

Sept. 19, 1944.

B. H. BUNN

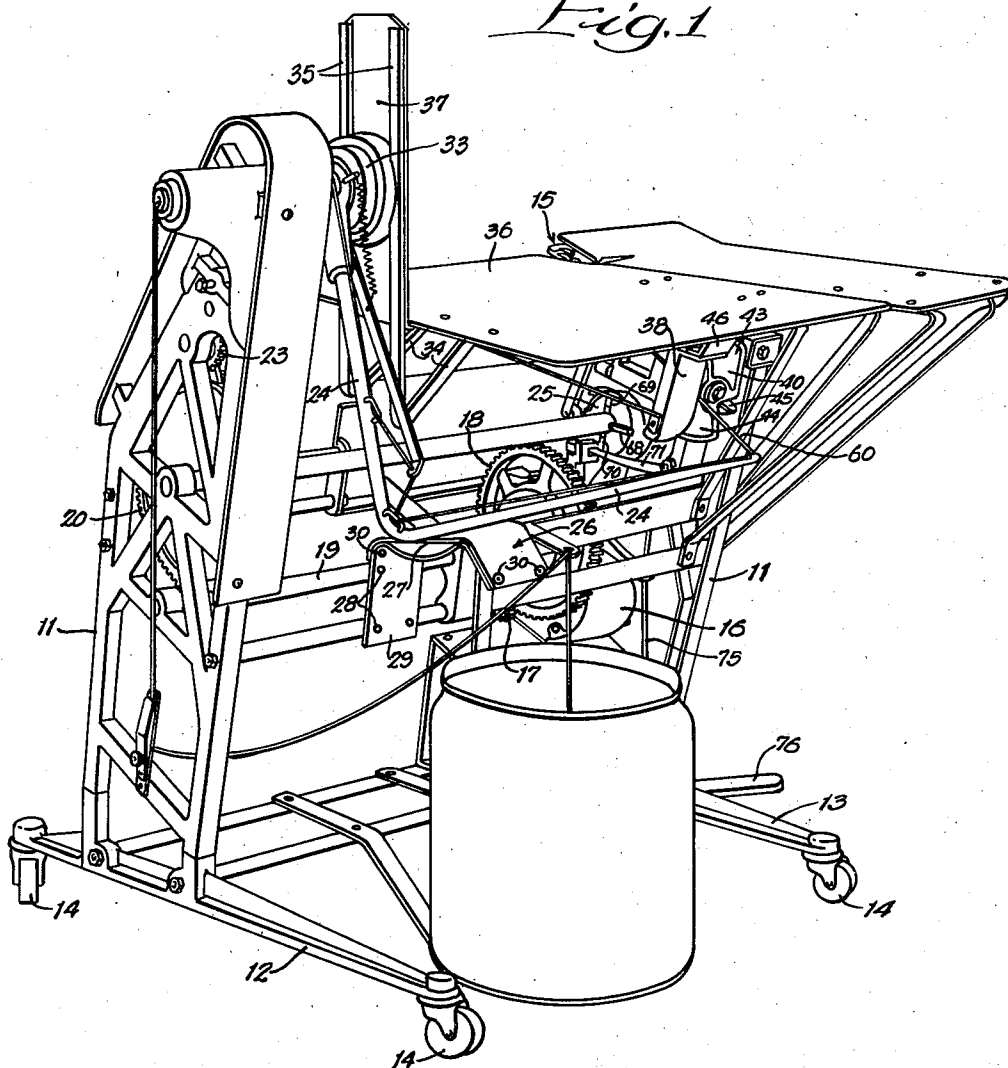
2,358,685

MACHINE TYING OF HAMS AND THE LIKE

Filed Dec. 5, 1941

4 Sheets-Sheet 1

Fig. 1



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Sept. 19, 1944.

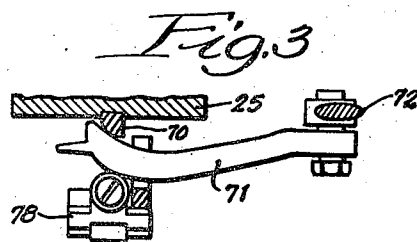
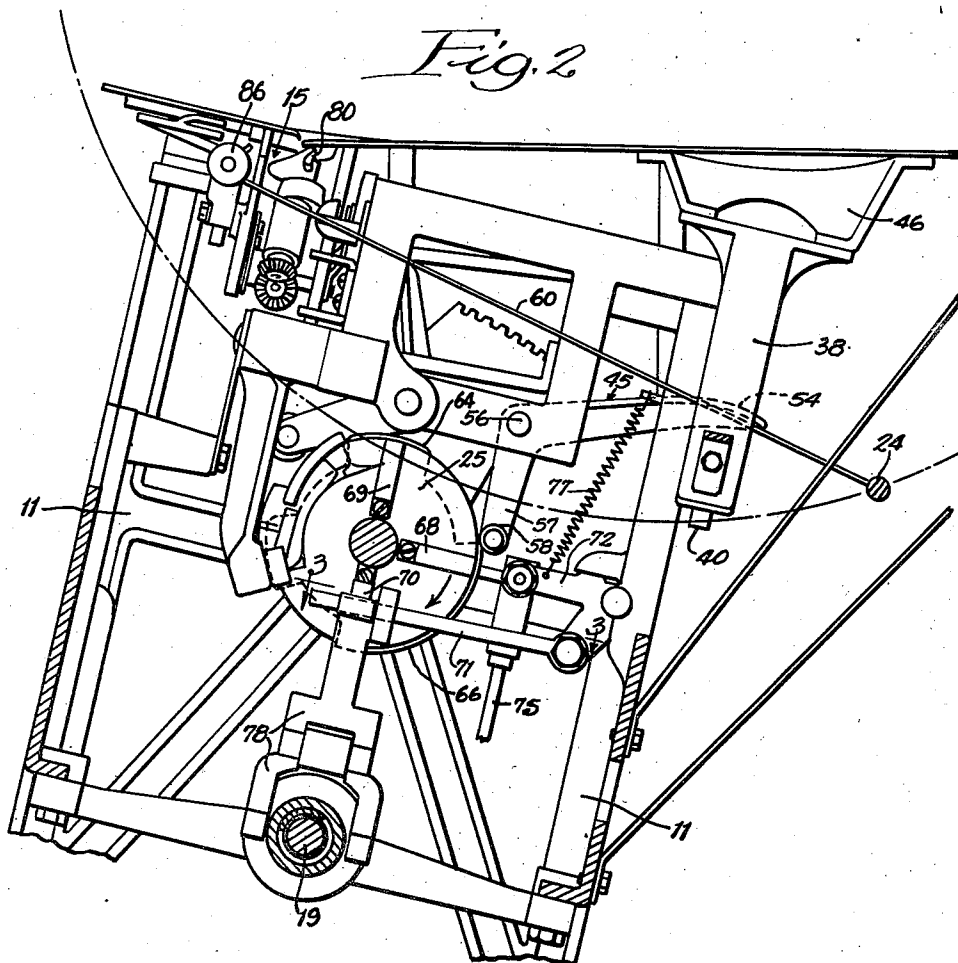
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MACHINE TYING OF HAMS AND THE LIKE

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4 Sheets-Sheet 2



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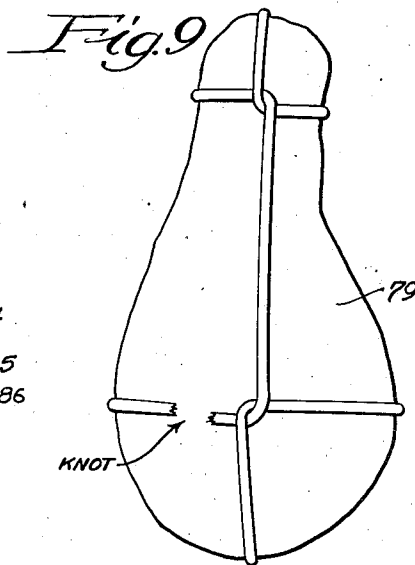
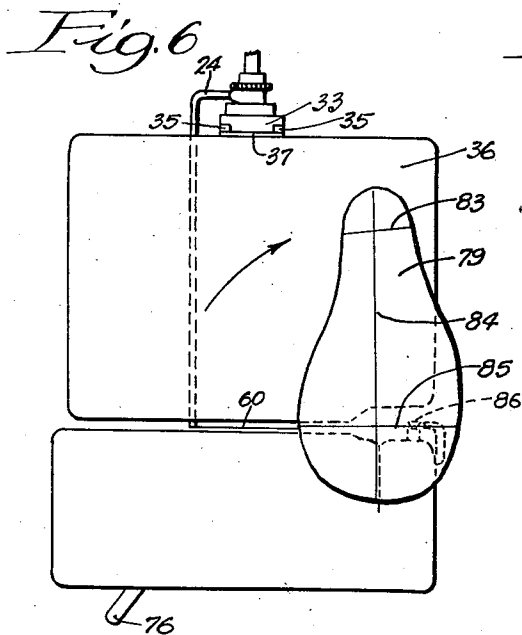
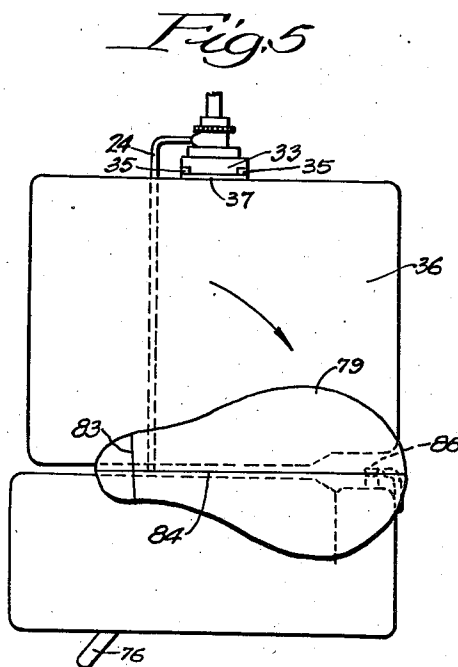
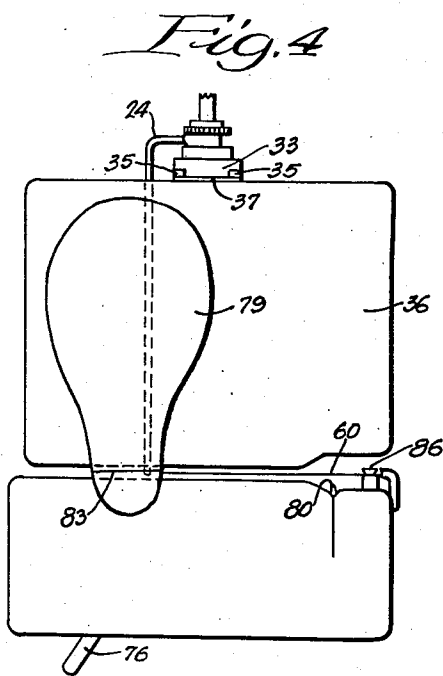
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MACHINE TYING OF HAMS AND THE LIKE

Filed Dec. 5, 1941

4 Sheets-Sheet 3



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2,358,685

MACHINE TYING OF HAMS AND THE LIKE

Filed Dec. 5, 1941

4 Sheets-Sheet 4

Fig. 7

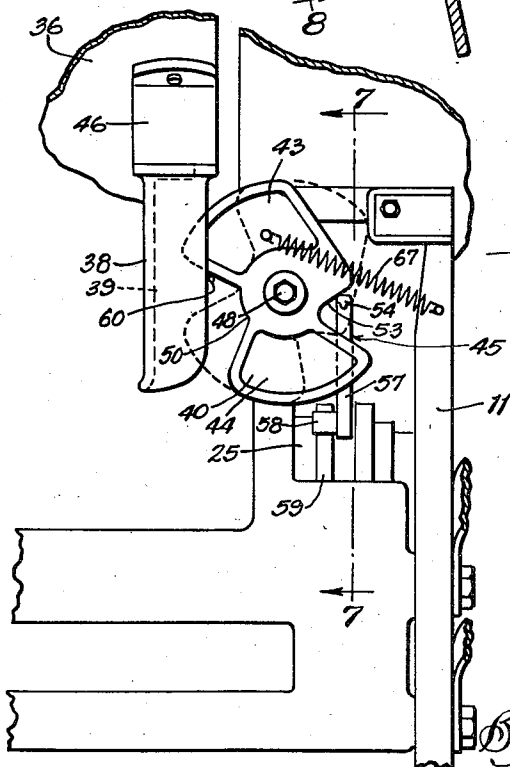
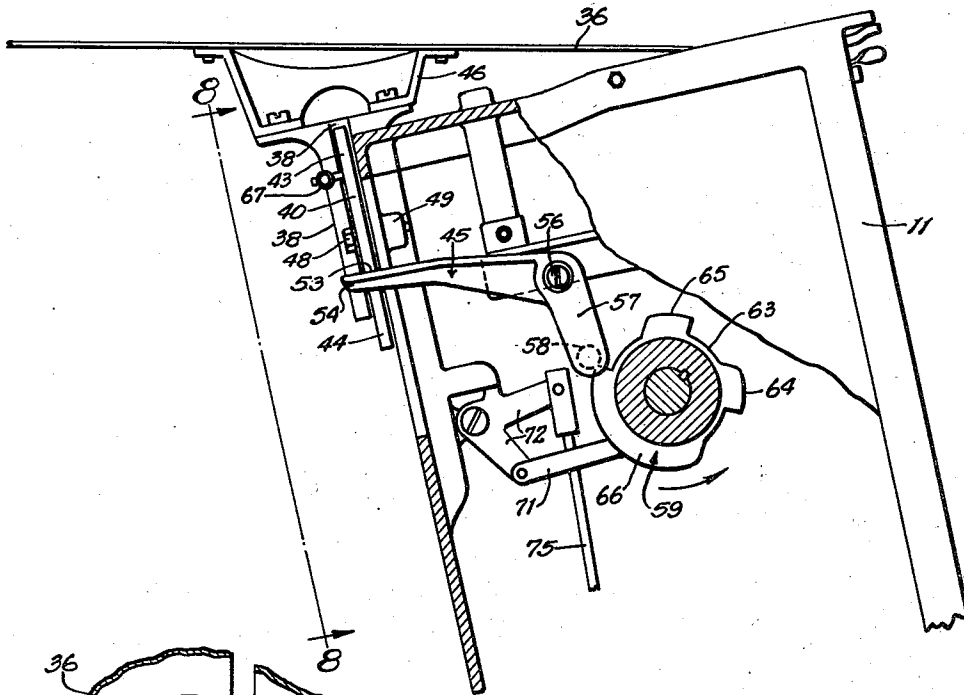


Fig. 8

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UNITED STATES PATENT OFFICE

2,358,685

MACHINE TYING OF HAMS AND THE LIKE

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Application December 5, 1941, Serial No. 421,735

12 Claims. (Cl. 100—31)

My invention relates to machine tying of hams or the like.

In the conventional hand tying of hams, the twine is so wrapped around the ham as to provide two longitudinally spaced transverse wraps and a longitudinal wrap, with the ends of the twine knotted together. One of the transverse wraps encircles the ham at or adjoining the bulge or maximum circumference of its large or butt end, and the other transverse wrap encircles the relatively small shank a short distance from its end.

Despite the manifold advantages of time saving and uniformity usually resulting from machine tying, the machine tying of hams has not heretofore been commercially practicable. With package tying machines which are in the most widespread use, being of the type disclosed in my patents, Nos. 1,606,290 of November 9, 1926, and 1,994,453 of March 19, 1935, no satisfactory technique has been found which would overcome the difficulties of maneuvering the ham through its several positions for wraps to avoid some seemingly inherent complications. One complication was that so bulky an article has interfered with the twine wrapping mechanism of a tying machine of moderate capacity. Another complication was the securing of a desired spacing between the transverse wraps without either objectionably shifting a wrap once laid or pulling the anchored end of the twine out of the twine catcher. A third complication arose from the essential structure of a tying machine of the type indicated. There the table is in two parts—a fixed part and an "island" part spaced from the fixed part by a gap through which the twine passes in the course of the wrapping. The "island" portion is suspended by a pivotal mounting concentric with the axis of the rotating twine arm. The knoter is beneath the dividing gap between the two parts of the table but instead of being beneath the axis of the pivotal support for the "island" table, it is horizontally shifted some distance from such a position. The third resulting objection to tying hams on such a machine has been that the weight of the heavy end of the ham has, in aligning it with the knoter, rested upon the "island" table at a considerable distance out from a position beneath its pivotal axis, thereby throwing an excessive strain upon the "island" table and its distant mounting. It also puts the "island" table under such an acutely unbalanced strain so as to retard, if not defeat, the passage of the twine on the under side of the plane of the table, past the twine trap or whatever equivalent device was employed.

By my invention I have provided a method or technique for tying a ham upon such a tying machine which avoids these complications and renders it entirely feasible for commercial use.

By my new method there is a minimum tendency for a displacement of the wraps even though with machine tying, unlike hand tying, there is no concatenation of crossing wraps on one side of the ham.

My invention is also applicable, in its broader phases, for the machine tying of elongated articles of more symmetrical form, such as bacon slabs, where the tying is to include two longitudinally spaced transverse wraps and a longitudinal wrap, with a single knotting of the twine.

Another feature of my invention is an improvement in a tying machine of the type mentioned rendering it more suitable for the tying of articles where the twine is to form two longitudinally spaced transverse wraps and a longitudinal wrap, with a single knot.

Another feature of my invention is an improved twine trap whereby the twine in the lower reach of its revolution, in being passed about the article or bundle as a wrap, may pass the abutments which hold the pivotally suspended or "island" portion of the table against rotation. One advantage of my improved twine trap is that the "island" table may more firmly be held against swinging movement by virtue of a positive stop which is maintained at all times, even during the passage of the twine. Another advantage is that the actuation of the twine trap is not effected by the twine itself, and therefore does not put any additional strain on the twine or on the twine arm and its drive mechanism.

An extremely simple but effective brake is provided to arrest the motion of the various parts in proper position if the drive is released at an intermediate stage of an operating cycle, the brake, however, being adapted to permit the parts to continue their courses throughout an entire cycle if the drive is not released.

Referring to the drawings, of which there are four sheets:

Fig. 1 is a view in perspective of a tying machine embodying my present invention, the view being from the rear and slightly to one side to show the embodiment of my invention;

Fig. 2 is a vertical fragmentary sectional view taken in a plane parallel to the plane of the wrap of twine formed by the machine around a package, said plane passing through the hub portion of a clutch member as it would appear looking

toward the right from the position illustrated in Fig. 1;

Fig. 3 is an enlarged fragmentary section taken on the plane of the line 3—3 of Fig. 2;

Figs. 4, 5 and 6 are diagrammatic illustrations which show, respectively, the method of application of the first, second, and third or final wraps of twine about a ham as performed on the machine illustrated;

Fig. 7 is an enlarged fragmentary transverse vertical sectional view taken as on a plane through the cam block of the machine illustrated in Fig. 1, and shows a butterfly twine trap for anchoring an island table against rocking motion;

Fig. 8 is a fragmentary section taken on the plane of the line 8—8 of Fig. 7; and

Fig. 9 is an inverted plan view of the wrapped ham showing the relation of the twine thereon.

Referring to the drawings in detail, a main frame 11 is supported on a base with laterally extending portions 12 and 13 to provide a wide stable support for the machine, the outer ends of the base portions being provided with swiveled casters 14.

The frame 11 is tilted toward the side opposite to that wherein the knotting mechanism, indicated generally by the numeral 15 in Fig. 2, is located. This tilting of the frame permits the twine arm to have a wider sweep while still maintaining its proper relation to the knoter and permits the use of a considerably larger package supporting surface without increasing the height of the pivotal mounting of the twine arm. An additional advantage in this construction lies in the fact that it positions the knoter to one side of the pivotal axis of a pivotally suspended table 36 which, as is explained fully later in this specification, provides maximum facility, and lack of undue strain on the parts of the machine, in wrapping a ham or the like.

The principal features of the twine wrapping and knotting mechanism of the illustrated machine in general may be similar to the corresponding parts on the tying machines disclosed in my patents, Nos. 1,606,290 and 1,994,453. To avoid needlessly complicating the present case, therefore, the reader is referred to those patents for an understanding of the structure and operation of these mechanisms which include the electric motor, the clutch, clutch shaft pinion, mutilated gear, drive gearing to the twine arm, the twine arm and the knotting mechanism and its means and method of operation. These parts will be briefly identified in the accompanying drawings to facilitate understanding of the present invention.

While I show the knotting mechanism 15 of my prior patents above set forth, and employ the term "knotting" in the specification, I wish it understood that this invention is not limited to use with such knotting mechanism but may be used with other devices for knotting or otherwise securing together the ends of the completed wraps of twine.

The motor 16, through its spur gear 17, is in continuous driving relation with a gear 18 having releasable clutch engagement with the shaft 19 journaled in the frame. The clutch shaft 19 has a pinion keyed thereto which is in constant meshed engagement with a partially mutilated gear 20 which is in intermittent toothed engagement with a twine arm drive gear 23. The twine arm drive gear has driving connection with the twine arm 24 substantially as illustrated in my

copending application Serial No. 430,253, filed February 10, 1942, the gear ratio between the mutilated gear 20 and the twine arm 24 preferably being such that for each complete single revolution of the mutilated gear, the twine arm 24 will be rotated three complete revolutions.

The cam block 25 is keyed to the same shaft as the mutilated gear 20, and a complete revolution of the cam block constitutes a cycle of operation of the machine. Such cycle may terminate with the automatic knotting of the twine, severing the twine between the knoter beak and the twine catcher, and withdrawing the reach of twine between the package and the twine catcher from the twine catcher to free the package for removal.

A brake 26 is illustrated in Fig. 1 to engage the twine arm 24 on the completion of each wrapping operation. This brake comprises a relatively heavy strip 29 of sheet steel, bent transversely at its center at an angle slightly less than ninety degrees, and secured, as by bolts 28, to the frame 11, with one leg thereof upright, and the upper portion projecting outwardly. The upper portion is bowed concavely to its upper surface, and a strap 27 which may be of leather is secured as by rivets 30 to subtend the arc of the concave portion of the strip 29, the strap 27 being held in tension by the metal band. The strap is positioned to engage the twine arm frictionally at the end of each rotation thereof, being positioned substantially tangentially to the orbit of the twine arm. The degree of friction may be adjusted by bending the metal of the strip 29 up or down for causing the strap 27 to engage the twine arm with greater or less frictional effect as required. This brake has proved to be extremely effective in preventing overrun of the twine arm and in bringing the parts properly to rest, particularly at the end of the first and second wraps when the knoter mechanism is not operated, at which time there is little resistance to the operation of the parts and their inertia otherwise might cause objectionable overrun.

An island table support member 33 is journaled on the hub of the twine wrapping arm 24 to permit free relative rotation of the wrapping arm with respect to the island table support member 33. A pair of table support brackets 34 and 35 are secured to the member 33 to depend vertically therefrom, extending down below the level of a table top member 36, which may be of sheet metal, the bracket members there being bent upwardly and extending along the under side of the table top member to comprise a support therefor.

A plate 37 of relatively heavy sheet metal, which may be steel of approximately 14 U. S. gauge, is secured to the front faces of the bracket members 34 and 35 and extends downwardly to the level of the table top member 36 where it is bent at right angles and extends horizontally along the under surface of the table top member 36 to comprise a support therefor. As is apparent from the illustration in Fig. 1, the center of gravity of this island table structure is well below its point of pivotal support on the hub of the twine arm 24, but in order to prevent displacement or rocking of the table, as may occur in the handling of heavy packages such as hams thereon, the table is anchored to the frame by means of a twine trap illustrated in Figs. 1, 2, 7 and 8.

This twine trap comprises in general three

major parts, namely, (1) a channeled member 38 secured to the under side of the table top 36 with a channel 39 therein facing toward the plane of the wrap of twine during a wrapping operation, (2) a "butterfly" anchoring member 40 having its two wing portions 43 and 44 adapted alternately, and with a slight overlap, to enter the channel member to secure it against lateral movement, and (3) a cam actuated lever 45 adapted to rock the butterfly member back and forth at required points in the cycle of operation to receive and pass the twine as it is carried around a package during a wrapping operation.

The channel member 38 for receiving the wings of the butterfly member (see Figs. 1 and 2) is mounted with its channel in a plane parallel to the sides of the tilted frame 11 by means of a cast metal bracket 46 secured to the underside of the table top member 36. The butterfly trap member 40 is pivotally mounted on a stud 48 threaded into a boss 49 on the frame 11. The wings 43 and 44 of the butterfly anchor member are adapted alternately to enter and leave the channel 39, as the butterfly member is rocked back and forth by the lever 45 and a coil spring 67. The wings are separated by a notch 50 of a size to free each of the wings from the channel when the other is inserted therein, the notch being of such arcuate dimension, however, as to permit one of the wings to enter slightly before the other leaves the channel.

A notch 53 on the opposite side of the butterfly anchor member from the notch 50 is adapted to receive an arm 54 of the cam operated bell crank lever 45 which is pivoted at 56 to the frame 11. The other arm 57 of the bell crank lever is provided with a roller 58 which is in rolling contact with the periphery of a three-step cam 59 on the cam block 25. (See Figs. 7 and 8.)

When the roller 58 is supported by one of the three steps or high points on the cam 59, the bell crank lever 45, as illustrated in Figs. 7 and 8, is maintained with the arm 54 thereof, which is in engagement with the butterfly member 40, in a raised position, thereby moving the butterfly member pivotally to the solid line position illustrated in Fig. 8. This operation moves the lower wing 44 clear of the channel member 38 and permits the reach of twine 60 to pass upwardly into the trap from the open lower end thereof. As the cam roller 58 passes onto a low portion 63 of the cam between any two of the three step portions 64, 65 and 66 of the cam, a coil spring 67, held in tension between the butterfly member 40 and the frame 11, moves the butterfly member pivotally in a clockwise direction to the dotted line position of Fig. 8, thereby freeing the upper wing 43 from the channel and releasing the twine for passage upwardly from the trapped position illustrated in Fig. 8.

The cam steps 64, 65 and 66 are arranged on the cam block 25 so as to move the butterfly member from the solid to the dotted line position of Fig. 8 approximately at the moment the twine arm begins a wrapping operation. It will be noted in Fig. 1 that the butterfly member 40 is in the dotted line position of Fig. 8 which indicates that with the cams set as in the present illustrated embodiment of the invention, the wrapping arm has started its wrapping operation, and the twine therefore is released for the upward movement required in a wrapping operation.

The cam step 66, it will be noted in Fig. 7, is longer than the other two cam steps. The reason

for this increased length of the third and last cam step 66 is to maintain the butterfly member in the solid line position of Fig. 8 during the last or third revolution of the twine arm 24, and also during the knotting operation which follows.

It will be noted in Figs. 1 and 2 that the cam block 25 has three radially disposed cam members 68, 69 and 70 projecting laterally from a side face thereof. These cam members are similar to the members 108 and N108 of my Patent No. 1,994,453, and function in a generally similar manner to engage, at successive intervals throughout the rotative cycle of the cam block 25, a clutch operating link 71 to release the clutch.

The clutch operating link as illustrated in Figs. 1, 2 and 3, is connected to one arm of a bell crank lever 72, pivoted in the frame 11, the other end of the bell crank lever being connected by means of a link 75 to a foot treadle 76. A coil spring 77 retained in tension between the frame 11 and an arm of the bell crank lever 72 normally holds the treadle in a raised inoperative position which forces the link 71 to the position of Fig. 3 to move the clutch operating arm 78 to its inoperative or releasing position when the link 71 is engaged by one of the cam members 68, 69 or 70.

The cams 68, 69 and 70 are located on the side of the cam block 25 so as to operate the clutch arm 78 to release the clutch upon completion of each of the first two complete revolutions of the twine arm 24, and also upon completion of the third revolution of the twine arm followed by the operation of the knotting and severing mechanism. It will be noted in this connection that the distance between the cam members 69 and 70 in the direction of rotation of the cam (see Fig. 2), is considerably greater than such distances between the cams 70 and 68 and the cams 68 and 69. The reason for this difference in angular spacing of these cam members is, of course, due to the fact that the knotting operation occurs after the completion of the third revolution of the twine arm. During this additional pivotal movement of the cam block 25, the twine arm drive gear 23 is over the mutilated or untoothed portion of the mutilated gear 20 so that no rotative movement of the twine arm occurs during this additional pivotal movement of the cam block.

The method of wrapping a ham with twine by my improved machine is illustrated in Figs. 4, 5 and 6. It will be understood by those familiar with the art that the ham initially may be wrapped with paper, cloth or the like, before wrapping with twine. Since such preliminary step is well known to the art, the present specification will not be burdened with a description thereof. Suffice it to say that the ham may be preliminarily wrapped with a suitable covering, if desired.

The initial positioning of the ham on the table and the method of turning the ham between successive wraps of twine is important, in fact essential, to the successful accomplishment of my method. A ham 79 is positioned initially as illustrated in Fig. 4 with its large or butt end on the island table 36, with the shank end of the ham in the plane of the desired initial wrap of twine. The ham is located on the tables so that the shank is to the left (as illustrated in Fig. 4), from the knotting beak 80 a distance slightly greater than the distance desired between the two transverse wraps of twine. This location of the ham brings its heavy butt end onto the tilting island table beneath its axis of pivotal support which is the

position of maximum stability. Since most hams have one side which is slightly concave while the side opposite thereto is straight, or convex, it is preferable to position the ham with the concave side down for the initial wrap so that the subsequent crossing of the ends of this initial wrap will secure the longitudinal wrap against lateral displacement in subsequent handling of the ham. The treadle 76 then is depressed by the operator and the initial wrap 83 of twine is carried around the shank of the ham as illustrated in Fig. 4.

The ham then is turned to the right through an angle of ninety degrees about a vertical axis substantially through the center of the initial wrap 83, the ham being turned clockwise to cross the ends of the wrap of twine, thus bringing the ham to the position illustrated in Fig. 5. It will be noted at this stage that the initial positioning of the ham has accomplished a further advantage in preventing the ham when thus turned from projecting out into the path of the twine arm in passing the twine around the ham longitudinally thereof.

It is important during this and the subsequent turning movement of the ham that the ham be not shifted laterally, with respect to the axis of the twine arm, since, if the ham is moved away from the knotter the twine end will be pulled loose from the twine catcher 86 which will make it impossible to complete the wrapping and tying operations, while if the ham is shifted toward the knotter it will produce objectionable slack in the reach of twine from the twine catcher to the ham.

Thus turning the ham ninety degrees brings the longitudinal center plane 84 of the ham in the plane of the wrap of the machine and brings the transverse butt plane of the ham, where the third and final wrap 85 of twine will subsequently come, slightly to the left of the knotter beak as can be seen from Fig. 5. The treadle 76 is again depressed to pass the second wrap 84 of twine around the ham lengthwise thereof as illustrated in Fig. 5.

The ham is then again turned ninety degrees in a clockwise direction to the position illustrated in Fig. 6, the axis of turning movement preferably being the line of intersection of the plane of the second wrap 84 and the desired plane of the third wrap as indicated by the wrap line 85 in Fig. 6. The foot treadle is again depressed and the third and final wrap 85 of twine is passed transversely around the butt of the ham as illustrated in Fig. 6, and the customary knotting operation is automatically performed and the twine severed and released from the twin catcher 86 in the manner described in my prior Patent No. 1,606,290.

While my present invention is particularly adapted for the tying of hams, it may, nevertheless, be used for the tying of numerous other types of packages. Since the packers of ham also customarily are packers of bacon, it is an important consideration that the mechanism of the present invention also is especially well adapted for the tying of slabs of bacon. The provision of the large table makes it easy to handle the sides of bacon in manipulating them for the performance of the tying operations, which in general are similar and are performed in the same sequence as those for the tying of hams.

In addition to being adapted for the tying of hams and bacons, the present machine also is well adapted for the tying of large numbers of miscellaneous packages of various sizes and shapes, some of which may be comparatively heavy. For these reasons the machine embodying the present invention is well adapted for use by mail order houses, department stores and the

like. The butterfly trap arrangement provides a secure anchorage for the island table without interference with the travel of the twine during a wrapping operation, and permits the wrapping of large and small packages without change or adjustment of the mechanism.

In case it is desired to wrap a package with but two wraps of twine, the treadle may be depressed permitting the twine arm to rotate through one revolution before inserting the package. This action does not withdraw any twine and leaves the twine arm and other parts, with the exception of the cam block, in their original positions. The cam block, however, is rotated through its first cycle of operation so that the cam member 68 engages the clutch operating link 71, leaving but two more rotations of the twine arm available to complete the cycle. If desired to form but a single wrap of twine around a package, the treadle may be depressed and held down to permit the twine arm to travel through two complete revolutions before inserting the package, whereupon, after the package is inserted, the knotting operation will be performed upon the completion of a single wrap of twine around the package, this being the third revolution of the twine arm in its cycle of three. It will thus be seen that either one, two or three wraps of twine may be made around a package with the wraps arranged in various manners to suit the requirements of the operator or the shape and size of the package being wrapped.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

I claim:

1. The method of wrapping a ham in a package tying machine having a fixed knotting zone and a three-wrap fixed orbital twine cycle, which comprises inserting the shank of a ham into the orbit of the twine wrap in laterally offset position from the knotting zone, passing a single wrap of twine about the ham shank, stopping the twine motion, turning the ham about the vertical median line of the wrap as an axis through an angle of ninety degrees to cross and interlock the terminal portions of the twine wrap and carry the ham butt above the knotting zone, passing a second wrap of twine about the longitudinal median vertical plane of the ham, stopping the twine motion, turning the ham similarly to the first turning about the juncture of the vertical plane of the second wrap and the desired vertical plane of a third wrap as an axis extending through the knotting zone, passing a third wrap of twine about the ham, and knotting the ends of the twine together to secure the three wraps of twine in position.

2. The method of wrapping a ham in a package tying machine having a fixed knotting zone and a three-wrap fixed orbital twine cycle which comprises inserting the shank of a ham into the orbit of the twine wrap in laterally offset position from the knotting zone, passing a wrap of twine about the ham shank to define a plane, turning the ham through an angle of ninety degrees about the intersection of the plane of the first wrap and the plane of a desired second wrap as an axis to swing the ham butt into overlying relation to the knotting zone and cross the terminal reaches of twine comprising the wrap, passing a

continuation of one of said terminal reaches as a second wrap of twine longitudinally about the ham in the desired second plane, again turning the ham through an angle of ninety degrees about the intersection of the plane of the second wrap and the plane of a desired third wrap as an axis to cross the terminal reaches of the twine, passing a further continuation of said one of said terminal reaches as a third wrap of twine about the ham butt in the desired third plane, and knotting the terminal reaches of the twine comprising the third wrap to secure the three wraps of twine in position in their desired planes.

3. A method of tying hams on a tying machine having a fixed table and a pivoted island table separated by a twine gap and in which the knoter is offset horizontally from the axis of the pivotal support of the island table; which method consists in placing the ham with its longitudinal axis substantially parallel to and close to the vertical plane of the pivoted island table support, with the shank of the ham overlying the twine gap, and the butt end thereof on the island table close to the vertical plane of the pivotal axis of the island table and making an initial wrap of twine about the shank, swinging the ham to cross the twine ends of the wrap and to bring the longitudinal axis of the ham over the twine gap with the butt end of the ham substantially over the knoter, making a second wrap of twine about the longitudinal axis of the ham, and again swinging the ham to cross the twine ends of the longitudinal wrap while retaining the butt of the ham substantially over the knoter to be at least partly supported by the fixed table with the small shank end of the ham on the island table horizontally spaced from the vertical plane of the pivotal axis of the island table for the final wrap and terminal knotting of the twine.

4. In a ham tying machine having a fixed table and a suspended island table, a pivoted wrapping member mounted adjacent the island table and having the island table suspended coaxially therewith, a twine trap mounted to operate between the island table and the fixed table, said twine trap comprising a recessed member carried by the island table, said recessed member having a recess therein facing the fixed table, a pair of projectable elements carried by the fixed table, and adapted alternately to enter the recess in the recessed member at different successive points in the twine wrapping operation to anchor the island table against pivotal movement, and cam operated means coordinated with the wrapping member and operatively associated with the projectable elements, initially to withdraw one of said elements from the recess and insert the second of said elements into the recess at a point in the twine wrapping operation when the reach of twine passes said one element, and sequentially to restore said one element and withdraw the second element as the reach of twine passes the second element.

5. In a package wrapping and tying machine having a wrapping arm, a fixed table, an island table pivoted within the orbit of the wrapping arm, and cam controlled means associated with the wrapping arm, table anchoring means extending into the path of a reach of twine carried by the wrapping arm during a wrapping operation, said anchoring means comprising a pair of coordinated locking members extending between the fixed and the island tables, means for releasing one of said locking members after the other of said locking members is in locking posi-

tion, and cam controlled means cooperatively associated with the wrapping arm cam controlled means to remove one of said locking members to receive and pass a reach of twine substantially as the reach of twine attempts to pass said locking members, and sequentially to remove the second of said locking members to pass the reach of twine clear of said locking members.

6. In a package wrapping and tying machine having a wrapping arm adapted to carry a reach of twine around a package, a fixed table, an island table pivoted within the orbit of the wrapping arm, and cam controlled means associated with the wrapping arm; table anchoring means extending into the path of a reach of twine during a wrapping operation, said anchoring means comprising a channeled member mounted on the island table with the channel thereof toward the fixed table, a tilting anchor member pivoted with respect to the fixed table and having a pair of extensions alternately insertable into said channel to interlock said fixed and said tilting table, and cam controlled means operatively associated with said wrapping arm cam controlled means to remove alternately first one and then the other of said extensions from the channeled member at a predetermined stage of the operation of the wrapping arm, to receive and pass a reach of twine carried by the wrapping arm.

7. In a package wrapping and tying machine having a wrapping arm adapted to carry a reach of twine around a package, a fixed table, an island table pivoted within the orbit of the wrapping arm, and cam controlled means associated with the wrapping arm; table anchorage means extending into the path of a reach of twine during a wrapping operation, said anchoring means comprising a channeled member mounted on the island table with the axis of the channel thereof extending vertically and facing toward the fixed table, a butterfly anchoring member pivoted to the fixed table in a generally upright plane and having the wings thereof adapted alternately to enter the channel of said channeled member to interlock said tables, and cam controlled means operatively associated with said wrapping arm cam controlled means to move said butterfly member pivotally to remove alternately first one, then the other of said wings from said channeled member at a predetermined stage of the operation of the wrapping arm to receive and pass a reach of twine carried by the wrapping arm.

8. In a package wrapping and tying machine having means for passing a reach of twine around a package, a fixed table, an island table pivotally supported adjacent the fixed table and separated therefrom by a space in which the twine passes during a wrapping operation, table anchoring means extending from the fixed table to the pivotally supported island table in the path of the twine during a wrapping operation, and actuating means operatively associated with the twine wrapping means and with the anchoring means alternately to withdraw and restore first one then another portion of the anchoring means from its anchoring position to pass the twine without releasing anchoring engagement.

9. The method of tying a ham which consists in placing the ham horizontally with its axis perpendicular to a vertical wrapping plane and with the plane intersecting the shank end of the ham, while maintaining the ham in that position, placing a reach of twine transversely about the shank in said wrapping plane, then horizon-

tally swinging the ham about the region of the wrapped shank as a pivot to bring the longitudinal axis of the ham into the wrapping plane, then placing a continuing reach of the twine longitudinally about the ham in the wrapping plane, thereafter horizontally swinging the ham about the butt as a pivot in the same direction as the first mentioned swinging to a final tying position perpendicular to the wrapping plane and with the shank extending in a direction opposite from its direction in the first mentioned position, and in the final tying position placing a continuing reach of the twine transversely about the butt of the ham in said wrapping plane, and then, also in the final tying position, knotting the ends of the twine together at the bottom of the butt and substantially in the wrapping plane.

10. In a package wrapping and tying machine having means for passing a reach of twine around a package, a fixed table, an island table pivotally supported adjacent the fixed table and separated therefrom by a space in which the twine passes during a wrapping operation, means for anchoring the island table relative to the fixed table and extending from one to the other of the tables across said space in the path of the twine during a wrapping operation, said anchoring means having two table anchoring relationships, and actuating means operatively associated with the twine wrapping means and with the anchoring means for actuating the anchoring means from one to the other of said table anchoring relationships in timed relation to operation of the twine wrapping means to pass the twine without releasing the island table from its anchored condition.

11. In a package wrapping and tying machine having means for passing a reach of twine around a package, a fixed table, an island table pivotally supported adjacent the fixed table and separated

therefrom by a space in which the twine passes during a wrapping operation, table anchoring mechanism comprising a member fixed to one of the tables and a member mounted in association with the other table for cyclical movement relative to the fixed member but having continuous anchoring inter-relationship therewith, said pivotally mounted member extending across said space into the path of the twine during a wrapping operation, and actuating means operatively associated with the twine wrapping means and with said pivotally mounted anchoring member for actuating the latter in timed relation to operation of the wrapping means for passing the twine during a wrapping operation without releasing the island table from its anchored condition.

12. The method of wrapping a package which consists in anchoring twine whereby the twine may be wrapped in a wrapping plane contiguous to the point of anchoring, locating one end of the package in said plane at a position remote from the point of anchoring, wrapping the twine in said plane around said end of the package, rotating the package around approximately a right angle in a direction to cross the ends of the wrap and to locate the length of the package in the wrapping plane with its other end adjacent the point of anchorage, wrapping the twine in said plane around the package lengthwise thereof, rotating the package through approximately a right angle to cross the ends of the longitudinal wrap and to locate said other end of the package in said plane and adjacent the point of anchorage, wrapping the twine in said plane around said other end of the package and securing the free end of the last wrap to the anchored end of the twine.

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