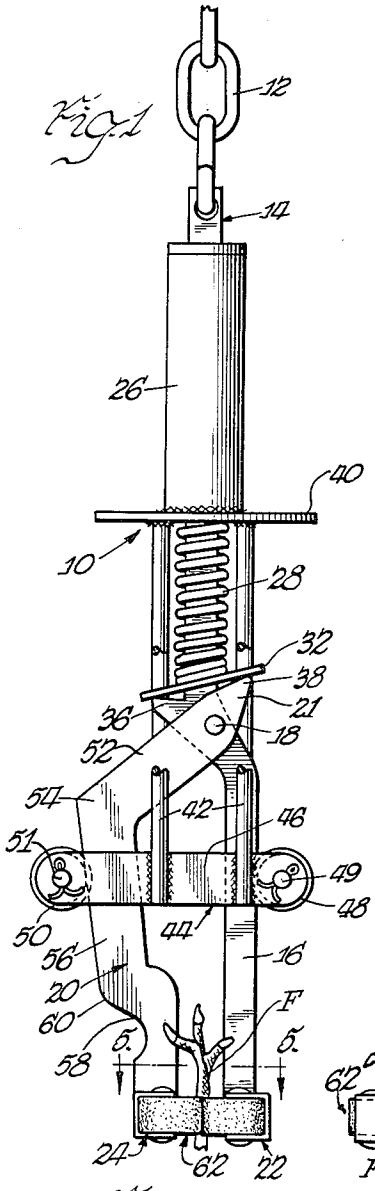
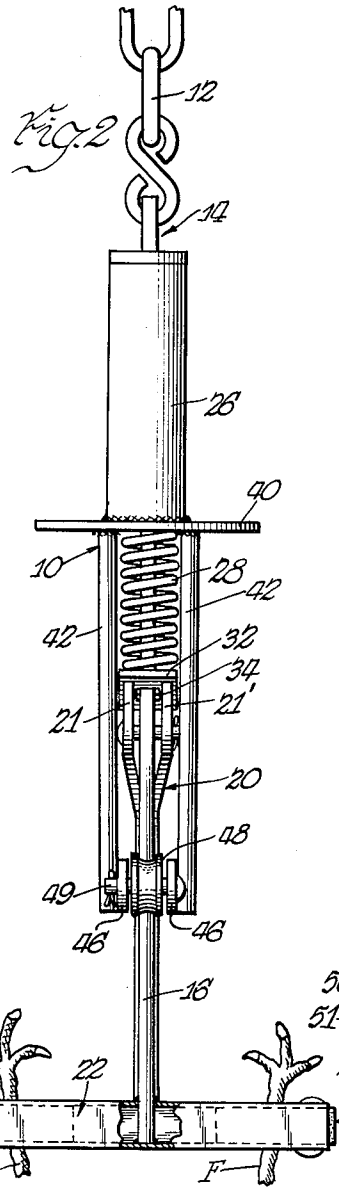
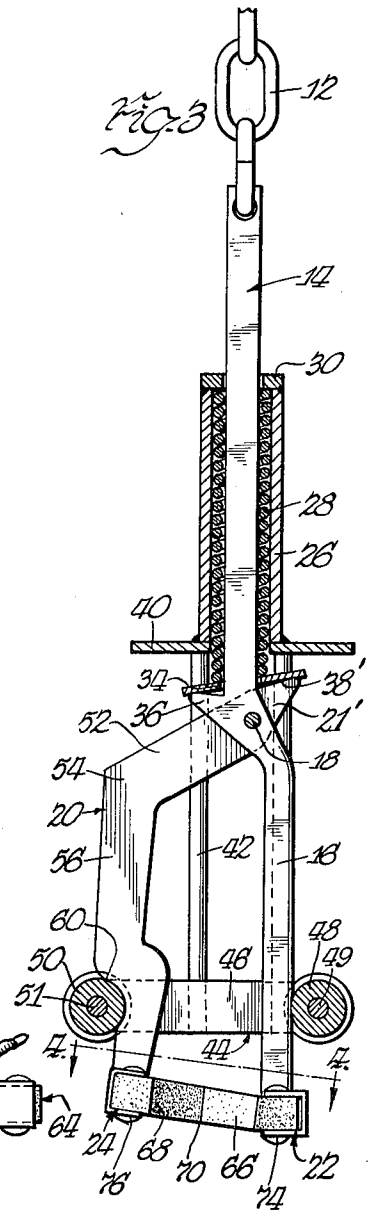
March 27, 1956 A. W. SHARP ET AL 2,739,347

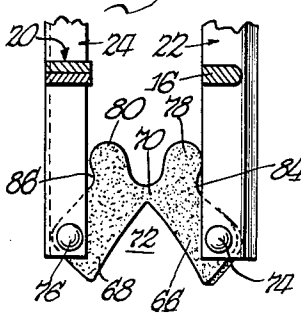
POULTRY SHACKLE

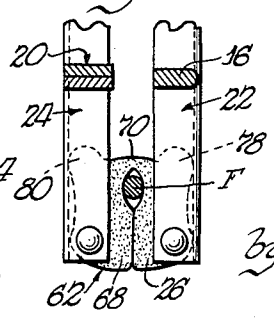
Filed Oct. 10, 1952











Inventors
Edward Crane
Allen W. Sharp
by Bair, Freeman & Molinare
Attys.

United States Patent Office 2,739,347
Patented Mar. 27, 1956

2,739,347

POULTRY SHACKLE

Allen W. Sharp and Edward Crane, Ottumwa, Iowa, assignors to Barker Poultry Equipment Co., Ottumwa, Iowa, a corporation of Iowa

Application October 10, 1952, Serial No. 314,076

4 Claims. (Cl. 17—44.1)

This invention relates to a shackle and more particularly to a shackle for holding a fowl during a picking operation.

The present shackle is an improvement over the shackle shown and described in our copending application, Serial No. 209,639, filed February 6, 1951, now Patent No. 2,688,765, issued September 14, 1954.

The poultry shackle shown and described in our above referred to copending application has a number of undesirable features which, as is the purpose of this invention, it is desirable to eliminate. For example, the jaws or gripping members in our previous shackle are rigid and non-resilient and the spring force in that shackle is so great that the jaws may damage the legs of the fowl. It is necessary to maintain the large spring force to prevent the fowl from "kicking" itself loose from the shackle. In addition, these jaws present a danger to the operator, if the operator should have his fingers between the open jaws when the trigger is tripped.

A further undesirable feature in our previous shackle is the use of a relatively large number of separate parts which are necessary to make the shackle operative. Our previous shackle was also lacking an ejector for ejecting the legs of the fowl from the shackle. In discharging fowl from said previous shackle, the jaws were merely spread apart and the feet of the fowl were supposed to pass vertically between the spread jaws as the fowl drops from the shackle. If the legs or feet are caught on the jaws, complete release is not obtained.

Thus, one of the objects of this invention is to provide a shackle for animals such as fowl and the like where the possibility of injury to the legs of the fowl, or to the operators working with the shackle, by the jaws of said shackle is substantially eliminated.

Another object of this invention is to provide a shackle having object grasping members for grasping the legs of animals which grasping members are formed of resilient material, such as rubber or the like.

A further object of this invention is to provide a shackle having object grasping members which serve to trigger the shackle and also are operative to eject the object grasped thereby when the shackle is opened.

Still another object of this invention is to provide a shackle which may be cocked in open position and having object grasping members which serve to trigger the shackle by an object thrust thereinto which shackle may be easily opened by the cocking mechanism but resists opening by forces applied to the jaws of the shackle.

Still a further object of this invention is to provide a novel shackle characterized by its simplicity and inexpensiveness of construction.

Further objects and advantages of this invention will become apparent as the following description proceeds and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

A preferred embodiment of the invention is shown in the accompanying drawings, in which:

Figure 1 is an elevation view of the shackle when closed, looking toward one end of the jaw members;

Figure 2 is an elevation view of the shackle looking from the right of Figure 1;

Figure 3 is similar to Figure 1 and shows the shackle in an open, or cocked position;

Figure 4 is a fragmentary plan view taken on line 4—4 of Figure 3; and

Figure 5 is a fragmentary plan view taken substantially on line 5—5 of Figure 1.

Referring now to the drawings, there is shown in Figure 1 a poultry shackle generally indicated at **10** suspended by a chain **12** from a conveyor (not shown). Connected to chain **12** and extending therebelow is an elongated stem **14**, the lower portion of which forms an arm **16**. Pivotally mounted on stem **14** by means of pin **18** is a second arm **20**. The upper end of arm **20** is bifurcated, as shown in Figure 2, to provide a pair of ears **21** and **21'** which permits symmetrical positioning of arm **20** with respect to arm **16**. Secured to the lower ends of arms **16** and **20** are jaw members generally indicated at **22** and **24**.

The shackle **10** is equipped with a tubular handle **26** through which stem **14** extends axially. The handle **26** is adapted to be reciprocated along stem **14**. A compressed spring **28** is provided concentrically on stem **14** and extends within tubular handle **26** and engages a flange **30** welded to the upper end of tubular handle **26**, as best seen in Figure 3. The other end of spring **22** bears against a washer-like toggle plate **32**, which is mounted on stem **14**. The toggle plate **32** has an aperture **34** therein through which extends stem **14**, and the aperture **34** is large enough to permit the required movement of the toggle plate **32** without any binding between toggle plate **32** and stem **14**.

The toggle plate **32** engages a shoulder **36** formed integrally on stem **14**, and also engages the tapered tips **38** and **38'** respectively of ears **21** and **21'** on arm **20**. The tendency of the compressed spring **28** bearing upon toggle plate **32** is to pivot the arm **20** away from the arm **16**.

The lower end of tubular handle **26** has a washer-like member **40** welded thereto. Extending downwardly from the lower face of washer-like member **40** are four spaced parallel rods **42** which have secured to their lower or extended ends a cage generally indicated at **44**. The cage **44** includes spaced parallel bars **46** between which the arms **16** and **20** are positioned. A pair of rollers **48** and **50** are journaled between bars **46** on shafts **49** and **51** which are spaced a fixed distance apart. The rollers **48** and **50** have concave edges adapted respectively to rollingly engage the edges of arms **16** and **20**.

The arm **16** is generally straight along the portion over which the roller **48** rolls. The arm **20** is of a particular configuration, which will now be described. The upper portion **52** of arm **20** extends from pin **18** in a direction transverse to the arm **16** to an elbow **54** where the arm turns and extends along a portion **56** inwardly toward the extended end of arm **16**. The edge of arm **16** and the edge of arm portion **56** over which rollers **48** and **50** roll converge in the direction toward the extended ends of the arms. Since the spring **22** is normally biasing the arm **20** in a direction away from arm **16**, as the rollers **48** and **50** are moved downwardly relative to the arms, the rollers permit the spreading of the arms **16** and **20** to the position shown in Figure 3. The arrangement of spaced rollers **48** and **50** cooperating with the converging edges of arms **16** and **20**, over which the rollers **48** and **50** roll constitute cooperating cam means.

Either of the sets of elements—rollers 48 and 50, or the converging edges of arms 16 and 20—may be referred to as cam means.

Below said portion 56 of arm 20 there is an indentation or recess 58, adjacent which is a shoulder 60. When roller 48 is down far enough, it slips into recess 58 and the shoulder 60 latches the roller 48 into the latched position shown in Figure 3, thus preventing the spring 22 from restoring the shackle to the position shown in Figure 1.

Referring now to the jaw members 22 and 24, each is channel-shaped in cross-section with the web of the channels disposed generally vertically and the legs, or flanges, of the channels disposed generally horizontally, and with the legs on one channel extending toward the legs on the opposite channel. A pair of object grasping members 62 and 64 are each secured at their ends to opposite jaw members, as best seen in Figures 4 and 5. Each of the members 62 and 64 defines a pair of abutting grippers 66 and 68 when the shackle is in a closed position, as shown in Figures 1 and 5. A portion 70 connects the abutting grippers 66 and 68 and provides for hinged movement of said grippers with respect to each other from the position in Figure 4 to the position in Figure 5 and vice versa. When the jaws are open, each of said grasping members 62 and 64 defines an open socket 72, most clearly seen in Figure 4.

The ends of grasping members 62 and 64 are pivotally mounted on pins 74 and 76, which extend between the flanges of channels 22 and 24. The members 62 and 64 are resilient and are made of rubber or the like. The intermediate portion 70 is of reduced cross-section and permits flexing thereof to accommodate the hinged movement of the grippers 66 and 68 to closed and open positions. The grippers 66 and 68 extend outwardly of the flanges of the channels so that they abut each other in the closed position.

The grippers 66 and 68 are provided with lobes or enlargements 78 and 80 which are adapted to enter between the flanges of the channel when the jaw members are closed. Each lobe on each gripper 66 and 68 makes the rearward side of the gripper, which is adjacent the channel web of the jaw member, appear to be recessed as at 84 and 86 intermediate the ends of the grippers. When the jaw members 22 and 24 are closed and a leg F of the fowl is positioned between grippers 66 and 68, said resilient grippers 66 and 68 distort, as shown in Figure 5. The lobes 78 and 80 and the recess 84 and 86 accommodate the distortion of the grippers.

When the shackle is being opened, the portion 70 of each grasping member 62 and 64 tends to move laterally outward from the position shown in Figure 5 to the position shown in Figure 4. Such lateral outward movement tends to eject the leg F of the fowl from the shackle.

When the shackle is in the opened, cocked position, shown in Figure 4, and the legs of the fowl are thrust into the sockets 72 and moved against said portion 70, the pressure against portion 70 tends to draw the opposite jaw members 22 and 24 toward each other. The shackle is constructed so that very slight movement of the jaw members 22 and 24 toward each other is sufficient to unlatch the roller 48 from the shoulder 60 and the spring 22 then acts to restore the handle to the position shown in Figure 1. The movement of the handle from the position shown in Figure 3 to the position shown in Figure 1, and the accompanying movement of rollers 48 and 50 causes the arms 16 and 20 to be pivoted toward each other to the clamping position.

The engagement of roller 50 with the edge of arm portion 56 of arm 20 and the arrangement of leverages is such that the shackle resists very strongly any force which is applied to the jaw members 22 and 24 in an effort to spread them apart. In that way, the legs F of the fowl are held securely and the fowl is unable to "kick" itself out of the shackle.

From the above description of the operation, it will be seen that the resilient grasping members 62 and 64 serve to hold the legs in a manner that will not damage the legs of the fowl. Furthermore, the grasping members 62 and 64 serve to trigger the shackle when the shackle is in the open position, shown in Figures 3 and 4. The grasping members 62 and 64 also serve as ejectors for ejecting the legs of the animal grasped thereby, when the jaw members of the shackles are being spread apart.

It will be noted in our improved construction that we have incorporated the cam surfaces with the jaw carrying arms of the shackles and have eliminated the separate trigger, all of which were found as separate parts in our previous design.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is intended in the appended claims to cover all such modifications and changes as fall within the true spirit and scope of the invention.

What we claim as new and desire to secure by Letters Patent of the United States, is:

1. A shackle comprising a pair of jaw members mounted on a pair of arms pivotable about an axis spaced from the jaw members, said jaw members being swingable toward open and closed positions, a reciprocable handle movable generally radially with respect to said axis, spring means operatively associated with said arms adapted to bias said arms pivotally toward an open position, cam means including a cam follower on said handle and a cam surface on at least one of said arms cooperating to permit pivoting of said jaw members toward said open position and to effectuate pivoting of said jaw members to a closed position, said spring means biasing said handle in a direction to effectuate closing of the jaw members, and said cam surface having a relatively deep recess therein forming a shoulder adjacent thereto, said recess adapted to receive the cam follower therein and said shoulder engaging said cam follower to latch said jaw members in an open position.

2. A shackle comprising a pair of jaw members mounted on a pair of arms pivotable about an axis spaced from the jaw members, said jaw members being swingable toward open and closed positions, a reciprocable handle movable generally radially with respect to said axis, spring means operatively associated with said arms adapted to bias said arms pivotally toward an open position, cam means secured to said handle comprising a pair of spaced follower members between which are positioned said arms, each spaced follower member engaging one of the arms and adapted to be moved therealong, and the surfaces of the arms engaged by said pair of spaced follower members being non-parallel, whereby movement of the follower members in one direction is accompanied by spreading of the jaw members and movement of the follower members in the opposite direction will effect closing of the jaw members.

3. A shackle comprising a pair of jaw members mounted on a pair of arms pivotable about an axis spaced from the jaw members, said jaw members being swingable toward open and closed positions, a reciprocable handle movable generally radially with respect to said axis, spring means operatively associated with said arms adapted to bias said arms pivotally toward an open position, cam means secured to said handle comprising a pair of spaced follower members between which are positioned said arms, each spaced follower member engaging one of the arms and adapted to be moved therealong, the surfaces of the arms engaged by said pair of spaced follower members being non-parallel, whereby movement of the follower members in one direction is accompanied by spreading of the jaw members and movement of the follower members in the opposite direction will effect closing of the jaw members, and the engaged surface on one of said arms having a relatively deep recess therein forming a shoulder adjacent thereto, said recess adapted to receive a follower

member therein and said shoulder engaging said cam follower to latch said jaw members in open position.

4. A shackle comprising a pair of jaw members mounted on a pair of arms pivotable about an axis spaced from the jaw members, said jaw members being swingable toward open and closed positions, a reciprocable handle movable generally radially with respect to said axis, spring means operatively associated with said arms adapted to bias said arms pivotally toward an open position, cam means secured to said handle comprising a pair of spaced rollers between which are positioned said arms, each roller engaging one of the arms and adapted to roll therealong, and the surfaces of the arms engaged by said pair of rollers being nonparallel, whereby the movement of

the rollers in one direction is accompanied by spreading of the jaw members and movement of the follower members in the opposite direction will effect closing of the jaw members.

References Cited in the file of this patent

UNITED STATES PATENTS

480,356	Woodward	Aug. 9, 1892
988,180	Engelberg	Mar. 28, 1911
1,008,724	Lenderman	Nov. 14, 1911
1,796,197	Galbraith	Mar. 10, 1931
2,435,706	Barker	Feb. 10, 1948
2,614,287	Crane	Oct. 21, 1952