

[54] **DEVICE FOR MODELLING POULTRY**
(PART 1)

3,675,272 7/1972 Schacht 17/11

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[57] **ABSTRACT**

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[51] Int. Cl. A22c 21/00

[58] Field of Search 17/11 R, 45, 52

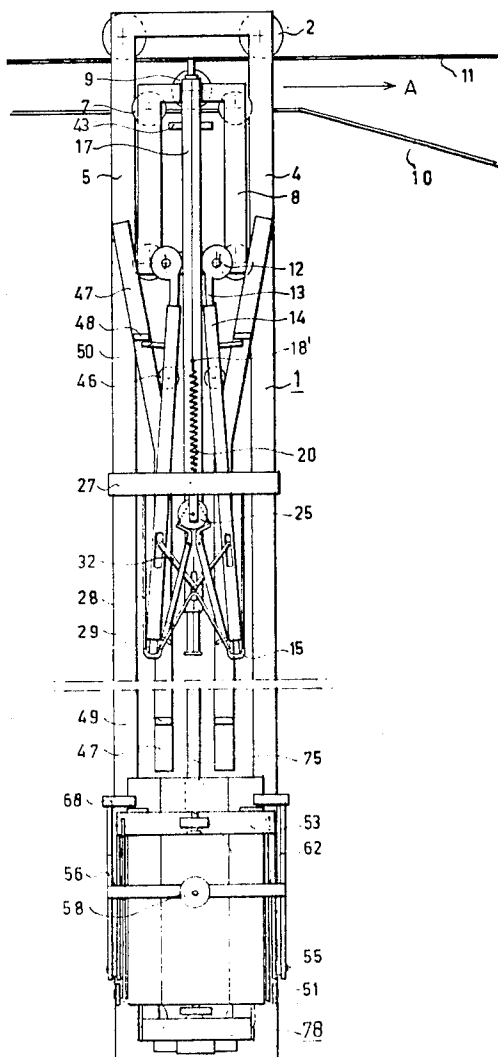
The invention provides a poultry packing device, in which a chicken suspended by the legs is modelled in a modelling apparatus having hingedly connected members the movement of which is controlled for folding the wings in a natural position. According to a preferred embodiment of the invention a pressure member presses the chicken against one of said members when the other members move towards each other to bring the modelling apparatus in the form of a tube.

[56] **References Cited**

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17 Claims, 15 Drawing Figures



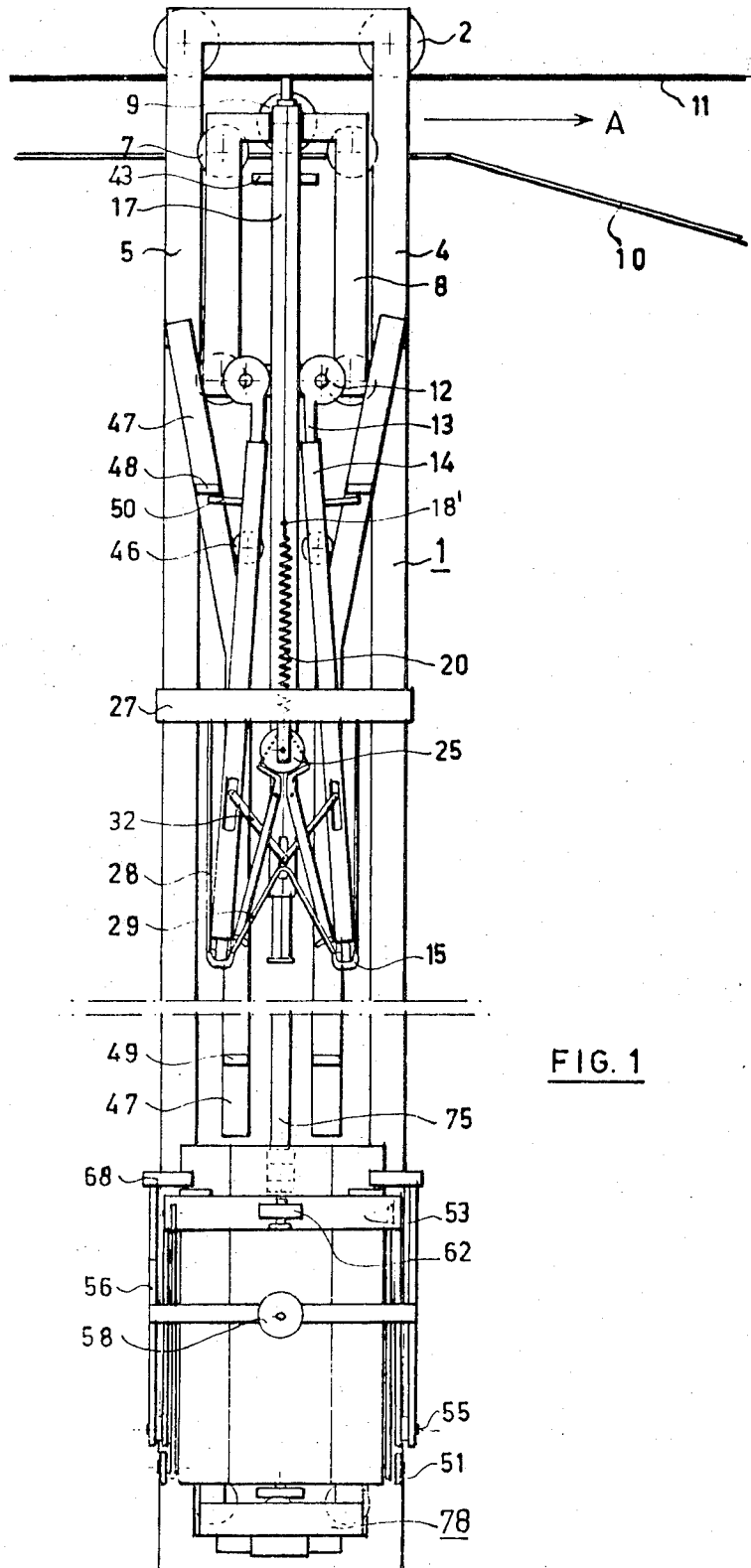
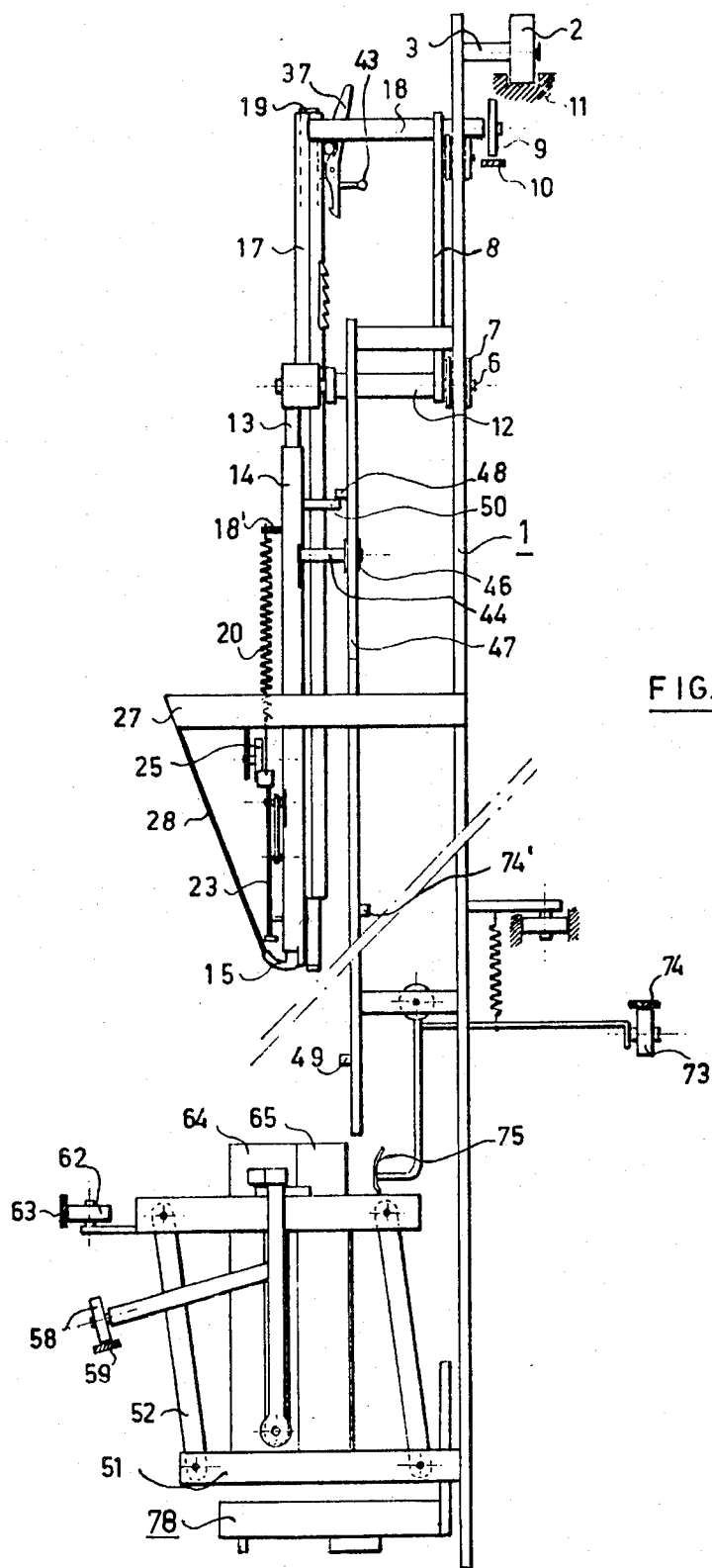
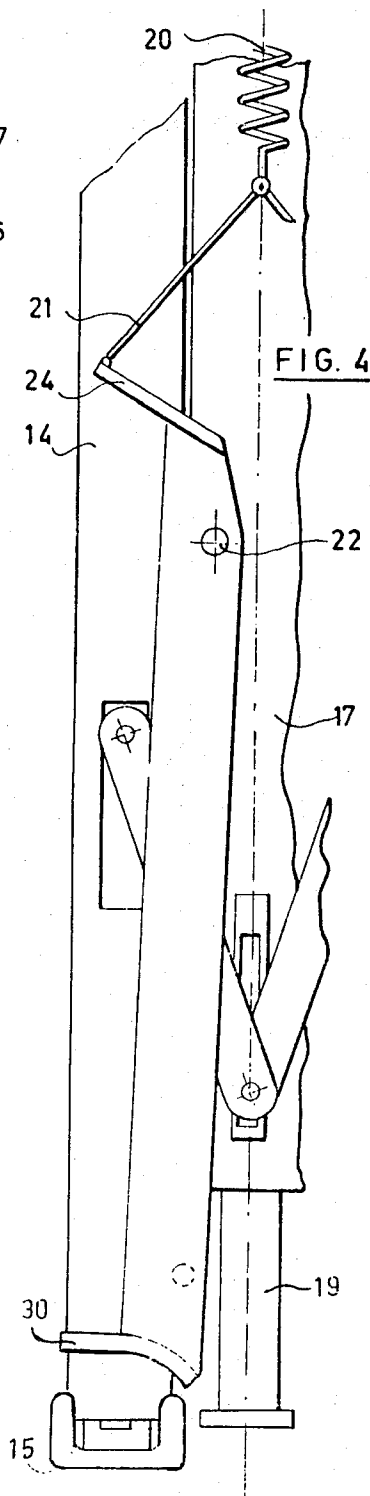
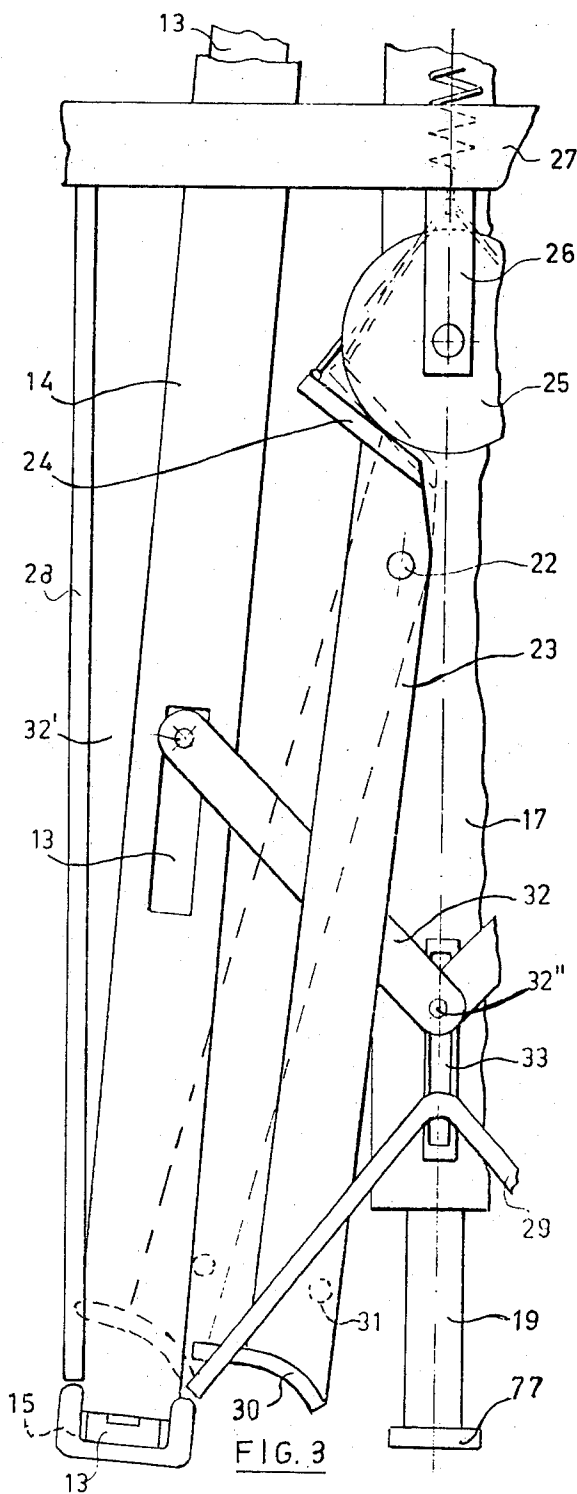
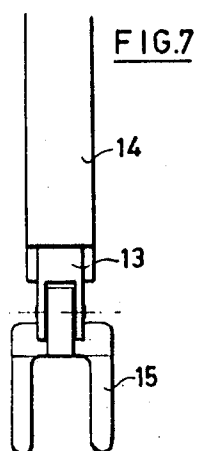
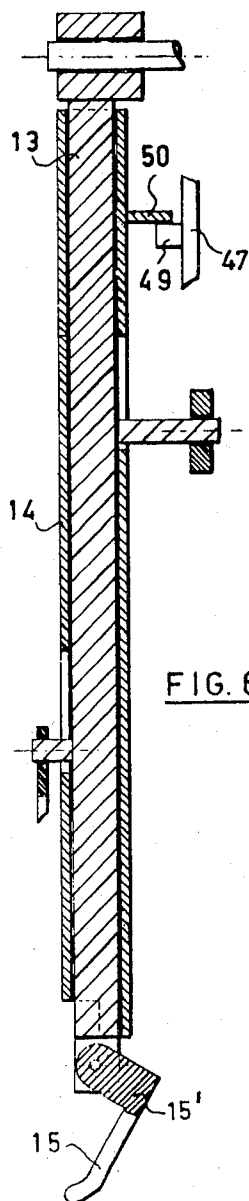
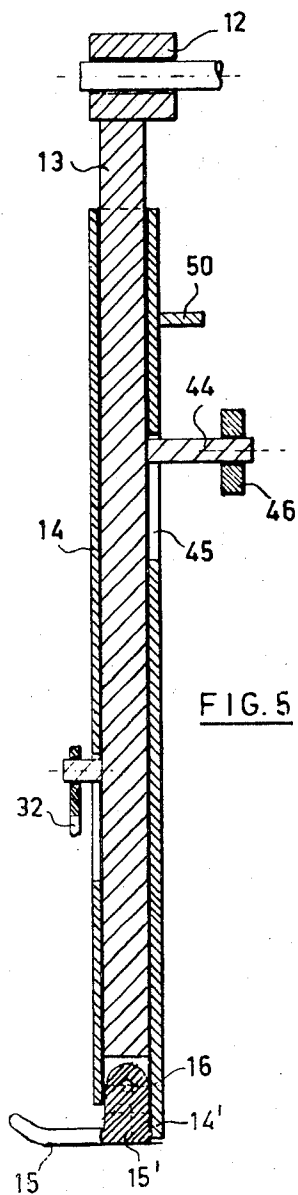


FIG. 1







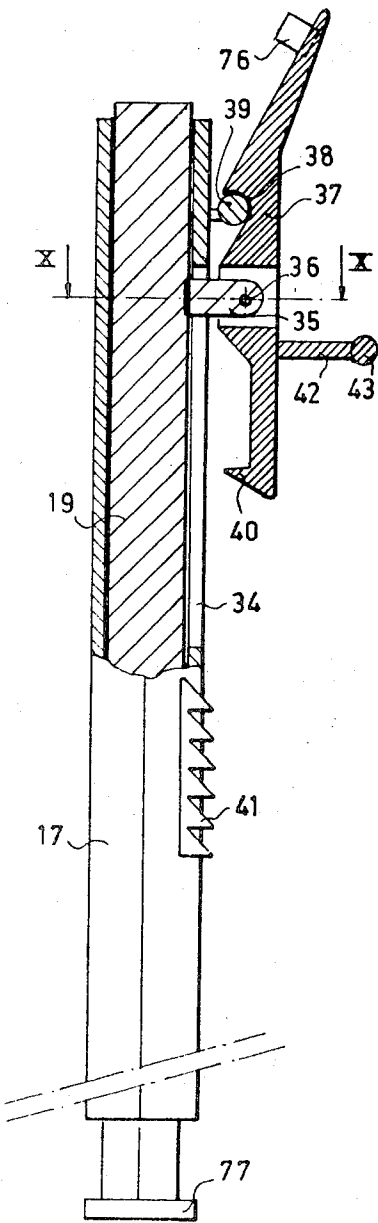


FIG. 8

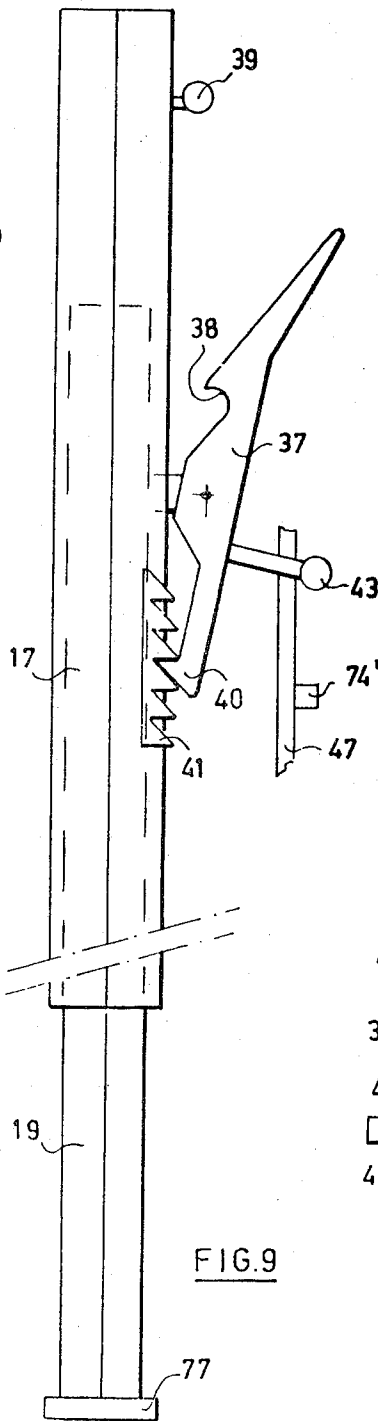


FIG. 9

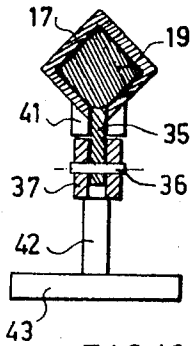


FIG. 10

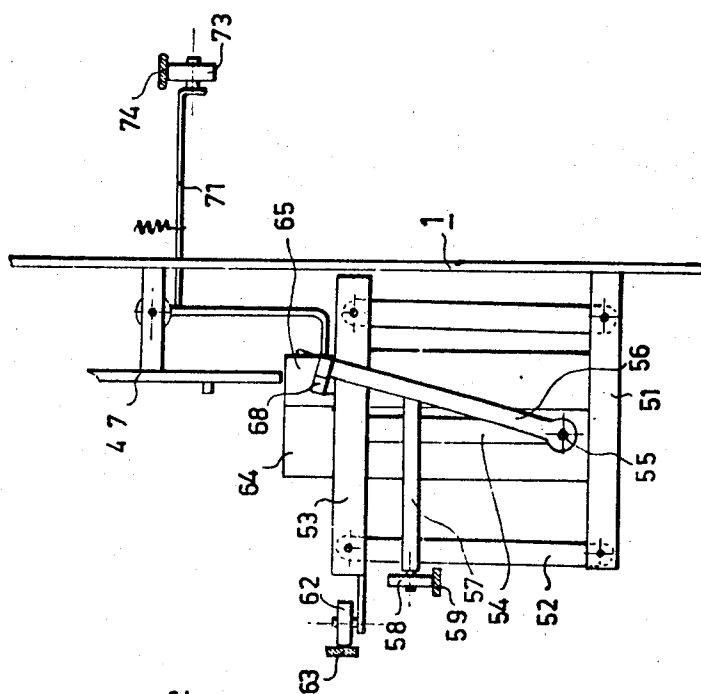


FIG. 12

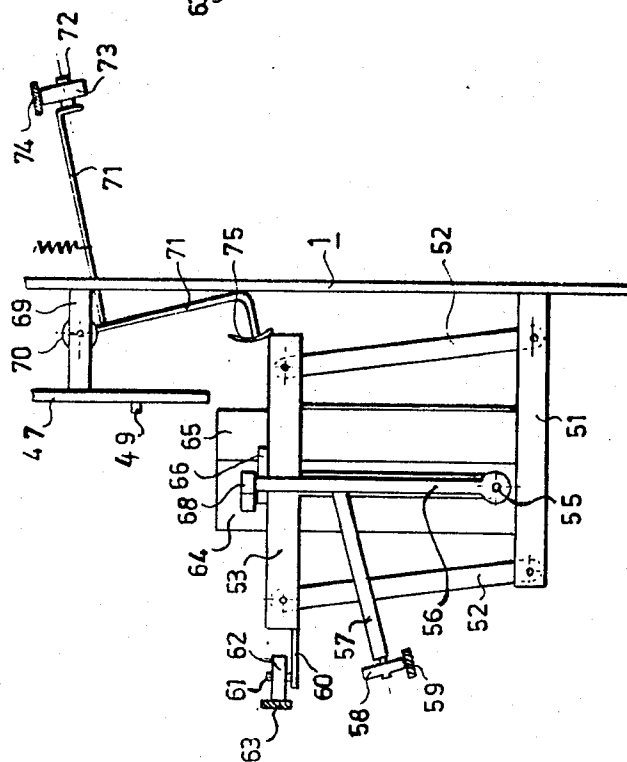


FIG. 11

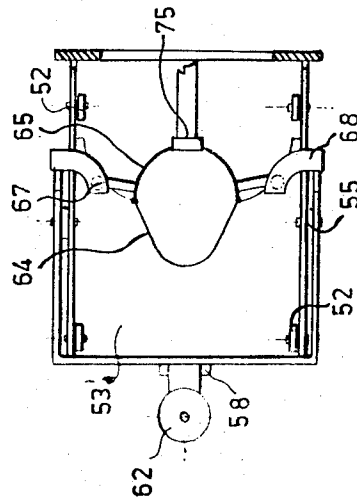


FIG. 14

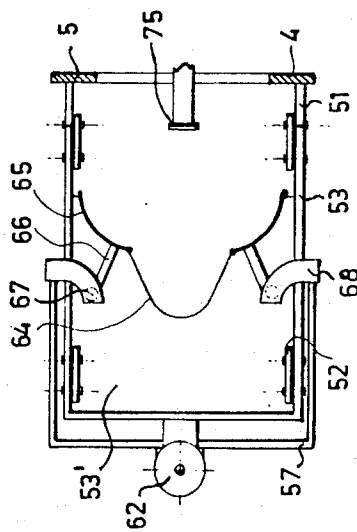


FIG. 13

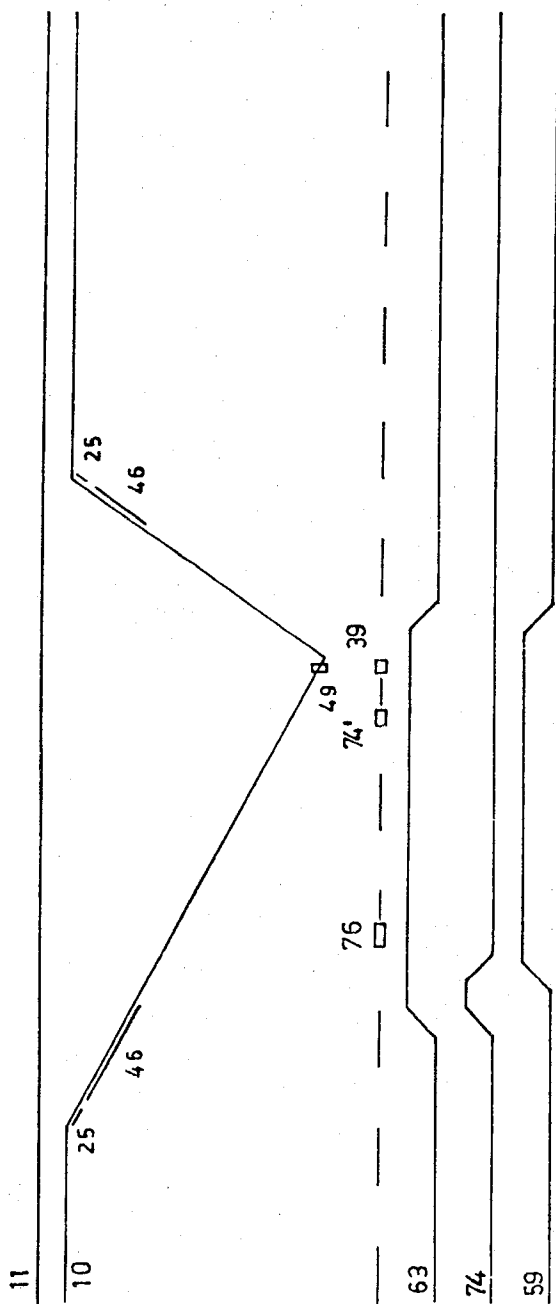


FIG. 15

DEVICE FOR MODELLING POULTRY (PART 1)

The present invention relates to a device for packing poultry, provided with a modelling apparatus having two or more movable members.

With a known device of this type the poultry is placed backwards on a platform. A funnel for modelling the poultry has a resilient end and the bag for receiving the poultry has to be shifted over said resilient end by hand. Further said machine uses of pneumatically driven means for shifting the poultry from the platform into the funnel, causing the resilient funnel to expand, together with the bag provided thereon.

Although with this device it is aimed at obtaining a save in labour, said saving, if present, is relatively small. The reasons hereof are, that when shifting a chicken through the funnel it happens very often that due to the friction a wing is also drawn backwards, which necessitates extra actions.

Because of the shifting through the funnel it never is ensured that the two wings are uniformly and at the same location folded on the back of the poultry to obtain an attractive display-packing.

It has been proved that the above described difficulties can in principle be removed, when in a device for packing poultry, provided with a modelling apparatus, having a first member and hingedly connected to said first member two further members, according to the invention it is provided that the said first and further members have internal surfaces that in each point contain a straight line parallel to the pivot axes of the hinge connections of said first and further members, means being provided for controlled pivoting of the said further members with respect to said first member from a first position, in which the said first and further members constitute an open shell into a second position in which said members constitute a tube.

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

When applying the invention it is obtained, that the wings of the chicken are adjacently placed against the trunk in a correct way. For this it has proved to be particularly favourable when the said further members of the modelling apparatus have an arc-shaped cross-section.

It has appeared that a good reliable working of the device according to the invention is further supported when according to a further feature of the invention a pressure plate is provided and means for moving said plate towards the said first member.

Therewith the chicken is first locked up in the first direction between the pressure plate and the first member, locking up in the other directions taking place by means of said further members, when the latter fold the wings in a natural position.

A further improvement of the working of the device according to the invention is obtained by providing a pressure member that is vertically movably mounted, and control means for moving said pressure member vertically. This pressure member is adapted to press on the cloaca of a chicken which chicken has been suspended by its legs. The favourable working which is obtained herewith is based on the fact that by this the chicken is stretched when it is introduced into the modelling apparatus.

An appropriate and simple embodiment of the invention can be obtained by providing that the device is mounted on a conveyor for conveying it along a predetermined track said device having a frame, a first sub-frame movable in vertical direction with respect to said frame, said first subframe being provided with means for attaching a chicken, a stationary guide mounted along said track cooperating with said movable frame, for controlling the height position of said subframe with respect to said frame, a second subframe supporting the modelling apparatus, a control means for moving said further members from their said first position into their second position and vice versa and a second stationary guide along said track cooperating with said control means.

By providing the main frame itself with guides also further movements can be obtained for controlling the various parts of the device according to the invention. In this way it is possible to derive all movements of parts of the device according to the invention from the conveyor, so that separate motors, sources of energy or electromagnetic control devices are superfluous.

The working of the device according to the invention in a considerable degree is improved when the chicken is suspended by the legs and can be kept in the stretched position by a pressure which is exerted on the area of the cloaca, after which the wings are laid against the loins of the chicken by means of the said further members and then the chicken is surrounded by the modelling apparatus. After the chicken has left this apparatus the legs are also pressed along the breast in a position in which they are moved towards each other. Accordingly, the invention also comprises a process for treating a chicken in the way as indicated above.

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

FIG. 1 is a front view of a modelling apparatus 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 a portion of the apparatus of FIG. 2 in a first position, the cooperation with control guides having been indicated;

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

FIG. 13 is a plane view, corresponding with FIG. 11;

FIG. 14 is a plane view, corresponding with FIG. 12; and

FIG. 15 is a diagram showing schematically the form of the several control guides mounted along the conveyor track.

A device according to the invention mainly consists of an endless conveyor, containing a number of modelling apparatus, one of which is elucidated by means of FIGS. 1-14 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 given 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 ensured 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. Pawl hook 37 further has a hook 40 at its lower side, which hook can cooperate with a toothed rack 41 provided on support 17. Pawl hook 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 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 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 of 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 apparatus (FIGS. 11-14 inclusive), which will further be described in the following. This apparatus is mounted on a further subframe 51, which is fixedly connected with frame 1. Frame 51 is by means of coupling rods 52, having mutually the same length, connected with a platform 53 so that 51, 52 and 53 form a parallelogram. The connections between said members are pivot connections. Platform 53 is on both sides provided with a supporting arm 54, having at its lower end a fixed pivot 55, on

which a swivel arm 56 is mounted. A control arm 57 is fixedly connected to said swivel arm 56 and supports a roller 58 that can cooperate with a stationarily mounted guide 59. Moreover a roller 62 is mounted on the platform 53 via a support member 60 and a shaft 61, which roller can cooperate with a stationary guide 63. Platform 53 further bears a modelling cylinder, consisting of a first member 64 having a curved surface and two pivotally mounted further members 65 also having curved surfaces. The curved surfaces of members 64 and 65 are cylindrical in that way, that their surfaces contain in each point at least one straight line, having a predetermined direction (in the shown embodiment a vertical direction) and thus are mutually parallel.

The perpendicular section of curved surface of member 64 is about parabolic and in its centre portion has a sharper curvature than near its ends, the cross-section of the curved surfaces of members 65 being substantially circle arcs having an almost constant curvature. Said pivotable members are by means of coupling rods 66 connected with sliding pins 67, which each are guided in a control slot 68. Said control slots 68 are supported by swivel arms 56. Furthermore two transverse arms 69 are mounted on frame 1, bearing a shaft, 70, to which a hook arm 71 is pivotally connected. Said arm is on one end provided with a shaft 72 upon which a roller 73 freely can rotate. Said roller can cooperate with a stationary guide 74. The other end of arm 71 bears a bent pressure plate 75. Further transverse arms 69 support the lower side of the guides 47.

When the modelling apparatus 51-73 is in the position shown in FIGS. 11 and 13 and frame 8 by a further descend of guide 10 is moved farther downwards, a chicken that has been attached to claws 15, comes about between members 65 when they are swung outwardly, as shown in FIGS. 11 and 13. Pressure plate 75 presses by reason of a curvature of the guide 74 the chicken firmly against the curved surface member 64. At the same time guide 63 has a transition from the position shown in FIG. 11 into that of FIG. 12 and simultaneous or shortly later guide 59 shows a rise. Therewith guides 63 and 59 are shaped so that when curved surface member 64 moves to the right members 65 fold inwards around their pivot connections, and the sliding pins 67 shift to the outside and inwards again in the guides 68. The members 65 therewith press the wings, the joints of which are still intact, in the natural position against the trunk. As will in detail be described in the following the chicken herewith is as thin as possible because it is drawn upwards on its legs and is pressed downwards on its cloaca by means which still have to be described. Thereupon pressure plate 75 again moves to the right by the guide 74 which is suitably shaped therefor.

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 cylinder 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 disengages hook 40 from the toothed rack 41.

Though the main object of the invention is to fold the wings and to make sure that chickens of different dimensions always can be handled and packed without difficulties with respect to the final position of the wings, it can, for completeness' sake, be indicated that in the shown embodiment of the invention after the chicken has been shifted into a bag the legs are folded against its breast by a further downward movement of claws 15, which then open and are retracted automatically.

What is claimed is:

1. In poultry packing apparatus having movable suspension means for suspending a fowl by its legs, a device supported generally in longitudinal alignment with said movable suspension means for folding the wings of poultry against the body, comprising a first member having a concave internal surface that in each part contains a straight line portion, hinge connections at the two ends of said first member, the pivot axes of said hinge connections being mutually parallel and said straight line portions being parallel to said pivot axes, two further members, one each pivotally connected to one of said hinge connections, said further members having concave internal surfaces that in each part contain a straight line portion parallel to said pivot axes, means for controlled pivoting of the said further members with respect to said first member from a first position, in which said first member and further members constitute an open shell, into a second position, in which said first and further members constitute a tube, and means for moving said suspension means toward and away from said first and further members so as to move a suspended fowl into the space encompassed by said first and further members.

2. A device according to claim 1, in which the said further members (65) have internal surfaces being substantially part of a circle cylinder.

3. A device according to claim 1, in which said first member has an internal surface having a cross-sectional substantially parabolic shape in a plane perpendicular to said pivot axes.

4. A device according to claim 1, in which said first member has an internal surface having a cross-sectional substantially parabolic shape in a plane perpendicular to said pivot axes and in which the said further members have internal surfaces being substantially part of a circle cylinder.

5. A device according to claim 1, in which a pressure plate (75) is provided and means (73,74) for moving said plate generally perpendicularly to and towards the said first member (64).

6. A device according to claim 5 in which said first member has an internal surface having a cross-sectional substantially parabolic shape in a plane perpendicular to said pivot axes.

7. A device according to claim 6, in which the said further members (65) have internal surfaces being substantially part of a circle cylinder.

8. A device according to claim 5 in which means (73, 74; 62, 63; 58, 59) are provided controlling the movement of said pressure plate (75) and of said further members (65) so that, when the said further members are in their said first position the said pressure plate moves towards the said first member, after which the further members from their said first position move towards their said second position.

9. A device according to claim 8, in which said first member has an internal surface having a cross-sectional substantially parabolic shape in a plane perpendicular to said pivot axes.

10. A device according to claim 9, in which the said further members (65) have internal surfaces being substantially part of a circle cylinder.

11. A device according to claim 1, provided with a pressure member (19,77) that is vertically movably mounted, and a control means (10,9) for moving said pressure member vertically toward and away from the space encompassed by said first and further members.

12. A device according to claim 11, in which said pressure member (19,77) is vertically movable with respect to a further vertically movable member (17), a means (35-41) being connected to both said vertically movable members for allowing the pressure member (19,77) to descend with respect to said further vertically movable member (17) and preventing said pressure member from ascending with respect to said further vertically movable member (17).

13. A device according to claim 12, in which said means (35-41) contains a toothed rack (41) and a pawl hook (40) cooperating with said toothed rack.

14. A device according to claim 13, in which a stop member (74') is present for disabling said means (35-41).

15. Apparatus as claimed in claim 1 wherein the concave internal surface of said first member is such that its generatrix is a straight line parallel to the longitudinal axis of the internal surface, the pivot axes of said hinge connections being parallel to said straight line generatrix, and said further members having concave internal surfaces whose generatrices are straight lines parallel to said pivot axes.

16. A device for packing poultry, provided with a conveyor (11) adapted to move along a predetermined track, said conveyor supporting a frame (1), a first subframe (8) being provided that is vertically movably mounted with respect to said frame (1), which first subframe (8) is provided with means for suspending a fowl by its legs, a stationary guide (10) being mounted along said track cooperating with said movable frame for controlling the height position of said subframe with respect to said frame, a second subframe (53) supporting a modelling apparatus generally in longitudinal alignment with said fowl suspending means, which modelling apparatus has a first member (64) and hingedly connected therewith two further members (65), a control means being provided for moving said further members (65) from a first position, in which said first and further members together form an open shell, into a second position in which said first and further members form a tube-like body, and a second stationary guide (59) along said track cooperating with said control means and activating them for moving said further members from their said first position into their said second position.

17. A device according to claim 16, in which said second subframe (53) is horizontally movably mounted with respect to said frame (1), a third stationary guide (63) being mounted along said track cooperating with said second subframe (53) for moving it horizontally.

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