J. W. KOHLHEPP.

MACHINE FOR DEHAIRING AND POLISHING CARCASSES.

APPLICATION FILED MAR. 3, 1909.

1,002,920. **Patented Sept. 12, 1911.**

3 SHEETS—SHEET 1.

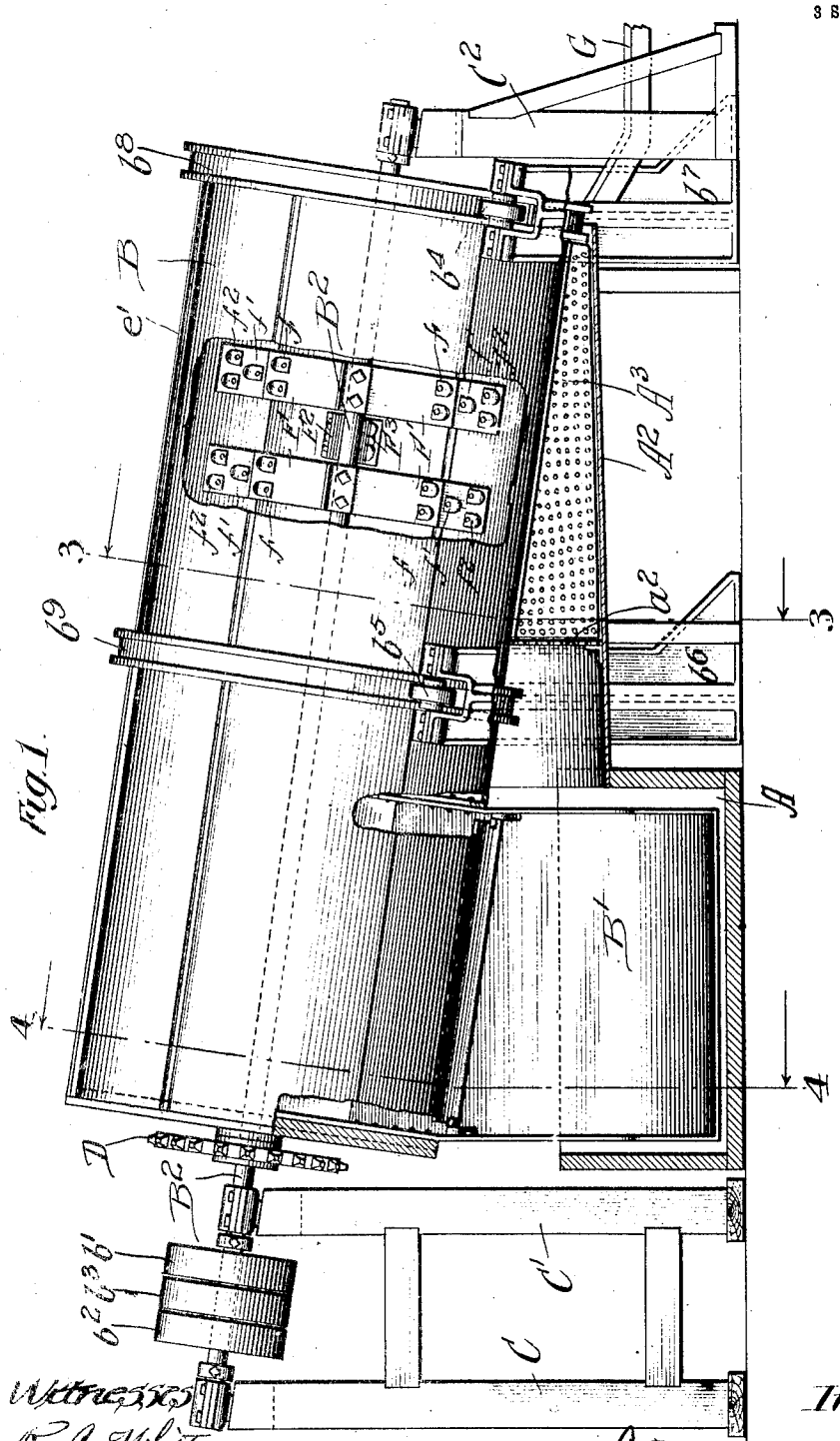


Fig. 1.

Witnesses:
R. A. White.
Harry R. White

Inventor
John W. Kohlhepp
By Charles W. Hills Atty.

J. W. KOHLHEPP.

MACHINE FOR DEHAIRING AND POLISHING CARCASSES.

APPLICATION FILED MAR. 3, 1909.

1,002,920. Patented Sept. 12, 1911

3 SHEETS—SHEET 2.

Fig. 2.

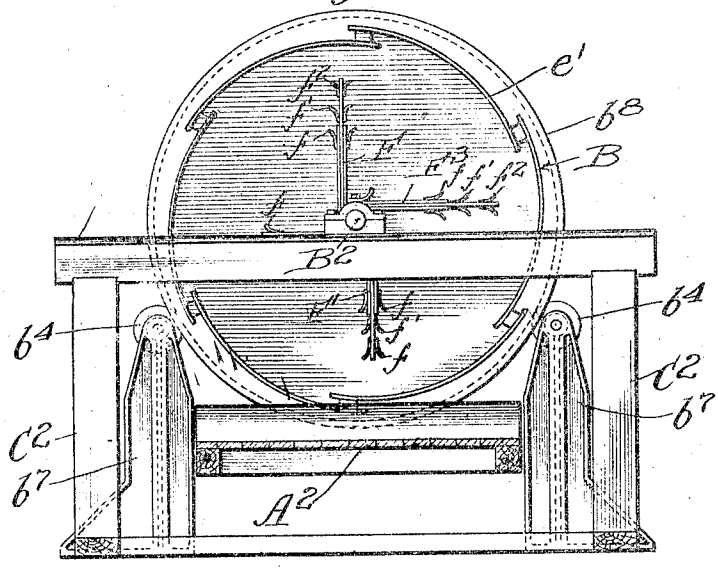
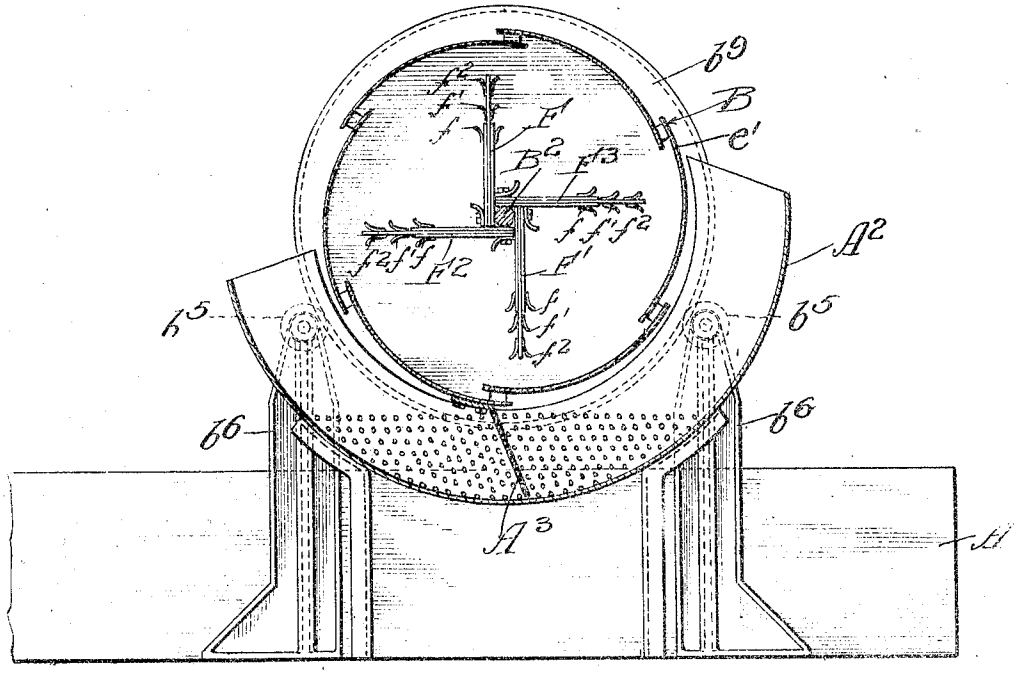


Fig. 3.



Witnesses
R. A. White
Harry R. L. White

Inventor
John W. Kohlhepp.
By Charles W. Rees Atty.

J. W. KOHLHEPP.

MACHINE FOR DEHAIRING AND POLISHING CARCASSES.

APPLICATION FILED MAR. 3, 1909.

1,002,920. Patented Sept. 12, 1911.

3 SHEETS—SHEET 3.

Fig. 4.

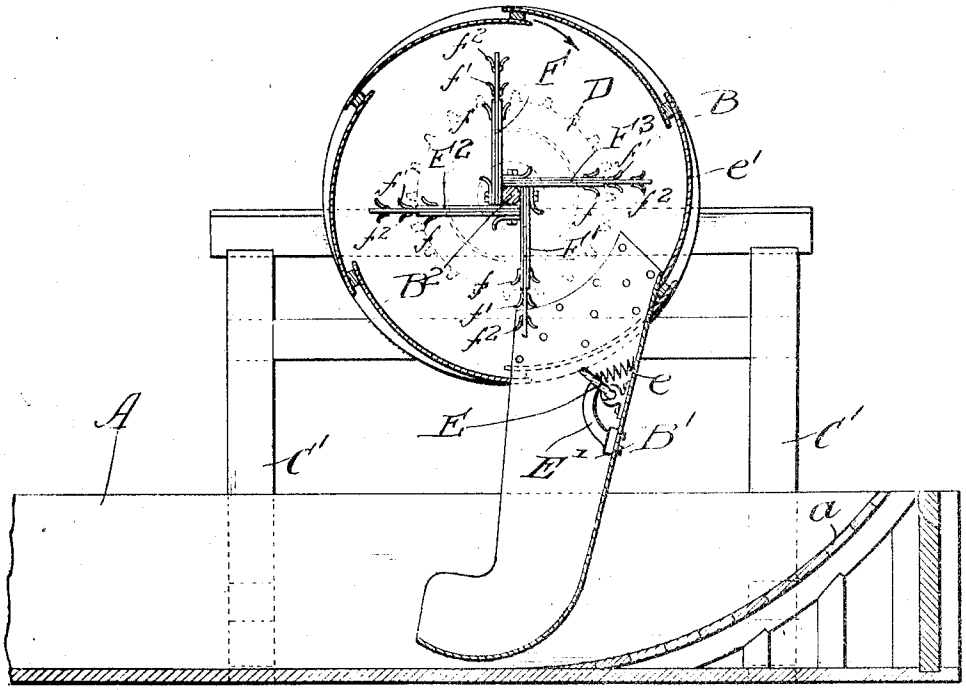


Fig. 5.

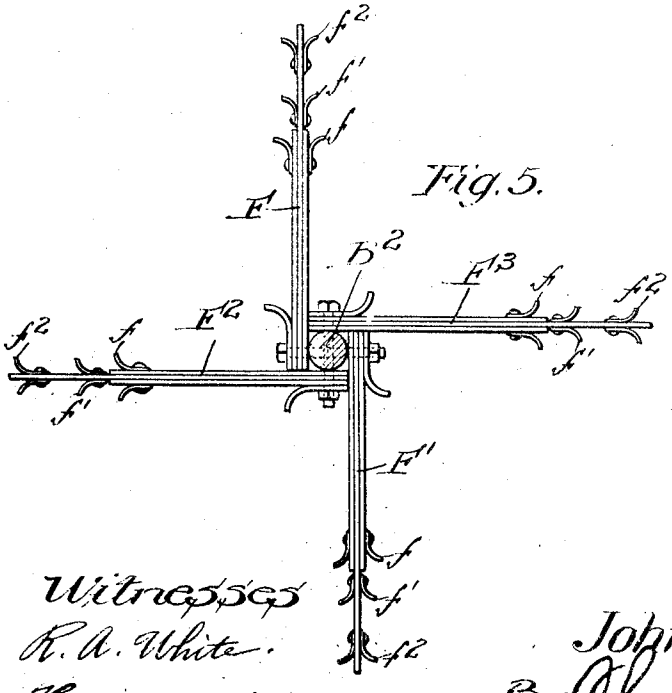
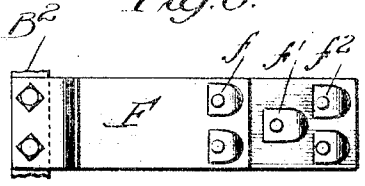


Fig. 6.



Witnesses
R. A. White.
Harry R. L. White

Inventor
John W. Kohlhepp.
By Charles Wood & Co Atty.

UNITED STATES PATENT OFFICE.

JOHN W. KOHLHEPP, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILLIAM B. ALLBRIGHT, OF CHICAGO, ILLINOIS.

MACHINE FOR DEHAIRING AND POLISHING CARCASSES.

1,002,920. Specification of Letters Patent. Patented Sept. 12, 1911.

Application filed March 3, 1909. Serial No. 481,182.

To all whom it may concern:

Be it known that I, JOHN W. KOHLHEPP, a citizen of the United States, and a resident of the city of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Machines for Dehairing and Polishing Carcasses; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference thereon, which form a part of this specification.

This invention relates to improvements in hog cleaning machines of that class set forth in my prior applications for patent for "Hog scrapers", filed May 18, 1906, Serial No. 317,451; "Carcass scraping and polishing machines", filed May 29, 1907, Serial No. 365,418; and "Carcass scraping and polishing machines", filed July 1, 1907, Serial No. 381,815.

In slaughtering establishments as heretofore constructed a large number of men are daily employed in dehairing and polishing the slaughtered animals, such as hogs, and the number required very greatly increases the cost of marketing the product. Various machines have from time to time been devised for this purpose, all of which while effective with certain classes of animals frequently operate unsatisfactorily or inefficiently with "rough" carcasses as they are termed, and furthermore the high initial cost of such machines and the large expense for repairs have tended to restrict the introduction of the same into use. Furthermore, such machines have heretofore required considerable space and more or less complicated mechanism to remove the scalded carcasses from the scalding tank or tub and deliver the same on the finishing bench.

The object of this invention is to provide a wholly automatically operating machine adapted to be installed in combination with a suitable scalding tank, to automatically remove the carcasses from the tank when the scalding is completed and to dehair and polish the same and eventually to deliver the carcasses to the bench when the operation has been completed.

It is a further object of the invention to afford a construction in which during the entire operation the carcasses are subjected to the action of the scalding water thus preventing the carcasses cooling, and furthermore, to so arrange the mechanism as to permit the carcasses to be delivered therethrough partly by gravity, whereby the rate of delivery may be regulated in part by the rate of drive of the mechanism.

The invention embraces many novel features and consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

As shown in the drawings: Figure 1 is a side elevation partly in longitudinal section and partly broken away of a device embodying my invention. Fig. 2 is a transverse section of the same. Fig. 3 is a section taken on line 3—3 of Fig. 1. Fig. 4 is a section taken on line 4—4 of Fig. 1. Fig. 5 is an enlarged detailed section of a beater shaft with the beaters thereon. Fig. 6 is an enlarged fragmentary detail showing one of the beaters in plan view.

As shown in the drawings: A scalding tank A, is provided over and adjacent the rear end of which is journaled an inclined scraping and polishing cylinder B, provided with an extension or boot B′ secured thereto, which scoops the carcasses and scalding water into the cylinder from the tank, where the carcasses are acted upon by the rotative beaters within the cylinder. Said tank A, as shown, may be of any desired size and length and is provided with an inwardly inclined end a, as shown. Journaled upon a suitable frame comprising upright members C—C′, on one side of the tank and C^2, on the opposite side thereof is the inclined cylinder B, the shaft B^2 of which is journaled in suitable bearings on said frame members. Said shaft B^2 is provided, as shown, with tight and loose driving pulleys b'—b^2—b^3, whereby said shaft may be rotated or if preferred, the direction of rotation thereof reversed by the use of a twist belt driving to one of said pulleys. Said cylinder B is journaled on the shaft and the weight thereof is supported on suitable rollers b^4—b^5, as shown in Figs. 1 and 2, and in dotted lines in Fig. 3, said rolls being journaled upon suitable standards which may be either connected with, or independent of, the main frame, as preferred, and as shown, indicated by b^6—b^7, said cylinder, as shown, being provided with a flanged circumferential band or track b^8—b^9, at a position to track on said rollers b^4—b^5.

Rigidly secured at the more elevated end

of the cylinder is a sprocket wheel D, adapted to be driven by a suitable sprocket chain trained over a suitable driving sprocket wheel driven from any source of power, and whereby said cylinder is continuously rotated. Secured by means of riveting or in any suitable manner to said cylinder at the more elevated end thereof and at a point intermediate the end of the cylinder and ring or track b^9 is a boot or chute B′, constructed of metallic plates bent or formed to the desired shape and affording a boot or scoop open on the forward side and which at the extremity curves forwardly, as shown in Fig. 4. Said boot extends at its inner end through the side wall of the cylinder and is of a width to receive therein the largest carcasses it is desired to scrape or dehair by means of the machine.

As shown, a spring impelled plate or shutter E, is pivotally engaged transversely of the chute at the inner end thereof and is provided with a pushing spring *e*, adapted normally to hold said plate extended to partly close the inner end of the chute or boot. Said pushing spring, however, is not sufficiently strong to prevent the plate folding inwardly under the weight of the carcasses passing into the cylinder. One or more stops E^1, are rigidly secured to the boot or scoop which bears against the outer side of the shutter in its closed position to prevent the shutter being forced outwardly by weight of the carcasses in the cylinder. The cylinder proper is constructed of spirally formed, longitudinal sections or staves indicated by *e′*. Of these, as shown, the rear edge of the one overlaps the forward edge of the next succeeding, and blocks are riveted or otherwise rigidly secured between the edges, affording a space between the edges of adjacent sections to permit water scooped into the cylinder with the carcasses draining therefrom. As shown also, said tank is extended laterally affording a semi-cylindric casing A^2, partly surrounding the cylinder to the lower end thereof and which inclines downwardly toward the tank to automatically deliver the fluid from the cylinder thereto. As shown also, a head a^2 is provided for said extension of the tank near the middle of the cylinder and this is perforated to permit the free passage of water back to the tank. As shown, a perforated metallic scraper A^3 is riveted or bolted to one of the staves of the cylinder and is shaped to fit to the cylindric extension A^2 of the tank so that as the cylinder rotates, the hair and refuse falling into said extension of the tank is swept upwardly by the scraper and delivered at one side of the machine, the water, of course, passing through said scraper and falling back to the tank.

Rigidly secured on the shaft B^2 are more or less flexible beaters constructed, as shown, of one or more strips or layers of resilient flexible material rigidly secured together and extending transversely of the shaft, and provided with scraping blades on each side of each beater, said resilient arms being indicated as a whole by F, and the oppositely disposed scraping blades by $f—f'—f^2$. As shown in Fig. 5, three such layers or thicknesses, conveniently of ordinary cotton belting or cotton belting impregnated with rubber, are used. These are bolted on opposite sides of the shaft in pairs, the beater F, being arranged oppositely to the beater F′, and the beater F^2 at right angles therewith and arranged oppositely to the beater F^3, and said sets of beaters alternating with the sets arranged at right angles therewith, as shown in Fig. 3. The length of said beaters is such that the ends thereof extend to near the periphery of the cylinder, conveniently into such proximity therewith as to assure the same effectively acting upon the carcasses passing through the cylinder. They may, of course, be constructed of any material that will act to some extent centrifugally to strike, beat or scrape the hair and scurf from the carcasses.

At the rear end of the machine, the cylinder is open or unobstructed, being supported as before described upon the rollers $b^4—b^5$, and extending downwardly and outwardly from the rear end is the bench G, upon which the hogs or carcasses slide from the machine.

The operation is as follows: The cylinder being driven in the direction indicated by the arrow in Fig. 4 by means of the sprocket wheel D, the carcasses from the scalding tank are scooped up in the boot or scoop B′ and slide therefrom into the cylinder. As the same enter the cylinder, the continued rotation thereof and the projecting ledges formed by the forwardly directed edges of the blades forming the successively arranged staves act to continuously roll the carcasses therein subjecting all portions thereof to the action of the beaters F to F^3 inclusive, which thus act to remove all the hair and bristles, the carcasses meanwhile continuing more or less slowly down the inclined cylinder partly by gravity and partly by the rotational action of the cylinder and the effect of the beaters.

Having completed the first rotation, should any carcass be positioned so that it might by any possibility fall into the boot B′, as the same is directed downwardly, it is obvious that the only effect would be in any event to again elevate the carcass, delivering it into the cylinder. Such carcasses, however, can not pass the blade E, which serves as a stop for such outward movement, and the beaters are adapted to act on the carcasses in the mouth of the boot

or on the shutter E, just as effectively as at any other position in the cylinder. As the operation progresses, the hair, bristles, and refuse pass rapidly between the staves into the extension A^2 of the scalding tank. Here, with each rotation of the cylinder, the perforated scraping blade A^3 as it passes within said shell engages the hair and bristles and pushes the same up the side of said extension, permitting the water to drain therethrough, at last delivering the same from the machine at one side thereof. Should it at any time be desired to reverse the rotation of the beater shaft, this may readily be accomplished as before described by shifting the twist belt from the loose pulley b^3 to the tight pulley b^2, in which event the straight belt, of course, simultaneously shifts from the tight pulley b' to the loose pulley b^3. This instantly reverses the drive of the beaters, thereby enabling the beater to be driven either in the same direction as the cylinder but at a much higher rate of speed, or in the opposite direction of the drive of the cylinder, in which event, of course, the action of the beater assists in rolling the carcasses.

Very many details of construction may be varied. I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art.

I claim as my invention:

1. The combination with a scalding tank of a rotative cylinder, means rotatable with the cylinder for picking up the carcasses from the tank and passing the same into the cylinder and mechanism within the cylinder acting to dehair the carcasses as they pass therethrough.

2. The combination with a scalding tank of a rotative cylinder adjacent thereto, means secured to the cylinder for automatically feeding the carcasses to the cylinder from the tank, and mechanism within the cylinder acting to dehair the carcasses as they pass therethrough.

3. The combination with a scalding tank of a rotative cylinder above the same, means adapted to automatically pick the carcasses from the tank and to deliver into the cylinder through the side thereof, and mechanisms within the cylinder acting to dehair and polish the carcasses as they pass therethrough.

4. The combination with a scalding tank of a rotative cylinder, a member rotatable with the cylinder for feeding carcasses and water into the cylinder, flexible mechanism within the cylinder for dehairing the carcasses as they move therepast, a casing below the cylinder for returning the water to the tank and a perforated member rotatable with the cylinder adapted to remove the hair and refuse from the water in the casing before the water is delivered back to the tank.

5. The combination with a scalding tank of a rotative cylinder, means attached to the cylinder adapted to automatically pick up the carcasses from the tank and to pass the same into the cylinder, reversible mechanism within the cylinder acting to dehair the carcasses as they pass therethrough, and a shutter secured to the cylinder to prevent the carcass from falling from the cylinder back into the tank.

6. The combination with a scalding tank of a rotative cylinder adapted to admit water therethrough, means rotatable with the cylinder adapted to automatically remove carcasses from the tank and to deliver the same into the cylinder and beaters rotatable in the cylinder adapted to be reversed in cleaning the carcasses.

7. In a machine of the class described a cylinder, mechanism secured thereon acting to automatically deliver the carcasses to be operated upon into the cylinder and rotative beaters within the cylinder acting to dehair the carcasses.

8. In a machine of the class described a cylinder, mechanism secured thereto acting to automatically deliver the carcasses to be operated upon into the cylinder together with water for washing the carcasses, and rotative beaters within the cylinder acting to dehair the carcasses by striking the same, means below the cylinder adapted to return the water into the tank and means for separating the hair and refuse from the water before its return to the tank.

9. In a machine of the class described a tank, a cylinder, mechanism secured thereto acting to automatically remove the carcasses from the tank to the cylinder and to deliver water into the casing for washing the carcasses, said cylinder being slotted to permit the water to flow therefrom back into the tank and rotatable mechanism for cleaning the carcasses while in the cylinder.

10. A carcass cleaning and polishing machine comprising a tank rotating mechanism adapted to automatically pick up the carcasses and water from the tank, cleaning mechanism for acting on the carcasses after the same are picked up and a separating mechanism for receiving the water and refuse from the cleaning mechanism and separating the refuse from the water and delivering the water to the tank.

11. The combination with a scalding tank of a cylinder journaled above the same, means rotating the cylinder, a boot operated with the cylinder to scoop the carcasses from the tank into the cylinder and dehairing mechanism within the cylinder and operating conjointly therewith.

12. The combination with a scalding tank of a cylinder journaled above the same, means for rotating the cylinder, a boot opening into the cylinder and rotatable therewith to scoop the carcasses and a quantity

of water from the tank into the cylinder, automatic means for partially closing the boot to prevent a carcass falling from the cylinder therethrough, and dehairing and scurf removing mechanism within the cylinder operating conjointly therewith to clean the carcasses.

13. The combination with a scalding tank of a cylinder journaled above the same, means for rotating the cylinder, means secured to and operated with the cylinder to remove the carcasses from the tank into the cylinder, cleaning mechanism within the cylinder, and means for reversely rotating the cleaning mechanism to act oppositely on the carcasses.

14. A machine of the class described comprising a scalding tank, a rotative cylinder journaled transversely thereof, a scoop rigidly secured on the cylinder adapted during part of the rotation thereof to extend into the tank to successively scoop the carcasses into the cylinder, scraping mechanism in the cylinder, means for rotating the scraping mechanism within the cylinder and relatively of the cylinder, means reversing the rotation of one of said elements independently of the other to vary the scraping operation.

15. A machine of the class described comprising a scalding tank, a rotative cylinder journaled transversely thereof, comprising spirally arranged sections, means separating the sections at the edges providing openings, means rigidly secured on the cylinder adapted during part of the rotation thereof to extend into the tank to scoop the carcasses into the cylinder and water for washing the carcasses, said water adapted to pass through the openings, means for returning the water to the tank, means for removing the bristles from the water before delivery into the tank, scraping mechanism within the cylinder, and means for rotating the scraping mechanism in the same direction as the cylinder or reversely thereto.

16. A machine of the class described comprising a scalding tank, a rotative cylinder journaled transversely thereof, means rigidly secured on the cylinder adapted during part of the rotation thereof to extend into the tank to transfer carcasses into the cylinder and to scoop water for washing the carcasses into the cylinder, means for catching and returning the water from the cylinder into the tank, rotating means for removing all the bristles and other refuse matter from the water before its return to the tank and mechanism for loosening the bristles and refuse from the carcasses.

17. In a machine of the class described a tank having a cylindrical concave extension thereon, an inclined cylinder journaled transversely the tank, a boot rigidly secured to the cylinder and adapted to project into the tank to scoop the carcasses therefrom into the cylinder, a shaft journaled axially in the cylinder, means for rotating the same in opposite directions, flexible beaters thereon, longitudinal apertures in the side of the cylinder affording inwardly projecting ribs whereby the carcasses are rotated and scrapers rigidly secured on said shaft to remove the hair and refuse from the carcasses.

18. In a machine of the class described a tank, an inclined cylinder journaled transversely the tank and having an opening, a boot rigidly secured on the cylinder adjacent the opening and adapted to project into the tank to remove the carcasses and water therefrom into the cylinder, means for partially closing the opening to prevent the carcasses being returned to the tank, a shaft journaled axially the cylinder, means for rotating the same, flexible beaters thereon, said cylinder having longitudinal slots in the side thereof affording inwardly projecting ribs for rotating the carcasses and scraping and beating mechanism rigidly secured to said shaft for removing the hair and refuse from the carcasses.

19. In a machine of the class described the combination with a scalding tank of a rotative cylinder journaled transversely the same and inclined toward its lower open end, means for rotating the cylinder, a broad scoop opening through the side thereof and adapted to extend into the tank to scoop the carcasses therefrom and deliver the same with each rotation thereof into the cylinder, whereby the carcasses in rapid succession may be passed into, and continuously through said cylinder and scraping mechanism within the cylinder for acting on the carcasses.

20. In a machine of the class described the combination with a scalding tank of a rotative longitudinally slotted cylinder journaled transversely the same and inclined toward its lower open end, means for rotating the cylinder, a broad scoop opening through the side thereof and adapted to transfer the carcasses from the tank into the cylinder and to supply water to wash the carcasses, said water adapted to pass through the slots in the cylinder, a scraping mechanism within the cylinder and means for separating the refuse from the water and returning the water to the tank.

21. In a device of the class described a rotatable cylinder, scraping mechanism therein, means for delivering carcasses and water into the cylinder, and rotatable means below the cylinder for separating the refuse from the water.

22. In a device of the class described a cylinder, scraping mechanism therein, a tank from which water is delivered into the cylinder, means for delivering carcasses into the cylinder, inclined stationary means be-

low the cylinder for catching the water and refuse delivered therefrom, and returning the water to the tank and rotary means secured to the cylinder for straining the refuse from the water and delivering the same from the stationary means.

23. A carcass cleaning and polishing machine comprising a cylinder means adapted to automatically deliver the carcasses and water thereto, means for cleaning the carcasses in the cylinder, and means rotatable with the cylinder for separating the bristles and scurf from the water.

24. A carcass cleaning machine comprising a scalding tank, a cylinder, means secured thereto for picking up a carcass from the tank and delivering the same together with water from the tank to the cylinder, means for removing the bristles from the carcass adapting the water to wash the bristles from the cylinder and means for separating the bristles from the water and returning the water to the tank.

25. In a device of the class described a cylinder, an automatically acting carcass and water feeder secured thereto, means for rotating the cylinder and feeder and a perforated separating member secured to, and rotatable with the cylinder for separating the bristles from the water.

26. In a device of the class described a tank, a cylinder, an automatically acting carcass feeder secured thereto adapted to supply water from the tank to the cylinder, a perforated separating member secured to, and rotatable with the cylinder, adapted to separate the refuse from the water and double acting beaters in the cylinder.

27. In a device of the class described a cylinder, a scoop opening thereinto, a scurf and hair separating member secured to the cylinder and dehairing and scurf removing mechanism in the cylinder.

28. In a machine of the class described an inclined cylinder journaled to rotate, a scoop secured to the cylinder at the highest end thereof adapted to deliver carcasses thereinto, an inclined shaft in the cylinder and beaters on the shaft.

29. In a machine of the class described a cylinder comprising sections having the edges overlapping, spacing members secured between the overlapped edges and beating mechanism in the cylinder, a pick-up scoop secured to the cylinder and a separating member secured to the cylinder.

30. In a machine of the class described a cylinder comprising sections having the edges overlapping, spacing members secured between the overlapped edges, beating mechanism in the cylinder, a scoop opening through the wall of the cylinder and a spring pressed shutter for closing the opening sufficiently to prevent a carcass passing in one direction.

31. In a device of the class described a rotatable cylinder having an opening in the side thereof, means for delivering carcasses through said opening and means for preventing the carcasses from falling from the cylinder through said opening.

32. In a device of the class described a rotatable cylinder, a scoop opening from the side thereof, and means for closing the mouth of the scoop sufficiently to prevent a carcass falling from the cylinder into the scoop.

33. In a device of the class described a cylinder provided with an opening, means for delivering carcasses through the opening, into the cylinder, means adapted to close the opening to prevent carcasses from falling from the cylinder and flexible beaters in the cylinder.

34. In a device of the class described a cylinder provided with an opening, means normally closing the opening adapted to automatically open by weight of a carcass to admit the carcass into the cylinder and means automatically operating said means to prevent the carcass falling from the cylinder.

35. In a device of the class described a rotatable cylinder provided with an opening, a shutter pivoted to close said opening adapted to be automatically opened by the carcasses in passing into the cylinder and to automatically close to prevent a carcass from falling out of the cylinder, a shaft extending through the cylinder and flexible beaters thereon for acting on the carcasses as delivered through the opening and until the carcasses leave the cylinder.

36. In a device of the class described a cylinder, ribs struck inwardly from the cylinder providing longitudinal slots, a scoop opening into the side of the cylinder for delivering carcasses thereinto and flexible beating mechanisms rotatable in the cylinder for acting on the carcasses therein.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

JOHN W. KOHLHEPP.

Witnesses:
K. E. HANNAH,
LAWRENCE REIBSTEIN.