Sept. 29, 1953 S. J. OGRABISZ 2,653,346

APPARATUS FOR REMOVING TENDONS FROM FOWL

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Fig. 1.

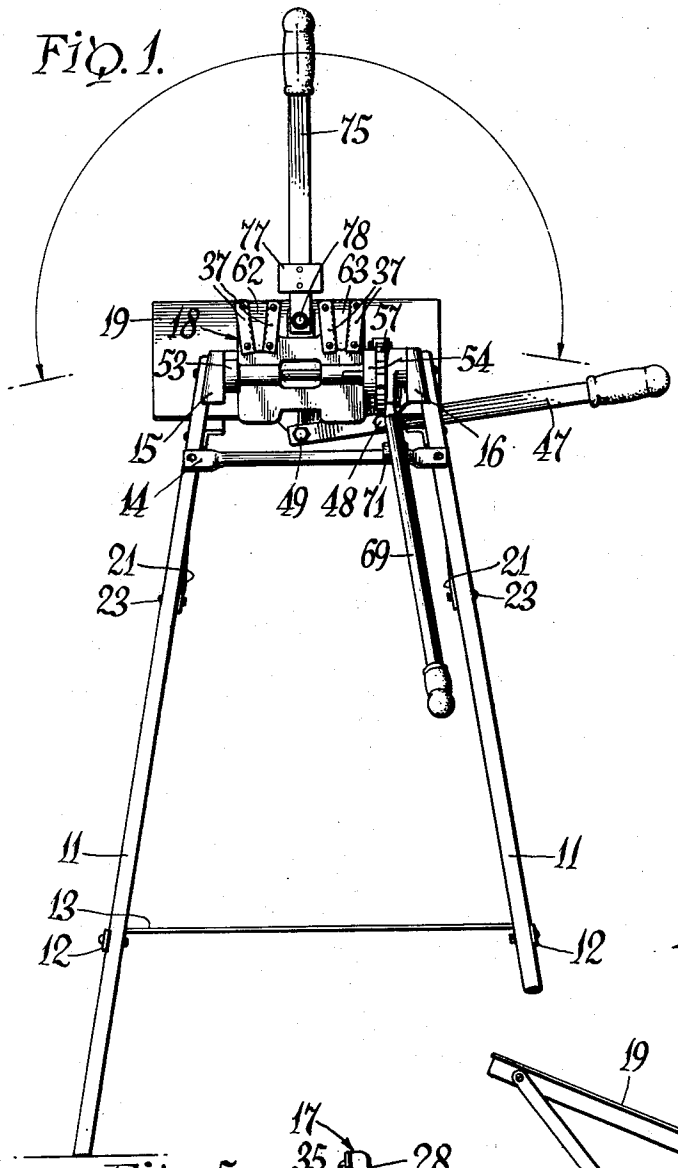

Fig. 7.

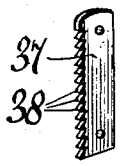

Fig. 6.

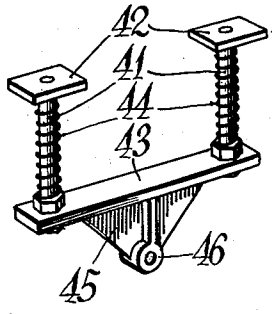

Fig. 2.

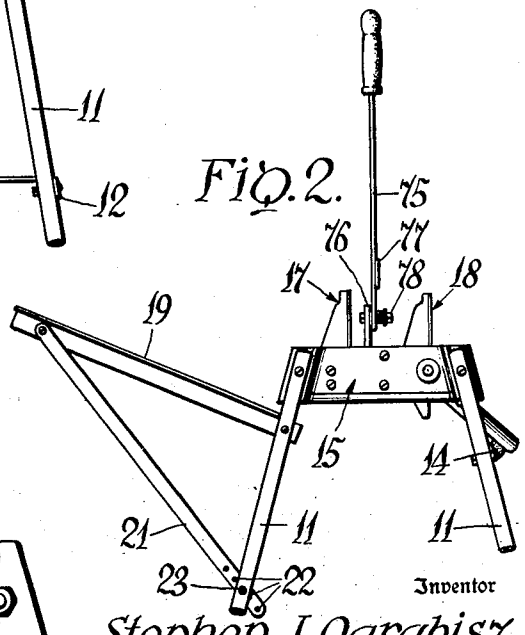

Fig. 5.

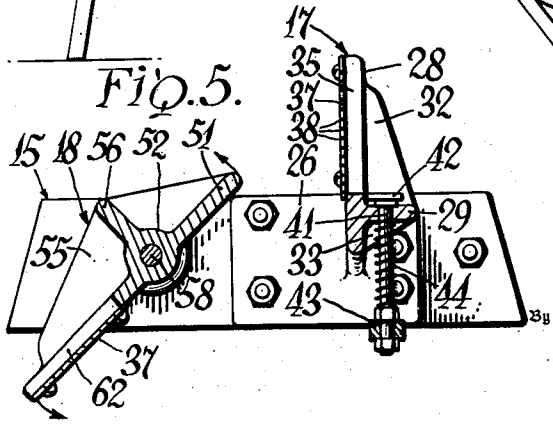

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Fig. 3.

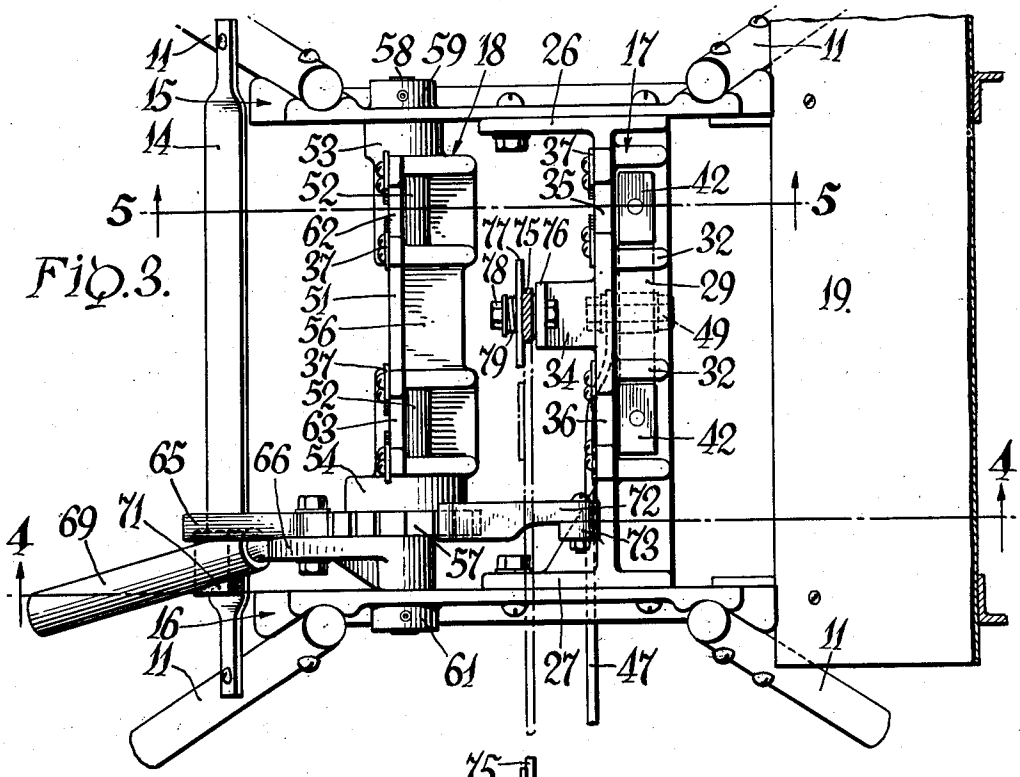
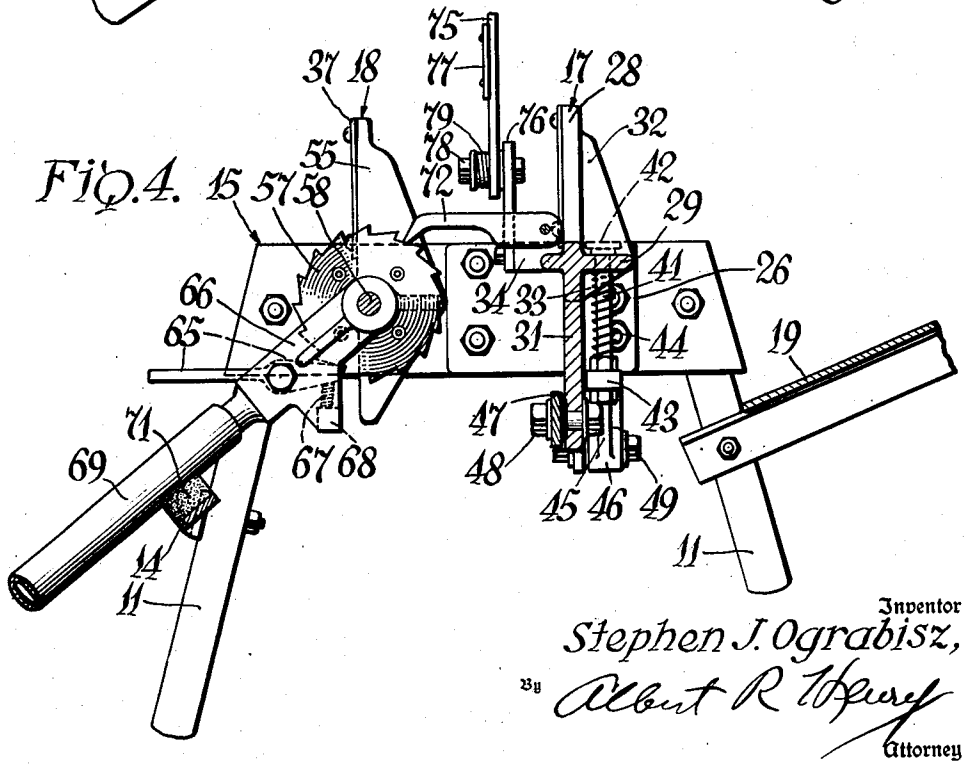


Fig. 4.



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APPARATUS FOR REMOVING TENDONS FROM FOWL

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Application April 20, 1951, Serial No. 222,035

6 Claims. (Cl. 17—11.3)

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This invention relates to apparatus for removing tendons from turkeys, chickens, or the like, and it has particular reference to mechanism with which the legs may be securely clamped and broken, and the lower portions of the legs and tendons may then be removed.

Growers of fine fowl have heretofore endeavored to meet the wishes of discriminating customers by extracting the tendons from the thighs of dressed birds. To this end, it has been proposed to position the legs between a pair of relatively movable jaws, which, upon further separation, would pull the tendons loose from their anchorages. Such devices of this nature which have come to my attention have not, however, been satisfactory. They are cumbersome and difficult to manipulate, and the legs frequently slip during the pulling operation, so that the grower is left with a tedious task of extracting the sinews by hand. Another objection is that available machines are not suited to the various breeds and sizes of turkeys and chickens, inasmuch as an apparatus which will work to some extent on large turkeys, for example, is practically useless on small Holland whites or capons.

The machine of the present invention has been found to overcome these and other objections, and to give uniformly good results on all kinds of fowl. In the following description, there will be set forth a detailed exposition of the best embodiment known to me, illustrated in the accompanying drawing, wherein:

Fig. 1 is a front elevation of the machine;

Fig. 2 is a fragmentary side elevation;

Fig. 3 is an enlarged plan with certain portions broken away;

Figs. 4 and 5 are sections taken substantially on the correspondingly numbered lines on Fig. 3;

Fig. 6 is a perspective of a portion of a releasing mechanism; and

Fig. 7 is a perspective of a clamp jaw.

The machine comprises four upright legs 11 which are advantageously angularly disposed to provide a wide base area, thereby increasing the stability. These are interconnected at their lower portions by side and center stretchers 12 and 13, and the front legs are further interconnected by a top stretcher 14. The tops of the legs are connected to a pair of parallel rails 15 and 16, between which are mounted a fixed back casting or frame 17 and a rotatable front casting or frame 18, each of which carries leg gripping clamps, as will presently be described. A supporting platform 19 for the fowl is pivotally mounted between the back legs adjacent the bottom edges of the rails 15 and 16, and it may be adjustably positioned by changing the setting of brackets 21, extending from the back of the platform to the legs, and provided with a series of holes 22, in which retaining screws 23 may be inserted.

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The back casting 17 comprises end flanges 26 and 27, for connection to the rails 15 and 16, a vertically disposed web 28, a rearwardly extending horizontal ledge 29, and a depending bracket 31 adjacent the flange 27. Spaced fillets 32, 33, between the web and ledge serve to strengthen the casting. A pad 34 is also formed on the front face of the casting to provide a lever mounting, as will presently appear. The upper portion of the web 28 is provided with V-shaped notches 35 and 36, so spaced that the legs of a fowl may be conveniently pressed therein. The edges of these notches are faced with clamping jaws 37, whose inner edges are formed with downwardly sloping teeth 38. When the legs of the bird are forced down into the jaws, the teeth bite into them, and thereby contribute materially to the retention of the legs against slippage.

The tightness of the gripping action is so great that it is a matter of some difficulty to remove the legs from the jaws by tugging on them with the fingers, even after the tendons have been removed. Accordingly, a releasing mechanism is provided, which, by simultaneously striking the stumps of the legs from the under side, frees them from the jaws. This mechanism includes a pair of posts 41 which are slidably mounted in apertures formed in the ledge 29 in line with the notches 35 and 36, and which carry spaced blocks 42 on their upper ends, and are threaded into a bar 43 at their lower ends. The posts 41 are encircled by springs 44 below the ledge 29, and therefore the assembly is biased to a position wherein the blocks 42 rest on the top of the ledge, and below the bottoms of the notches 35 and 36.

A web 45 depends from the bar 43, and it is formed with a bushing 46 at its lower end. An operating lever 47, projecting from the right hand side of the machine, is pivotally mounted by a stud 48 on the depending bracket 31, and its inner end is connected to the bushing 46 by a pin 49. It will be seen that, when the lever 47 is moved down, the posts 41 will be elevated to cause the blocks 42 to strike the imprisoned legs of the fowl, and to release the carcass without injury to the flesh.

The front casting or frame member 18 is formed with a web 51 extending on either side of bearing

bushings 52, the outer ends of which merge into additional bushings 53 and 54 of somewhat greater external diameter. The casting is reinforced by means of fillets 55 and webs 56. A ratchet wheel 57 is secured to the face of the bushing 54, and this assembly is rotatably mounted on a fixed shaft 58, extending between bosses 59 and 61 formed on the rails 15 and 16. The web 51 is also formed with V-shaped notches 62, 63, which are aligned with the notches 35 and 36 of the back casting 17. The notches 62 and 63 are also equipped with serrated jaws 37.

The front casting 18 may be rotated in a forward direction by means in the nature of a clutch mechanism, adapted normally to impart rotation in one direction only, and including a pawl 65, pivotally mounted on a link 66 which in turn is rotatably mounted on the shaft 58. The pawl 65 is urged into engagement with the teeth of the ratchet wheel 57 by a spring 67 interposed between its end and a boss 68 formed on the link 66. The outer end of the link 66 is connected to a lever 69, whose downward movement is limited by a stop block 71, connected to the upper rail 14. It will be seen that the lever 69 may be worked up and down, pump handle fashion, to advance the front casting 18 in circular arcs determined by the swing of the lever 69. Reverse rotation of the casting 18 is normally prevented by a second, gravity engaged, pawl 72, pivotally mounted on lug 73 formed on the back casting 17.

A desire to illustrate the machine clearly has dictated against the superimposition on some of the views of the outline of the fowl. It will be understood, however, that the carcass is laid on its back on the platform 19, with the scaly section of the legs extending forwardly over the pairs of aligned notches 35, 62, and 36, 63. The front casting 18 is brought to an upright position, and the legs are pressed in its notches and clamping jaws close to the feet. The legs are also pressed into the back notches close to the knuckle joints. Before doing more than make the legs taut between the pairs of clamps, they are broken by a hammer which is located between the front and rear castings.

This hammer comprises a lever 75, pivotally mounted on a post 76 secured to the face of the pad 34 of the casting 17. The lever carries a hard plate 77 having rounded edges which extend from either side of the lever, and which are located a distance from the pivot 78 to bring them over the legs when the lever is swung to either side. A coiled spring 79, surrounding the pivot 78, exerts sufficient friction to maintain the lever in any desired position, such as the non-interfering vertical position shown in Fig. 1, while permitting the lever to be swung sharply to both right and left.

When the legs are positioned between the jaws, a mildly sharp blow with the hammer will make a clean, complete fracture of the leg, and will also break the skin. This preliminary operation is highly desirable. In machines which are intended to operate by fracture of the leg while the tendons are being drawn, a very considerable manual effort is required, and there is too high an incidence of flesh bruises and rupture of the edible skin.

After the legs have been broken, the lever 69 is oscillated through such arcs as are desired, to rotate the casting 18, and thereby pull the severed leg and the tendons from the thigh. The numerous tendons are very tough, and therefore considerable force must be exerted to free them

from the thighs. It has been found that the pumping action simplifies the operation, imposes less strain on the operator, and that the progressive pulling extracts the tendons with less likelihood of one or more snapping short, or dislodging the muscular tissue. In the present machine, rotation of the casting 18 through about 270° of arc is sufficient to remove the tendons from even large turkeys. After they have been separated, the disengaged parts are removed from the front jaws, and the carcass is released by operating the lever 47, as previously described. The stumps may then readily be trimmed at the joints. The front casting is then brought again to an upright position, for operation on another fowl.

While the invention has been described with respect to a specific embodiment, it is to be understood that it is not limited to the precise details thereof, but should be considered to encompass all those modifications and variations as fall within the scope of the following claims.

I claim:

1. In a machine for pulling tendons from fowl, a fixed frame member, a rotatable frame member mounted in spaced and parallel relation to the fixed frame member, each of said members being formed with spaced V-shaped notches aligned with the notches of the other member, leg clamping jaws positioned on the edges of the notches, a clutch mechanism for the rotatable frame member including means for rotating said member in increments in a direction increasing the distance between the notches of the fixed and rotatable member, means for normally forestalling rotation of the rotatable member in the opposite direction, and a releasing mechanism positioned adjacent the fixed frame member, said releasing mechanism including blocks movable toward the notches of the fixed frame member to force legs out of the clamping jaws thereon.

2. In a machine for pulling tendons from fowl, a fixed frame member and means for mounting the same in a substantially upright position, a rotatable frame member mounted on said means in spaced and parallel relation to the fixed frame member, said fixed frame member being formed with a pair of spaced notches, said rotatable member being formed with a pair of spaced notches in alignment with the first named notches, angularly inclined leg clamping jaws positioned on said notches, mechanism for rotating the rotatable member in increments and in a direction increasing the distance between the jaws thereof and the jaws of the fixed member, means cooperating with said mechanism for normally forestalling rotation of the rotatable member in the reverse direction, a vertically movable release bar mounted below the notches of the fixed frame member, and a lever connected to said bar to elevate the same toward said notches.

3. In a machine for pulling tendons from fowl, a supporting structure including a pair of spaced parallel rails, a fixed frame member disposed transversely of the rails and connected thereto, said frame member being formed with a pair of spaced and substantially upright notches, angularly disposed and serrated clamping jaws positioned on the edges of the notches, said fixed frame member including a ledge below the notches and extending rearwardly thereof, release rods slidably mounted in the ledge and aligned with the notches, means biasing said rods to a position below the notches and the jaws thereof, a lever pivotally mounted on said

frame member and connected at one end to said rods to move the same past the notches, a rotatable frame member mounted between said rails in front of the fixed frame member, said rotatable member being formed with notches substantially aligned with the notches of the fixed frame member, and a ratchet mechanism connected to the rotatable frame member to rotate the same in a direction increasing the distance between the notches of the fixed and rotatable members.

4. In a machine for pulling tendons from fowl, a supporting structure including a pair of spaced parallel rails, a fixed frame member disposed transversely of and connected to the rails, a rotatable frame member rotatably mounted between the rails in spaced parallel relation to the fixed frame member, both the fixed and rotatable frame members being formed with pairs of spaced notches, the notches of one member being aligned with the notches of the other member, a ratchet mechanism connected to the rotatable frame member to rotate the same, a leg breaking lever pivotally mounted on the fixed frame member between the notches thereof and between the fixed and rotatable frame members and adapted to be swung in either direction toward said rails to intercept an object disposed in said aligned notches, and friction means on said lever to retain the same in an upright position between said aligned notches.

5. In a machine for pulling tendons from fowl, a supporting structure including a pair of spaced parallel rails, a fixed frame member disposed transversely of and connected to said rails, said member being formed with a pair of spaced and substantially upright V-shaped notches, clamping jaws formed with downwardly extending teeth positioned on the edges of the notches, a release bar slidably mounted on said fixed member, means carried by said bar to elevate the same toward said notches, a leg breaking lever pivotally mounted on said fixed member between the notches for swinging movement toward said rails, said lever including a part adapted to impinge on an object positioned in said notches and projecting outwardly therefrom, a shaft mounted between the rails in spaced parallel relation to said fixed member and said leg breaking lever, a second frame rotatably carried by the shaft, said second frame being formed with spaced V-shaped notches also provided with

clamping jaws, the notches of the frames being aligned, a ratchet mechanism connected between said second frame and shaft and operable to rotate said second frame in one direction, and a disengageable latch mounted on the fixed frame and extending into engagement with said ratchet mechanism to forestall rotation of the second frame in the opposite direction.

6. In a machine for pulling tendons from fowl, a supporting structure including a pair of spaced parallel rails, a fixed frame member having an upper edge disposed transversely of the rails and connected thereto, said frame member being formed with a pair of spaced and substantially upright V-shaped notches having their apices below the upper edge of the frame member, pairs of angularly disposed clamping jaws positioned on the frame member and along the edges of the notches, said jaws being formed on their inner edges with downwardly sloping teeth, a rotatable frame member mounted transversely between the rails in front of and spaced from the fixed frame member, said rotatable member being formed with spaced V-shaped notches substantially aligned with the notches of the fixed frame member, pairs of angularly disposed clamping jaws formed with downwardly sloping teeth secured along the edges of the notches of the rotatable frame member, a ratchet mechanism connected to the rotatable frame member to rotate the same in a direction increasing the distance between the notches and jaws of the fixed and rotatable frame members, and a releasable pawl mounted on the fixed frame member and extending forwardly therefrom to the ratchet mechanism for normally forestalling reverse rotation of the rotatable frame member.

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