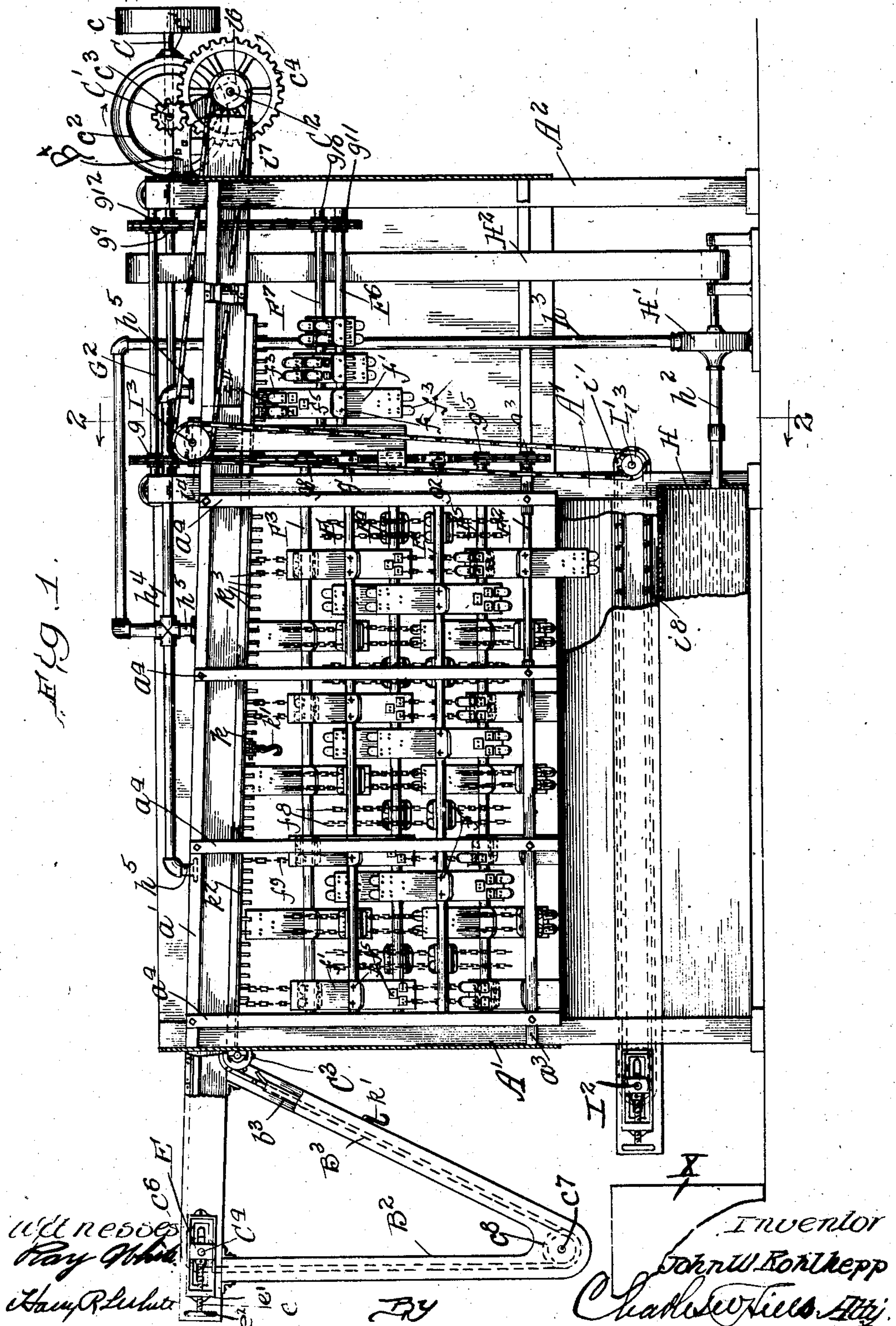


J. W. KOHLHEPP.
CARCASS SCRAPING AND POLISHING MACHINE.
APPLICATION FILED MAR. 29, 1907.

994,524.

Patented June 6, 1911.

5 SHEETS-SHEET 1.

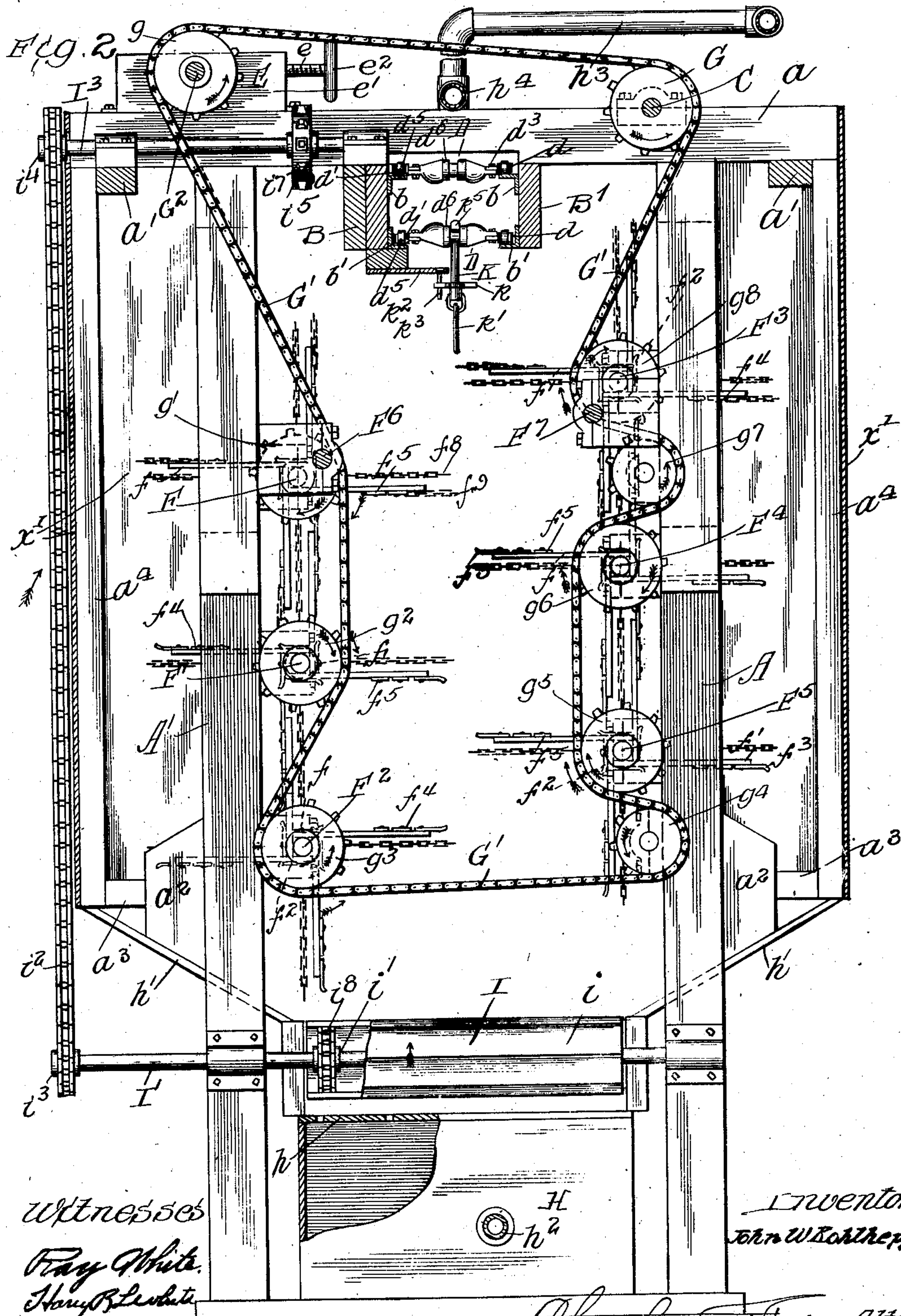


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5 SHEETS—SHEET 2.



Witnesses
Ray White.
Harry B. White.

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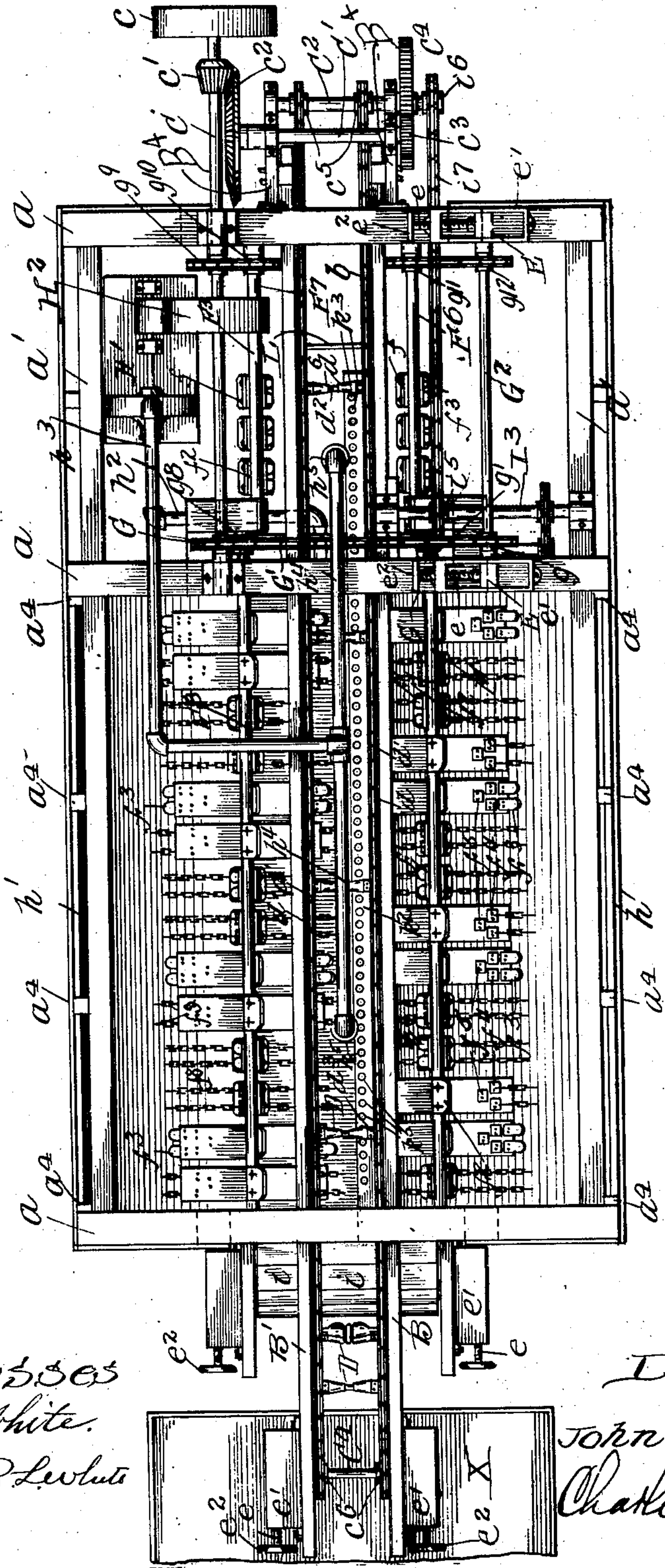
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5 SHEETS—SHEET 3.

994,524.

Fig. 3



Witnesses
Ray White.
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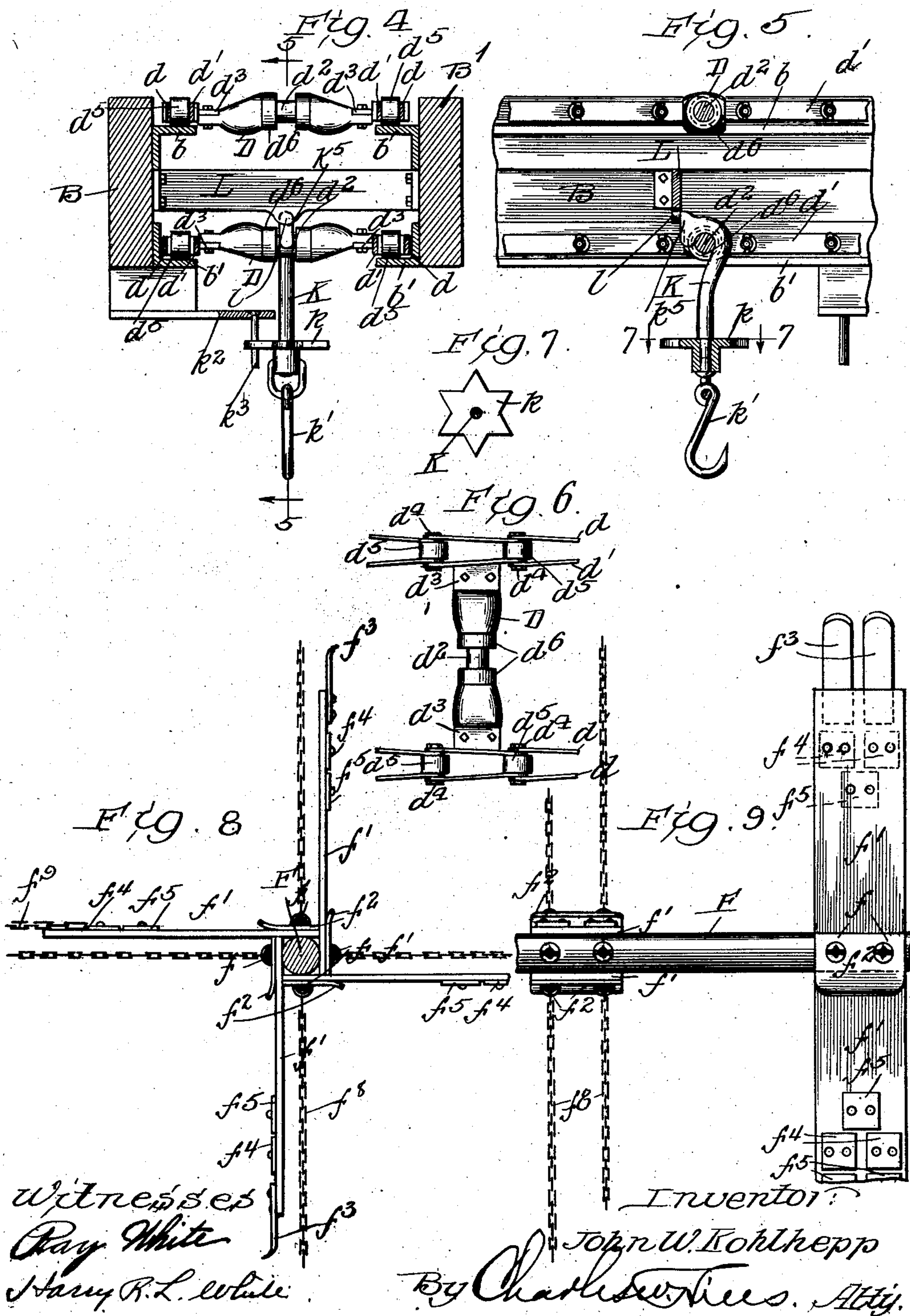
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5 SHEETS-SHEET 4.

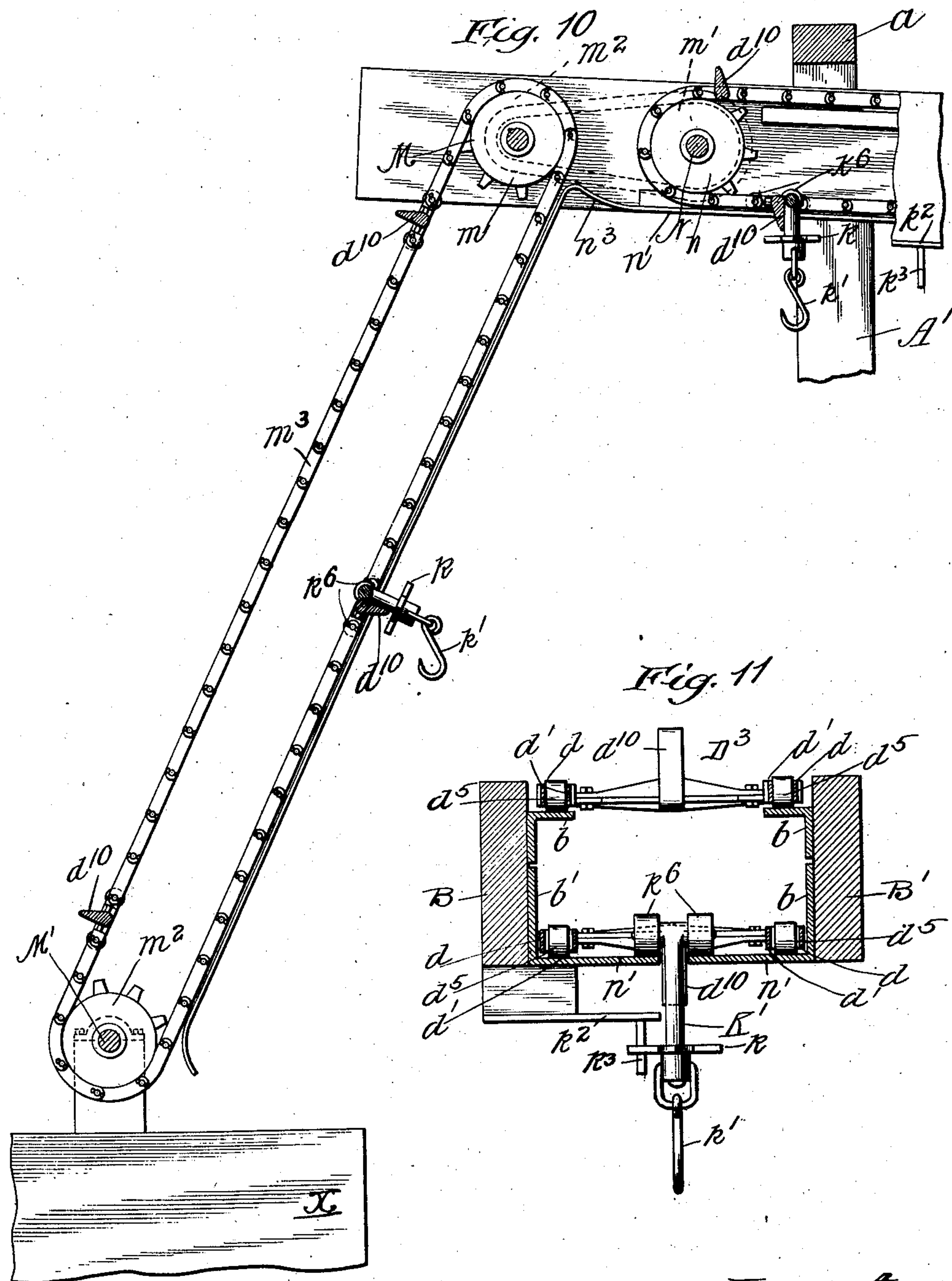


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Patented June 6, 1911.

5 SHEETS-SHEET 5.

994,524.



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UNITED STATES PATENT OFFICE.

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CARCASS SCRAPING AND POLISHING MACHINE.

994,524.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed March 29, 1907. Serial No. 365,416.

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 Scraping 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 letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in that class of carcass scraping and polishing machine set forth in my application for patent filed May 18, 1906, Serial No. 317,451.

The object of this invention is to provide mechanism for mechanically removing the hair and bristles and polishing the carcass of slaughtered animals such as hogs, which are passed through the machine by means of a suitable conveyer and to afford means for elevating the carcasses from the scalding tank and delivering same to the conveyer which operates either at the same or a different rate.

It is also an object of the invention to afford means for rotating the carcasses during the passage through the machine thereby exposing all parts thereof to the action of the machine.

It is also an object of the invention to afford a construction whereby the carcasses are delivered automatically from the elevator to the conveyer.

It is a further object of the invention to afford a mechanism whereby the operation may be conducted at any desired rate through the machine and whereby the capacity of the machine may be increased to any desired limit by merely extending the machine.

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

In the drawings: Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a section taken on line 2—2 of Fig. 1. Fig. 3 is a top plan view of the same. Fig. 4 is an enlarged transverse section of the carrier or conveyer and means for rotating the carcass. Fig. 5 is a section taken on line 5—5 of Fig. 4. Fig. 6 is a top plan view of one of the carriages connecting the

conveyer chains. Fig. 7 is a section taken on line 7—7 of Fig. 5. Fig. 8 is an enlarged transverse section of one of the beater shafts. Fig. 9 is a side elevation thereof. Fig. 10 is an enlarged longitudinal vertical section of an elevator and part of a conveyer for machines of large capacity one of which is driven at a higher speed than the other. Fig. 11 is an enlarged transverse section of the conveyer and carriage shown in Fig. 10.

As shown in said drawings:—a strong frame is constructed of any suitable length or material, and comprises uprights or posts A—A' arranged on opposite sides the machine and oppositely each other, upon the upper ends of which are supported transverse beams a which extend laterally beyond the posts. Secured thereon near the extremities are longitudinal girders a' . Secured below the middle of each post on the outer side are brackets on which are secured girders a^3 corresponding with the girders a' at the top of the frame. Secured to said girders a' — a^3 are vertical studs a^4 , which are thus supported at any desired distances beyond the post to serve as guards to protect workmen from injury from any of the operating parts of the mechanism and upon which may be secured any suitable covering material X' if desired.

In advance of the discharge end of the posts are corresponding posts or uprights A² having secured at the top thereof a beam a to which the top girders a' are also secured and which afford a support for a part of the driving mechanism. Said posts are successively shorter from the receiving end of the machine to the rear or discharge end so that the top beams are successively lower toward said discharge end. Supported upon said beams on the under side thereof are parallel longitudinal sills B and B' one on each side the center as shown in Figs. 2 and 3 which afford a support for the conveyer. Secured near the top of each of said sills on the inner side thereof are parallel ways b as shown formed of angle bars with the webs thereof secured to said ways with the flanges directed inwardly. At the bottom of each of said sills is secured a corresponding set of ways b' likewise constructed of angle bars having the webs rigidly secured to the sills and the flanges directed inwardly as shown in Fig. 2.

Journalled longitudinally at one side of

the center and at the delivery end of the machine is the driving shaft C, provided with a pulley c , at its outer end and also provided with a bevel pinion c' , which meshes with a beveled gear c^2 , as shown in Fig. 3, which is rigidly secured on a transverse shaft C' journaled on a bracket B⁴ rigidly bolted to the sills B—B'. Secured on said shaft C' is a pinion c^3 . Journaled on the ends of said sills midway between the upper and lower ways b — b' and parallel the shaft C' is a conveyer shaft C². This as shown is provided at one end with a gear c^4 which meshes with the pinion c^3 , on the shaft C' thereby driving the conveyer shaft C². Rigidly secured on said shaft C² in alinement with the inner faces of the sills and midway between the upper and lower ways on each sill are sprocket wheels c^5 . Journaled on each of the posts A—A' and the adjacent sill B or B' are shafts on each of which is an idler sprocket wheel C³ the tops of which project slightly above the top of each lower way and are in alinement therewith to support the lower run of the conveyer. Secured on the outer or receiving end of each of said sills is a transverse shaft C⁴ on which are sprocket wheels c^6 for said conveyer chain. Depending guides or hangers B² corresponding with the sills extend downwardly at a right angle therewith. Inclined sills or brackets B³ extend upwardly from the lower end of each hanger and connect with the corresponding sill adjacent the idler sprocket C³. The lower end of said hanger B² extends near the top of the scalding tank X, as shown in Fig. 1, and at said lower end and rigidly secured on the bracket B³ is an upwardly inclined guide or way b^3 which extends to near the sprocket wheel C³ and serves as ways for the upward run of the chain. Journaled transversely said hanger at its lower end is a shaft c^7 provided with idlers c^8 shown in dotted lines in Fig. 1. Around said sprocket wheels c^5 and the idlers c^8 — c^8 and C³ are trained sprocket chains one against each sill and connecting said chains on opposite sides are carriages each comprising as shown a transverse bar D having its central part, turned to cylindric form d^2 and at its end rigidly secured by bolting, riveting or any suitable means on the laterally directed lugs d^3 of one of the links of each chain. As shown also each pintle d^4 of each of the links d — d' is provided with a roller d^5 , adapted to travel on the ways heretofore described and thus to support and carry the weight of the carcasses with minimum friction. Said transverse bar D is provided with collars d^6 , one on each side of the turned portion at the middle thereof as shown in Figs. 4 to 6 inclusive, affording a space therebetween to receive the conveying hook hereafter described. A tightener

for each of said chains is provided on the receiving end of the sills. As shown in Figs. 1 and 3, said tightener comprises a collar E, secured on the end of the idler shaft C⁴ and to which is swiveled the inner end of a threaded shaft e which extends through a suitable nut e' rigidly secured to the sill. A hand wheel e^2 is provided on the outer end of said threaded shaft whereby rotation of said shaft acts to shift the shaft of the idler inwardly or outwardly to vary the tension of the chains.

Journaled substantially horizontally on the posts A' on the inner side thereof are shafts F, F' and F² and arranged approximately equal distances apart and journaled on the inner side of the post A opposite said shafts and at a height midway between the same are corresponding shafts F³, F⁴ and F⁵. Secured on each of said shafts are flexible arms or beaters f' of any suitable material and length. Conveniently rubber, cotton or leather belting may be employed though rope, chains f^8 or any flexible material may be used. These as shown in Figs. 8 and 9 are rigidly secured to a shaft by means of a bolt f which extends through the shaft and through two oppositely directed beaters and also secured by means of said bolts, on the outer side of each beater is a plate f^2 , which lies flat against the beater and at its outwardly directed end is curved outwardly therefrom as shown in Fig. 8, and serves as a spring brace for the beater to prevent the same bending short when in operation.

Secured on the inner side of each beater at its extremity is a plurality of curved plates f^3 which extend beyond the same and likewise secured on the beater between said plates and the shaft are plates f^4 , and f^5 riveted thereto, affording a slight space between the adjacent ends thereof. These assist in the operation and strengthen the ends of the beaters. Said beaters are arranged at approximately equal intervals along the length of the shaft as shown in Figs. 1 and 9 and so that the beaters of one shaft are staggered with those of the next adjacent either above or below or opposite and as shown the beaters on the shaft F and F' are arranged with the curved ends of the plates f^3 to strike downwardly and those on the shafts F², F³, F⁴ and F⁵ are arranged to strike upwardly as shown in Fig. 2. Said shafts are driven by means of a sprocket wheel G rigidly secured on the drive shaft C and from said sprocket wheel an endless sprocket chain G' is trained around the idler g , secured on a longitudinal shaft G² corresponding with the shaft C and provided with a tightener E such as before described and thence leads downwardly from said idler g around the inner side of a sprocket wheel g' on the shaft F, g^2 on the

shaft F', and thence outwardly engaging the outer side of a sprocket wheel g^3 , on the shaft F². Said chain then passes transversely the machine and at the opposite side passes upwardly around the outer side of an idler g^4 journaled on one of the posts A, and thence inwardly engaging the inner sides of a sprocket wheel g^5 , on the shaft F⁵, and a sprocket wheel g^6 , on the shaft F⁴ then around the outer side of an idler g^7 and then inwardly around the inner side of a sprocket wheel g^8 , on the shaft F³. Thus a single endless sprocket chain driven from the shaft C, by means of the sprocket wheel G, drives all said shafts so that the beaters on some strike downwardly on the carcass and the beaters on others strike upwardly thereon and the tension of the chain may of course be adjusted as desired by means of said tightener E.

Journaled on the boxing for the delivery end of shafts F and F³ are shafts F⁶ and F⁷, respectively, the outer ends of which are journaled in suitable boxes on the posts A². Secured on the shafts are beaters f such as before described which are arranged to scrape and polish the head and snout of the carcass. Said shaft F⁶ is driven by a sprocket chain trained around a sprocket wheel g^{12} on the shaft G² and the sprocket wheel g^{11} on the shaft F⁶. The shaft F⁷ is driven by a sprocket chain trained around a sprocket wheel g^{10} on said shaft and g^9 secured on the shaft C, in consequence beaters of shaft F⁷ strike downwardly and those of the shaft F⁶ strike upwardly.

A tank H for hot water approximately fills the space at the bottom of the frame and is approximately of the same length as the beater shafts F to F⁵ inclusive. This tank as shown is provided with a perforated top or cover h , and inclined sides h' extend outwardly from the top of the tank to the outer side of the studs a^4 as shown in Figs. 2 and 3 and serves to direct all water and refuse falling thereon to the top of the tank. Positioned between the posts A and A² is a rotary pump H' connected in said tank by means of a pipe h^2 , and which is driven by means of a belt H², from a suitable pulley on the shaft C. A pipe h^3 leads upwardly from said pump and delivers the hot water forced therethrough to a pipe h^4 , provided at intervals with spray heads h^5 , from whence the hot water is sprayed upon the carcasses. A longitudinal conveyer I is provided at the top of said tank which acts to deliver any material such as hair or bristles falling from the carcasses to the delivery end of the machine and should a carcass be dropped during the operation delivers the same outwardly without necessitating the stopping of the machine. This conveyer as shown comprises suitable shafts I' and I² at opposite ends of the tank on each

of which are provided sprocket wheels i' adjacent each of the posts on which the same is journaled. Sprocket chains i^8 are trained about said sprocket wheels and transverse lags i are secured to said chains as shown in Fig. 2 and act to support and deliver anything falling thereon out of the machine. As shown the shaft I' is driven by means of a sprocket chain i^2 trained about a sprocket wheel i^3 thereon and a sprocket wheel i^4 on the end of a transverse shaft I³ provided with a sprocket wheel i^5 thereon in alignment with a suitable sprocket wheel i^6 on the conveyer shaft C² whence the same is driven by means of a sprocket chain i^7 .

Means are provided for supporting the hogs or other carcasses comprising suitable hooks K, adapted each to engage the turned central portion d^2 of the transverse bars D of the carriages as shown in Figs. 4 and 5, swiveled on the lower end of the shank of each hook K is a toothed wheel k , as shown constructed in the form of a star, though obviously any desired number or form of teeth may be used. Supported on said wheel k is the hook k' adapted to support the carcass and which is usually engaged in the jaw of the carcass. Rigidly secured on the sill B below the same and projecting inwardly in close proximity with the shanks of said hooks K, as they pass along the conveyer is a plate k^2 provided as shown along its inner edge adjacent said hook with downwardly extending teeth or pins k^3 arranged suitable distances apart and which when engaged by the teeth of the wheel k act to rotate the same and the carcass supported thereon.

Means are provided for releasing the hooks from the carriages therefor after passing the beaters and for this purpose is shown a rigid bar L secured between the sills B and B' beyond the beaters on the ends of the shafts F⁶ and F⁷. Said bar is provided with a downwardly directed central projection l which as shown is adapted to be engaged by an upwardly directed projection or finger l^5 on each hook and serves to hold or arrest the forward movement of the hook as shown in Figs. 4 and 5 permitting the carriage to be drawn from beneath the same by the forward movement of the chains thereby permitting the carcass to fall upon any suitable receiving conveyer which for convenience is not shown.

The operation is as follows: The carcasses having been scalded in the tank X, an operator standing at the end engages one of the hooks k' usually in the lower jaw of the carcass, and throws hook K into engagement with the next carriage passing his station so that the throat of the hook is directed toward the machine. The elevator immediately lifts the carcass from the tank and bears the same upwardly upon and sup-

ports the same between the sills B and B' which, having a slight incline toward the delivery end of the machine, permit the carcasses to move freely along the same partly assisted by gravity. As the carcasses enter the machine the beaters on the respective shafts strike the same some downwardly and some upwardly and the carcass is continually revolved at any desired rate depending upon the number of projections on the wheels k , the distance between the depending teeth k^3 and the rate of travel. In this manner every portion of the carcass is exposed to the beaters and at the same time subjected to a spray of hot water from above. The bristles and hair removed by the beaters fall upon the conveyer I, and are delivered to the rear of the machine remote from the scalding tank, the water from the spray heads falling from the carcasses is returned again to the tank H and the temperature may be maintained either by coils within the tank or in any suitable manner. Should it occur as very rarely it does that a carcass during the operation falls from the hook, the conveyer I delivers the same to the rear of the machine from whence the carcass may be returned to the scalding tank and conveyer. Having passed the main beaters, or those on the shaft F to F⁵, inclusive, and the carcasses have been scraped and polished, except possibly a very small portion about the head as for instance the snout and the ears, the auxiliary shafts F⁶ and F⁷ which are conveniently arranged closer together than the other beater shafts act, striking some downwardly and some upwardly, as the carcass rotates between the same, until all portions of the snout, head and ears are thoroughly cleaned. Having passed the last beaters the upwardly directed point or projection k^5 on the hook K comes in contact with the downward projection l on the bar L, which forces the hook from the carriage permitting the carcass to be delivered therefrom to any suitable receiving means which may extend into position to receive the same but which forms no part of the present invention. Of course the rate at which the work may be performed is dependent upon the rate of rotation and length of the beater shafts, the rate of travel of the carcasses therebetween and the condition of the carcasses. Said shaft may of course be made of any length and driven at any desired rate of speed and if preferred may be constructed in one or a plurality of lengths to secure the desired results.

If it is desirable to deliver the carcasses as rapidly as possible as in very large plants a separate elevator may be used. Such a construction is shown in Figs. 10 and 11 in which the elevator shaft M, is driven from the conveyer shaft N, on which is a sprocket

wheel m' of relatively large size driving a sprocket wheel m^2 shown in dotted lines in Fig. 10, of as much smaller size as it is desired to increase the rate of operation of the elevator. Also secured on the shaft M, is a sprocket wheel m , of approximately the size of the sprocket wheel n and journaled on posts on each side the scalding tank X is a shaft M', provided with a sprocket wheel m^2 , corresponding in size to the wheel m . The elevator chain m^3 , is constructed as before described with the exception that the carriages D³ are not turned at the middle to be engaged by the hooks but instead are provided with a centrally projecting finger d^{10} which extends through a narrow slot between the inwardly projecting broad flanges of the ways n' as shown in Fig. 11. The hook K is omitted and journaled on the upper end of the shank transversely thereof are rollers k^6 , which travel on the inner side of said flanges. Said ways rise slightly as shown at n^3 at the receiving end of the machine and in advance of said rise incline downwardly to near the surface of the tank X as shown in Fig. 10. When a carcass is engaged on the hook k' as before described the shank K' of the hook is inserted between the flanges n' and held until engaged by one of the fingers d^{10} . When so engaged the shank of the hook with the carcass supported on the truck at the top of the shank is pushed up the incline and at the top thereof is released from the elevator chain and rolls down said incline n^3 into position to be engaged by the corresponding finger d^{10} on the conveyer. In this manner the elevator and conveyer may be driven at different rates and the carcasses delivered automatically from the elevator to the conveyer and in a similar manner the carcasses may be delivered on said trucks afforded at the upper end of the shank K' from the conveyer or to any suitable runway on which the carcass may be moved for operation. Chains f^8 are secured on the shafts between the other beaters, and also chains f^9 are secured on the ends of the beaters f' on the upper beater shafts in lieu of the curved plates f^3 .

I do not purpose limiting this application for patent otherwise than necessitated by the prior art, as obviously many details of construction may be varied without departing from the principles of this invention.

I claim as my invention:—

1. A carcass cleaning machine comprising mechanisms for removing the hair and refuse from the carcasses and mechanism for continuously turning the carcasses while the aforesaid mechanism is acting on said carcasses.

2. In a device of the class described an elevator, a conveyer for delivering the car-

casses through the machine, means for actuating the same, rotative beater shafts, beaters thereon acting by impact on the carcasses and mechanism for rotating the carcasses as the beaters act thereon.

3. In a device of the class described an elevator and conveyer to convey carcasses from a scalding tank through the machine, means for actuating the same, substantially horizontal beater shafts arranged on each side of said conveyer and flexible beaters on said shafts acting by impact on the carcasses and mechanism secured intermediate the conveyer and beaters for continuously rotating the carcasses while being acted upon by the beaters.

4. In a device of the class described an elevator and conveyer to receive the carcasses from a scalding tank and deliver them through the machine, means for actuating the same, rotative horizontal beater shafts arranged longitudinally of and on each side of said conveyer, flexible beaters thereon acting by impact on the carcasses and chains on the shafts also acting to clean the carcasses.

5. In a machine of the class described a conveyer, parallel staggered shafts affording a passage therebetween, beaters on said shafts staggered with the beaters on the adjacent shaft on the same side of the machine and staggered with the beaters on the shafts on the opposite side of the passage, means adapted to actuate the beaters for some to act upwardly on the carcasses and the remainder downwardly on said carcasses and mechanism for continuously rotating the carcasses as the beaters operate thereon.

6. In a device of the class described the combination with a suitable frame, of a plurality of oppositely disposed substantially horizontal shafts journaled on each side thereof, those on one side staggered relatively to those on the other, beaters on each shaft, mechanism for rotating said shafts simultaneously whereby the beaters on one or more shafts strike downwardly and those on the remainder strike upwardly, an inclined longitudinal conveyer above the beaters, a support carried by the conveyer adapted to carry a carcass between said beaters and means suitably mounted upon the machine adapted to engage and rotate the carcass support during its travel through the beaters.

7. In a device of the class described the combination with a suitable frame, of an upper longitudinal central conveyer inclined toward the delivery end, horizontal shafts journaled on each side of said frame, flexible beaters thereon, mechanism for rotating said shafts whereby the beaters on one or more shafts strike downwardly and the others strike upwardly, means supporting said carcass on the conveyer between the

said beaters and means acting to contact the carcass support and to rotate the same and the carcass during its passage.

8. In a device of the class described the combination with an inclined track of a conveyer thereon, means supporting the carcasses on the conveyer and a rack engaging a pinion on the support for the carcass and acting to rotate the carcass continually while moving through the machine and beaters acting to dehair and polish the carcass during its passage.

9. In a device of the class described the combination with an inclined track of a conveyer movable thereon, detachable means engaging the carcasses to the conveyer, a rack engaging a pinion on said support for the carcass and acting to rotate the carcass during its passage through the machine and downwardly and upwardly acting flexible members acting to dehair and polish the carcass.

10. In a device of the class described the combination with an inclined track of a conveyer movable thereon, transverse bars on said conveyer and means engaging the carcasses on the track to be moved by the conveyer, a fixed rack below the tracks, a pinion engaged on and acting to rotate each support and each carcass and downwardly striking beaters acting to dehair and polish the carcass as it rotates.

11. In a device of the class described the combination with an inclined track of a conveyer movable thereon an elevator adapted to deliver the carcasses to the conveyer, means supporting the carcasses on the track, a rack supported below the track and extending longitudinally of the conveyers, a pinion rigidly secured on the supporting means and meshing with the rack and acting to rotate the carcasses continually and beaters acting by impact to dehair and polish the carcasses as they rotate.

12. In a device of the class described a plurality of substantially horizontal shafts journaled in a frame on opposite sides thereof those on one side staggered relatively to the others, radial beaters arranged on each shaft and staggered relatively to those on adjacent shafts, means rotating all the shafts simultaneously some to strike inwardly and downwardly and some upwardly, an inclined conveyer acting partly by gravity to deliver one or more carcasses simultaneously through the machine, means for rotating the carcasses during the passage and means spraying hot water on the carcasses during their passage.

13. In a device of the class described a frame, a plurality of substantially horizontal shafts journaled on opposite sides thereof, those on one side staggered relatively to those on the other side, radial flexible beaters secured on each shaft and staggered rela-

tively those on adjacent shafts, means rotating the shafts whereby said beaters strike inwardly and oppositely, an inclined conveyer acting partly by gravity to deliver one
5 or more carcasses through the machine, a hot water tank positioned below the beater shafts, means movable over the top of said tank for moving any falling object or material out of the machine and means spraying
10 hot water from the tank on the carcasses during their passage.

14. In a device of the class described a frame, a plurality of substantially horizontal shafts arranged on opposite sides the frame
15 and staggered relatively to each other, centrifugal, flexible, radial beaters arranged on each shaft and staggered relatively to those on adjacent shafts, means rotating the shafts so that the beaters strike inwardly and op-
20 positely some striking upwardly, an inclined conveyer acting partly by gravity to deliver one or more carcasses through the machine, a hot water tank positioned below the beater shafts inclined sides thereon and means
25 spraying hot water on the carcasses during their passage.

15. In a device of the class described a frame, a plurality of horizontal shafts jour-
30 naled on opposite sides of the machine, those on one side staggered relatively to those on the other side, centrifugal acting flexible beaters rigidly secured on each shaft, those on one being staggered relatively to those on adjacent shafts, means rotating all the shafts
35 simultaneously whereby all said beaters strike inwardly, an inclined conveyer above the beaters acting to partly by gravity deliver one or more carcasses through the machine, means adjacent the conveyer for au-
40 tomatically rotating the carcasses, a hot water tank positioned below the beater shafts, inclined sides thereon and means spraying hot water on the carcasses during their passage.

45 16. In a device of the class described a frame, a plurality of horizontal shafts jour- naled on opposite sides thereof and stag-
gered respectively, flexible beaters secured on each shaft, those on each being stag-
50 gered relatively to those on adjacent shafts, means rotating the shafts to strike an object passing between the same, an inclined conveyer above and between the shafts and act-
ing partly by gravity to deliver one or more
55 carcasses therethrough during the passage, positively acting means above and between the shafts to rotate the carcasses, a tank po-
sitioned below the beater shafts, inclined sides thereon and means spraying hot water
60 on the carcasses during the operation.

17. In a machine for dehairing and clean-
ing carcasses mechanism for continuously
rotating the carcasses while passing through
the machine and beaters acting on the car-
65 casses to dehair and clean the same.

18. The combination with a suitable frame of horizontal shafts journaled on opposite sides thereof and each staggered relatively to those on the side opposite, flexible beaters on each staggered relatively to the beaters on
70 adjacent shafts, means for rotating said shafts, a hot water tank below said shafts, means spraying hot water therefrom down- wardly between the beaters, a corresponding
75 set of beater shafts approximately in aline- ment with the upper beater shafts and a less distance apart, beaters thereon acting to
scrape the head, snout and ears of a carcass and means for returning the sprayed water
80 to said tank.

19. The combination with a suitable frame of horizontal shafts journaled on opposite sides thereof and each staggered relatively to those on the opposite side, beaters on each
85 staggered relatively to those on the adjacent shafts, upper auxiliary beater shafts afford- ing substantially a continuation of said
beater shafts, beaters on said shafts ar-
ranged closer together than those on the
90 main shafts, means for delivering the car- casses partly by gravity past the beaters, means for rotating all of said shafts,
part of said shafts rotating the beaters to
95 act upwardly on the carcasses and the re- mainder of the shafts rotating the beaters
to act downwardly on the carcasses, a hot
water tank, and means for spraying hot
water therefrom downwardly between the
shafts.

20. The combination with a suitable frame
100 of a track supported thereby, a conveyer on the track supporting carcasses, and carrying them along the track, flexible beaters below the track acting on said carcasses, means be-
105 tween the track and beaters for continuously rotating the carcass as it passes between said beaters and chains acting on the carcasses to dehair the same.

21. In a device of the class described the combination with a conveyer, means moved
110 thereby for supporting carcasses, beaters arranged on each side of the conveyer and mechanism adjacent the supports for the car-
casses acting to continuously turn the car-
115 casses while the beaters are acting thereon.

22. In a device of the class described beater shafts extending longitudinally of the travel of the carcasses, scrapers ar-
120 ranged staggering thereon and chains se- cured on said shafts coacting with the scrapers to remove the hair and bristles from carcasses by whipping the carcasses and by impact.

23. Carcass cleaning means comprising flexible beater arms, scrapers secured thereto
125 acting centrifugally to whip the carcass and flexible chains coacting with said scrapers acting by impact on the carcass.

24. In a carcass scraping and polishing
130 machine the combination with a conveyer,

supports adapted to be secured to the conveyer, shafts arranged on both sides of the conveyer flexible scrapers on said shafts acting on the carcass during its passage therebetween and other flexible means on said shafts comprising connected links coacting with the scrapers in removing the hair from the carcasses and polishing the same.

25. In a carcass scraping and polishing machine a conveyer, means actuated thereby for supporting carcasses, mechanism adjacent the conveyer actuated with the movement of the carcasses for rotating the same, and a plurality of different kinds of beaters acting on the carcasses while rotating.

26. In a carcass scraping and polishing machine a conveyer, means traveling therewith for supporting carcasses, mechanism actuated by movement of the carcasses for rotating the same, a plurality of different kinds of beaters acting on the carcasses while rotating, a drive shaft, mechanisms operated thereby for actuating the conveyer and for actuating the various beaters, some of which act upwardly and others of which act downwardly upon the carcasses and mechanism adapted to automatically remove the carcasses from the conveyer at the delivery end of the machine.

27. In a device of the class described the combination with a frame of ways supported thereby, conveyer chains in said ways, carriages rigidly connected thereto, friction rollers on said chains supporting the same on the ways, carcass supports adapted to be removably engaged on said carriages, means adjacent the lower end of the support adapted to coact therewith for rotating the carcasses and beaters acting on said carcasses.

28. In a device of the class described the combination with a frame of ways rigidly secured thereto, conveyer chains, rollers secured to said chains supporting the same on said ways, carriages rigidly connecting the chains having a cylindrical portion, carcass supports adapted to engage the cylindrical part of the carriages, a hook swiveled on the support, a toothed wheel connected with the hook, stationary means on one side of the support for continuously turning the wheel, a projection integral with the support, means rigidly secured to the frame for contacting the projection thereby automatically releasing the support from the carriage and scraping means acting on the carcasses.

29. In a device of the class described the combination with ways of endless chains thereon, anti-friction means secured to the chains and supporting the same on said ways, carriages rigidly secured to the chain, supports adapted to be removably engaged to the carriage, scrapers extending longitudinally of the travel of the carcass acting

centrifugally on the carcass, means at the rear end of the scrapers adapted to automatically remove the carcasses from the carriages and mechanism above the scrapers for continuously rotating the same.

30. In a device of the class described the combination with a drive shaft of an endless conveyer driven thereby, carriages actuated by the conveyers, scraper shafts on each side of the conveyer, scrapers thereon acting on the carcasses, supports adapted for engagement on the carriages, means on one side of the supports for continuously turning the carcasses during the passage through the scrapers and means automatically releasing each support from the carriages.

31. In a hog scraping and polishing device the combination with an inclined conveyer of means acting to deliver carcasses thereto, supports for said carcasses actuated by the conveyer, parallel horizontal shafts journaled longitudinally of the travel of the carcasses, scrapers and beaters thereon, shafts at the ends of the aforesaid shafts, arranged closer together, beaters thereon scraping parts of the carcass not acted upon by the aforesaid beaters, a drive shaft, and operative connections between said drive shaft and the conveyer and all of the beaters shafts for simultaneously actuating the same.

32. In a device of the class described the combination with an endless conveyer, carcass supports movable therewith, means on one side of the support adapted to continuously rotate the carcass, flexible blades acting on opposite sides of the carcass as the same travels therepast, and independent means coöperating with the blades to clean the carcass while acted upon by the blades.

33. Scraping mechanism comprising flexible arms or beaters, means secured thereto preventing short bending thereof, plates rigidly secured to each arm, or beater strengthening the outer end, blades secured to the beaters acting centrifugally upon a carcass and chains acting on the carcasses independently of and simultaneously with the blades.

34. A scraping mechanism embracing shafts, mechanism for rotating said shafts, flexible arms on said shafts, arranged staggering with those on adjacent shafts, a curved plate secured to the shaft and stiffening the arms, plates secured on the arms near the extremity, blades secured at the extremities of each arm, and chains rigidly secured on said shafts adapted to act on the carcass.

35. In a device of the class described the combination with a conveyer, of carriages secured thereto, a support having a rigid part for engaging the carriage and a movable part adapted to engage a carcass, means contacting the movable part thereby rotating

the carcass, flexible beaters acting to scrape and polish the carcass during the turning operation and means at the rear of the scrapers for automatically releasing each carcass from the conveyer.

36. In a device of the class described the combination with a frame of parallel approximately horizontal shafts journaled thereto on opposite sides of the frame, scrapers actuated by movement of the shafts some striking upward and some downward and all striking inwardly, means for turning the carcasses continuously while the scrapers are striking the same, vertical aligned ways or tracks above and between the shafts, a conveyer having a lap on each way, carriages carried thereby, a carcass support adapted for pivotal engagement on the carriages and a bar rigidly secured between the ways above the shafts adapted to contact the support to automatically release the same and carcass from the conveyer at the rear end of the beaters.

37. In a device of the class described the combination with a conveyer of carcass supports movable therewith, means coaxing with part of the support for continuously rotating the same, beaters acting on opposite sides of the rotating carcasses, a water tank below the beaters, means spraying water on the carcasses from above to clean the same and inclined sides on the tank for conveying the falling water to the tank.

38. In a device of the class described the combination with a carcass conveyer of scraping mechanism acting on the carcass, a water tank beneath the scraping mechanisms, spraying means supplied with water from the tank for cleaning the carcasses as the hair and dirt are loosened, a conveyer above the tank and sides rigidly secured to the tank for returning the water thereto and the bristles upon the conveyer.

39. A device of the class described comprising a frame, ways or tracks rigidly secured thereto, chain conveyers moving carcasses along the track, scraping mechanisms acting on opposite sides of a carcass, mechanism below the tracks for moving the carcasses to expose all sides to the action of the scrapers, a water tank beneath the scraping mechanism, a pump connected therein, spraying pipes communicating with the pump, a drive shaft, operative mechanisms operating the conveyer, scrapers and pump from the drive shaft, a conveyer above the tank, operative connection actuating the same by movement of the drive shaft and flaring side walls on the tank.

40. A device of the class described comprising a frame, ways or tracks rigidly secured thereto, chain conveyers moving carcasses along the track, scraping mechanisms acting on opposite sides of a carcass, mechanism below the tracks for moving the car-

casses to expose all sides to the action of the scrapers, a water tank beneath the scraping mechanism, a pump connected therein, spraying pipes communicating with the pump, a drive shaft, operative mechanisms operating the conveyer, scrapers and pump from the drive shaft, a conveyer above the tank, operative connection actuating the same by movement of the drive shaft, flaring side walls on the tank, and mechanism automatically releasing each carcass from the conveyer at the rear of the tank and scrapers.

41. In a device of the class described the combination with a frame of ways rigidly secured thereto, an endless conveyer movable thereon, means for tightening the conveyer, supports engaged to the conveyer for carrying carcasses, shafts on each side of the tracks, beaters thereon acting on the carcasses by impact, mechanism intermediate the shafts and ways actuated by movement of the carcass to rotate the same during the passage between the beaters and auxiliary beaters at the ends of the aforesaid beaters arranged close together to act on the snout, ears and head of the carcasses.

42. In a device of the class described the combination with a frame of ways rigidly secured thereto, an endless conveyer movable thereon, means for tightening the conveyer, supports engaged to the conveyer for carrying carcasses, shafts on each side of the tracks, beaters thereon acting on the carcasses by impact, mechanism intermediate the shafts and ways actuated by movement of the carcass to rotate the same during the passage between the beaters, auxiliary beaters at the ends of the aforesaid beaters arranged close together to act on the snout, ears and head of the carcasses, and mechanism adapted to remove the carcasses from the conveyer after the carcasses pass between the auxiliary beaters.

43. In a device of the class described the combination with a frame of ways rigidly secured thereto, an endless conveyer movable thereon, means for tightening the conveyer, supports engaged to the conveyer for carrying carcasses, shafts on each side of the tracks, beaters thereon acting on the carcasses by impact, mechanism intermediate the shafts and ways actuated by movement of the carcass to rotate the same during the passage between the beaters, auxiliary beaters at the ends of the aforesaid beaters arranged close together to act on the snout, ears and head of the carcasses, mechanism adapted to remove the carcasses from the conveyer after the carcasses pass between the auxiliary beaters, a tank filled with fluid, a pump communicating therewith and spraying means above the carcasses supplied by the pump for washing the carcasses.

44. In a device of the class described a conveyer for moving carcasses, mechanism

below the conveyers for automatically rotating the carcasses, a plurality of different kinds of beaters acting to scrape the carcasses as they rotate, a tank filled with fluid, a spraying device above the carcasses and means supplying fluid thereto from the tank.

45. In a device of the class described a conveyer for moving carcasses, mechanism below the conveyer for automatically rotating the carcasses, a plurality of different kinds of beaters acting to scrape the carcasses as they rotate, a tank filled with fluid, a spraying device above the carcasses, means supplying fluid thereto from the tank, means returning all of the water to the tank, a conveyer positioned above the tank to catch a fallen carcass, and means for disengaging the carcasses from the conveyer after passing the scraping and beating mechanisms.

46. In a device of the class described the combination with tracks of a chain conveyer movable thereon, rollers engaged thereto, carcass supports, means securing the chains together and adapted to move the supports along the track, a rotatable toothed wheel on said support, a bar rigidly secured to the frame, teeth or pins rigidly secured thereto for engaging the teeth on the wheel and rotating the same and carcass, and scrapers acting on the carcasses.

47. In a machine for the purposes set forth a conveyer comprising oppositely disposed link chains, rollers between the links and at the points of articulation of the links, lugs integral with some of said links, carriages rigidly secured thereto having a cylindric portion, carcass supports adapted to engage the cylindric portion of said carriages and mechanism for rotating part of the carcass support.

48. In a machine of the class described conveyer chains comprising links, friction rollers secured on the pintles that join the links together, carriages rigidly secured to the chains at intervals along the length, a carcass support adapted for pivotal engagement with the carriage, a projection or finger thereon, a hook swiveled on the lower end of the support to engage a carcass, means for turning the same and means for contacting the projection or finger to disengage the support from the carriage.

49. In a device of the class described a frame, rigid ways secured thereto, a conveyer comprising endless chains, rollers secured thereto for supporting the chains on the ways, carriages rigidly engaged to the chains, a support movable by the carriages, friction rollers secured thereon, means on the end of each support for engaging the carcass and means below the ways for rotating said engaging means.

50. In a machine of the class described a frame, an inclined way at the front end thereof, tracks or ways extending from the

top thereof rearwardly and inclined downwardly toward the rear of the machine, supports adapted to move along the way, an elevator adapted to elevate the supports to the tracks, said supports movable by gravity along the tracks, conveyers movable on the tracks, means thereon for engaging the supports aiding gravity in moving the supports therealong, a rotatable hook secured to each support for engaging the carcass and means for rotating the hook and carcass as they move along the tracks.

51. In a machine of the class described the combination with an inclined slotted way, inclined tracks extending from the top thereof to the rear of the machine having an opening therebetween, an elevator movable along the way, a conveyer movable along the tracks, a carriage movable along the ways and tracks, supports extending through the openings in the ways and tracks, friction rollers thereon adapted to support the same thereon, rotatable hooks secured to the supports and rigid means fastened to the frame for continuously rotating the hooks as the supports move along the ways.

52. In a device of the class described a frame inclined elevator ways secured thereto, upper and lower inclined tracks secured to the frame and extending from the top of the ways rearwardly, a chain conveyer movable along the tracks comprising links, rollers at the articulations of said links, a carriage rigidly secured at its ends to said chains, a support adapted to be removably secured thereon, rotatable means carried by the supports for engaging the carcasses, means coacting therewith for rotating the carcasses, a rigid bar secured between the upper and lower tracks and means on the supports adapted to conduct the same to release the supports from the carriages.

53. In a device of the class described a frame, scraping mechanisms supported thereby, mechanisms above the scrapers for supporting and moving carcasses therepast, a tank or receptacle containing fluid, a pump connected therewith, spraying devices above and between the scrapers supplied by the pump, mechanisms actuating the pump, supporting and moving mechanisms and beaters simultaneously from the same source of power and mechanism between the supporting and moving mechanism and the scraping mechanisms for rotating the carcasses continuously while moving through the machine.

54. In a device of the class described a frame, scraping mechanisms on opposite sides thereof extending in the direction of travel of the carcasses, mechanism supporting and conveying carcasses between the scrapers, a tank below the scraping mechanisms, spraying devices above the tank, a pump for supplying fluid thereto from the

tank, a conveyer above the tank adapted to convey a fallen carcass from beneath the scrapers, a main drive shaft and operative connections actuating all of the mechanisms, the conveyers and the pump therefrom.

55. In a machine for the purposes specified a frame, a conveyer, main scraping mechanisms, auxiliary scraping mechanisms at the exit end of the machine arranged closer together adapted to clean the head and adjacent parts of the carcasses as the ears and snout and means for continuously rotating the carcasses until removed from the machine.

56. In a machine for the purposes described carcass scraping and cleaning mechanisms comprising shafts arranged to afford a passage therebetween, scraping mechanisms thereon acting to whip the carcasses and by impact to remove the bristles and dirt, short shafts arranged at the rear of the aforesaid shafts affording a narrower passage therebetween and scraping mechanisms thereon acting on the irregular parts of the carcass.

57. In a machine of the class specified, beater arms, chains secured thereto acting on a carcass by whipping the bristles therefrom and chains operated simultaneously, as the beater arms also acting to clean the carcass.

58. A polishing, scraping and cleaning mechanism for a machine of the class set forth embracing shafts, flexible beater arms secured thereon at various angles, means stiffening the arms, chains secured to part of said arms acting to whip the bristles and dirt from the carcass, blades or knives on other of said arms acting to scrape the carcass, and other means secured on the shafts acting conjointly with the aforesaid scraping and whipping mechanism to remove the bristles and dirt from the carcass.

59. In a polishing and bristle removing machine, mechanism comprising independent blades acting centrifugally and by impact to scrape the bristles from carcasses and mechanisms comprising chains acting conjointly therewith to whip the carcasses by impact.

60. In a polishing and bristle removing machine, mechanism acting centrifugally and by impact to scrape the bristles from carcasses, chains acting conjointly therewith to whip the carcasses by impact, spraying devices above the scraping and whipping mechanisms to wash the refuse from the carcasses as loosened and means for conveying the bristles and refuse from the machine.

61. In a polishing and bristle removing machine, flexible mechanism having rigid blades acting centrifugally and by impact to scrape the bristles from carcasses, chains acting conjointly therewith to whip the car-

casses by impact, spraying devices above the scraping and whipping mechanisms to wash the refuse from the carcasses as loosened, a tank below the spraying devices and inclined walls therefor returning the water thereto and directing the bristles toward the tank.

62. In a polishing and bristle removing machine, mechanism having blades acting centrifugally and by impact to scrape the bristles from carcasses, mechanisms embracing chains acting conjointly therewith to whip the carcasses by impact, spraying devices above the scraping and whipping mechanisms to wash the refuse from the carcasses as loosened, a tank below the spraying devices, inclined walls therefor returning the water thereto and directing the bristles toward the tank, and a conveyer acting to remove the bristles from above the tank.

63. In a hog scraper, the combination of one or more movable chains, and means for supporting a hog in such position that said chain or chains will contact with the same in its movements.

64. In a hog scraper, the combination of one or more movable chains having an upward motion during at least a portion of their movement, and means for supporting a hog in the upward path of travel of said chain or chains.

65. In a hog scraper, the combination of a rotatable shaft, means to rotate said shaft, one or more flexible members attached to said shaft and adapted to be thrown outwardly by centrifugal force as said shaft rotates, and means to support a hog in such position that it will be struck by said flexible members.

66. In a hog scraper, the combination of a rotatable shaft, means to rotate said shaft, one or more chains attached to said shaft and adapted to be thrown outwardly as said shaft rotates, and means for supporting a hog in such position that it will be struck by said chain or chains.

67. In a hog scraper, the combination of a rotatable shaft, means to rotate said shaft, one or more chains attached to said shaft and adapted to be thrown outwardly as said shaft rotates, said chain or chains having upward movement during a portion of their rotation, and means to support a hog in the upward path of said chain or chains to be struck thereby.

68. In a hog scraper, the combination of a rotatable shaft, means to rotate said shaft, one or more chains attached to said shaft and adapted to be thrown outwardly as said shaft rotates, and means to convey a hog through the field of action of said chain or chains so that it will be struck thereby.

69. The combination in a hog scraping machine, of a suitable vertical framework, guide ways running longitudinally thereof, a traveling carrier running in said guide

ways and embodying transversely arranged bars, suspension devices for attaching the carcasses revolubly mounted on said bars, gearing also mounted on said bars and engaging with a stem of the suspension device to revolve the same, and a rack secured alongside the guiding track with which a wheel of said gearing will engage.

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

JOHN W. KOHLHEPP.

Witnesses:

C. W. HILLS,
K. E. HANNAH.