J. W. KOHLHEPP.

CARCASS SCALDING, DEHAIRING, AND POLISHING MACHINE.

APPLICATION FILED FEB. 12, 1912.

1,210,951.

Patented Jan. 2, 1917

3 SHEETS—SHEET 1.

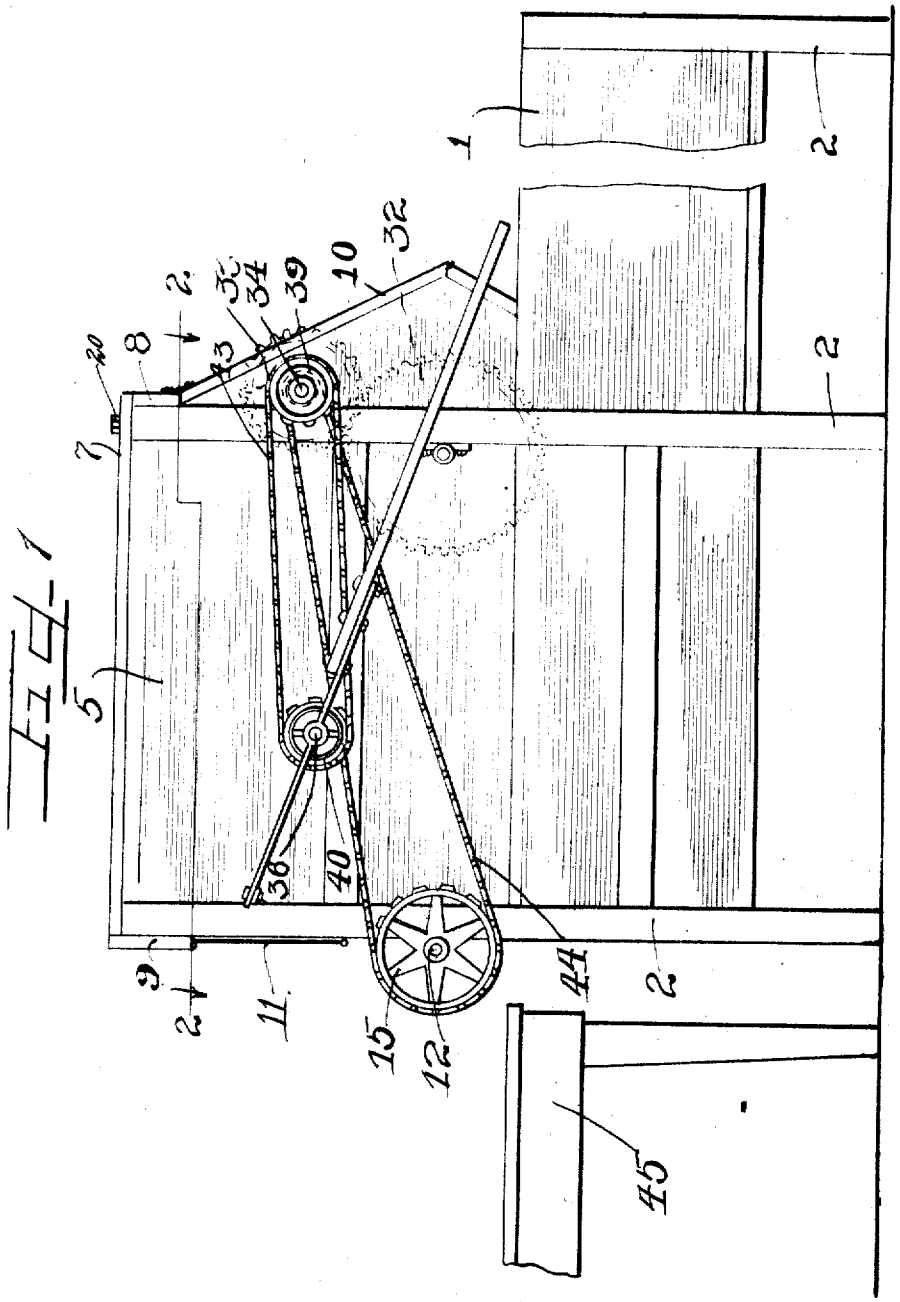


Fig. 1

Witnesses

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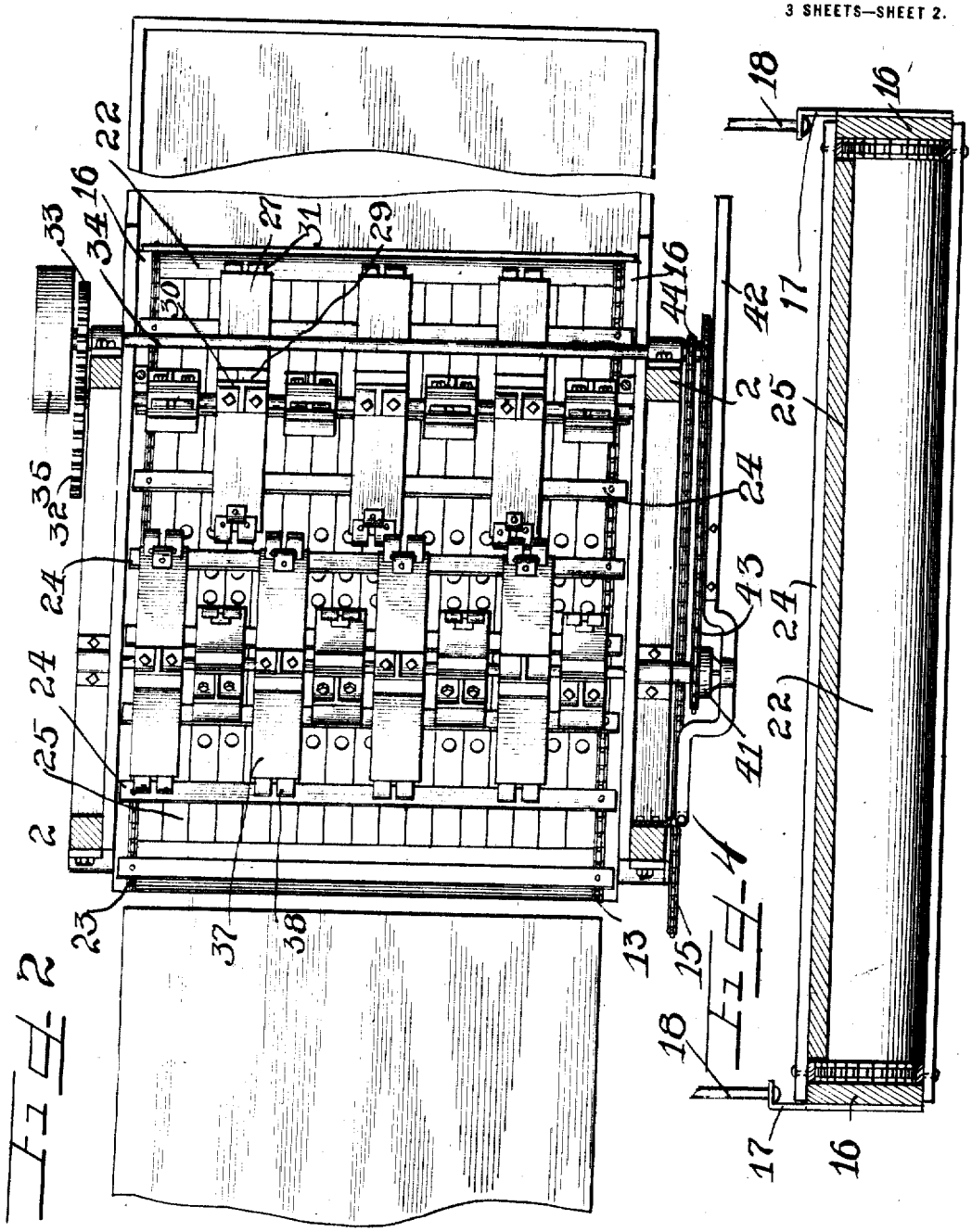


FIG. 2

FIG. 1

Witnesses

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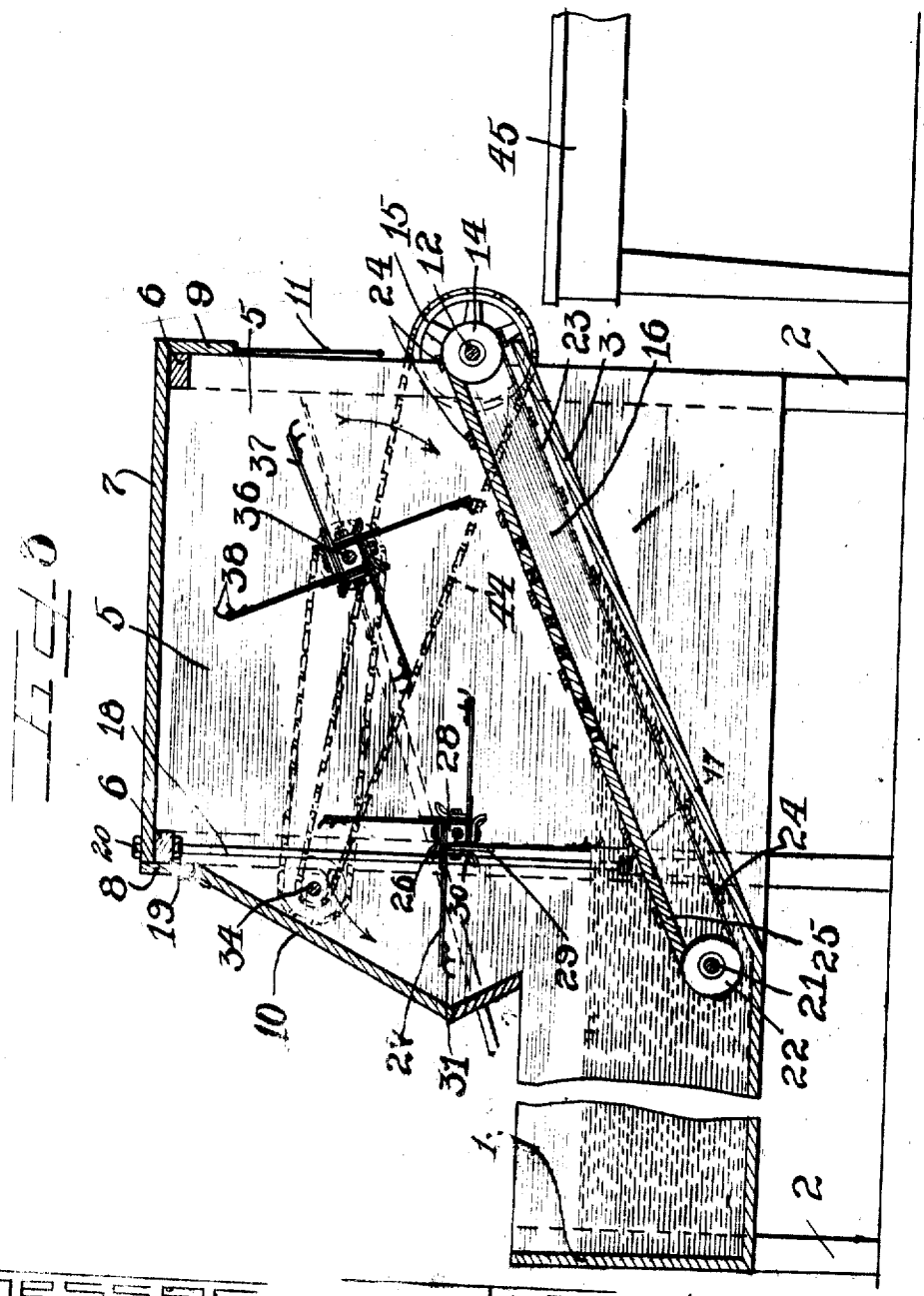
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN W. KOHLHEPP, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ALLBRIGHT MILL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CARCASS SCALDING, DEHAIRING, AND POLISHING MACHINE.

1,210,951. Specification of Letters Patent. Patented Jan. 2, 1917.

Application filed February 12, 1912. Serial No. 677,133.

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, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Carcass Scalding, Dehairing, and Polishing Machines; 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 numbers of reference marked thereon, which form a part of this specification.

This invention relates to that class of devices set forth in the patents for my prior inventions, to-wit, "Hog scrapers", issued June 6, 1911, No. 994,523, and "Carcass scraping and polishing machines", issued June 6, 1911, No. 994,524.

The machines as heretofore constructed, have been more particularly adapted for the large capacity required in the largest packing establishments, and have been adapted to satisfactorily dehair and polish from five hundred hogs per hour to approximately one thousand hogs per hour, or even a larger number. In consequence, such machines have been of such large size, and have necessitated the expenditure of such power, and have been so expensive, that the smaller packing establishments have not found it practical to use the same, particularly where the number of hogs to be slaughtered would not exceed several hundred per day. In consequence, the smaller packing plants have been forced to continue the scraping and polishing of the carcass by manual labor, thus greatly increasing the expense for the treatment of each carcass as compared with the larger plants, and putting such smaller plants at a serious disadvantage in marketing, owing to the larger cost entailed for the preparation of the product. In all the other machines heretofore devised for the purpose, the operator has no control whatever over the carcasses after the same have been started into the machine, and in consequence, where rough or old hogs are slaughtered, and treated simultaneously with younger hogs, such machines have not always worked satisfactorily, inasmuch as the time required to dehair the rough hogs is much greater than required to dehair the younger and more tender hogs, and, in consequence, either the one is not fully dehaired and not properly polished, or the other is subjected to serious injury if retained in the machine long enough to dehair the rough carcasses.

The object of this invention is to provide a machine for the purpose specified, in which the carcasses are under the control of the operator at all times to permit the period of treatment to be varied to suit the condition of the carcass.

It is also an object of the invention to afford a construction wherein the scalding tank and scraping and polishing machines, are constructed and assembled as substantially one machine, and wherein the dehairing mechanism acts to constantly spray or dash the scalding water from the scalding tank upon the carcasses during operation.

It is also an object of the invention to afford a construction wherein the carcasses are moved upon a suitable conveyer, one by one, into the machine, and wherein a rotative shaft having radial beaters thereon, dips into the scalding water in the tank sufficiently low to dash the scalding water upon the carcass and simultaneously beats the scalded carcass to dehair the same.

It is also an object of the invention to afford a construction comprising the scalding tank and an inclined conveyer leading upwardly and outwardly from one end thereof, and having revolving beaters acting upon the carcass and oppositely from the movement of the conveyer, to continuously rotate the carcass while operated upon.

A further object of the invention is to afford a device of the class described, wherein the carcasses from the scalding tank, are delivered upon a suitably inclined conveyer transversely thereof, and wherein two revolving beater shafts journaled above the conveyer (the one at the inlet end of the machine, and the other at the discharge end thereof are equipped with beaters) are rotated oppositely, the one to facilitate the movement of the carcass upon the conveyer toward the discharge end, the other to strike and roll the carcass back upon the conveyer, permitting discharge from the machine only when its motion is arrested.

It is an object of the invention also to afford a scalding tank equipped with a machine for scraping and dehairing carcasses,

and whereby the carcasses are scraped and polished and delivered from the machine, and whereby also the refuse is delivered from the scalding receptacle and machine.

The invention, (in a preferred form) is illustrated in the drawings, and hereinafter more fully described.

In the drawings: Figure 1 is a side elevation, partly broken away, of a machine embodying my invention. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is a central vertical section of the machine, with the tank broken away. Fig. 4 is an enlarged sectional detail of the conveyer, illustrating the suspension for the inner end thereof.

As shown in the drawings: 1, indicates the scalding tank, the capacity of which may vary with the quantity or number of hogs to be slaughtered per hour, but which (as the machine is intended for small plants) is preferably of small capacity. Said scalding tank is supported upon legs 2, of suitable height, and the rear or discharge end thereof inclined upwardly, the end wall 3, therefor, affording an incline corresponding somewhat with the inclination of a conveyer hereinafter described, by which the carcasses are handled.

The scraping and polishing machine is built upon the discharge end of the tank, and, for this purpose, side walls 5, of suitable length, are extended upwardly to a desired height, the legs 2, at and near the rear end of the machine, being extended upwardly to afford a frame therefor. Beams 6, extend transversely the machine, and are supported on the upper ends or tops of said legs and afford transverse ties for said side walls. A cover 7, of any suitable kind or material, is secured on said beams to entirely cover said scraping and polishing machine and to confine the dirt, hair or other refuse and spray within the machine.

Extending downwardly from the cover 7, at the forward or inlet end of the machine, is a relatively narrow end board 8, permanently secured in place, and similarly at the rear end of the machine and extending downwardly from the top, is an end wall 9. A removable end wall shown as hinged door 10, is detachably engaged in any suitable manner upon the front inclined ends of the side-boards extending from the narrow permanent end wall 8, to near the top of the scalding tank.

A removable end wall 11, constructed of canvas or any other suitable material is swingingly engaged below the end wall section 9. Journaled transversely the machine at the rear end thereof, and just above the end of the inclined end wall 3, is a conveyer shaft 12, having a sprocket wheel 13, on each end thereof, and having between said sprocket wheels a drum or cylinder 14, approximately equal in diameter to said sprocket wheels. A sprocket wheel, 15, is provided on the outer end of said shaft for driving the same.

Extending downwardly into the tank substantially parallel to the inclined end wall 3, are side rails 16, to each of which on its outer side, is secured a link 17, which engages the head of a supporting rod 18, which extends upwardly along the side wall of the tank and through the beam 6, and cover-board 7, and is engaged in place by suitable nuts 19 and 20, the one beneath the beam 6, and the other at the extremity of said rod and above the cover-board, thus firmly engaging the same in place from vibration, and acting to support the inner end of said rails thereon. Journaled in the inner ends of said rails, is a shaft 21, having a barrel or drum 22, thereon corresponding with the barrel 14, before described, and provided with a sprocket wheel at each end thereof in alinement with the corresponding sprocket wheels 13, on the shaft. Sprocket chains 23, are trained around corresponding sprocket wheels, and transverse lags 24, are secured thereon affording a conveyer. As shown, an apertured deck or floor 25, is supported on said side rails 16, and shaped at its ends to fit against the drums or barrels 14 and 22, respectively on said conveyer shafts, so that the upper run of said conveyer slides thereover, as shown in Fig. 3. A shaft 26, is journaled horizontally above the lower end of said conveyer and transversely the scalding tank, and rigidly secured thereon are beaters 27, arranged in oppositely directed pairs on (and substantially radially of) said shafts. Each of said beaters 27, comprises a piece of rubber belting of suitable width and of a length for the end thereof to dip into the water of the scalding tank, as shown in Fig. 3, as the shaft is rotated. The pairs of beaters are arranged on said shaft at right angles with each other, as shown in Fig. 3, and, as shown, are offset from the shaft slightly, being secured upon a suitable hub 28, substantially rectangular in form, and on opposite sides of which the beaters are secured. A relatively short strip of similar rubber belting 29, is secured on the outer side of the beater at its inner end at the hub, and at the outer side thereof is a curved plate 30. Suitable bolts extend through said curved flexible plates, 29, and beater 27, acting to rigidly secure the beaters of each pair to the shaft.

At the outer end of each of the beaters is provided a plurality of curved scraping knives 31, in the usual manner. At the outer end of said beater shaft is a gear wheel 32, which meshes with a gear wheel 33, on a main driving shaft 34, journaled transversely the shaft and above the beater shaft, and on the end of which is engaged a belt

pulley 35. Power is communicated to said shaft 34, by means of said belt pulley to rotate the beater shaft 26, so that the downwardly directed beater arms thereon strike upwardly and rearwardly, or, in other words, in the direction of travel of the conveyer.

Near the rear end of the machine, and also above the conveyer, is a beater shaft 36, parallel the beater shaft 26, before described, and having similar arms 37, thereon, similar to the beater arms 27, before described. Said beater arms are of a length to extend within close proximity of the upper run of the conveyer, and are likewise provided at their extremity with curved scraping plates or knives 38, corresponding with the scraping plates or knives before described. A sprocket wheel 39, is provided on the outer end of the main driving shaft 34, and a corresponding sprocket wheel 40, is engaged on the extremity of the beater shaft 36, by means of a clutch 41, adapted to be operated by a lever 42, from the operator's position alongside the scalding tank. A sprocket chain 43, is trained about said sprocket wheels so that the inner beater shaft 36, is rotated in the same direction with the main driving shaft or oppositely from the rotation of the lower or inner beater shaft, that is to say, while the beater arms on the inner beater shaft strike upwardly on the carcass and outwardly, the beater arms on the upper or rear beater shaft 36, strike downwardly and inwardly thereon or against the draft of the conveyer.

A suitable sprocket wheel is provided near the extremity of the main driving shaft 34, and trained about the same and about the sprocket wheel 15, on the rear conveyer shaft, is a sprocket chain 44, whereby the conveyer is actuated. The gambreling table 45, is positioned at the rear end of the machine to receive the carcasses as they drop from the conveyer. Said table, however, is spaced a sufficient distance from the rear end of the machine to permit the hair and refuse carried from the machine by the conveyer, to drop between said table and the machine, as shown in Fig. 3.

The operation is as follows: The slaughtered carcasses, are delivered into the scalding tank in the usual or in any suitable manner, and the operator (who stands upon a suitable platform at the side of the tank) arranges the carcasses transversely the tank substantially parallel the beater shaft 26 and pushes the same onto the conveyer. As the carcass is engaged by the conveyer, the beater arms 27, of the beater shaft 26, strikes upwardly thereon, assisting the conveyer to move the carcasses into the machine, preventing the carcasses from sliding from the conveyer back into the tank. As the conveyer moves the carcass upwardly and inwardly of the machine, the carcass is deluged with water, which is dashed over it by the beater arms 27, striking into the water and throwing the same rearwardly, and this operation continues all the time the carcass remains in the machine.

When the carcass reaches a position to be engaged by the rear beater arms or those upon the beater shaft 36, these striking downwardly and inwardly upon the carcass, and oppositely from the drive of the conveyer, cause the carcass to rotate constantly in the field of operation, presenting every portion of the carcass to the action of the beaters, while the water dashed upon the carcass by the beaters 27, thoroughly washes and cleanses the same as well as continues the scalding, until the carcass is discharged from the machine.

When (from his knowledge of the condition of the carcass, and his experience) the operator has decided the carcass is ready to discharge from the machine, he engages the lever 42, and disengages the clutch, thus stopping the drive of the beater shaft 36, whereupon the carcass is quickly discharged from the rear end of the machine by the conveyer and falls upon the table 45, ready for gambreling.

Inasmuch as the conveyer is driven constantly, all hair and refuse falling upon the conveyer is delivered from the machine, falling to the floor or upon any suitable conveyer between the machine and the gambreling table. Inasmuch as the lower beater shaft is driven constantly and also the conveyer, it follows that the carcasses may be delivered very rapidly into the machine, the period of stoppage for the upper rear beater shaft to permit the discharge of the carcass from the machine, being less than the period necessitated to permit another carcass to be brought within the field of operation of the machine.

It is to be understood, of course, that although I have shown but two beater shafts, a greater number may be employed, and it is also to be understood that any suitable means may be employed for conveying the carcasses through the machine substantially parallel with the beater shafts and in the field of their operation. It is to be understood further that although I have shown (and prefer) that the carcasses are constantly sprayed and washed with the hot water from the scalding tank by the action of the beaters on the lower or inner beater shaft dashing the same thereover, that any other suitable means may be employed for this purpose, if desired, and, although I have shown as an important function of the lower beater shaft, its coaction with the conveyer in moving the carcasses onto the conveyer, it is to be understood that other means may be employed for this purpose, as

also may other means than the upper beater shaft for turning the carcasses, if desired.

Numerous details of construction may be varied without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted on this application otherwise than necessitated by the prior art.

I claim as my invention:

1. A scalding tank and a dehairing and polishing machine mounted thereon and embracing a transversely movable conveyer, a beater shaft journaled transversely the tank and above the inner end of the conveyer, beaters thereon striking inwardly and upwardly of the conveyer and acting to assist in loading the carcasses thereon and acting to spray and dash the hot water from the tank on said carcasses while beating and scraping the same and while supported on said conveyer, and means for rotating said carcasses on said conveyer.

2. A machine of the class described embracing a scalding tank, an inclined, constantly movable conveyer therein, discharging at one end therefrom, a transverse beater shaft, journaled above the lower end of the conveyer, beaters thereon dipping into the water of the tank and striking in the direction of travel of the conveyer, and coacting with the conveyer in loading the same, an upper beater shaft journaled transversely the conveyer, beaters thereon striking downwardly and oppositely from the travel of the conveyer and acting to rotate the carcasses thereon, and means throwing said upper beater shaft out of action to permit the discharge of the carcasses therepast.

3. A machine of the class described embracing a scalding tank, a continuously movable conveyer discharging from the end of the tank, scraping and polishing means mounted on the tank above the inner end of the conveyer and co-acting with the conveyer in loading the carcasses thereon, and acting to dash the hot water from the tank thereover while moving on the conveyer, an upper rotative beater shaft, means for rotating the same to strike downwardly and oppositely from the travel of the conveyer and acting thereby to rotate the carcasses thereon, and a clutch acting to throw said beater shaft out of action to permit the discharge of the carcasses therepast.

4. A machine of the class described comprising a scalding tank, a scraping and polishing machine mounted at the inner end thereof and embracing a continuously movable conveyer, an upper and a lower beater shaft journaled transversely the machine, beaters thereon, means rotating said beater shafts, the lower at a relatively slow rate to strike upwardly and in the direction of travel of the conveyer to facilitate the loading of the carcasses thereon and to dash the water from the tank thereover, the other at a higher rate of speed and downwardly and oppositely from the movement of the shaft to co-act therewith in rotating the carcasses thereon, and means arresting the rotation of the upper beater shaft to permit the discharge of carcasses therepast and from the machine.

5. In a machine of the class described a scalding tank, an inclined conveyer extending from near the bottom thereof and upwardly and outwardly from one end of the same, and adapted to convey scalded carcasses and the refuse therefrom from the machine, rotative beater shafts supported above the inner end of said conveyer and near the upper end thereof, and rotated oppositely, and beater arms thereon, one acting in the direction of the travel of the conveyer to load the carcasses thereon and spray the same with the water from the tank, the other acting downwardly thereon to rotate the carcasses.

6. In a machine of the class described the scalding tank, the inclined conveyer leading therefrom, a rotative beater shaft arranged transversely the tank above the inner end of the conveyer, beater arms thereon of a length to dip into the water of the tank, means for rotating said beater shaft for the beater arms thereon to strike upwardly and in the direction of travel of the conveyer to assist in loading the carcasses thereon while scraping and dehairing the same, scraping and dehairing means near the upper end of the conveyer acting also to rotate the carcasses on the conveyer, and means throwing the latter out of action to permit the discharge of the carcasses therepast.

7. In a machine of the class described the scalding tank, the inclined conveyer leading upwardly and outwardly therefrom, means acting to assist in loading the carcasses upon the conveyer and to spray the carcasses with water from the tank, a beater shaft journaled above the discharge end of the conveyer, beaters thereon, means for rotating said shaft for the beaters thereon to strike downwardly and oppositely from the direction of travel of the conveyer to rotate the carcasses thereon, and a clutch for throwing said shaft out of action to permit the carcasses to be discharged therepast.

8. The combination with a scalding tank, of a carcass scraping and polishing machine mounted thereon, said scrapers deluging the carcass with water from and above the level in the tank and acting to scrape and polish the carcasses and to discharge the same therefrom.

9. The combination with a carcass scalding tank, of an inclined conveyer extending thereinto and acting to deliver the carcass s therefrom and oppositely rotatable

scraping and polishing means mounted above said conveyer, one acting to assist the conveyer in loading the carcasses thereon, the other to resist discharge of the carcasses from the conveyer, said beating and scraping means acting to retain and rotate the carcasses at a predetermined place on the conveyer during the scraping and polishing operation and means throwing one of said scraping mechanisms out of action to permit the discharge of the carcass therepast and from the machine.

10. A machine of the class described embracing a scalding tank, an inclined endless conveyer thereon to discharge the hair and scrape and polish the hogs therefrom and oppositely rotating scraping and polishing means mounted above the conveyer and acting to rotate, scrape and polish the carcasses on the conveyer while moving from the tank to the point of discharge.

11. A device of the class described comprising a water tank, an endless inclined partially submerged conveyer within said tank and extending through one wall of the same and beaters arranged above said conveyer adapted to coöperate therewith to dehair and polish a carcass thereon.

12. A device of the class described comprising a tank, a superstructure thereon inclosing one end thereof, an inclined conveyer extending from near the bottom of said tank upwardly into the superstructure, beaters mounted in said superstructure adapted to strike a carcass while on the conveyer, and entrance and exit openings in said superstructure for the carcasses.

13. A machine of the class described embracing a scalding tank, an endless conveyer partially submerged therein, oppositely rotating beaters arranged at different heights, and means driving the lower beaters at a different rate than the upper.

14. A machine of the class described embracing a partially submerged inclined conveyer, oppositely rotating beaters arranged at different heights conforming to the inclination of the conveyer, one of said beaters adapted to dash water on the conveyer portion above the water level and means providing for the admission and discharge of a carcass from the machine.

15. A machine of the class described comprising an endless inclined conveyer, beaters arranged thereover, driving mechanism connecting said beaters and conveyer, and means throwing certain of said beaters out of action.

16. In a machine of the class described a pair of upper and lower beater shafts, flexible beaters thereon, an inclined conveyer adapted to deliver the carcasses to be delivered to and past said beaters, means driving said beater shafts, the lower to strike upwardly and inwardly, the other to strike oppositely therefrom and at a higher speed, and a clutch acting to disconnect the drive for the upper beater shaft to permit the carcasses to move therepast on the conveyer.

17. In a device of the class described, stationary mounted power driven revoluble supporting mechanism, rotating scraping means thereabove adapted to act conjointly therewith to dehair a carcass therebetween, and means for throwing certain of said scraping means out of action.

18. In a device of the class described moving supporting means for the carcass, rotating scraper elements adapted to coact therewith to rotate and scrape the carcass, and means for throwing one of said scraper elements out of action permitting the carcass to be discharged by said supporting means.

19. In a device of the class described stationary mounted revoluble supporting and scraping means for the carcass, rotating means mounted above and adjacent thereto affording a pocket to receive, rotate and scrape the carcass, and means adapted to throw certain of said elements out of action to permit discharge of the carcass.

20. In a device of the class described a plurality of rotating scraping means, a movable supporting element coacting therewith to dehair a carcass, and means throwing certain of said means out of action to permit said element to discharge the carcass.

21. In a hog scraping machine rotating means, scrapers yieldably mounted thereon, a revoluble supporting element with its axis parallel that of said rotating means and means for throwing certain of said scrapers out of action to permit discharge of the carcass.

22. In a hog scraping machine, scrapers, a continuous conveyer to convey the carcass toward the field of operation of said scrapers, and means throwing certain of said scrapers out of action to permit the carcass to be carried out of the field of operation of said scrapers and discharged.

23. In a hog scraping machine rotatable yieldable scraping elements, revoluble supporting and scraping means for the carcass and hinged means adapted to throw certain of said rotatable elements out of action to permit the discharge of the carcass.

24. In a hog scraping machine yieldingly mounted revoluble scraping elements, and a movable supporting and scraping means for the carcass, certain of said scraping elements pivotally mounted and adapted to be held out of the field of operation to permit discharge of the carcass.

25. In a device of the class described movable supporting and scraping means for the carcass, rotatable scraping elements thereabove, means spraying the carcass with water, and means throwing one of said rota-

table elements out of operation to permit discharge of the carcass.

26. In a hog-scraping apparatus, the combination of a rotary scraping device, a support for the carcass, means to move this support in a fixed path and in a linear direction to hold the carcass within the line of action of the scraping device, this latter being so held with reference to the support as to prevent the carcass from passing it.

27. In a hog-scraping apparatus, the combination of a rotary scraping device, a carrier traveling in a permanently fixed path upon which the carcass rests and whereby it is moved into contact with the scraping device and means provided on the carrier and tending while advancing onward with the carrier to overcome the repelling reaction of the scraping device by pushing the carcass and holding it against said device.

28. In a hog-scraping apparatus, the combination of a rotary scraping device, a carrier which travels in a permanently fixed path whereby the carcass is moved into contact with the scraping-device, which latter is so supported with reference to the carrier as to prevent further progress of the carcass after this latter contacts with the scraping device, and means provided on the carrier which with coaction of the scraping-device cause the carcass to be turned and rolled about itself.

29. In a hog-scraping apparatus, the combination of a rotary scraping device, a stationary support for the carcass, and a flexible carrier comprising transversely arranged bars by and upon which the carcass is moved along said support within the action of the scraping device said support serving as a frame upon which said carrier is mounted so as to occupy a fixed position below said scraping device and to travel in a permanently fixed path while occupying said position.

30. In a hog-scraping apparatus, the combination of a rotary scraping device, a stationary inclined support for the carcass and a carrier positioned to travel in a permanently fixed path below said scraping device and whereby a carcass is moved along on said support within action of said device, said carrier comprising transversely arranged bars upon which the carcass rests while being moved forward.

31. In a device of the class described beaters, mechanism for moving the carcasses upwardly into the field of, and elevating the same at a predetermined point toward the beaters, oppositely rotating beating shafts, and means throwing one of the beater shafts out of action to permit passage of the carcass thereby.

32. In a hog scraping machine means acting to advance the carcass upwardly intermittently, and dehairing elements adapted to be thrown out of action during the advancement of said carcass.

33. In a hog scraping machine a supporting and dehairing element acting to advance the carcass intermittently, and dehairing mechanisms acting respectively to assist and retard the advance of the carcass.

34. In a hog scraping machine scraping mechanisms, and revoluble supporting and dehairing elements adapted to elevate the carcass into the field of action of the scraping mechanisms.

35. In a hog scraping machine a plurality of rotating scraping mechanisms, and a revoluble supporting and dehairing element adapted to elevate the carcass successively into the field of operation of said scraping mechanisms.

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

JOHN W. KOHLHEPP.

Witnesses:
LAWRENCE REIBSTEIN,
CHARLES W. HILLS, Jr.