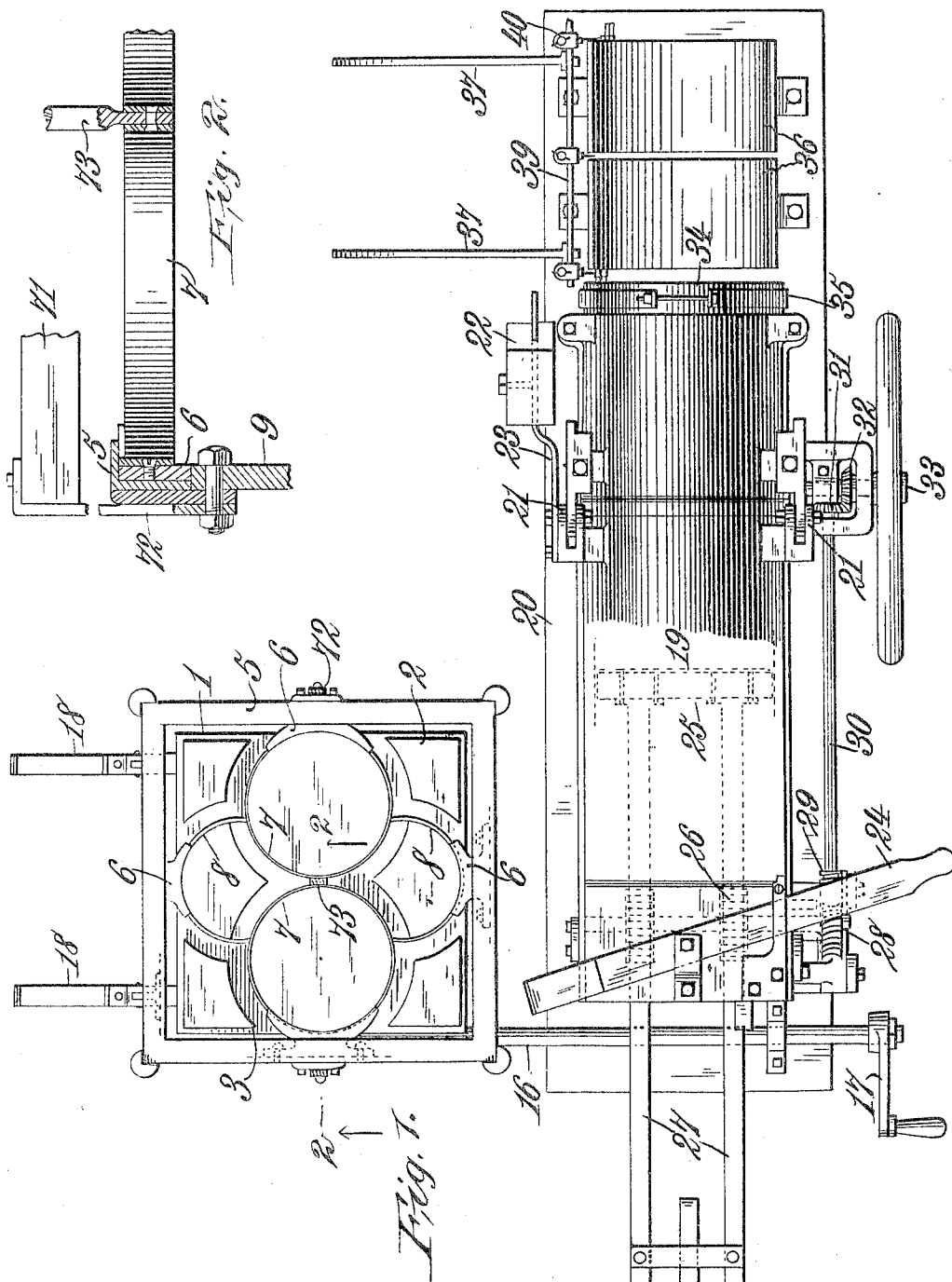


R. F. STEWART.
BUTTER CUTTING MACHINE.
APPLICATION FILED NOV. 11, 1904.

3 SHEETS—SHEET 1.

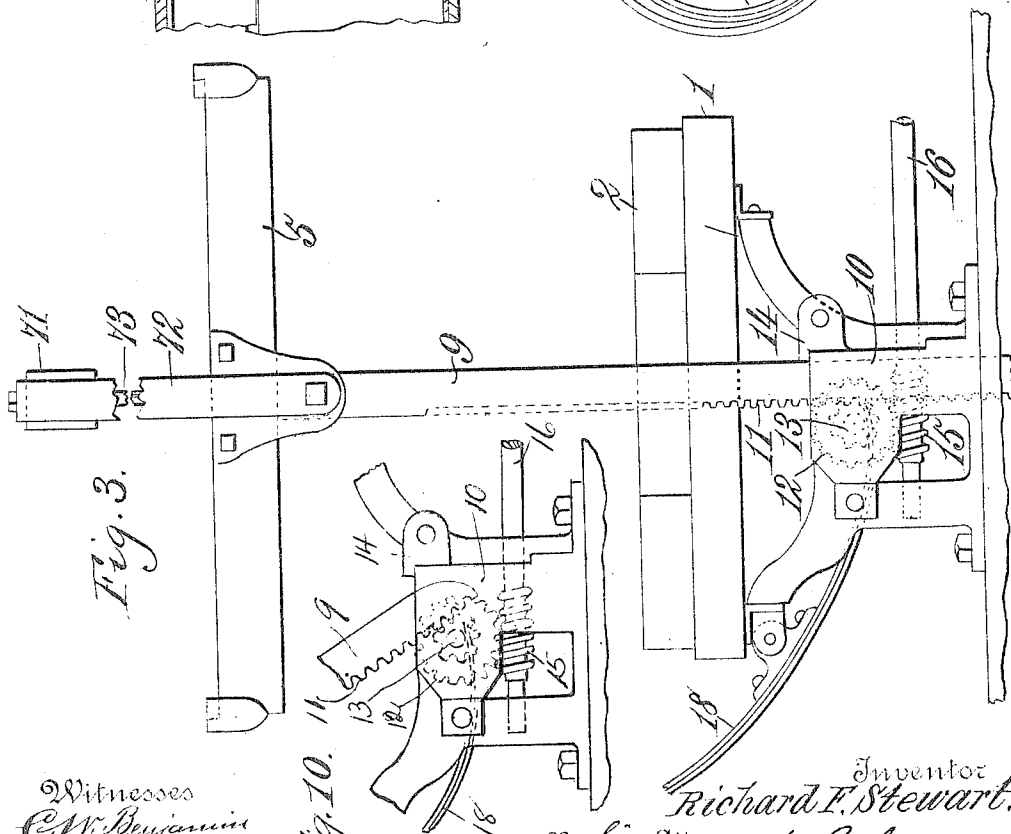
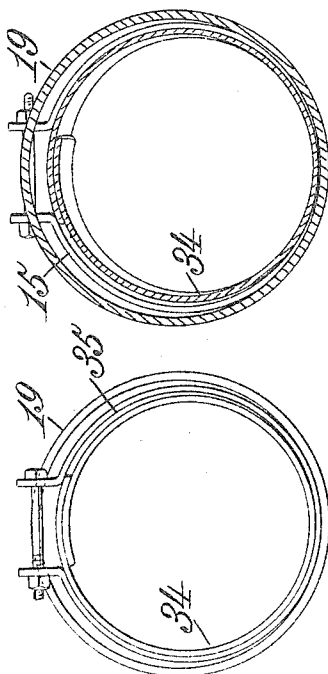
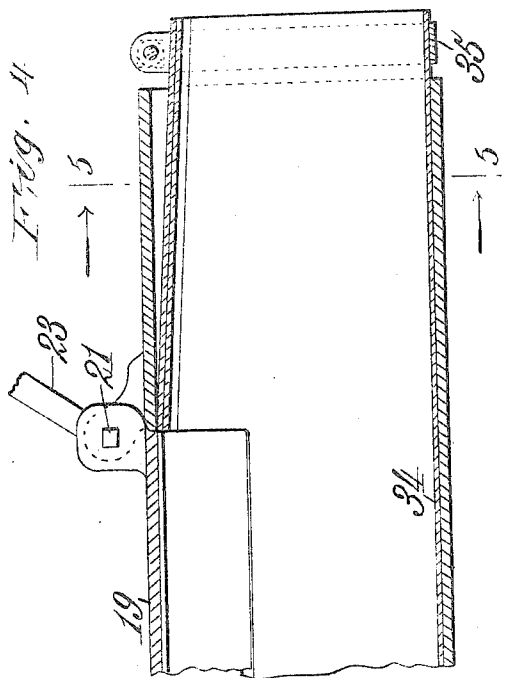


Witnesses
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Wm L. Morris

Inventor
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3 SHEETS—SHEET 2.



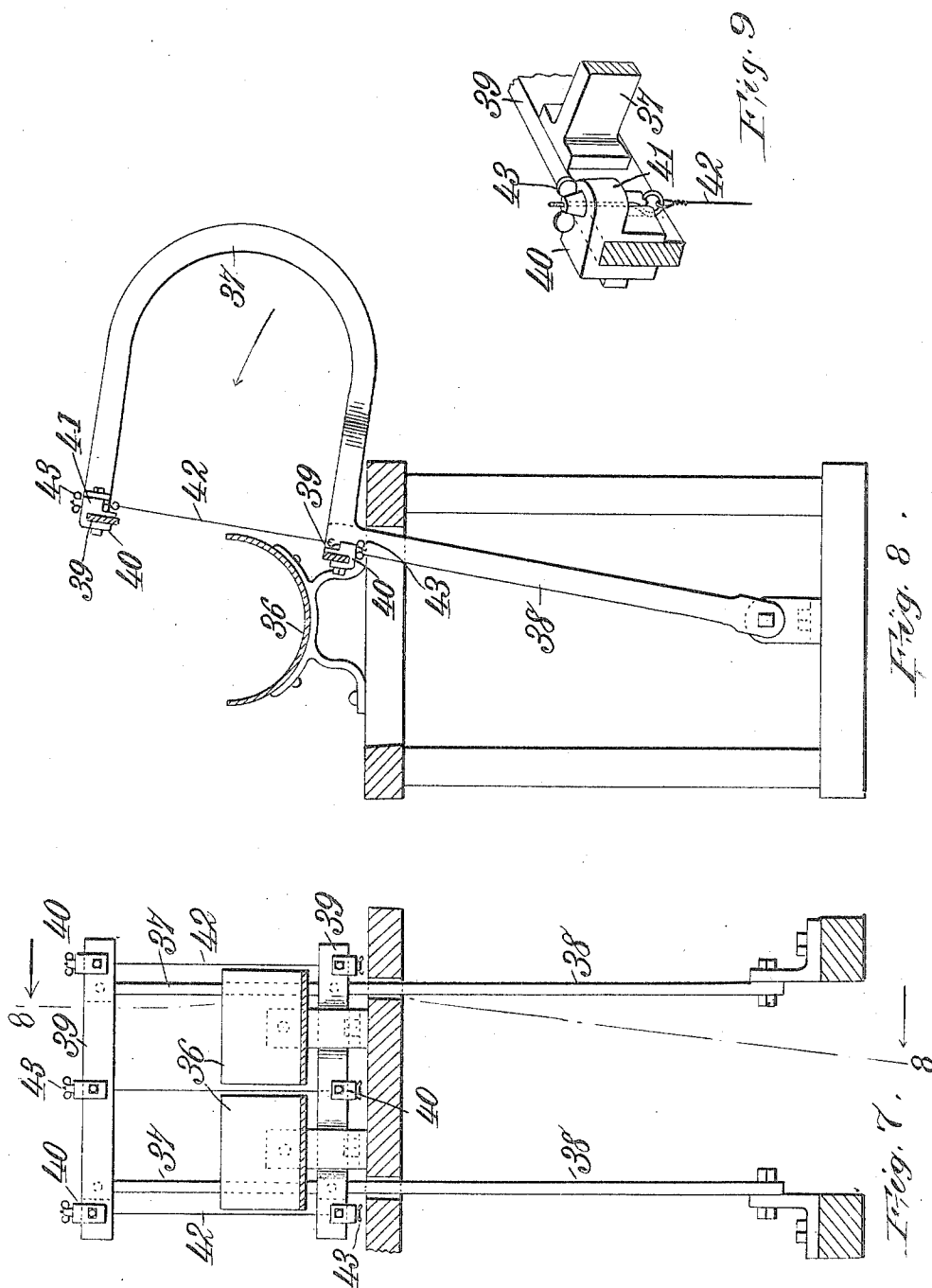
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Fig. 10.

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3 SHEETS--SHEET 3.



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UNITED STATES PATENT OFFICE.

RICHARD F. STEWART, OF POCANTICO HILLS, NEW YORK.

BUTTER-CUTTING MACHINE.

No. 804,564.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed November 11, 1904. Serial No. 232,321.

To all whom it may concern:

Be it known that I, RICHARD F. STEWART, a citizen of the United States, residing at Pocantico Hills, in the county of Westchester and State of New York, have invented new and useful Improvements in Butter-Cutting Machines, of which the following is a specification.

In an application filed by me September 10, 1904, serially numbered 223,982, I have described a machine for cutting butter, said machine being designed for reducing a package or tub of butter to determined sizes, such as one-pound lumps, in an expeditious manner and without shrinkage in the aggregate weight of the lumps from the weight of the original package.

The machine of the application aforesaid is characterized by mechanism for subdividing the tub package of butter into rectangular bars, these bars in turn being divided into lumps or cakes of the requisite weight, and means is provided also for preparing the waste or irregular cuttings of butter by molding, so that such cuttings may be formed into bars and then cut up into lumps.

The present machine in its general features resembles the machine of my earlier application; but it is designed especially for forming the butter into cylindrical bars or rolls, shaping and packing such bars to the desired diameter, and severing sections or lumps from said shaped and packed rolls of a size sufficient to fill the box or pail in which the lumps are retailed.

The present machine comprises as its essential features a vertically-moving frame having a series of annular cutters to divide the original tub package into rolls, a cylindrical chamber having a compressible lining which receives the roll and if need be compresses it to the desired diameter, means for forcing the roll through the chamber, a semi-cylindrical receiving-table to which the roll passes from the chamber, and severing means for cutting off one or more sections or cylindrical lumps from the roll as it lies upon the receiving-table.

In order that the invention may be better understood by those skilled in the art, I have illustrated in the accompanying drawings one embodiment of the same, and in said drawings—

Figure 1 is a plan view of the machine constructed in accordance with my invention. Figure 2 is a detail view of a portion of the ver-

tical cutter-frame to show one of the cutting-rings. Fig. 3 is a view in end elevation of the vertical cutter-frame. Fig. 4 is a longitudinal section of a portion of the roll-chamber, showing the compressible lining. Fig. 5 is a transverse sectional view on line 5 5 of Fig. 4. Fig. 6 is an end view of the roll-chamber, and Figs. 7, 8, and 9 are detail views of the cutting mechanism for severing the rolls into sections. Fig. 10 is a detail view of the lower end of one of the vertical cutter-frame racks to show its position when the cutter-frame is tilted.

Referring to the drawings by numerals, like numerals indicating like parts in the several views, 1 denotes the table or platform of the vertical cutter, upon which the package of butter from the tub is placed. Said table 1 is provided with raised surfaces 2, divided from one another by regularly arranged grooves or interstices 3, which receive the annular cutting-rings, presently to be described. Reciprocating vertically above said table 1 is the vertical cutter, which comprises a rectangular frame 5, having secured within it by means of suitable supports 6, secured to the sides of the frame, a plurality of cutters, preferably though not necessarily annular. In the present instance two complete rings 7 are shown, and the other rings 8 are incomplete, so that in cutting up a tub package of butter two complete rolls will be formed by the rings 7, while the rolls formed by rings 8 will have cut-away places owing to the arrangement of rings shown. Such incomplete rolls as are formed by rings 8 it is purposed to bring to cylindrical form by combining with them the waste cuttings, or, if need be, other butter, as they are passed through the chamber, all as will hereinafter be set forth.

In order to firmly brace the annular cutting-rings and render them perfectly rigid, so that they will not be bent upwardly and displaced when they are forced through a package of hard butter, I provide bracing means for these annular cutters, which, as shown in the present instance, consists of a horizontally-arranged cross-bar 71, which is mounted upon supports 72, secured to the sides of the rectangular frame 5, as clearly shown in Figs. 1, 2, and 3. Secured to said cross-bar 71 is a depending brace-rod 73, the lower end of which is riveted or otherwise secured to the annular cutters 7, as shown in Figs. 1 and 2, so that any upward thrust of the cutting-rings as they are forced through

a package of butter is received by the brace-rod 73 and the cross-bar 71, and great rigidity and strength are given to the annular cutters.

5 The vertical cutter has the depending arms 9, which slide in suitable ways 10 on the machine-frame, one edge of the arms being formed as a rack 11, which is engaged by a pinion 12 on the shaft 13, said shaft having a worm-wheel 14, which is driven by a worm 15 on a shaft 16, mounted in suitable bearings in the machine-frame and adapted to be driven by a crank 17 or in any suitable manner. By this arrangement of vertical cutter and driving mechanism the cutter may be elevated to the proper height, a tub package of butter placed upon the table, and the cutter may then be drawn downward through the package, so that the annular cutters will divide the package into rolls.

It will be observed that the rings 7 and 8 drop into the interstices or grooves 3 in the table 1 when they reach the downward limit of their movement, so that the package of butter is cut completely through and perfect rolls are formed, the package resting upon the raised surfaces 2. The package having been divided into rolls by the vertical cutter, said cutter is swung to one side, the rounded lower ends of the racks 9 (see Fig. 10) permitting tilting of the vertical cutter to one side, rocking on the pinions 12 without withdrawing the racks from their guides or ways 7 until it rests upon the spring-supports 18, leaving the table readily accessible for the removal of the cut rolls.

The rolls are separately removed and placed in a chamber 19, mounted on a suitable frame 20, the chamber and vertical cutting apparatus being placed in juxtaposition for convenience in handling the butter. Said chamber 19 is preferably though not necessarily cylindrical in form and divided horizontally, so that its upper half, which is hinged at 21, may be raised to permit insertion of the roll in the chamber, a counterweight 22 being secured to an arm 23 on the movable upper half of the chamber to render the raising and lowering of the upper half of the chamber easy. The movable upper half of the chamber is locked in closed position by means of a locking cross-bar 24 (see Fig. 1) in the same manner as the top of the mold box or chamber shown in my application hereinbefore referred to.

55 Within the chamber is a reciprocating head 25, which is actuated in the same manner and by similar means as the head or compressing plunger of the cutting-machine of my application referred to, such plunger or head actuating means comprising a pair of pinions 26, (dotted lines, Fig. 1,) meshing with racks on the bars 27 of the plunger, said pinions 26 being mounted on a shaft having a worm-wheel 28 meshing with and driven by a worm 29 on a shaft 30, which last-named shaft has a

bevel-gear 31, which meshes with a bevel-gear 32 on a hand or power operated shaft 33 at the side of the machine-frame.

It will be obvious that as the plunger or head 25 is moved forward in the chamber it will force the roll of butter through the cylindrical bore of the same, said chamber preferably having a lining 34 of enameled metal to give a smooth clean interior surface. The delivery end of the enamel lining is split and lapped, as shown in Figs. 4, 5, and 6, the end of the lining projecting beyond the chamber (see Fig. 4) and having a compressor 35 around it, so that by tightening the compressing-ring 35 the delivery end of the chamber will be tapered, as shown in Fig. 4, so as to pack the butter solidly as it is delivered, the amount of compression being regulated by means of the compressing-ring 35. This construction of tapered delivery-chamber is of particular advantage in connection with the incomplete rolls formed by the cutters 8 of the vertical cutter or in connection with waste cuttings and fragments of butter which it is desired to mold into rolls. In shaping the incomplete rolls or in utilizing fragments the butter is placed in the chamber, additional butter being put in to fill the spaces in the incomplete roll. The mass is then forced forward by the plunger or head 25 and passing through the tapering delivery end of the chamber is packed into a solid roll. It will be seen that by making the lining of a continuous sheet lapped upon itself a tapered and adjustable chamber having a practically unbroken inner surface is provided, the only break being the line where the lapped edges come together. This construction prevents marring the roll of butter or its escape through side openings or slits, so that all the butter is delivered in a substantially smooth perfectly-formed roll. As the roll of butter issues from the delivery end of the chamber it passes to a table, which is made up of one or more half-round or semicylindrical sections 36, supported on the machine-frame, the diameter of these table-sections 36 being substantially the same as that of the mold, so that the roll passes readily from the mold to the table and without defacement.

While I have shown the receiving-table as semicylindrical in cross-section, it will be understood that it may be of polygonal contour in cross-section, the only object being to provide a receiving-table which will readily receive the butter-roll and hold it from displacement during the lump-cutting operation, presently to be described.

Adjacent the roll-receiving table is the cutting apparatus for cutting the shaped and packed roll into sections, such cutter being shown in the present instance as a frame having U-shaped bows 37, provided with supporting-arms 38, pivoted at their lower end to the machine-frame, the arms 38 being long, so as to have the pivotal point of the cutting-

frame at a distance from and centrally beneath the receiving-table and permit the cutting instrumentalities to move in substantially a straight line across the roll of butter to be severed. Mounted on the U-shaped bows 37 are bars 39, to which are adjustably secured, by means of set-screws, clamps 40, provided with eyes 41 to receive the ends of wires 42, which serve as severing devices, thumb-nuts 43 being provided for tightening the wires 42.

Normally the cutter-frame stands in the position shown in Fig. 8. When the roll has been forced out of the mold onto the semicylindrical cutting-table, said cutter is swung forward, the wires passing between the separated sections of the receiving-table and severing the roll, the U-shaped bows straddling the table-sections and preventing any part of the cutter-frame from striking the butter roll, while at the same time it carries the cutting-wires completely through the table and roll. It will be seen that the peculiar trough-shaped receiving-table holds the butter roll securely and prevents its displacement under the cutting thrust of the severing devices. The end of the shaped and packed roll is thus cut off into one or more sections or rounded lumps at a time, two being shown in the present instance, and further movement of the roll under the action of the plunger forces these severed sections off the table into pails or boxes, in which they are retailed or handled.

It will be understood that while I have described a particular construction and that the best now known to me I do not restrict myself to the details of construction shown and described except so far as I am limited by the terms of the appended claims, for it is obvious that the structure shown may be considerably varied within the range of mechanical skill without departing from the spirit of my invention.

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

1. In a butter-cutting machine and in combination, a cylindrical packing and shaping chamber formed of a single lapped sheet, means for forcing butter through said chamber, and means for varying the degree of pressure on the butter at the delivery end of said chamber.

2. In a butter-cutting machine and in combination, a cylindrical packing and shaping chamber formed of a single lapped sheet, means for forcing butter through said chamber, and means for varying the diameter of said chamber at its delivery end.

3. In a butter-cutting machine and in combination, a cylindrical packing and shaping chamber formed of a single lapped sheet, means for forcing butter through said chamber, and

means for compressing said delivery end to vary the diameter thereof.

4. In a butter-cutting machine and in combination, a cylindrical packing and shaping chamber, means for forcing the butter through said chamber, a lining for said chamber formed of a single lapped sheet and having a compressible delivery end, and means for compressing said lining to vary the diameter of its delivery end.

5. In a butter-cutting machine and in combination, a compressible cylindrical packing and shaping chamber, means for forcing butter through said chamber, means for compressing said chamber to vary the diameter of the delivery end of said chamber, a semicylindrical receiving-table to receive the butter roll from said chamber and hold it against lateral movement, and a cutter movable in a substantially horizontal path to cut a section from said roll.

6. In a butter-cutting machine and in combination, a compressible cylindrical packing and shaping chamber, means for forcing butter through said chamber, means for compressing said chamber to vary the diameter of the delivery end of said chamber, a multipart semicylindrical receiving-table to receive the butter roll from said chamber and hold it against lateral movement, and a cutter movable in a substantially horizontal path to cut a plurality of sections from said roll.

7. In a butter-cutting machine and in combination, a supporting-frame; a multipart semicylindrical receiving-table to receive the butter and hold it against lateral movement, a horizontally-movable U-shaped cutter-frame pivoted in operative relation to said table and adapted to straddle and completely embrace said table in making its cutting movement, and a plurality of cutting-wires spanning said U-shaped frame and adapted to traverse the interstices of said multipart table and divide the butter therein into sections.

8. In a butter-cutting machine, the combination with a semicylindrical receiving-table, of a swinging cutter comprising a relatively long supporting-arm pivoted centrally beneath said table and having a substantially U-shaped frame at its upper end adapted to embrace said receiving-table when the cutter is swung through its cutting-arc, and a severing-wire spanning the open end of said U-shaped frame.

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

RICHARD F. STEWART.

Witnesses:

WM. D. HUMPHREYS,
H. C. TIMBERMAN.