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[54] DEVICE FOR PACKING POULTRY

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17/44.1

[51] Int. Cl. A22c 21/06

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53/124 D, 124 A, 258, 260, 261, 116, 393;
17/11, 44.1; 294/103, 104, 87 R, 86.3;
99/485; 214/1 BB

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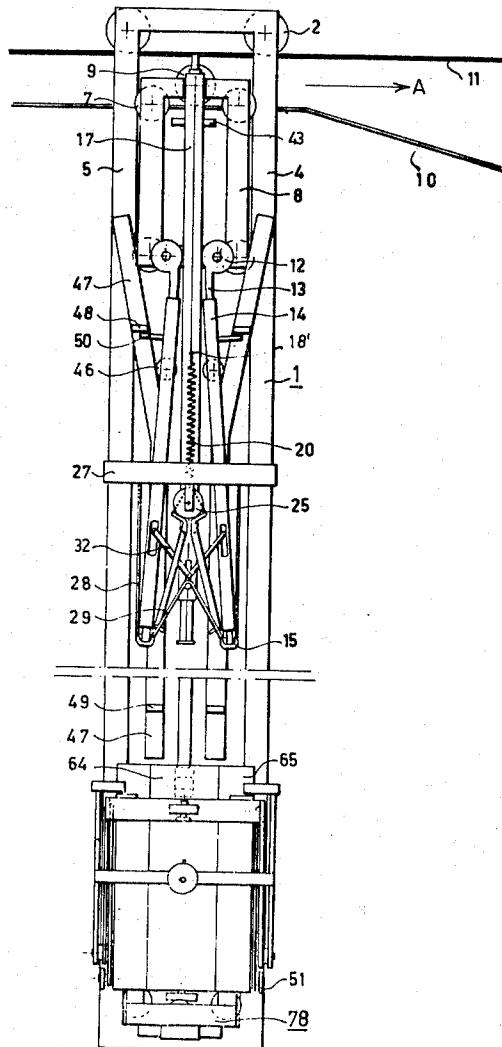
Attorney, Agent, or Firm—Larson, Taylor & Hinds

[57] ABSTRACT

The invention relates to a device for packing poultry. A difficulty often occurring when a chicken or such like is automatically put into a bag is, that the legs may protrude, tear the bag or at least when not rightly folded against the breast, will deteriorate the attractive display of the packed chicken.

According to the invention retaining means lock the legs in claws, which allows pushing the legs by means of the claws into the bag in the right position. A further improvement consists in pressing on the cloaca of the chicken in order to stretch it when pushed in the bag. Also the claws are moved from a first spaced position in which it is easy to suspend a chicken on the claws into a position in which they are close to each other in order to bring them rightly into the bag.

11 Claims, 13 Drawing Figures



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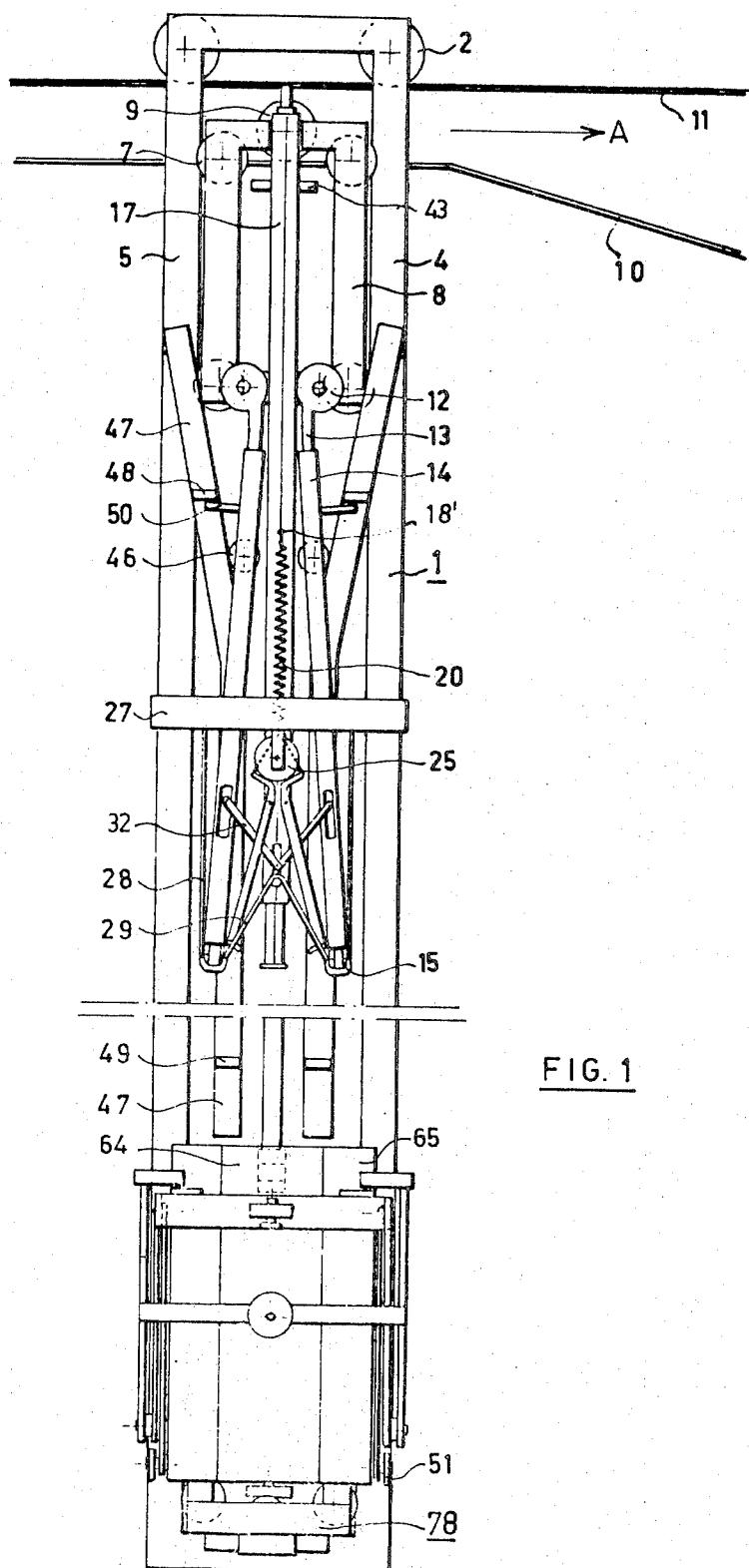


FIG. 1

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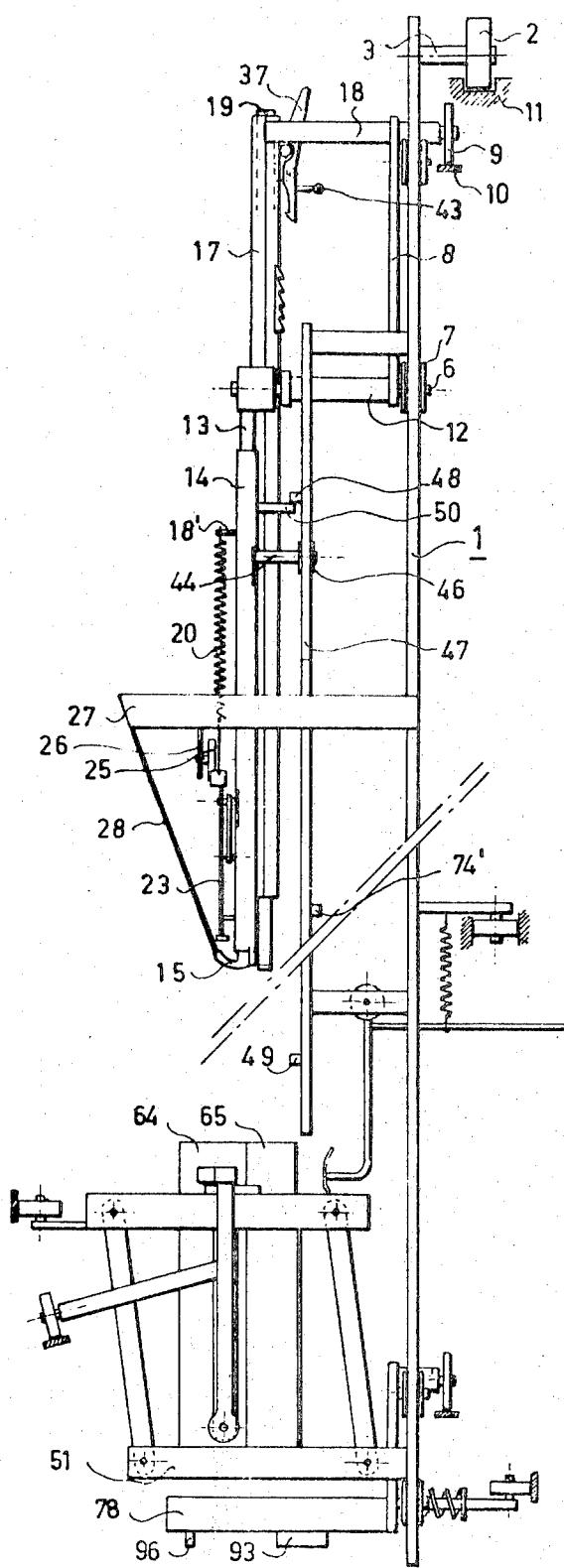
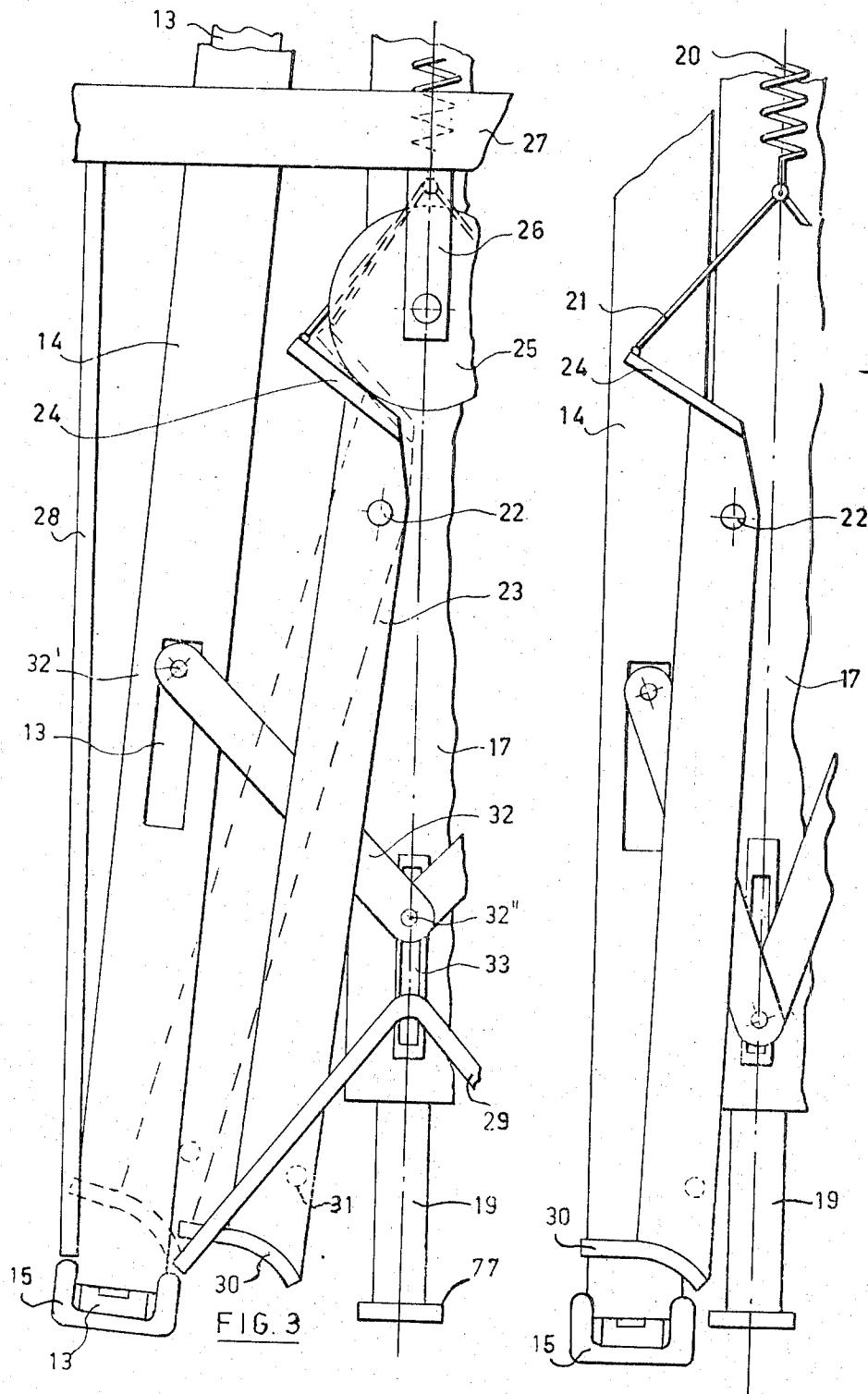


FIG. 2

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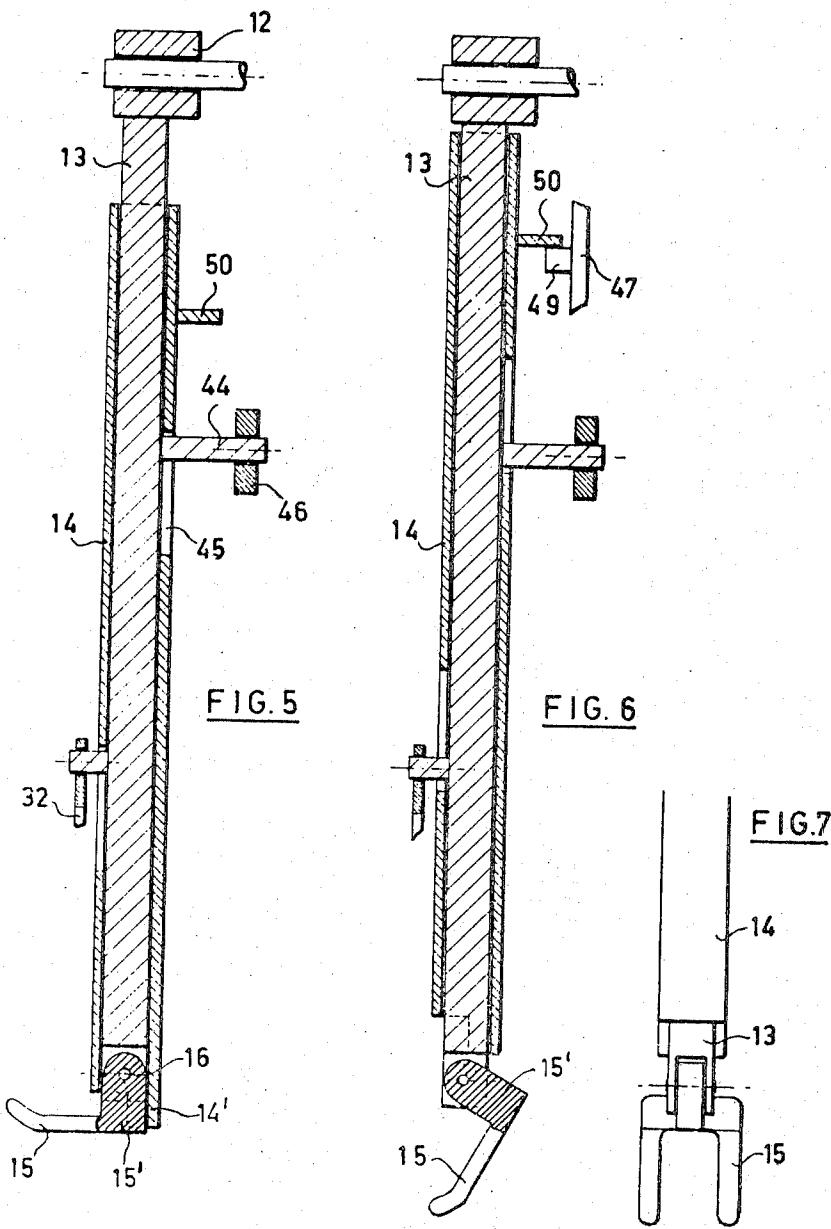
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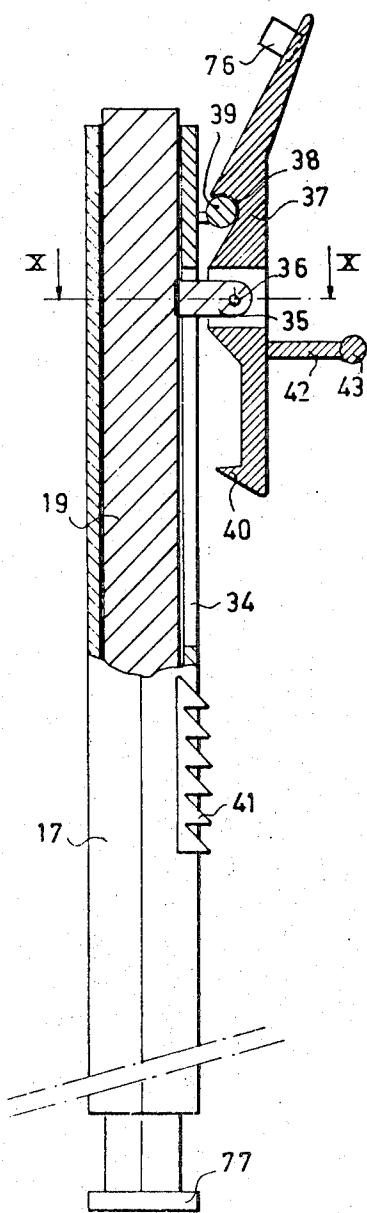


FIG. 8

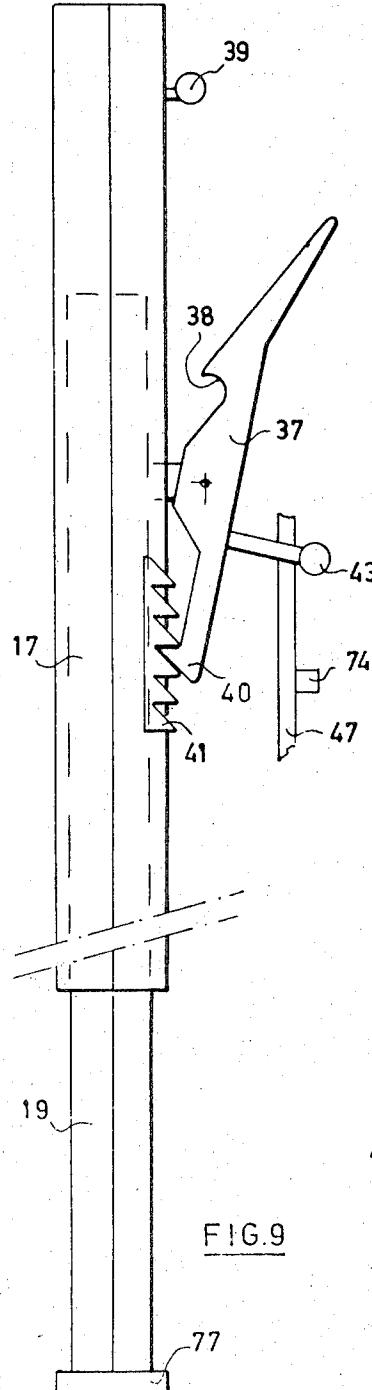


FIG. 9

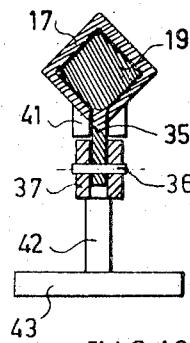


FIG.10

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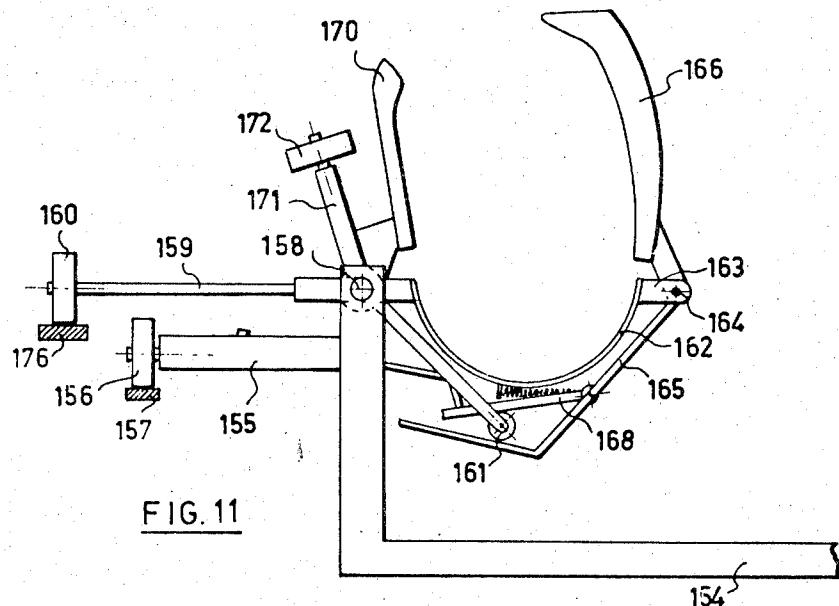


FIG. 11

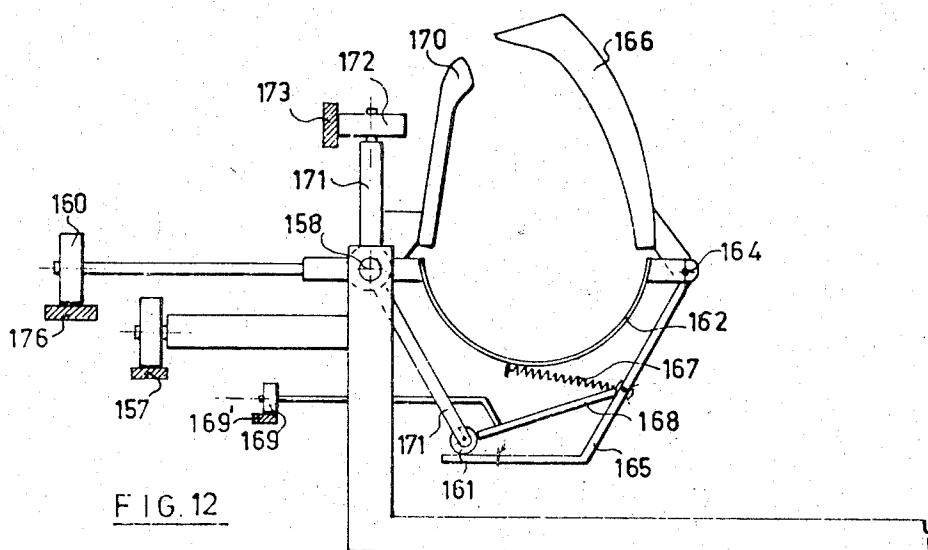


FIG. 12

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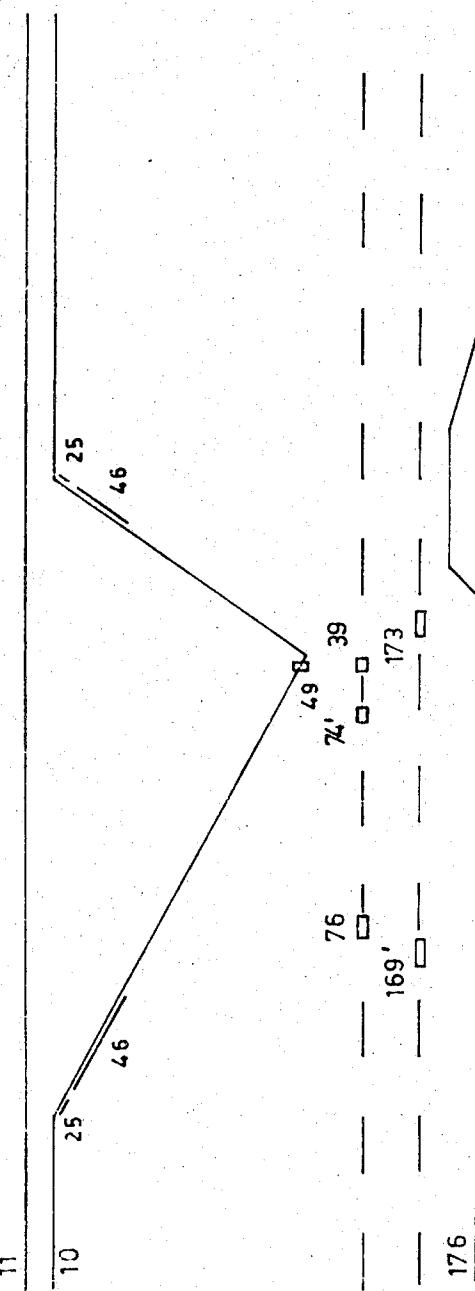


FIG. 13

DEVICE FOR PACKING POULTRY

The present invention relates to a device for packing poultry, provided with a modelling apparatus, an attaching means for a chicken and a means for moving said attaching means into said modelling apparatus.

A major problem with packing poultry is to see to it that the legs are folded against the breast. In this natural position of the legs it is not possible that they protrude in an undesired way, which may cause difficulties with closing a bag containing the poultry or even tearing the bag. Also the display may be far from attractive.

It is a first aim of the invention to provide a device for packing a chicken in which the legs of a chicken are positively held.

Herewith by a chicken any form of poultry is to be understood, suitable for packing, e.g. so-called slaughter-chickens, young cocks, ducks or duck's chickens and so on.

A further aim of the invention is to provide a device for packing a chicken in which the legs of the chicken are folded against the breast.

Still a further aim of the invention is to provide a device for packing a chicken in which "springing back" of the legs before the packing has been closed, is avoided.

Still a further aim of the invention is to provide a device for packing a chicken that is reliable and does not require any additional power sources such as pneumatic, hydraulic or electric motors or electrical or electro-magnetical control means.

According to the invention a device for packing poultry, provided with a modelling apparatus, an attaching means for a chicken and means for moving said attaching means into said modelling apparatus, is characterized in that the attaching means contains two claws adapted to receive the leg joints of a chicken and a retaining means movable with respect to said claws for retaining said joints in said claws.

A preferred embodiment of the invention is characterized in that the retaining means for each claw contains a pivotally mounted lever having a curved portion at its lower side, a mechanical biasing means being connected to said lever urging it into the position in which said curved portion is above the related claw.

A further preferred feature consists in that means are provided for moving said claws towards each other.

In order to facilitate withdrawing the claws from the chicken's legs it is provided according to a further feature of the invention that claws are pivotally mounted on support members that are slidably mounted with respect to claw locking members so that in a first relative position of said support and claw locking members (FIG. 5) the claws are locked in a position adapted to support a chicken and in a second relative position (FIG. 6) the claws can freely pivot to release a chicken suspended on them.

In many instances it is desired to positively hold the chicken in the bag, especially if "springing back" of the legs or air enclosures have to be obviated. Accordingly, it is provided that a support means is located below said claws, said support means being movable from a first position (FIG. 11) in which they can receive a chicken suspended on the claws into a second position in which they retain such a chicken.

A further improvement of the invention consists in providing a pressure member for pressing a chicken suspended on said claws downwards.

In the following the invention is further elucidated by means of the accompanying drawings, in which:

FIG. 1 is a front view of a device according to the invention;

FIG. 2 is a side view of the device according to FIG. 1;

FIG. 3 shows a detail in view on a larger scale in the position of FIG. 1;

FIG. 4 shows the same detail as FIG. 3 in a further position;

FIG. 5 shows a section of the detail of FIGS. 3 and 4 in the position of FIG. 4;

FIG. 6 shows the same section as FIG. 5 in an even further position;

FIG. 7 shows a detail of the apparatus in the position of FIG. 6;

FIG. 8 shows a section of a further detail in a position corresponding with that of FIG. 2;

FIG. 9 shows the detail of FIG. 8 in a different position;

FIG. 10 is a section along the line X-X of FIG. 8;

FIG. 11 shows an additional apparatus suitable for cooperation with the device of FIGS. 1-10;

FIG. 12 shows the apparatus of FIG. 11 in an other position; and

FIG. 13 is a diagram showing the time relation of control means used with the shown embodiment of the invention.

A device according to the invention mainly consists of an endless conveyor, containing a number of devices, one of which is elucidated by means of FIGS. 1-10 inclusive.

The said apparatus consists of a frame 1, which at its upper side is supported by a pair of rollers 2, which each are mounted freely rotatable on a shaft 3, said shaft 3 being fixedly connected with the frame 1. The rollers 2 are supported by a fixed guide 11, forming part of the said conveyor, which may be of any form and has not been shown. Frame 1 comprises two uprights 4 and 5, the inner sides of which serve as guide rails for guide wheels 7 of a subframe 8. Subframe 8 is supported by a fixed guide 10 by means of a roller 9. When frame 1 is moved by the conveyor (not shown) in the direction of arrow A and guide 10 tilts downwards relative to guide 11 subframe 8 will shift downwards in the frame 1. A pair of rods 13 are mounted on frame 8 by means of a pair of pivot connections 12. About each of these rods a sleeve 14 is present, which sleeves can shift relative to the related rod 13 in their longitudinal directions. Rods 13 bear at their lower sides claws 15 which are rotatably mounted on said rods by means of shafts 16. (Vide also FIGS. 5, 6 and 7).

Furthermore, a central support 17 is mounted on the subframe 8 by means of crossbeams 18 which are stationarily connected with said frame 8 (vide also FIGS. 3 and 4). Support 17 consequently is a vertically movable member. It has on the outside a square diameter and is hollow. A pressure member 19 is guided in support 17. At 18' a tension spring 20 is mounted to support 17, said spring 20 being at its lower side connected with two links 21 (FIG. 4). Support 17 further bears a pair of double levers 23 by means of pivot connections 22, said levers having at their upper sides a flat hook

portion 24, at the end of which the links 21 are connected. The hook portions 24 can cooperate with a roller 25 which by means of a support 26 is rotatably mounted but for the rest is not movable on a subframe 27, which itself has stationarily been provided on frame 1. Subframe 27 bears guides having an outer guide portion 28 and an inner guide portion 29, each combination 28, 29 serving for guiding one chicken's leg to hook said leg into a claw 15 when suspending the chicken. For clarity's sake the means connecting portion 29 with frame 27 for supporting portion 29 has not been shown in the drawing. The double levers 23 at their lower sides bear retaining members 30 (FIGS. 3 and 4). Said retaining members are shaped such that when they are positioned above a claw 15 (shown in interrupted lines in FIG. 3), the joint of a chicken's leg suspended in claw 15 is well retained. This position in which the joint is well retained is warranted by an abutment 31, which is fixedly connected to the double lever 23 and can engage the side of a sleeve 14. For causing the two sleeves 14 to move symmetrically relative to the centre plane of the central support 17 links 32 are provided, which on the one hand are connected with rod 13 by means of a pivot connection 32' and on the other hand are rotatably connected with each other by means of a pin 32'', which is slidably mounted in a guide 33 provided on the support 17.

As appears more specifically from FIGS. 8 and 9 the central support 17 has a slot 34, through which an arm 35 protrudes, said arm being fixedly connected to rod 19. Said arm bears by means of a shaft 36, a pawl hook 37, which is retained in the position shown in FIG. 8 by means of a recess 38, engaging a retaining member 39 which is mounted on support 17. Pawlhook 37 further has a hook 40 at its lower side, which hook can cooperate with toothed rack 41 provided on support 17. Pawlhook 37 further bears an arm 42 supporting a control member 43.

Rods 13 (vide FIGS. 5 and 6) are provided with supporting arms 44, which protrude through slots 45 in the sleeves 14 and each bear a freely rotatable roller 46. Sleeves 14 lean on the shafts 44 by means of the upper limitation of the slots 45. Consequently they can move up and down along the height of the slots 45 relative to the rods, by which they can come from the position shown in FIG. 5 into that of FIG. 6, which causes release and tilt of the claws 15, because the ends 14' of the sleeves no longer prevent the right hand supporting planes 15' of the claws thereof from rotating counter clockwise about shafts 16.

The rollers 46 can cooperate with guides 47 (vide FIG. 1), which are fixedly connected with frame 1. Said guides 47 in their upper portions converge downwards, whereas their lower portions are mutually parallel. Furthermore, said guides 47 bear upper and lower stops 48 and 49 respectively which can cooperate with abutment members 50 each connected to a sleeve 14. In the position, in which the abutment member 50 is adjacent stop 48 (FIG. 2) rods 13 have, relative to sleeves 14, been shifted upwards and the rods and the claws are in the position of FIG. 5. When, on the other hand, the abutment member 50 is adjacent stop 49 and rod 13 has been shifted downwards relative to sleeve 14, claw 15 is swung downwards as is shown in FIG. 6.

In the position shown in FIGS. 1, 2 and 3 a chicken has to be suspended by its knee-joints into claws 15 by hand or by an automatic means which has not been

shown and does not form part of the invention. Frame 1 is moved to the right along guide 11 in FIG. 1, so that at the beginning of the descending portion of the guide 10 the subframe 8 starts to descend. By this pivot levers 23 move downwards so that the flat hook portions 24 thereof move downwards relative to roller 25. By this spring 20 pulls by means of the links 21, the levers 23 from the position shown in drawn lines in FIG. 3 into the position shown in the same figure in interrupted lines, so that the stop members 30 retain said knee-joints in the claws 15. When guide 10 descends farther, so that frame 8 shifts downwards relative to frame 1, rollers 46 cooperate with the converging portions of guides 47, so that sleeves 14 with rods 13 swing inwards 15 until they reach the position of FIG. 4. A further descend of guide 10 thereupon sees to it that frame 8 can move downwards even farther, with which, however, no further swinging movement or rods 13 or sleeves 14 takes place, because guides 47 then are mutually parallel.

With said further downward movement of frame 8 claws 15 come into a modelling sleeve consisting of a first arcuate member 64 and two further arcuate members 65 hingedly connected to member 64. This sleeve 25 is mounted on a further subframe 51, which is fixedly connected with frame 1.

Sleeve 64, 65 for instance may be cylindrical, that is to say having an inner surface that in each point contains a straight line, which lines are mutually parallel or funnel-shaped. It may be provided with movable parts or completely be stationary.

Pressing the cloaca for stretching the chicken is effected in the following way:

During the movement of frame 1 along guide 11, pawl hook 37 is caused to cooperate with a stationary control cam 76, by which said pawl hook rotates about pivot connection 36 to the right and rod 19 can shift downwards in sleeve 17. Herewith cloaca-pressure member 77, which is mounted on the lower side of rod 19 contacts the chicken between the legs at the location of the cloaca. Hook 40 grips into the teeth of toothed rack 41 (FIG. 9). By this rod 19 cannot be shifted back in an upward direction. Thereupon guide 10 causes a continued downward movement of frame 8 relative to frame 1. Herewith rod 19 with cloaca pressure member 77 cannot move upwards relative to claws 15. By this the chicken is pressed farther downwards through the sleeve consisting of members 64 and 65, and it comes into a bag (not shown), which is attached to bag retaining member 78. Near the end of the descending movement a control rod 43 that by means of arm 42 is connected to hook pawl 37 hits a stop 74' and disengages hook 40 from the toothed rack 41.

The apparatus for supporting and retaining a chicken in a bag is illustrated in FIGS. 11 and 12. A base member 154 is supported by conveyor means (not shown), so that the apparatus moves below a device as shown in FIGS. 1-10 inclusive into a position in which a bag with a chicken in it can be received by the said apparatus. A supporting arm 155 bearing a roller 156 running on a guide 157 is fixedly attached to base member 154. Guide 157 is horizontal but its height position can be adjusted with non-shown adjustment means when poultry having a different size has to be packed.

Base member 154 furthermore bears a shaft 158, on which a lever 159 is mounted, bearing on one end a follower roll 160 and on its other end a cup shaped mem-

ber 162. Furthermore said cup shaped member 162 supports a fixed arm 163, which by means of a pivot 164 bears a double lever, consisting on the one hand of a bent arm 165 and on the other hand of a flap 166. Arm 165 is under the influence of a tension spring 167, which is fixedly connected with cup shaped member 162. Furthermore an abutment 168 is pivotably mounted on arm 165. A roller 169 is mounted on a side arm of abutment 168. When roller 169 is moved upwards by means of a guide 169' (FIG. 12), the cooperation between 168 and abutment roller 161 (FIG. 12) is ended, by which the entirety 165-166-168 is rotated clockwise about pivot 164. Furthermore a flap 170 is rotatably mounted on a shaft 158, which flap is fixedly connected with an arm 171 which at its end bears a roller 172, that can cooperate with a stationary guide 173 (FIG. 12). Starting from the position of FIG. 11 a bag with the chicken in it is descended from the sleeve 64-65 (FIG. 1) until the lower side of the bag rests on cup shaped member 162. By the shape of guide 173 roller 172 now moves and by this flap 170 from the position of FIG. 11 to the position of FIG. 12. By this also the lower part of arm 171 moves to the left, so that roller 161 causes bent arm 165 to swing counter clockwise about the pivot 164, which causes the swinging to the left of flap 166. At the end of said movement roller 161 begins its locking task after passing beyond the end of the abutment 168.

Shortly before this movement of flaps 170 and 166 rods 13 descend farther together with the claws 15 mounted thereon. Cloaca pressure member 77, which is mounted on the end of rod 19 is, however, de-clutched from sleeve 17 because abutment cam 43 now comes into contact with an abutment 74', which is fixedly connected with guides 47. Thereupon claws 15 together with retaining members 30 provided thereon are moved even farther downwards, which causes the legs of the chicken to be folded against the body. At this moment the flaps 170 and 166 are sufficiently close to each other to prevent that the legs are again moved upwards when the claws are retracted.

Then roller 160 cooperates with a guide 176, so that the entirety 159,162,166,170 swings about shaft 158 to the right.

This swinging movement is favourable for cooperating with closure means, which may be of any type and are no part of this invention. The fact that the bag with the chicken is positively held facilitates as well closing as stretching the bag around the chicken.

A survey of the movements occurring in the described embodiment is shown in FIG. 13. In this figure the same references are used as in the specification so that it is possible to see immediately how control functions are interrelated in time.

What is claimed is:

1. In an apparatus for modelling poultry, a device having a pair of U-shaped claws each adapted to receive a leg of a fowl and each pivotally mounted on respective ones of a pair of elongated members, said elongated members each being pivotably mounted by means of a pivot pin for movement of the claws toward and away from each other, said pins being movably mounted for movement of said elongated members to and fro in a direction normal to said movement of said claws toward and away from each other, a pair of link means, one of said link means being connected to one elongated member and the other being connected to

the other elongated member, a pair of locking means, one of which is mounted on one of said elongated members and the other being mounted on the other of said elongated members, each locking means being movable with respect to the claw mounted on its related elongated member from a first position in which said locking means engages said claw to lock it in a predetermined pivotal position with respect to the elongated member on which it is mounted, into a second position in which it is retracted from the related claw to allow said claw to pivot with respect to the elongated member on which it is mounted, and vice versa, a pair of retaining means, each of which is provided with a curved surface and movable from a first position in which said surface is above a respective claw into a second position in which said surface is retracted from said respective claw, first driving means connected to said pivot pins for moving said elongated members to and fro in said normal direction, second driving means connected to said link means for moving the portions of the elongated members that support a claw toward each other and away from each other, third driving means for moving said retaining members from their said first position into their said second position and vice versa, and control means for simultaneously controlling both of said locking means.

2. A device according to claim 1, in which each retaining means comprises a pivotably mounted lever, a mechanical biasing means being connected to each of said levers urging them into the position in which said curved surface is above the related claw.

3. A device according to claim 2, in which the claws and the retaining means are mounted on a vertically movable frame.

4. A device according to claim 3, provided with an abutment means engaging said retaining means in a predetermined height position of said frame and overpowering the said mechanical bias means for keeping said retaining means away from said claws.

5. A device according to claim 1 in which the claws and the retaining means are mounted on a vertically movable frame and in which the second drive means contain guides and rollers engaging said guides and being mounted on said movable frame.

6. A device according to claim 1, in which a support means is located below said claws, said support means being movable from a first position in which they can receive a chicken suspended on the claws into a second position in which they retain such a chicken.

7. A device according to claim 1 further comprising a pressure member for pressing a chicken suspended on said claws downwards, and means for controlling the said pressure member.

8. A device according to claim 7, provided with an adjusting means for automatically adjusting the relative height position of said pressure member with respect to said claws in dependence on the shape of a chicken suspended on said claws.

9. A device as claimed in claim 1 mounted in frame means for movement along an endless track, and control track means for effecting the various said movements as said frame means moves along said endless track.

10. A device as claimed in claim 9 further comprising support means located below said frame means in alignment with said claws and movable concurrently with said frame means, and means for selectively mov-

ing said support means from a first position in which it can receive a chicken suspended on said claws, into a second position for retaining such a chicken.

11. In an apparatus for modelling poultry, a device having a pair of claws each adapted to receive a leg of a fowl and each pivotally mounted for movement from a first position for receiving and retaining a leg to a second position for releasing said leg, and vice versa, means mounting said claws for movement bodily in a first direction toward and away from each other and to and fro in a second direction normal to said first direction, locking means for selectively locking said claws in said leg receiving and retaining position and for releas-

ing said claws to allow said claws to pivot to said leg releasing positions, a pair of retaining means each of which is provided with a retaining surface and movable from a first position in which said surface is above a respective claw into a second position in which said surface is retracted from said claw, and drive and control means for moving said claws toward and away from each other in said first direction and to and fro in said second direction, for moving said retaining means from their first positions into their second positions and vice versa, and for simultaneously controlling both of said locking means.

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