July 17, 1962 E. T. WAYNE 3,044,109

POULTRY SHACKLES

Filed Aug. 24, 1959

FIG.1.

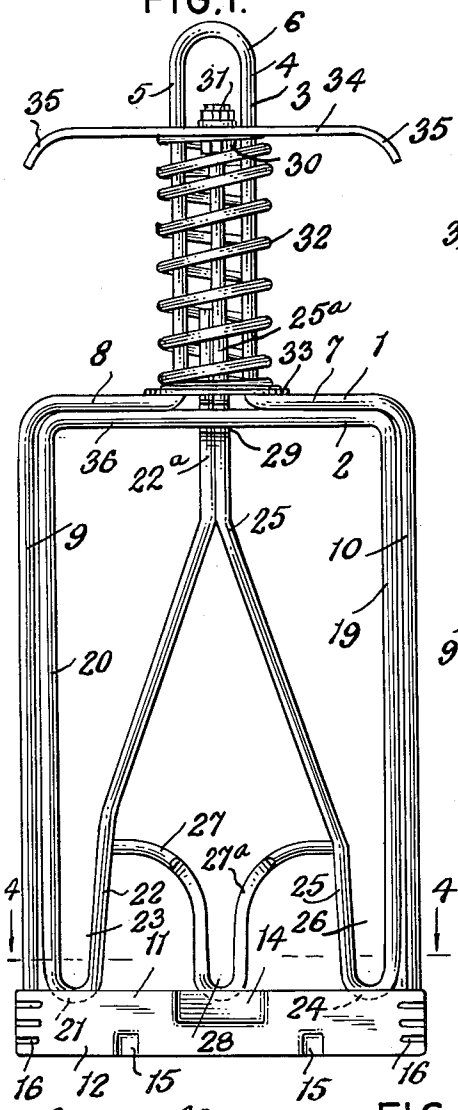


FIG.2.

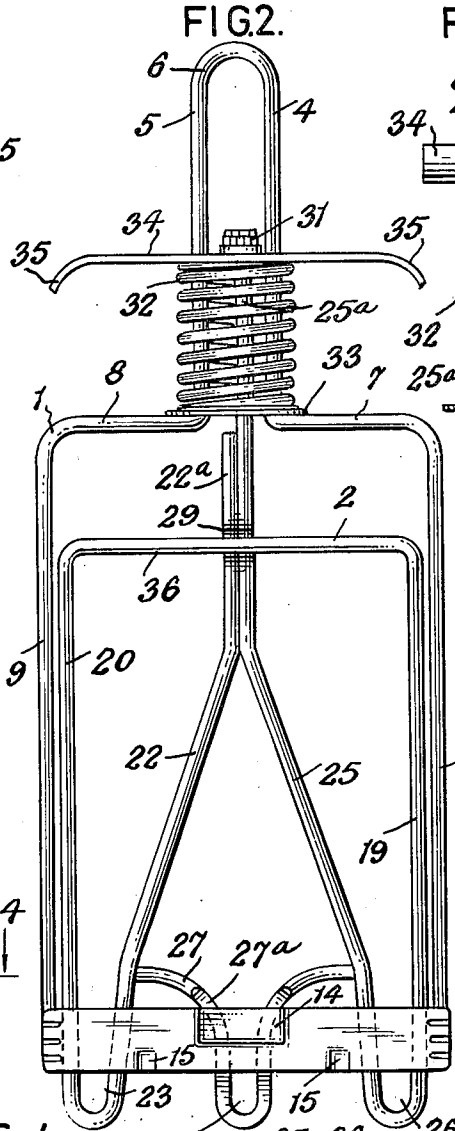


FIG.3.

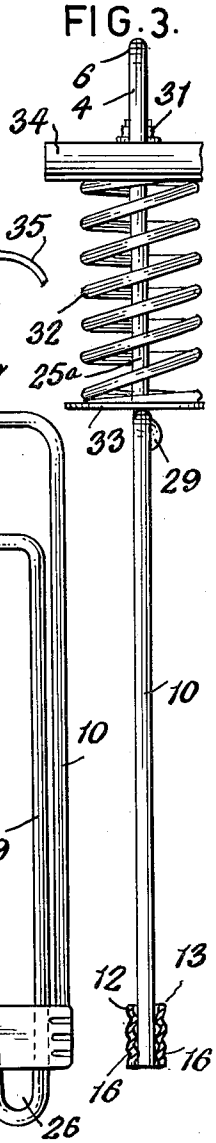
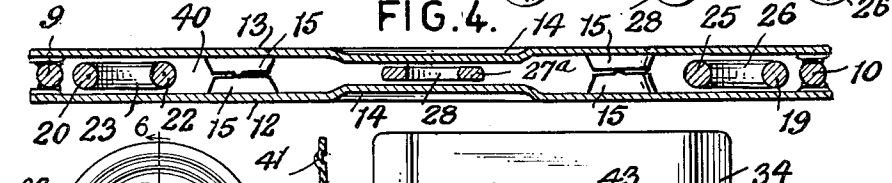


FIG.4.



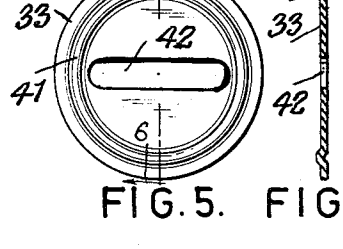


FIG.5.

FIG.6.

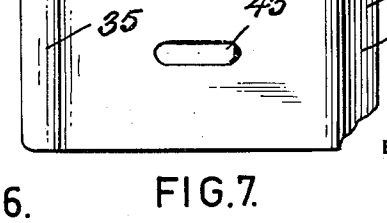


FIG.7.

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POULTRY SHACKLES

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6 Claims. (Cl. 17—44.1)

This invention relates to shackles or suspension devices for fowls, and especially those of the kind which support the fowls while they are being killed, scalded, picked or otherwise treated during processing operations. The invention has particular reference to a shackle or suspension device of the kind by which an automatic release of the suspended fowl takes place at the conclusion of the processing operations.

It is an object of the invention to provide a device of this character by which parts of the suspended fowl will be firmly held, but which will be readily and positively released when desired, by means positioned in the path of travel of the conveyor by which the shackle and the suspended fowl are transported.

More particularly, the invention contemplates the provision of an outer frame within which an inner fowl-engaging frame is slidably mounted, and of means provided on the outer frame, and in the form of a cross member extending between parts of the same, by which the parts of the fowl are ejected from the inner frame by sliding movement of the inner frame and which movement is effected by elements disposed in the path of travel of the conveyor by which the shackle is transported.

With these and other objects to be hereinafter set forth in view, I have devised the arrangement of parts to be described and more particularly pointed out in the claims appended hereto.

In the accompanying drawing, wherein an illustrative embodiment of the invention is disclosed,

FIG. 1 is a front elevational view of a shackle made in accordance with the invention;

FIG. 2 is a similar view, with the inner frame partly extended to fowl-ejecting position;

FIG. 3 is an end elevational view of the shackle, looking at the same from the right of FIG. 1 and with parts fragmentarily shown;

FIG. 4 is an enlarged sectional view, taken substantially on the line 4—4 of FIG. 1, looking in the direction of the arrows;

FIG. 5 is a top plan view of the spring seat;

FIG. 6 is a cross sectional view on the line 6—6 of FIG. 5 of the spring seat of FIG. 5, and

FIG. 7 is a top plan view, with a portion fragmentarily shown, of the plate.

The improved shackle includes two main parts namely, an outer frame generally indicated at 1, and an inner frame generally indicated at 2, and which fits within the outer frame and is slidably movable relatively to the same. These two frames and other parts to be described, are preferably made of non-corrosive metal or of metal treated to render it corrosion-resistant.

The outer frame 1 is preferably largely composed of metal rod, and includes a shank portion or suspension member 3 of substantially inverted U-shape, being thus provided with the leg parts 4 and 5 integrally connected by the loop portion 6 and by which the device may be suitably suspended on a conveyor or other moving or stationary support. At their ends remote from the loop portion 6, the leg parts 4 and 5 are extended laterally to form shoulders 7 and 8, and are then bent downwardly to form the spaced parallel legs 9 and 10. The outer frame 1, as thus far described, is in the form of a fork of rectangular shape. At their lower ends, the legs 9 and 10 are connected by a cross member 11, consisting of two spaced plates or strips 12 and 13 between which the ends of the legs 9 and 10 are securely fastened as by being welded thereto. Ribs 16 are formed in the plates 12 and 13 at the ends thereof to facilitate the operation of welding these plates to the legs 9 and 10. The plates 12 and 13 are also formed with inwardly-directed protuberances 15 when, when welded in contact act as spacing elements, thus holding the plates 12 and 13 together in desired spaced relationship to form a passage 40 between them to enable parts of the inner frame 2 to be slidably moved through the passage 40. Depressions 14 are also formed in the plates 12 and 13 at a central point, these depressions providing a passage between them of slightly reduced width for the entry of a central loop portion 27*a* of the inner frame 2 to be now described.

The inner frame 2 is of a type generally resembling the shackle shown in my Patent No. 2,613,390, dated October 14, 1952, and it is made of non-corrosive metallic rod and includes a pair of parallel side bars or legs indicated respectively at 19 and 20 which are disposed closely adjacent to and in parallelism with the legs 9 and 10 of the outer frame 1. At one end, the bars or legs 19 and 20 are connected by an integral cross member or bar 36. The opposite end of the bar 20 is upturned to form a loop 21 and continues upwardly as indicated at 22 so that portions of the bar 20 and part 22 co-operate in the formation of a notch 23 for receiving the leg of a fowl to be suspended in the device. Similarly, the leg 19 is upwardly bent to form the loop 24 and then continues upward to form an inner leg as at 25, with the part 25 and the part 19 co-operating in the formation of a leg-receiving notch 26. A substantially V-shaped brace member 27 of metallic rod has its diverging arms welded to the parts 22 and 25 and it forms a notch 28 which can be used to hold a neck or other part of a fowl to be suspended. The portion of the brace member 27 which forms the notch 28 is flattened slightly as shown at 27*a*, which flattened portion passes between the depressed parts 14 of the plates 12 and 13 as clearly seen in FIG. 4.

The upper end of the part 22 extends upwardly in the form of a branch 22*a* which projects between the leg portions 4 and 5 of the outer frame and alongside of the stem 25*a* that forms a continuation of the part 25. The parts 22*a* and 25*a* are offset at the point indicated at 29 to enable them to clear the cross bar 36. Stem 25*a* is provided at its upper end with a plate 34, secured to the upper end of the stem 25*a* by means of the nuts 30 and 31 or other equivalent fastening means. The plate 34 is provided with a central slot 43 through which the shank 3, and particularly the leg portions 4 and 5 thereof pass, permitting the plate 34 to be moved relatively to the shank 3 as indicated in FIG. 2.

At 33 is shown a spring seat in the form of a flat metal disk provided with a central slot 42 through which the shank 3 of the outer frame passes. The seat 33 rests upon the shoulders 7 and 8 and is provided with an annular rib 41 in it near its peripheral edge, said rib acting to confine one end of a coil spring 32 that rests against the seat 33. The opposite end of the coil spring rests against the under side of the plate 34.

From the foregoing, the operation of the improved shackle will be readily apparent. The chicken or other fowl to be processed is suspended in the shackle by having its legs inserted in the notches 23 and 26 and its neck may also, if desired be inserted in the notch 28, or any one or more of the notches may be employed by which to suspend the poultry. The loading of the shackle is performed while the shackle is suspended on suitable conveying means and while the parts of the shackle are in the positions shown in FIG. 1. At that time, the fowl-receiving notches are in their retracted position, or are so elevated by the spring 32 as to be positioned above

the upper edge of the cross member **11**. Near the end of travel of the conveyor, and during which travel the processing steps will have been completed, the plate **34** is carried under fixed elements, such as cam members, and the plate **34** is depressed thereby and to an extent somewhat greater than that shown in FIG. 2, and such downward pressure imposed on the plate **34** causes the inner frame **2** to be slidably moved in a downward direction. It will be noted that the opposite ends of the plate **34** are downwardly inclined as shown at **35**, to facilitate the engagement of the plate **34** by the plate-depressing means, such as the cams mentioned above.

As the inner frame **2** is moved downwardly in opposition to the force exerted by the spring **32**, the parts, such as the legs or neck or either of them, of the suspended fowl, that are engaged in the notches **23**, **26** and **28**, come into contact with the upper edges of the plates **12** and **13** of cross member **11**, with the result that these parts of the fowl are ejected from the notches and the fowl is thus released automatically from the shackle. When the cam or other pressure on the plate **34** is ceased, the spring **32** restores the inner frame **2** to its retracted or raised position within the outer frame, as shown in FIG. **1** and the device is then in readiness to receive another fowl for processing.

The device is composed of a minimum of parts and may because of its construction be easily cleansed and kept sanitary; it utilizes no pivoted levers or elements likely to stick or clog, and the action of ejecting the fowl is a positive and automatic one, the cross bar **11** being simultaneously operative on all parts of the engaged fowl to eject the same.

Having described a single embodiment of the invention, it is obvious that the same is not to be restricted thereto, but is board enough to cover all structures coming within the scope of the annexed claims.

What I claim is:

1. A shackle having an outer frame provided with spaced legs and a looped shank, an inner frame slidably movable relatively to the outer frame, the inner frame being provided with notches to receive parts of a fowl, a cross member extending between the legs of the outer frame, said cross member including spaced elements providing a passage between them and through which the parts of the inner frame having the notches are slidably movable in a manner to cause the parts of the fowl to be forced out of the notches by contact with the cross member, and spring means normally operative on the inner frame to maintain the inner frame nested within the outer frame and with its notches positioned free of the cross member.

2. A shackle comprising an outer frame in the form of a forked member including a pair of spaced legs, shoulders at one end of the legs, an inverted U-shaped shank extending from the shoulders, said shank including a suspension loop at one end, an inner frame slidably mounted within the outer frame and provided at one end with notches for receiving parts of a fowl, the frame having a stem at its other end, said stem slidably fitting within the shank, a cross member connecting the legs of the outer frame, said cross member having a passage through which the notches are slidable, a seat provided on the shoulders of the outer frame, a coil spring having one end resting against said seat, a plate mounted on the end of the stem, and the second end of the coil spring resting against said plate, wherein said seat is in the form of a disk provided with a central aperture through which the stem is slidable; and the plate is provided with downwardly-bent portions at its opposite ends.

3. A shackle comprising an outer frame including a pair of spaced legs, shoulders at one end of the legs, an

inverted U-shaped shank extending from the shoulders, a spring seat in the form of a disk seated on the shoulders, said disk having a central slot through which the shank extends, said shank including a suspension loop at one end, an inner frame slidably mounted within the outer frame and provided at one end with notches for receiving parts of a fowl, the frame having a stem at its other end, said stem slidably fitting within the shank, a cross member connecting the legs of the outer frame, said cross member being in the form of spaced plates providing a passage between them and through which the notched parts of the inner frame are slidable, a coil spring having one end resting aganst the spring-seat, a plate secured on the end of the stem, and the second end of the coil spring resting against said plate.

4. In a shackle, an inner frame composed of metallic rod and shaped into rectangular form and having leg-receiving notches, an outer frame larger than the inner frame and fitting around the outside of the inner frame, the outer frame including a cross member composed of spaced elements defining a passage between them through which the parts of the inner frame provided with the notches are slidably movable to thereby cause the legs of a fowl then positioned in the notches to be struck by parts of the cross member and thereby forced out of the notches, a spring operative on the inner frame to maintain it within the outer frame with its notches maintained out of the passage in the cross member, and means carried by the inner frame for causing the spring to be compressed and the inner frame caused to have its notches moved through the passage upon the imposition of pressure on such means.

5. A shackle comprising an inner frame, said frame being composed of metallic rod, said frame being shaped at one end to provide a plurality of notches to receive parts of a fowl, an outer frame within which the inner frame is slidable, said outer frame including spaced legs connected by a cross member, said cross member consisting of elements spaced apart to provide a passage between them and through which the parts of the inner frame provided with the notches are moved to cause ejection by contact with parts of the cross bar with parts of the fowl engaged by the notches, the inner frame having a central stem located remotely from its notches, the outer frame being provided with a loop within which the stem is slidable, an abutment carried by the end of the stem, the outer frame being provided with a seat, and a coil spring extending around the loop and having one end maintained against the abutment and the other end rested against the seat on the outer frame.

6. A shackle comprising, an outer frame having a cross bar at one end, said cross bar consisting of a pair of plates maintained in spaced relation to provide a passage between them, a suspension loop at the other end of said outer frame, an inner frame fitted within the outer frame and slidable relatively thereto, the inner frame having fowl-receiving loop parts, said loop parts being movable between the plates of the cross bar on sliding movement of the inner frame, and in a manner to cause any fowl parts held by said fowl-receiving loops parts to be disengaged by contact with the plates of the cross bar, and means for normally maintaining the fowl-receiving loop parts of the inner frame away from the cross bar.

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