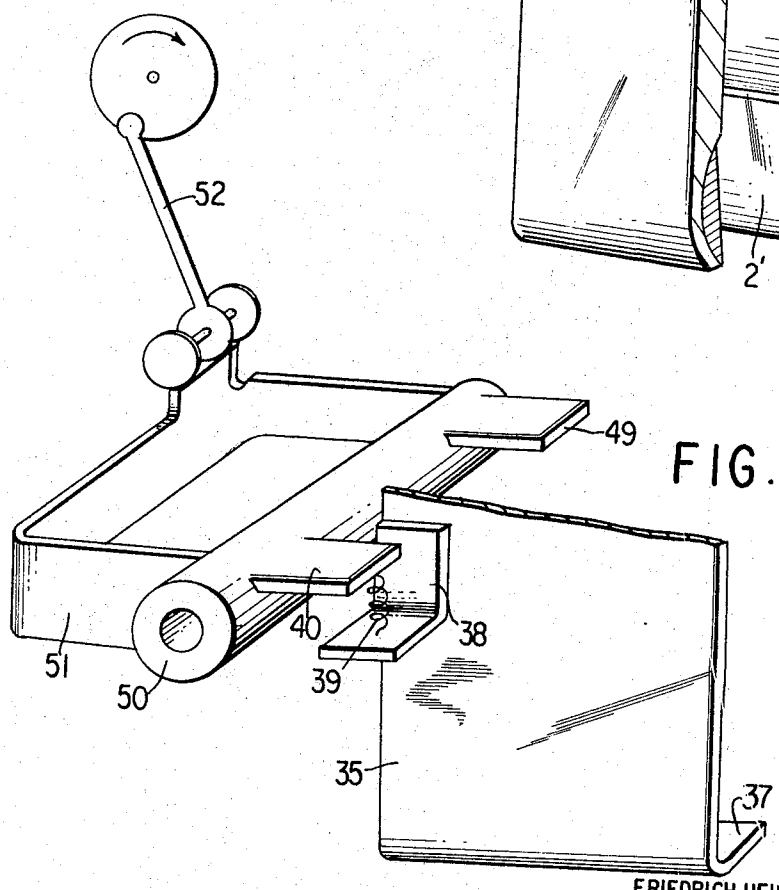


FIG. 6

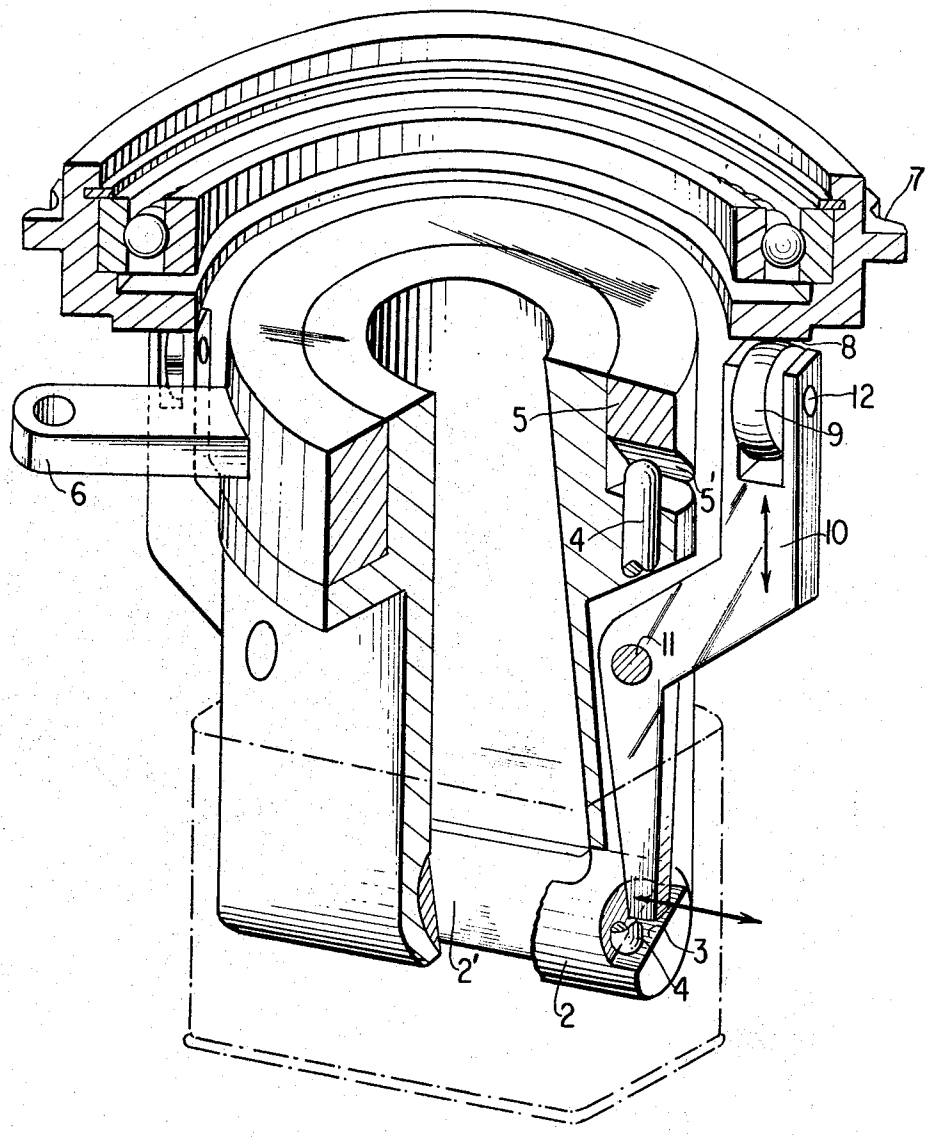
INVENTOR
FRIEDRICH HEINRICH MICHAEL SCHMITT
BY
Hammond & Littell
ATTORNEYS

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Filed March 16, 1965 5 Sheets-Sheet 2

FIG. 2



INVENTOR
FRIEDRICH HEINRICH MICHAEL SCHMITT
BY
Hammond & Littell
ATTORNEYS

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Filed March 16, 1965 5 Sheets-Sheet 3

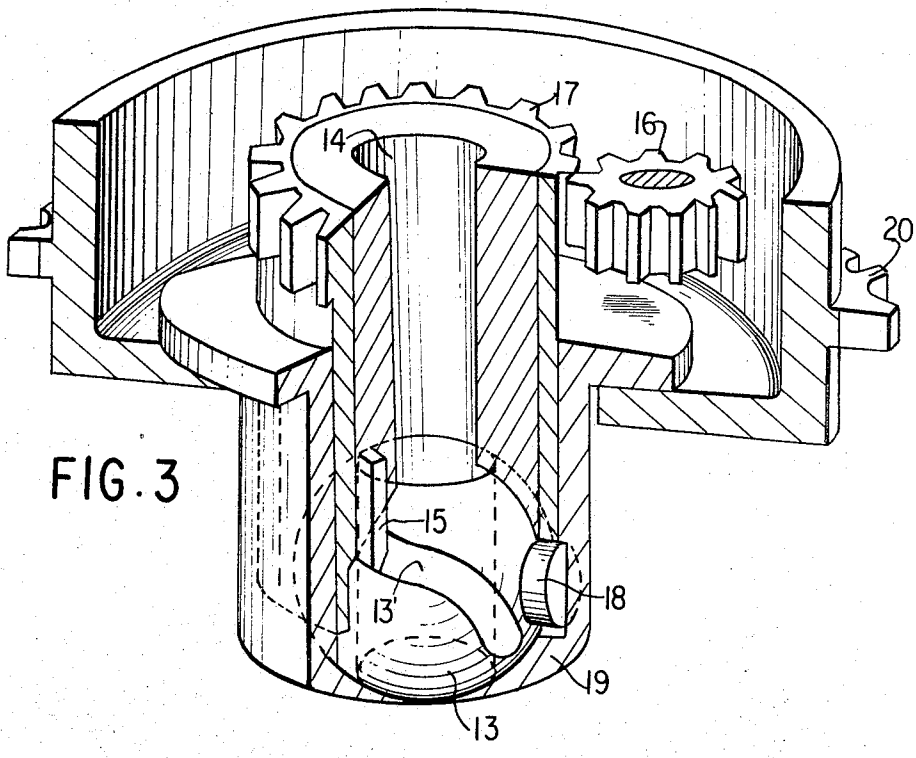


FIG. 3

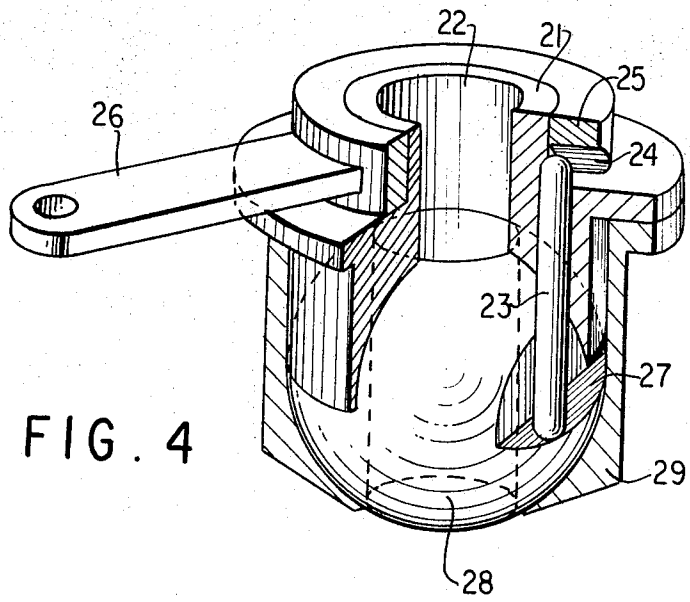


FIG. 4

INVENTOR
FRIEDRICH HEINRICH MICHAEL SCHMITT
BY
Hammond & Littell
ATTORNEYS

Sept. 5, 1967 F. H. M. SCHMITT 3,339,604

APPARATUS FOR PACKING MERCHANDISE IN THE FORM OF PIECES

Filed March 16, 1965 5 Sheets-Sheet 4

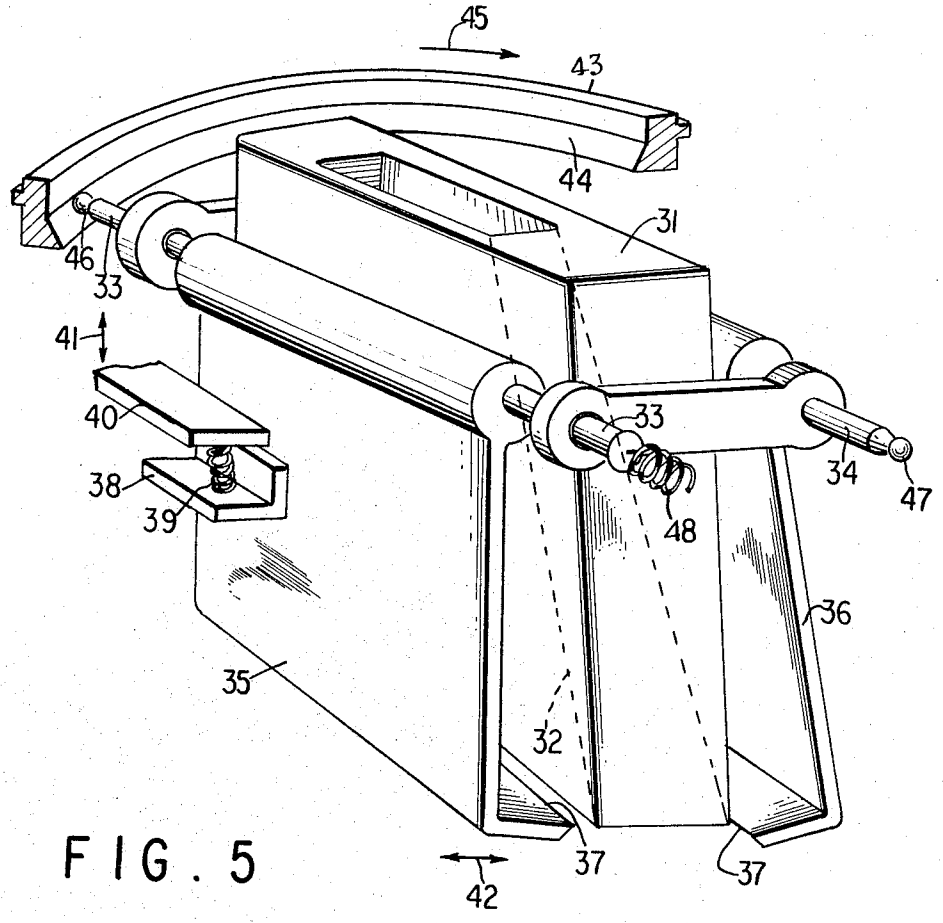


FIG. 5

INVENTOR
FRIEDRICH HEINRICH MICHAEL SCHMITT
BY
Hammond & Littell
ATTORNEYS

Sept. 5, 1967 F. H. M. SCHMITT 3,339,604

APPARATUS FOR PACKING MERCHANDISE IN THE FORM OF PIECES

Filed March 16, 1965 5 Sheets-Sheet 5

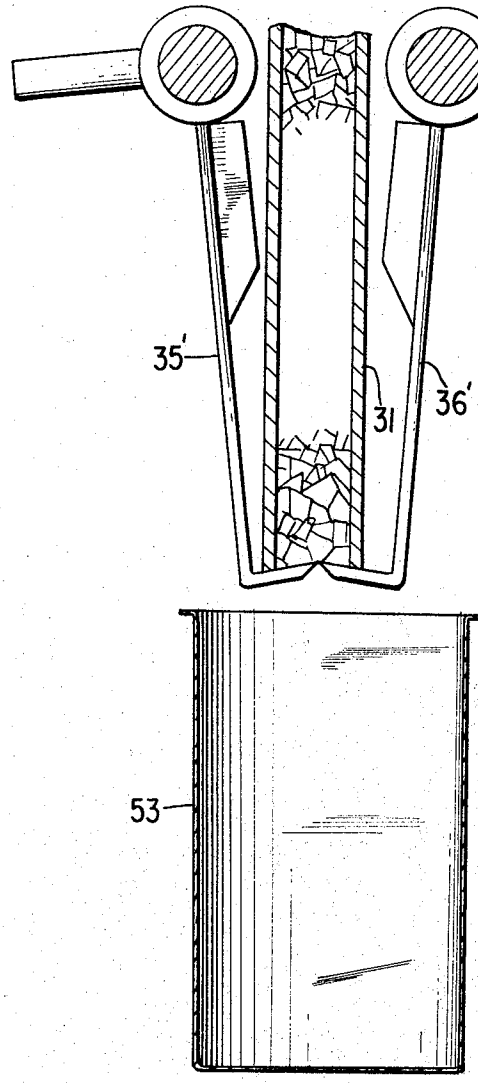


FIG. 7

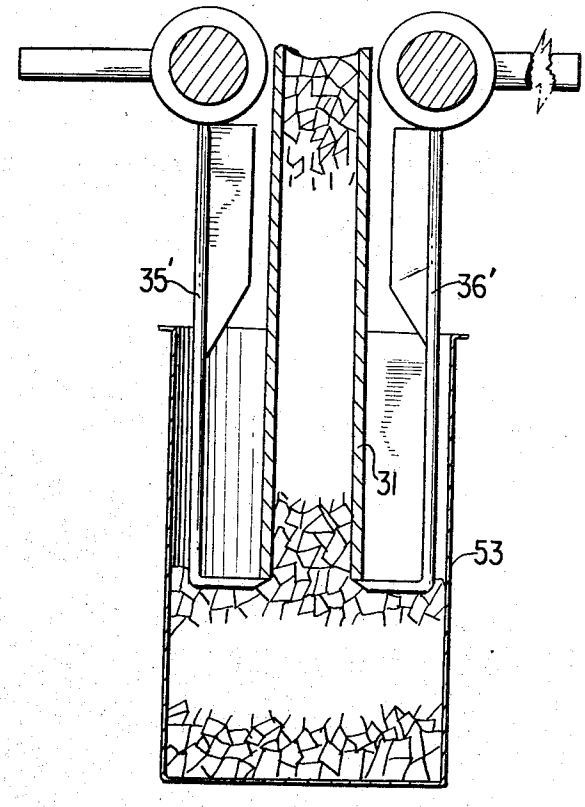


FIG. 8

INVENTOR
FRIEDRICH HEINRICH MICHAEL SCHMITT
BY
Hammond & Littell
ATTORNEYS

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3,339,604

APPARATUS FOR PACKING MERCHANDISE IN THE FORM OF PIECES

Friedrich Heinrich Michael Schmitt, Frankfurt am Main, Germany, assignor to FKF-Werke Friedrich Schmitt & Cie, Frankfurt am Main, Germany, a German firm

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Claims priority, application Germany, Mar. 19, 1964, F 42,364
6 Claims. (Cl. 146—106)

This invention relates to an apparatus for packing any goods in piece form, in particular for packing meats, where the stock to be packed is still in the form of whole lumps or chunks.

The packing of such merchandise which contains large pieces, is difficult especially due to the fact that the filler portion has to be cut off at each filling of a can.

An arrangement with circular knives has already been suggested for round cans, however, this known arrangement does not provide for a smooth surface of the can content, furthermore, it is not suitable for cans of rectangular or oval shape.

To pack meats or sausage meats into cans by means of already known filling devices without considerable intake of air and under filling out all corners of the can, the empty feeding apparatus has to be lifted up and then slowly lowered during the actual filling procedure. At the same time, the feed pipe, even in rectangular receptacles, should fill out the entire can profile as much as possible.

Standard feed pipes which are open at the bottom do not meet the requirements since the filler portion is not properly separated from the batch already fed into the can and the sausage meat because of its sticky consistency will be pulled out across the rims of the can at the subsequent advancement of the can.

Quite often the feed cone becomes arrested, being at such a height, that the mass being packed hangs on the succeeding locking apparatus and, moreover, unduly soils the edges of the can.

It is therefore an object of this invention to provide the feed pipe at its bottom end with a special cutoff and sealing device which does not alter in its drive the outer contour of the nozzle during the filling procedure. Due to the particular shape of the cutoff means, this device serves the purpose to satisfactorily cut off the meat, even when it is still in pieces and, furthermore, to form the surface of the filler mass in such manner that the can being filled can be sealed without soiling it on the succeeding seaming machine.

This and other objects of my invention will become apparent as the description thereof proceeds.

The object of the invention is accomplished in that the tube opening is provided with a series of knives whose blades may be passed across the opening of the tube to cut off the filler portion. During this movement in vertical relation to the blade a simultaneous shuttling movement in direction to the blade may be imparted on said blade.

Thus it is achieved that the coarse pieces present in the filler mass are cut off in a clean way without the danger that the more solid pieces are only squeezed together but not entirely cut through. At the same time the tube nozzle is closed and thus the surface becomes smooth.

Preferably a rotation member, somewhat corresponding with the cross section of the opening, is arranged in the opening of the filler nozzle having at least one edge of the passage developed as a blade.

passage. But, the tube nozzle may also be provided with knives on two opposite walls, the blades of said knives

being disposed at the terminal edges of these walls to effect a rotating motion and for reciprocal movement.

The rotation member may be a ball having a circular

The movement of the knife in vertical relation to the blade is appropriately carried out in that the knife is formed in an L-shape, the free edge of the lower shank of the L being sharpened and forming the blade of the knife. The knife is thus disposed at the upper part of the long shank of the L in flexible manner. In this arrangement, the force which effects the reciprocal motion of the knife is able to operate.

An especially practical form of design of the device of the invention consists in that the rotary base of the sealing-rotation-member or of the knife or knives is formed so that the member supporting the blade or the blades may be moved towards the blade and is forced toward one side due to the action of a spring. The force in counteraction to the spring is then passed through a ring, having a coupling means, in engagement with the locking member or knife, disposed at the inside of said ring. The contact surface may, for example, consist of a globe or semiglobe suitably arranged in the rotation axis of the coupling means. This globe is then pressed by force of the spring against the inside of the ring, and in the case where this inner surface is formed excentrically, a reciprocal motion is exerted on the knife at the rotation of the ring, thus effecting the movement in one direction by means of the spring whereas the movement in opposition to this spring force is obtained by this rotating ring.

Examples of forms of construction according to the invention are shown in the drawings in which:

FIG. 1 is a view in perspective, with parts in section, of a cutting and locking device in the form of a locking roller according to the invention;

FIG. 2 is a view similar to FIG. 1, where an arrangement for the axial rotation of the roller forming the locking member is provided;

FIG. 3 is a view similar to FIG. 1, showing the locking means supporting the blades being formed as a ball;

FIG. 4 is a modification of the arrangement shown in FIG. 3;

FIG. 5 is a view in perspective, showing the arrangement and the drive of the knives forming the cutting and locking means in a modified form of the invention;

FIG. 6 is a view in perspective of a mechanism suitable for the generation of the rotary motion;

FIG. 7 is a cross-sectional view of the hopper in elevation closed by the pivoting knives;

FIG. 8 is the hopper according to FIG. 7 with open knives.

The hopper **1**, illustrated in FIG. 1, proceeds from a round cross-section on top downwardly symmetrically into the cross-section of an oblong opening **2'** of the locking and cutting roller **2** shown in open condition. The peripheral edges of the oblong slot serve as blades. Control surfaces **3** are arranged on the cutting roller in angular displacement to the oblong slot of the cutting roller and in symmetrical relation to each other. They serve as working surface for two operation rods **4** which are moved by means of the front cam **5'** on the hub **5** of lever **6**.

The movement of the lever **6** is synchronously reduced toward a coupled valve across several known transmission elements by a guide cam in the machine (not shown).

In the construction design of FIG. 2, an axial cutting motion is provided for in addition to the radial motion of the cutting roller **2** shown in FIG. 1.

The movement is transmitted from the sprocket wheel **7** with front cam **8** across roller **9** by means of the lever **10** onto the cutting roller **2**. The mounting of said lever

10 and said roller 2 is supported by bolts 11 and 12. The sprocket wheel 7 is disposed at the coupling valve. The drive of sprocket wheel 7 is effected by a separate motor.

The closing and cutting elements, shown in FIGS. 3 and 4, differentiate only in the manner by which the cuting and sealing movement of the globe 13 is accomplished.

According to FIG. 3, the center body 14, which is flange-connected to the series-connected standard valve, carries by means of the cylinder-hopper cam guide 15 which engages cam groove 13' in globe 13. Globe 13 is provided with a bore corresponding with the bore of the hopper.

The drive is initiated from the machine across several transmission elements to a gear rack (not illustrated) with a pinion disposed in the standard valve synchronously with the drive of the standard valve and from there to the pinion 16 and the gear-tooth system of a carrier sleeve 17, which imparts to globe 13 by means of the globe pin 18 a horizontal rotation therewith forcing the globe through the milled cam groove 13' and the fixedly disposed cam guide 15 into a vertical rotation, and cutting off the filler mass with the edges of the bore of globe 13 which are developed as blades, and, finally, closing the hopper. To increase the cutting action, the sleeve 19 forming the counter knife may be forced into rotation by the crown wheel 20 by means of a separate driving motor.

According to FIG. 4, the center member 21, flanged to the standard valve, with cylindrical hopper 22 serves as bearing guide for two control rods 23 which are operated by means of front cam 24 on the hub 25 of lever 26 across the control surfaces 27 of globe 28 thereby turning said globe in a vertical direction, thus cutting the filler portion and closing the hopper. The knife casing 29, according to FIG. 3, may be put into rotation for the purpose of obtaining better cutting effect.

FIG. 5 shows a modified form of the invention, wherein the inner cross section of the hopper 31 widens toward the bottom in the form of a flat funnel, as indicated by the dotted lines 32.

The hopper is provided with supports for the shafts 33 and 34, by means of which these shafts may slide in axial direction into the supports. The knives 35 and 36, respectively, are rigidly connected to the shafts. Knives 35 and 36 presenting in the instant embodiment a nearly L-shaped cross section, the lower free edge 37 of the lower shank of the L being shaped as a knife.

On the outer surface of the knives there are arranged angles 38 in engagement with springs 39 which, on the other hand, are arranged in a barcket 40 reciprocally moving in vertical direction. When this bracket 40 carries out its vertical shuttle movement, indicated by arrow 41, then the knife 35 is rotated in identical manner about the axis of shaft 33, as indicated by the double arrow 42. The same arrangement is provided for knife 36.

The reciprocal movement of the knives in the direction of the knife edge axis is effected by a circular ring 43, whose inner surface 44 is dually excentric. Ring 43 is for example always driven in the same rotation direction with the aid of a ring gear and chain or in any other suitable manner, this direction being indicated by arrow 45. Inasmuch as the inner surface 44 does not proceed concentrically to the rotation axis of ring 43, a force is exerted on the knobs 46 and 47, and the rods 33 and 34, respectively to which the knives 35 and 36 are respectively secured, are shifted in axial direction against the pressure of the springs 48. Thus, a movement of the knife in the axial direction of its cutting edge is effected. The drive, as shown here, is only one embodiment of construction and, if so desired, a different type of drive may be utilized. For example, the reciprocal movement may be transferred from an excentric cam to the knife by means of a lever, in which case the knife is provided with a pivot the forked head of such a lever being in engagement with said pivot. For the rotating motion of the knives too, there are various appropriate possibilities for the drive. One type of drive for the rotating motion of the embodiment as shown in FIG. 5, which has been found effective is shown in FIG. 6.

In FIG. 6, only the knife 35, the angle 38, the spring 39 and the bracket 40 of the device in FIG. 5 are illustrated. Bracket 40 and bracket 49 (bracket 49 being for the motion of the other knife 36) are welded on to a casing 50, which is rotatably mounted on a locally fixed axis, not shown. The casing 50 is connected with a bracket 51 which is put into a reciprocal motion by a crank means 52, said motion being transmitted across the spring 39 to the knives 35 and 36, respectively.

From the view presented in FIG. 7, the hopper 31 can be seen, connected at the top with a piston feeder device. Laterally to the hopper, the knives 35' and 36' are attached, which in FIG. 7 represent the closed position after the cutting off. Beneath the feeder device the empty can 53 is indicated schematically.

FIG. 8 shows the position of the knives during the feeding procedure, the half-filled can 53, which was completely raised at the beginning of the filling, has now been lowered again half way. It is evident from FIG. 8, that the knives, swung back, clear the hopper completely.

It will be obvious, that the invention is not restricted to the embodiments illustrated herein and explained; in particular various types of drive for the rotating motion and for the reciprocal movement of the cutting and closing element may be provided. It is first of all important that the profile of the feeder opening is in conformity with the shape and the size of the can and that the blades preferably carry out the indicated twin motion, as then a complete filling of the can without any hollow spaces therein and a practically level surface of the contents in the can may be attained even when a mass containing relatively coarse pieces is to be packed, as for example, meats or sausage meats.

Thus, the various changes and modifications may be made in the invention without departing from the spirit of the disclosure or the scope of the appended claims.

What is claimed is:

1. Apparatus for filling containers of various shapes with a mass containing pieces, which comprises a feed tube having a profile adapted to the profile of the container to be filled, and cutting means comprising at least one cutting edge, and means to move said cutting edge over the mouth of the feed tube in a direction which is a component of a vertical motion and a lateral reciprocal motion, thereby cutting said mass and simultaneously closing the mouth of said feed tube.

2. The apparatus of claim 1 wherein said cutting means comprises a rotational member in the mouth of said feed tube, said member being provided a passage through said rotational member corresponding approximately with the profile of the feed tube opening, at least one edge of said passage being formed as a cutting edge.

3. The apparatus of claim 1 comprising in addition a ring gear having a dual eccentric control surface and means connecting said cutting means to said control surface whereby rotation of said ring gear provides a simultaneous rotating motion of said cutting means and reciprocating motion in the direction toward the rotational axis.

4. Apparatus for filling containers of various shapes with a mass containing pieces, which comprises a feed tube having a profile adapted to the profile of the container to be filled, and cutting means comprising cutting edges on the opposite sides of the mouth of said feed pipe and means to move said cutting edges over the mouth of said feed tube, and simultaneously to provide a lateral reciprocal motion of said cutting edges.

5. The apparatus of claim 4 comprising in addition crank means adapted to simultaneously operate the opposing cutting edges to move them over the mouth of said feed tube.

6. Apparatus for filling containers of various shapes with a mass containing pieces, which comprises a feed tube having a circular profile adapted to the profile of the container to be filled, cutting means comprising a rotational member in the mouth of said feed tube, said member being in the shape of a globe and being provided with a passage through said globe corresponding approximately with the profile of the feed tube opening, at least one edge of said passage being formed as a cutting edge, and means to rotate said globe substantially simultaneously about a horizontal axis and a vertical axis.

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RICHARD H. EANES, JR., *Primary Examiner.*