Sept. 19, 1944. C. M. DU PUY 2,358,693

FOWL-PLUCKING APPARATUS

Filed Feb. 22, 1943

Fig. I.

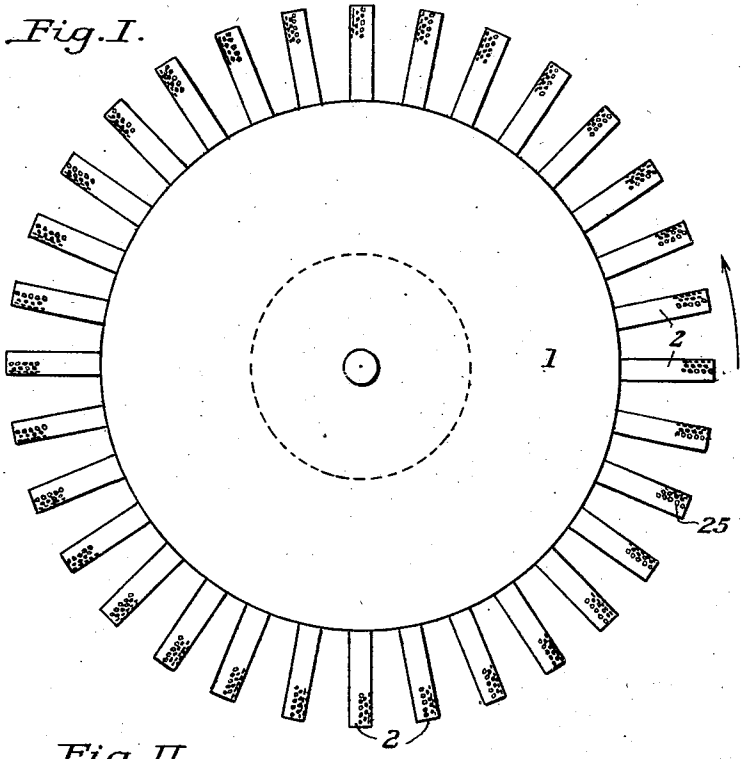


Fig. II.

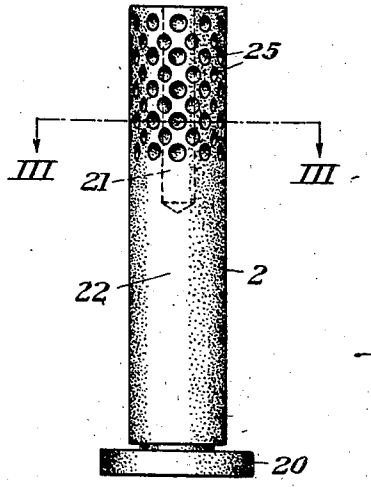


Fig. III.

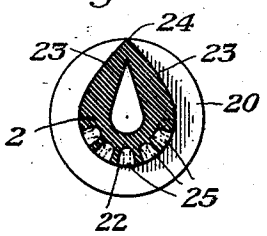


Fig. IV.

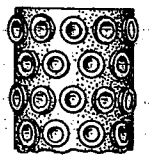
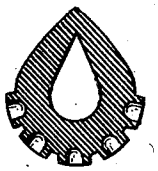


Fig. V.



INVENTOR

Charles M. DuPuy

by Christy Parmelee and Strickland

his attorneys

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FOWL-PLUCKING APPARATUS

Charles M. Du Puy, Ligonier Township, Westmoreland County, Pa., assignor to Pennsylvania Rubber Company, Jeannette, Pa., a corporation of Pennsylvania

Application February 22, 1943, Serial No. 476,685

4 Claims. (Cl. 17—11.1)

This invention relates to plucking apparatus for fowls, and consists in improvement in the structure of a component part of such apparatus. The objects in view are economy in operation and increase in efficiency.

In the accompanying drawing Fig. I is a diagrammatic view in side elevation of a finger-equipped drum which constitutes an essential part of fowl-plucking apparatus of a type now in use and of the type to which this invention is applicable. Figs. II and III are views to larger scale. Fig. II shows in side elevation, and Fig. III in transverse section, one of the fingers with which the drum is equipped. The plane of section of Fig. III is indicated by the broken line III—III, Fig. II. It is in the structure of the finger that the present invention is found. Fig. IV is a fragmentary view in elevation of the finger of the invention in modified form; and Fig. V is a view in transverse section of the modified finger.

In Fig. I a drum 1 is shown, equipped with fingers 2 that extend from the face of the drum radially outward. In the apparatus now in common use the drum is rigid, formed ordinarily of steel, and the fingers are flexible, formed ordinarily of rubber. The drum is mounted for rotation, and in operation it rotates at high speed (approximately 750 R. P. M.), and the fowl upon which it operates is held in position to sustain the impingement of the advancing fingers. The effect is the plucking of the fowl.

The fingers 2, commonly formed, are essentially cylindrical; one head is enlarged to a basal flange 20, by which the finger is secured to the drum; toward its basal end the essentially cylindrical finger is ordinarily solid; toward its free and distal end it is ordinarily hollow and of tubular form. Externally the essentially cylindrical finger is toward its base ordinarily smooth-surfaced; toward the free and distal end it is knurled or otherwise roughened.

In operation these exteriorly roughened, flexible finger-tips, impinging at high speed upon the plumage of a fowl, pull the feathers from their pits in the skin and effect the desired plucking.

As has been said, the drums rotate at high speed, and the linear travel of the finger-tip relatively to the oppositely advancing fowl is very fast. The first feature of my invention consists in a modification of the cross-sectional shape of the finger. I retain the hollow, tube-like character at the distal end, as indicated at 21; but, instead of forming it of circular cross-section, I give to it the pear-shaped cross-section shown in Fig. III, the term "pear-shaped" being employed to describe the finger's streamlined cross-sectional shape that comprises the essence of this feature of my invention. The anterior face 22 (with reference to the direction of travel) is rounded, and may be, and ordinarily will be, substantially semi-cylindrical. This anterior face is, to accomplish the end in view, roughened. The posterior face is drawn out rearwardly in two converging smooth surfaces 23, which, merging forwardly with the anterior face 22, meet rearwardly in a more or less sharply angled ridge 24. In consequence, the resistance of the air to drum rotation is greatly diminished, and the instrument may be driven with undiminished effect under greatly reduced power.

The second feature of invention is found in the form and arrangement of the roughness upon the finger-tip. This roughness is, as has already been intimated, confined to the anterior face of the finger, where alone it is effective. Specifically, it takes the form of re-entrant pockets 25 of cup shape, which, by virtue of their shape, are effective in more firmly engaging the feathers. Under the high speed of drum rotation, the fingers, impinging upon the feathered surface of the body of the fowl, are flattened, and the soft rubber of which they are formed is compressed. The cups are by such compression reduced in depth and the hollows or pockets reduced in volume. The plumage of the fowl, when under the operation of the apparatus, is wet, and the wet feathers close and for a moment seal the mouths of the cups as they advance. With the progress of the cup beyond the point of impingement and compression, its resilient walls expand again, the cup returns to its normal proportions, and in so doing exerts suction upon the feather that closes and seals its mouth. The feather clings to the cup-rim with the added adhesion of suction. In consequence, the security of the grip of the finger upon the feather is increased, and the apparatus is rendered more effective in the performance of its work.

As shown in Figs. II and III the rims of the cups are flush with the general surface in which they are sunk. The modification shown in Figs. IV and V consists in the formation of the cups with rims elevated above the general surface. In such modification, manifestly, the cups are more readily compressible.

I claim as my invention:

1. In fowl-plucking apparatus that includes a

rotating carrier and a finger of flexible and resilient material extending radially from the carrier, the invention herein described, which comprises a finger of pear-shaped cross-section, with the pointed portion smooth-surfaced and arranged posteriorly with respect to the direction of travel of the finger, when the carrier is rotated, and roughened anteriorly toward its distal fowl-contacting end.

2. The structure of claim 1, the roughness of the anterior face of the finger being in the form of re-entrant cup-like recesses located at the fowl-contacting end of the finger, whereby the finger engages with suction effect the plumage of the fowl.

3. In fowl-plucking apparatus that includes a rotating carrier and a finger of flexible and resilient material extending radially from the carrier, the invention herein described, which consists in a finger of pear-shaped cross-section formed at its fowl-contacting end and on its curved anterior face, with reference to the direction of travel, with a cup-like recess, whereby the finger engages with suction effect the plumage of the fowl.

4. A plucking finger for apparatus of the class described, said finger being formed of flexible and resilient material and of pear-shape in cross-section, and at its distal end being roughened on the fowl-contacting face that corresponds to the bottom of the pear.

CHARLES M. DU PUY.