July 22, 1924. 1,502,535

V. M. YOUNG

METHOD OF AND MEANS FOR PICKING FOWL AND THE LIKE

Filed April 16, 1923 2 Sheets-Sheet 1

Fig. 1.

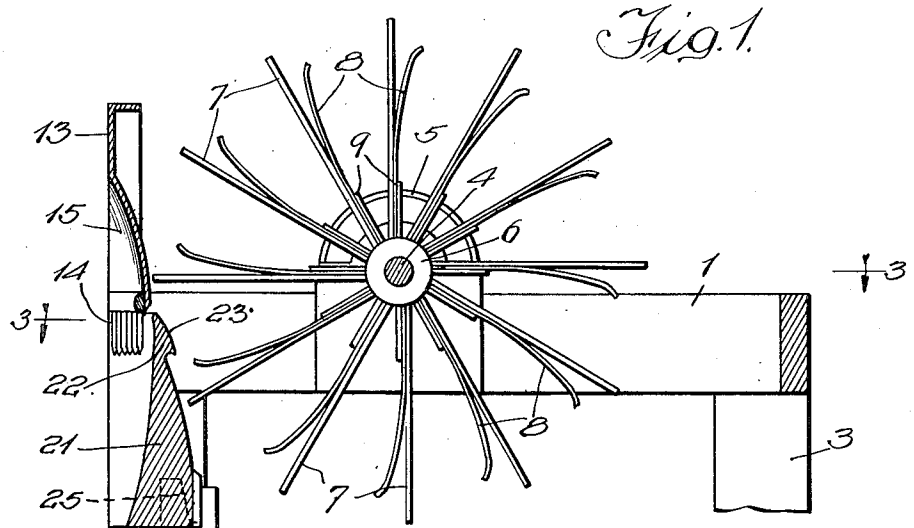


Fig. 4.

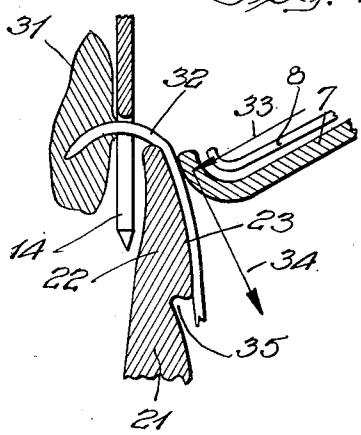
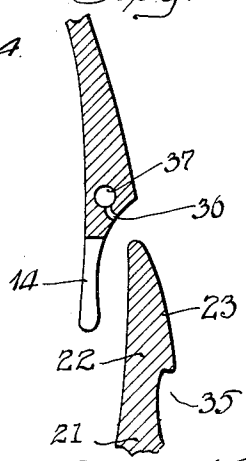


Fig. 5



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METHOD OF AND MEANS FOR PICKING FOWL AND THE LIKE

Filed April 16. 1923 2 Sheets-Sheet 2

Fig. 2.

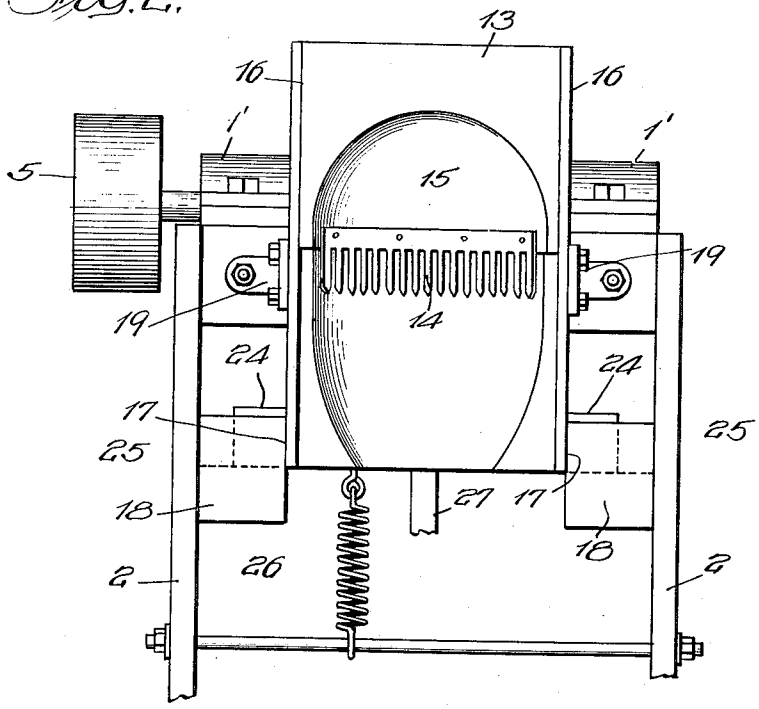
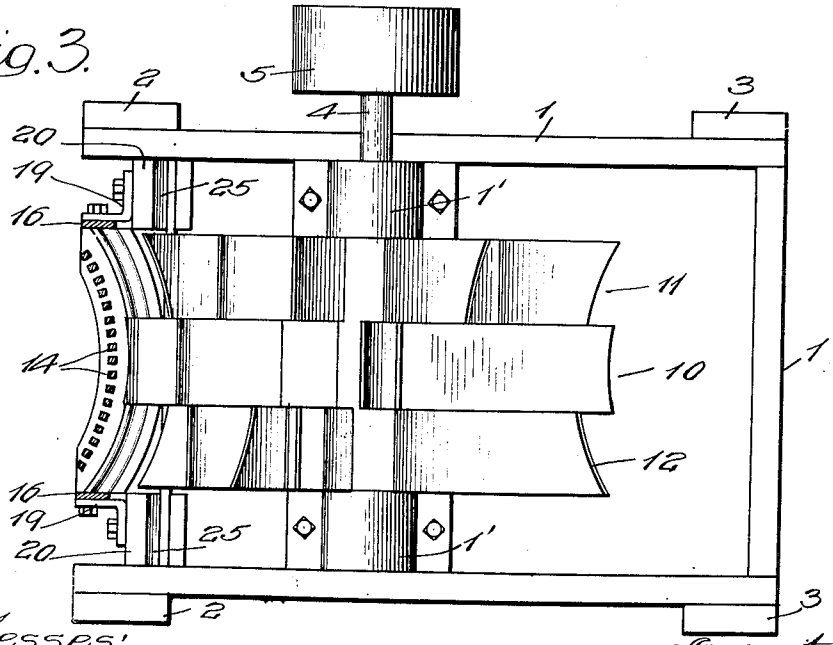


Fig. 3.



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Patented July 22, 1924. 1,502,535

UNITED STATES PATENT OFFICE.

VALEDO M. YOUNG, OF CHICAGO, ILLINOIS.

METHOD OF AND MEANS FOR PICKING FOWL AND THE LIKE.

Application filed April 16, 1923. Serial No. 632,257.

To all whom it may concern:

Be it known that I, VALEDO M. YOUNG, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Methods of and Means for Picking Fowl and the like, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention provides a method of and means for picking or plucking fowls or the like.

While I shall describe my invention in connection with the process of removing the feathers and hair from fowl, such, for example, as chickens, turkeys, ducks, geese and the like, it is to be understood that the invention is applicable not only to the removal of feathers, or feathers and hair, but to hair alone, or to fibers or filaments from a supporting surface.

Primarily, I provide two elements for the practice of the invention in its preferred form. First, a guide having a surface which is relatively smooth and frictionless with respect to the feathers, hair or filaments to be plucked or picked; and next, a frictional engaging surface which is held or pressed against the hair, feather, filament, or the like, while it is on said surface and then said engaging surface is moved along the guiding surface. When the frictional device presses the feathers, hair, or the like against the smooth guiding surface, the resulting friction caused between the friction device and the hair, feathers, or the like to be plucked, is employed for the purpose of pulling or plucking said hair, feathers or the like by movement of the frictional device.

The pressure and movement of the frictional device may be obtained by a striking effect such as the movement of a piece of flexible fabric or the like, striking with components of motion toward and along the guiding surface. In the preferred form of the invention, I secure this striking action by a number of such frictional devices or strikers mounted on a common shaft and turning with said shaft. The centrifugal force throws the strikers out adjacent the feathers or the like and the rotation of the strikers about the shaft causes the longitudinal movement along or substantially tangent to the surface. It is conceivable that the inertia of the feathers, hair or the like might be sufficient to cause some friction between the striker and the same, but the same is not sufficiently positive for my purposes and I have therefore provided the guiding surface.

In the preferred form of my invention I provide in addition a comb holder for performing the dual function of projecting the hair, feathers or the like out over the guiding surface and also for holding the skin-pelt or other surface from which the hair, feathers and the like are to be removed against injury or tearing. At the same time it forms a guide or shield for the carcass to be plucked to prevent it from being accidentally moved into the range of the strikers.

In order to acquaint those skilled in the art with the manner of constructing and operating my invention, I shall now describe a specific embodiment of the same in connection with the accompanying drawings which form part of the specification.

In the drawings;

Figure 1 is a vertical sectional view through a machine embodying my invention;

Fig. 2 is a front elevation taken from the left of Figure 1;

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary sectional view illustrating the action of the machine; and

Fig. 5 is a fragmentary sectional view of a modification in which a blast of air is employed to hold the feathers in the path of the striker.

Upon a stationary frame 1 which has the supporting legs 2—3, I mount shaft 4 which is driven by any suitable means, as for example, by the pulley 5. This shaft 4 has secured thereupon a suitable hub 6 from which hub radiate the flexible strikers 7 which strikers are preferably formed of pieces of flexible belting or other suitable material having a frictional surface adapted to engage the feathers, hair and the like to be removed. I have found, for example, that suitable rubber covered duck belting or leather belting is satisfactory for this purpose. These strikers or paddles 7 are preferably mounted with spring arms back of the same so as to insure the throwing out of the paddles under the action of centrifugal force when the shaft 4 is rotated. The spring arms 8 are backed by rigid arms 9

which in turn are secured into the hub 6. The springs 8 are arranged to back up the strikers 7 to cause them to grip the feathers, hair, etc., firmly as the strikers pass the guide 23 as shown in Fig. 4. These paddles or strikers 7 with their spring arms 8 and rigid backing 9 are preferably arranged in a plurality of rows, the arms of each row being offset with respect to the arms of adjacent rows so as to secure a better distribution of the striking effect. As shown, for example, in Figure 3, I have provided three rows, 10, 11 and 12, but it is to be understood that the number of rows and the distribution of the paddles in each row may be varied without in anywise departing from the spirit of the invention.

A shield 13 is mounted at the front of the machine and to the lower edge of this shield is secured a comb 14 as is apparent from Figures 1 and 2. This comb has coarse teeth for holding the feathers, hair and the like against lateral displacement. Preferably the central part of the shield 13 is hollowed out as is indicated at 15 to accommodate better the body of the fowl to be plucked. This shield 13 is preferably secured in place upon the frame 1 by means of the side pieces 16 which support the shield and comb permanently in position. These side pieces 16 reach down and are secured at 17 to the blocks 18 which in turn are secured to the front legs 2 of the machine. These pieces 16 are also secured by means of the brackets 19 to the front frame member 20.

Immediately below the edge of the shield 13 is provided a guide or breaker member 21 which has a head member 22 provided with a smooth convex surface 23 upon its upper forward end immediately adjacent the comb 14 and in such position as to cooperate with the feathers, hair or the like which are to be plucked. The guide or breaker 21 is mounted for limited pivotal movement on the trunnion or bearing members 24, these trunnion or bearing members fitting in grooves or slots shown at 25 (see Figs. 1 and 2) so that the forward position of the surface 23 will be fixed by engagement of these trunnions with the front side of the groove or slot 25.

A spring 26 is connected to the lower rear part of the breaker or guide member 21 and this is adapted to retract the breaker or guide from its forward position to its rearmost position where it will be out of the path of the strikers or paddles 7. The breaker or guide member 21 is curved to conform to the curvature of the lower portion of the shield 13 and the comb 14. When the member 21 is retracted by the spring 26 it is adapted to rest against the comb 14. I provide a lever 27 for moving the guide or breaker member 21 to its forward or operating position, this lever being actuated by a flexible cable 28 running over a pulley 29 to a suitable pedal lever 30.

The operation of the device will be best understood from Figure 4. In plucking chickens, the body of the chicken 31 is moved in close contact with the comb 14 in such a way that the movement is against the natural lay of the feathers. The feathers thus tend to stick upwardly between the teeth of the comb 14 but are engaged by the striker arms 7 and beaten or bent down over the polished surface 23 of the breaker head 22. As the feather 32 is bent down over the smooth surface 23 of the guide or breaker head 22, the centrifugal force of the striker 7 acting as indicated by the arrow 33 tends to hold the end of the striker blade firmly against the feather and press it against the smooth surface 23. Since the striker 7 is arranged to have frictional engagement with the feather or hair 32, and since its line of movement is about the shaft 4 on the line indicated by the arrow 34, the resultant friction of the pressure 33 combined with the pull of the movement 34 picks or plucks the feather out of the body 31, throwing the same downwardly. The surface of the guide or breaker 21 is relieved at 35 in order to permit disengagement of the hair, feather or the like with the striker arms so that they may be thrown downwardly and clear of the striker arms or paddles 7.

In Figure 5 I have shown how a blast of air issuing from a number of jets 36 along the comb 14 may be employed for holding the feathers, hair, or the like out in the path of the striker arms 7. The jets 36 are fed with compressed air from a manifold pipe 37. These jets do not interfere with the action above described but assist the same.

The fundamental action involved is simple. The guiding surface 23 is smooth and presents relatively little friction with respect to the feather. In other words, the coefficient of friction between the feather and said surface 23 is low. The striker 7, however, presents a surface which is relatively yielding and has a relatively high coefficient of friction with respect to the feather. The result is that when the feather is gripped between the high friction element 7 and the low friction surface 23 and then the high friction element 7 is moved along the surface 23 with the feather 32 interposed, a pull will be exerted upon the feather 32 which is equal to the difference in friction between the high friction engagement of the striker with the feather and the low friction engagement of the surface 23 with the feather. This action, I believe, is fundamentally new.

It is further to be noted that the surface 23 is convex and that it is inclined in such a

manner that its lower or trailing edge is nearer to the axis of the shaft 4 than the leading or upper edge. The reason for this is that the striker will not engage as firmly the base of the feather as it will the tip of the feather. This engagement increases because of the inward projection of said surface 23 which causes greater effective inertia of the striker 7 and hence better gripping toward the trailing edge than along the advanced edge to prevent crushing of the stem of the feather but to secure a good frictional grip upon the main body of the same where a large surface is afforded.

While I have described the preferred embodiment of my invention, and while I have described its use as in connection with the plucking of fowls, it is to be understood that in this operation of plucking the feathers, the hair which exists on the body of the fowl may also be removed in the same manner.

I do not intend to be limited to the precise details shown and described.

I claim:—

1. The method of pulling a protective element from the skin of a carcass which comprises, engaging the element between a smooth guide surface and a frictional contacting device, pressing the device against the element toward the surface to create frictional engagement between the element and the device, and moving the device and the element while so pressed against the element along the guide surface to impart a pull to said element.

2. The method of pulling from the skin of a carcass the individual protective elements which comprises, pinching the elements between a smooth low friction guiding surface and a frictional striker to impart a component of motion of the striker along the surface and longitudinally of the element to pluck the same.

3. The method of plucking feathers or hair from a fowl which comprises, training the feathers or hair over a low friction guide surface, then striking the feathers or hair with a yielding frictional striker and engaging the feathers or hair between the guiding surface and the striker to impart a longitudinal plucking motion to the feathers or hair along said surface.

4. The method of removing feathers or the like from fowl which comprises, engaging the feathers between a low friction stationary guide and a movable striker having relatively high friction to cause a jerking movement of the feathers along the surface of the guide.

5. The method of picking fowl which comprises, bending the feathers outwardly from their natural lay and then striking them further out of their natural lay by a flexible moving striker which engages the feather by the inertia of the striker.

6. In combination, a guide having a guiding surface, a striker having a frictional co-operating surface, and means for projecting feathers or hair or the like between said guiding surface and said striking surface.

7. In combination, a guide having a relatively smooth surface, a striker having a frictional surface, said striker being adapted to be moved substantially normal to the guiding surface and to pinch feathers, hair or the like between said surfaces.

8. In combination, a guide member having a relatively smooth guiding surface, a frictional striking member moving in a circular path substantially tangent to said guiding surface for engaging between it and the guiding surface feather, hair and the like to be removed.

9. In combination, a guide member having a relatively smooth surface, a frictional member adapted to be held against a hair, feather or the like between it and the guiding surface and to be moved substantially along said guiding surface to impart a pull to said feathers, hair or the like.

10. In combination, a shield having a comb, a guiding member adjacent the comb, and a flexible rotating striker having frictional surface adapted to move substantially tangent to the guide member and to be pressed toward said surface by inertia.

11. In combination, a guide member having a smooth working surface, a separate comb for training filaments or the like over the working surface, and a frictional engaging member for engaging the filament and moving the same over said guiding surface.

12. In combination, a guide having a convex double curved working surface, a comb adjacent the guiding surface and a rotary striking device co-operating with said guiding surface.

13. In combination, a comb, a guide adjacent the comb, a rotary engaging member co-operating with the guide for pulling feathers or the like, said guide being movable out of the path of said engaging member.

14. In combination, a guide having a working surface, a comb adjacent the guide for training feathers, hair or the like over said working surface, and a rotary frictional engaging member co-operating with said surface, said surface being relieved to permit disengagement of the rotary member with the guiding surface.

15. In combination, a guide having a working surface adapted to lie in the normal path of movement of a pulling member, a rotary pulling member and a comb member for training hair, feathers or the like over said working surface to be engaged by said pulling member.

16. In combination, a guide having a relatively smooth working surface of limited

extent, a shield for holding the carcass to be plucked adjacent said working surface, and a rotary pulling element moving substantially tangent to said working surface.

17. In combination, a guide having a relatively smooth working surface of limited extent, a shield for holding the carcass to be plucked adjacent said working surface, and a rotary pulling element moving substantially tangent to said working surface, and means for moving the guide out of the range of the pulling element.

18. In combination, a guide having a convex working surface, a striker moving against and along said working surface, said striker being adapted to have frictional engagement with the feathers of a fowl or the like and a comb back of said guide for training the feathers upon the working surface and for holding the fowl out of the path of the striker.

19. In combination, a guide having a smooth convex working surface, a flexible striker having a friction surface movable against and along said working surface, means for driving said striker at relatively high speed, and a comb adjacent said guide for training the feathers upon the working surface and for holding the fowl out of the path of the striker.

20. In combination, a guide having a smooth convex working surface of limited length, said guide having a rounded leading edge for receiving feathers and the like, a flexible striker having a frictional surface adapted to engage feathers and the like trained over said edge and to pull the same by movement lengthwise of said convex working surface and a comb for engaging the feathers to train them over said leading edge into the path of the striker.

21. The method of pulling feathers which comprises gripping the feather between a relatively stationary smooth low friction surface and a relatively movable resilient high friction member and then moving the member along the surface to pull the feather by the difference in friction upon opposite sides of the feather.

22. The method of pulling feathers which comprises training the feather over a smooth surface having a low coefficient of friction with respect to the feather, then pressing the feather against the surface by means of a striker having a high coefficient of friction with respect to the feather and moving the feather along said surface by the friction between the striker and the feather.

23. The method of pulling feathers which comprises training the feather over a smooth pressure surface, pressing a friction striker against the feather to grip the same between the striker and the smooth surface and sliding the striker and the feather along said surface to pull the feather.

In witness whereof, I hereunto subscribe my name this 14th day of April, 1923.

VALEDO M. YOUNG.