No. 877,432. PATENTED JAN. 21, 1908.

M. C. JORGENSEN.

HOG SCRAPER.

APPLICATION FILED APR. 28, 1906. 6 SHEETS—SHEET 1.

Fig. 1.

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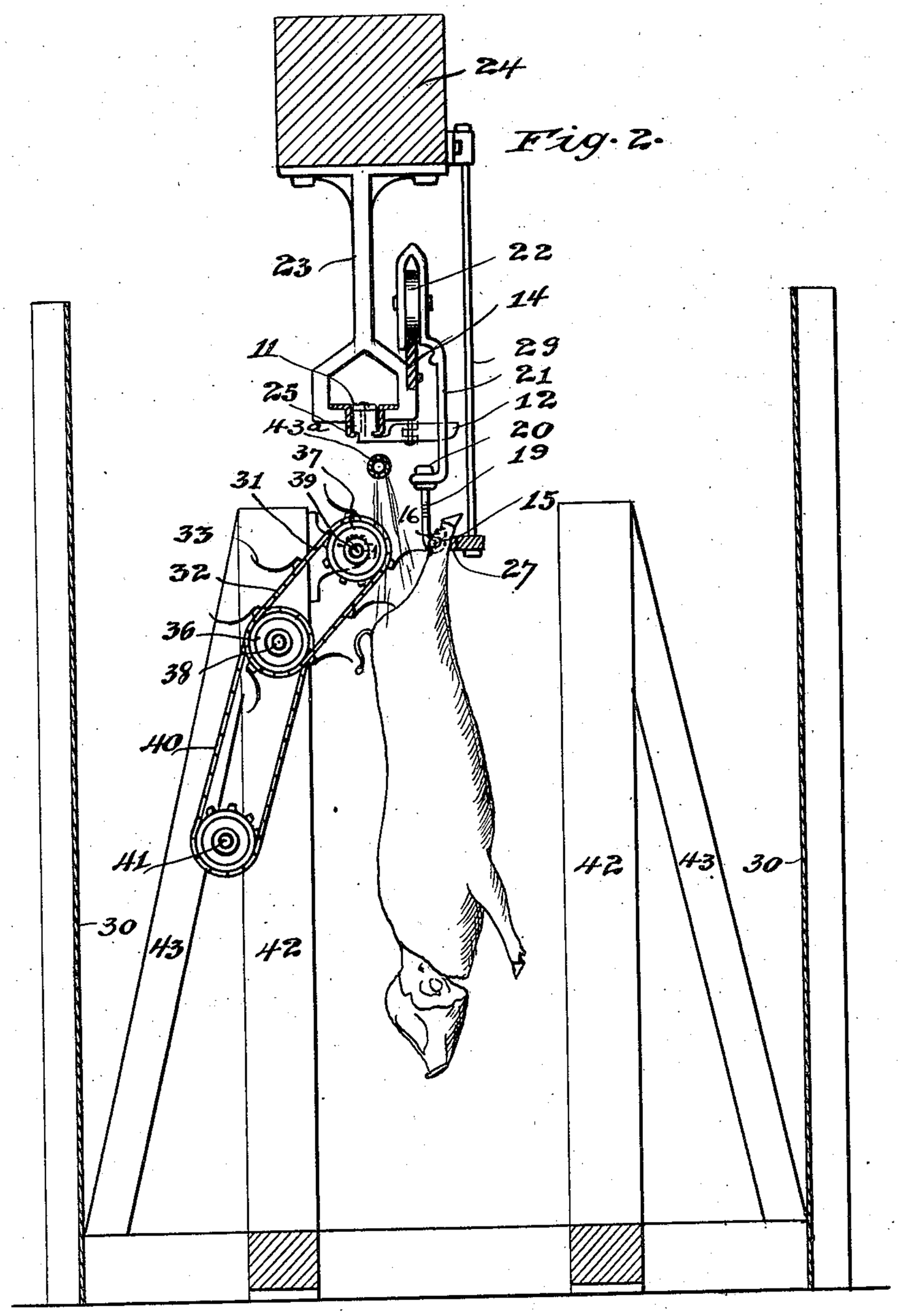
Fig. 2.



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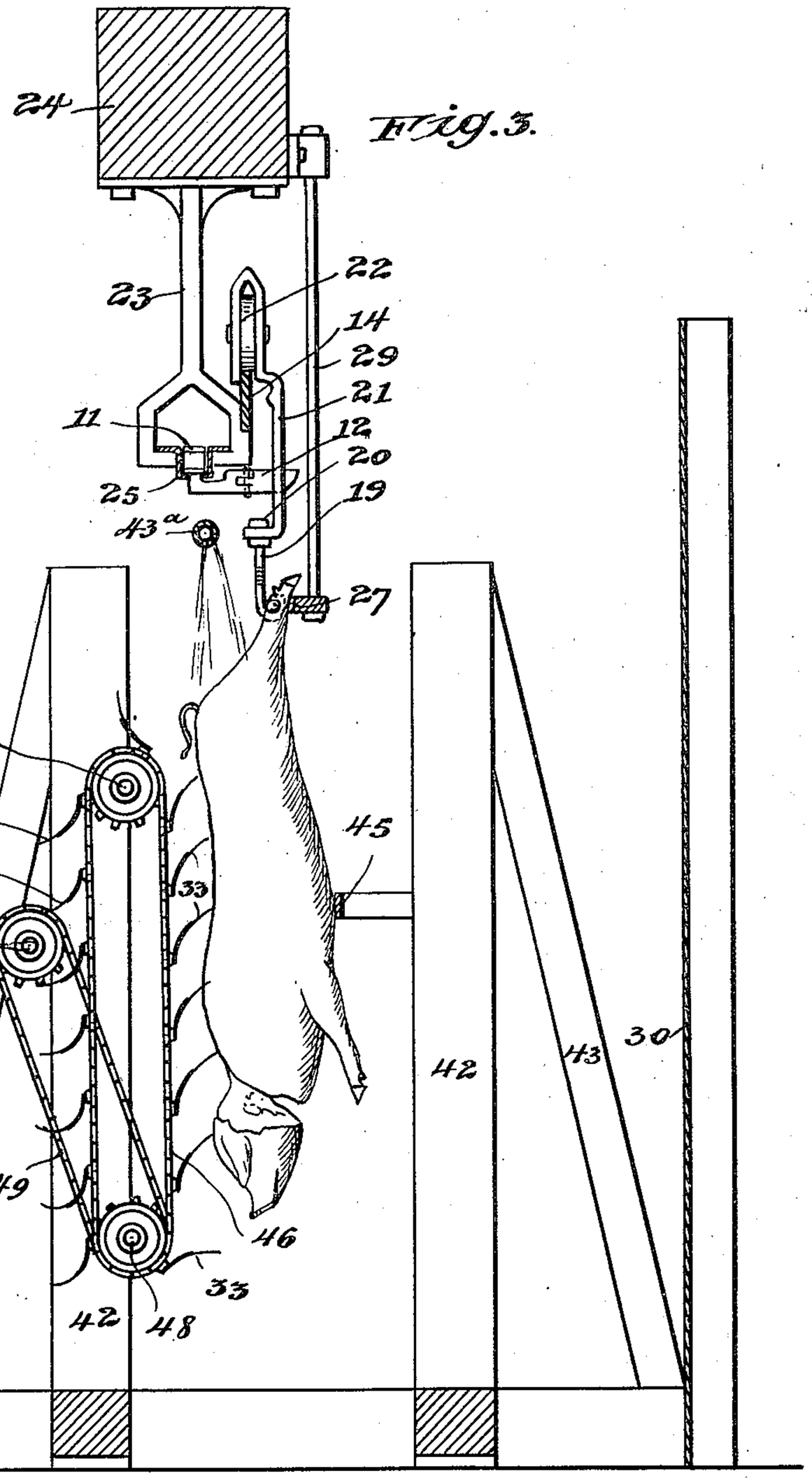
6 SHEETS—SHEET 3.

Fig. 3.



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6 SHEETS—SHEET 4.

Fig. 4.

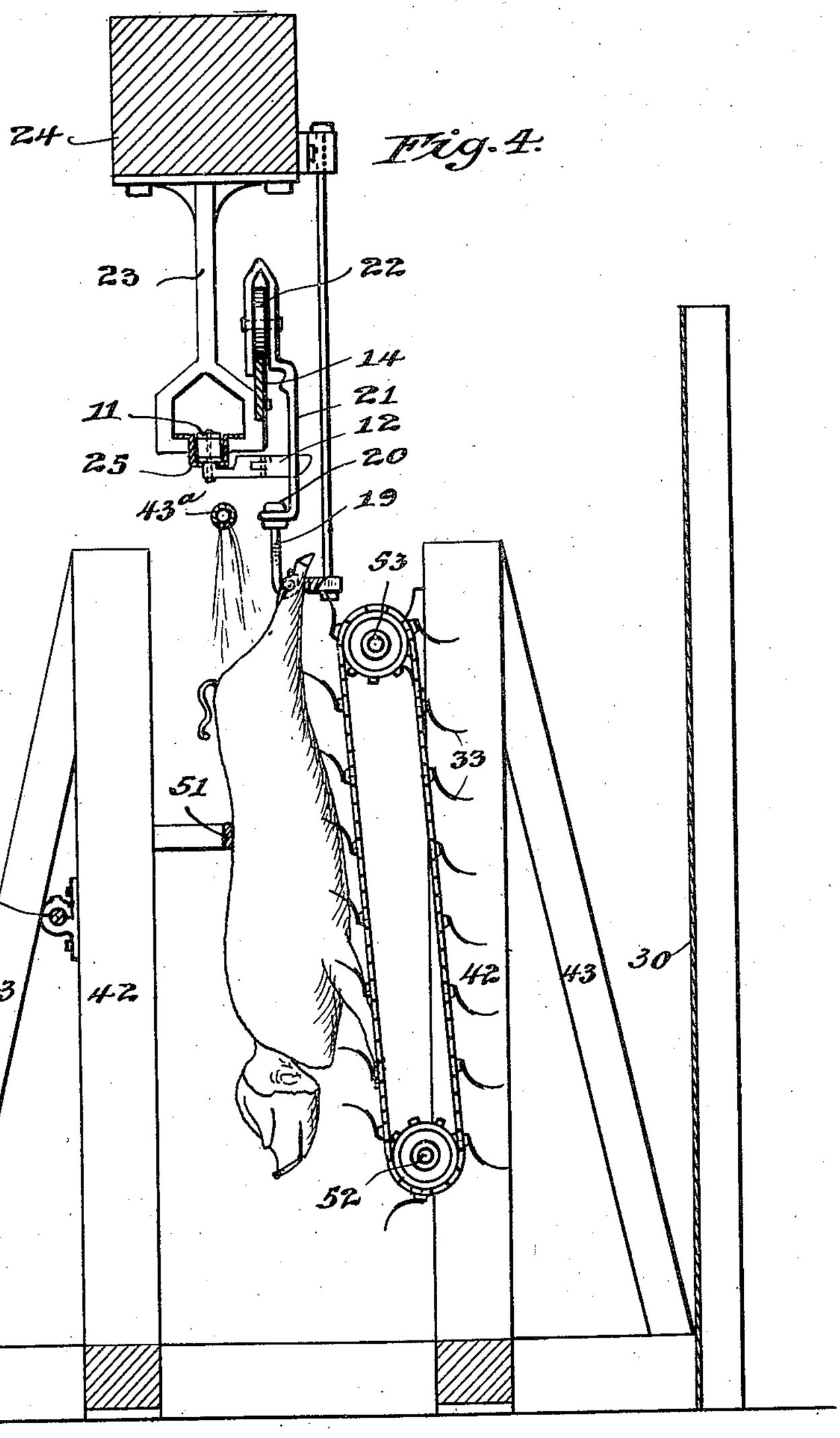

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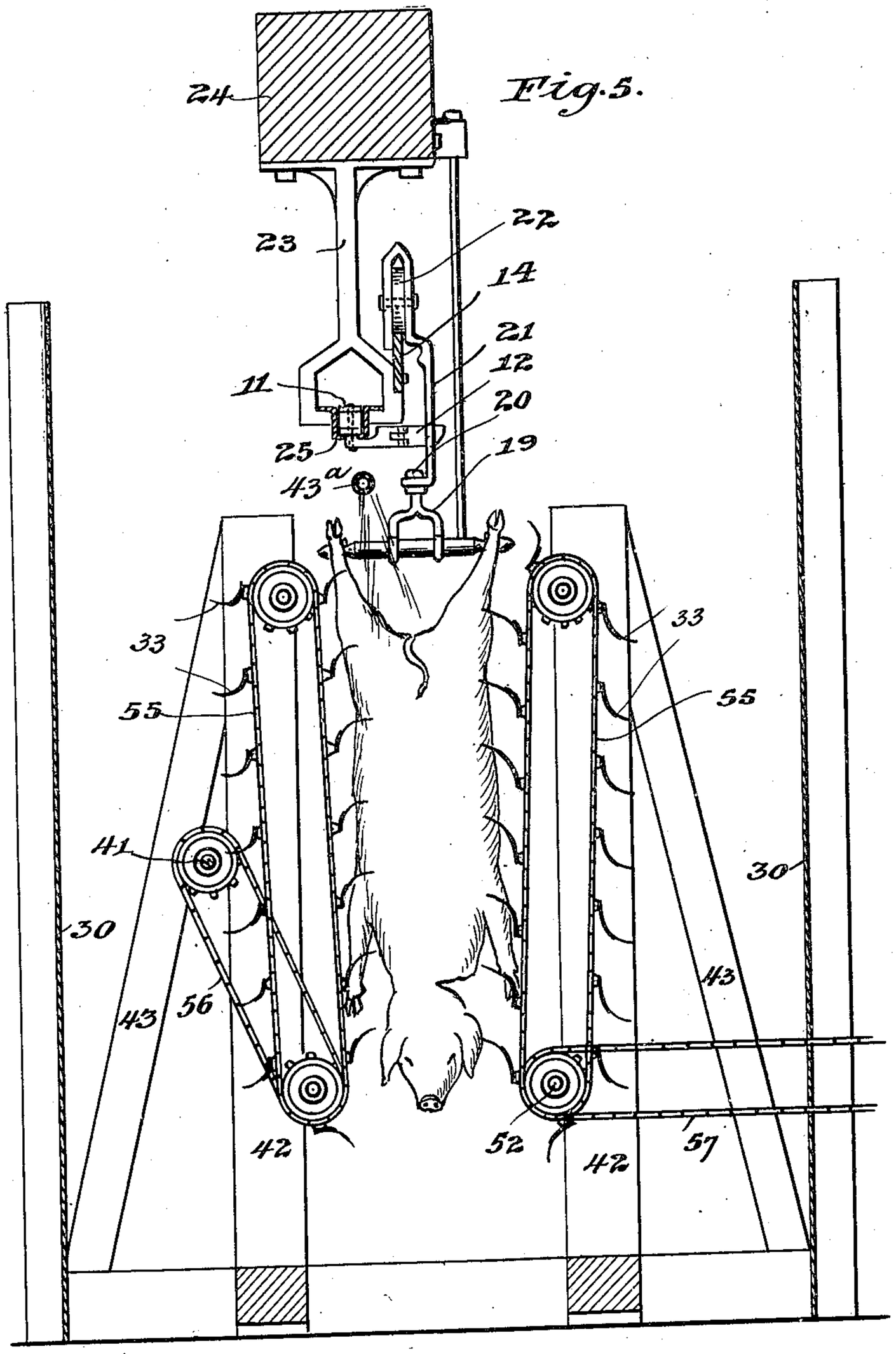
Fig. 5.



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HOG SCRAPER.

APPLICATION FILED APR. 28, 1906. 6 SHEETS—SHEET 6.

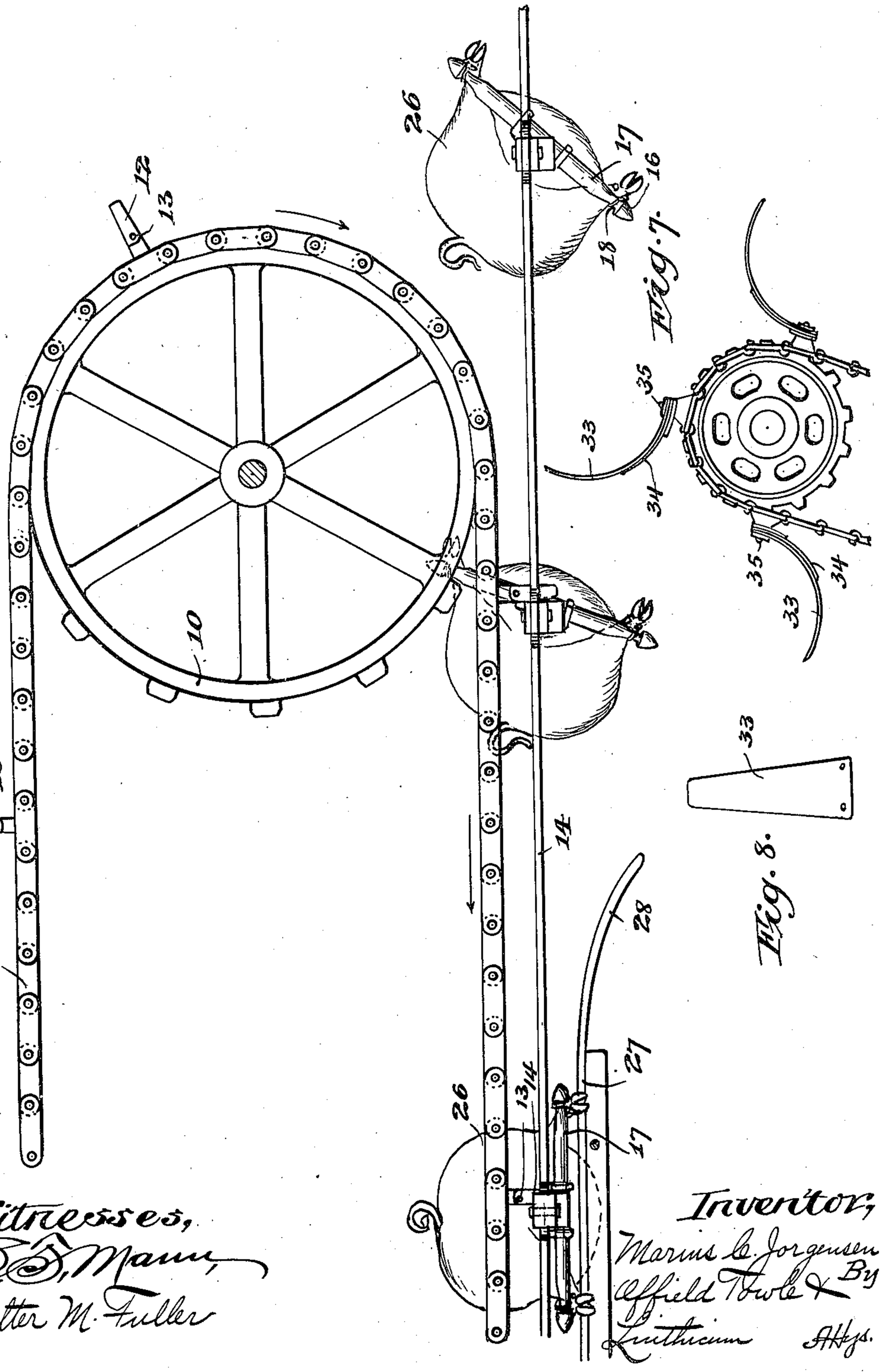

Fig. 6.

Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE.

MARIUS C. JORGENSEN, OF CHICAGO, ILLINOIS.

HOG-SCRAPER.

No. 877,432. Specification of Letters Patent. Patented Jan. 21, 1908

Application filed April 28, 1906. Serial No. 314,158.

To all whom it may concern:

Be it known that I, MARIUS C. JORGENSEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hog-Scrapers, of which the following is a specification.

It is the aim of my invention to produce a machine which shall be capable of effectually scraping the bristles from a hog's body without cutting or marring the skin or hide, thereby causing it to present an unsightly appearance.

It takes considerable strength to manually remove the bristles by scraping; in fact, with some hogs it is almost impossible, but with my improved power-driven scraping mechanism the bristles come off readily, leaving the body substantially unscratched or marred. The ease or difficulty with which the bristles can be taken off depends upon the kind of hog and the treatment it has had, especially concerning its food, but with my novel scraper, the bristles are removed without difficulty from all kinds of hogs.

I use a number of sets of scrapers properly disposed each to clear a section of the animal's body from bristles, the hog being carried by the scrapers by any convenient conveying means, such, for example, as a chain. Each set of scrapers desirably consists of a plurality of parallel sprocket chains inclined at the proper angle to scrape the particular portion of the body intended. To each chain is attached a number of somewhat elastic scraping members or blades and when the chains and blades are caused to travel rapidly, the hog is carried along so that the blades scrape the body downwardly and take off all the bristles. To remove the bristles from the whole body I use a set of scrapers for the hams, one for the back, another for the belly, and still two others for the sides. The hog is conveyed by the first three sets of bristle removers in one position, and then, before arriving at the scrapers for the sides, the body is turned automatically to a position at right angles to that which it previously had.

The mechanism accommodates itself to animals of varying sizes because there is more or less elasticity in the chains to which the scraping blades are attached and because the blades themselves have some resiliency.

In the accompanying drawings, I have illustrated the preferred embodiment of my invention wherein: Figure 1 is a plan view of the greater portion of the scraper; Fig. 2 is a vertical cross-section of the scraper on the line 2—2 of Fig. 1, as viewed in the direction indicated by the arrows, and illustrates the mechanism for removing the bristles from the hams of the hog; Fig. 3 is a similar cross-section on the line 3—3 of Fig. 1, as viewed in the direction indicated by the arrows, and shows the scraper for removing the bristles from the back of the hog; Fig. 4 is a similar vertical section on the line 4—4 of Fig. 1, and illustrates the scraper which coöperates with the belly of the hog; Fig. 5 is a similar cross-section on the line 5—5 of Fig. 1, and shows the scrapers for the sides of the hog; Fig. 6 is an enlarged detail view of a portion of the mechanism for conveying the hog through the scrapers, illustrating also the means for maintaining the hog's body in the proper position while being acted upon by the rapidly traveling scrapers; Fig. 7 is a detail view of a portion of one of the scraper chains and its attached blades; and Fig. 8 is a face view of one of the blades.

Referring first to Fig. 6, a comparatively large horizontal sprocket wheel 10 has passing around its surface and coöperating with its teeth the conveying chain 11 equipped with a number of lugs or fingers 12, pivoted at 13 to certain links of the chain spaced some distance apart, the pivotal connection being such that the fingers or lugs 12 may be rotated forwardly on their pivots but are prevented from backward turning. Extended parallel to one side portion of this chain is a track plate or bar 14 by which the hogs are supported and on which they travel. In order to sustain the hogs in substantially vertical position with their heads downward, their legs are slit at the points 15 and the tendons 16 drawn outwardly. A wooden stick or rod 17 is interposed between these tendons and the main portions of the legs, thereby obtaining a secure connection with the hog's body and keeping its legs properly spaced apart, since the rods 17 are grooved at 18 to accommodate the tendons and prevent their sliding along the rod. Each rod is upheld by a double hook member 19 (Fig. 5) swiveled at 20 to a bracket 21 having a roller 22 at its upper end adapted to travel on the top surface of the rail or bar 14. The two sides of bracket 21 overlap to a slight extent the sides of bar

14, so as to prevent the sustaining bracket 21 and its roller from leaving the track. Track 14 extends the full length of the scrapers above the same and is held in position by a number of depending supports 23 which are fastened to the underside of a beam 24. Within the lower portion of the supports or brackets 23, chain 11 is adapted to travel and is prevented from sagging by bent plates 25 upon the flanges of which the chain rests. As wheel 10 turns, the arms or lugs 12 are brought around so as to engage the rear sides of the depending brackets 21 to compel the hogs to travel along the rail 14, as will be obvious. The hogs are brought from a scalding bath to the position of the one labeled 26, in Fig. 6, by gravity, since the rail 14 is somewhat inclined at this point (not shown). An attendant stationed near the wheel 10 sees that the lugs 12 properly engage the supports for the hogs and also turns the hogs' bodies so that a guiding bar 27 will strike the front of their hind legs, thereby compelling all the hogs to travel along the rail 14 with their backs turned in the same direction. To facilitate the placing of the hogs' bodies in the proper position, the end of bar 27 is curved at 28, as shown in Fig. 6. Bar 27 is also supported from beam 24 by means of the downwardly extended rods 29.

In order to confine the bristles which are removed from the hogs to a limited space, the various scrapers are inclosed in any suitable form of casing 30. As the hog travels along the rail 14, it is first brought to the scrapers for removing the bristles from the hams. These scrapers, which I characterize 31, in Figs. 1 and 2, each comprise a sprocket chain 32, to which are attached a number of curved spring blades 33 of the shape shown in Figs. 7 and 8. These scraping blades 33 are somewhat elastic and just back of each I provide a shorter spring member 34 to stiffen the scraper blade. The blades and springs 33 and 34 are attached to links of the sprocket chains in any suitable manner, such as by means of screws or rivets 35. Each sprocket chain 32 passes over a pair of coöperating sprocket wheels 36 and 37, all of the former being mounted on a shaft 38 and all of the latter being mounted on a parallel shaft 39 above shaft 37. These two shafts are not in the same vertical plane but are offset, as shown in Fig. 2, so as to incline the sprocket chains to the proper angle to effectually scrape the hams of the hog. Shafts 38 and 39 are rapidly revolved by means of the connecting sprocket chain 40, which joins shaft 38 with a driving shaft 41, suitable sprocket wheels being provided for that purpose. In Fig. 2, I have illustrated the various shafts as being mounted upon an upright post 42 suitably braced by the member 43, but no particular means of support are required for these scrapers.

In order to aid the removal of the bristles from the body after they have been scraped therefrom, I employ a water pipe 43ª, through the perforations of which water sprays on to the body to wash the bristles into the bottom of the inclosure 30. This pipe 43ª extends over, not only the ham scrapers, but the others mentioned hereinafter.

As the hog, after having its hams cleared of bristles, is conveyed to the back scrapers 44 (Figs. 1 and 3), its belly comes in contact with a suitably supported bowed bar 45 to prevent the hog from swinging away from the scraping blades. Each of the back scrapers, as illustrated in Fig. 3, consists of a sprocket chain 46 equipped with scraping blades 33 like those used in the ham scrapers, the various chains co-acting with sprocket wheels mounted on the two shafts 47 and 48, driven from the driving shaft 41 by any suitable form of connection, such, for example, as the sprocket chain 49 and its sprocket wheels. These back scrapers are alined substantially vertically since the back of the hog when sustained in the manner indicated is nearly vertical. After leaving the back scrapers, the hog is carried along rail 14 to similar scrapers 50 for removing the bristles from its belly (Figs. 1 and 4). I also provide a bowed rod 51, similar to the part 45, which engages the back of the hog, as shown in Fig. 4, to prevent the hog from swinging away from the rapidly traveling blades. Since these scrapers are substantially like the others, they need no detailed description, except to state that their two parallel suitably supported shafts 52 and 53 are not in the same vertical plane so as to incline the chains to the proper angle to effectively remove the bristles from the belly. Before passing to the scrapers for the sides of the hog, the forward leg passes off of the curved end 54 of bar 27 (Fig. 1), and owing to the fact that the scrapers then act on only a part of the body tending to push it away the hog is turned through an angle of ninety degrees, as shown in Fig. 5, in order that its sides may be scraped as it passes between the two sets of scrapers 55. Furthermore when the forward leg reaches the curved end 54 of the track, the resistance of this leg on the track ceases, while that of the rear or trailing leg continues. The result of this action of the conveyer on the hog, its pull being exerted at one side of the track, and on the trailing leg, is to assist in turning the body around to the extent of 90 degrees. Inasmuch as these bristle removers are substantially the same as the others, although their angle of inclination is a little different, no further description thereof appears to be necessary, except to state that they are driven, the one from shaft 41 and the other from any suitable shaft or source of power, by the sprocket chains 56 and 57. When the hog has passed

through or by all of these scrapers, substantially all of the bristles have been removed from its body, except a few about its feet, which may be readily taken off by means of a torch.

It should be noted that all of the sprocket chains equipped with scrapers are driven by the sprocket wheels on the lower shafts, thereby keeping the side of the chain next to the hog substantially tight. It should be further noted that all of these scrapers operate downwardly, thereby throwing nearly all of the bristles to the floor of the inclosure. Owing to the elasticity of the scrapers and to more or less slackness of the scraper chains, hogs of various sizes may pass through these sets of scrapers and all be properly scraped without any adjustments of the devices being necessary.

It is obvious that various changes may be made in the structure described without departing from the substance of my invention as defined by the claims. It is apparent, for example, that more than one set of scrapers may be made to operate on the hog at the same time, such as the back and belly scrapers, or hams and belly scrapers, etc. It is also evident that belts and pulleys may be substituted for the sprocket chains and sprocket wheels, if desired, and in this case the scraping blades would be attached to the belts.

I claim:

1. A hog scraper comprising a plurality of scraping devices adapted to remove bristles from different portions of the hog's body, the field of operation of each of said devices being fixed at substantially the same angle to the horizontal as the general angle to the horizontal of that part of the carcass' surface operated upon, substantially as described.

2. A hog scraper comprising a plurality of scraping devices adapted to remove the bristles from different portions of the hog's body, the field of operation of each of said devices being fixed at substantially the same angle to the horizontal as the general angle to the horizontal of that part of the carcass' surface operated upon, and means for conveying the carcass through the fields of operation of said scraping devices, substantially as described.

3. A hog scraper comprising a plurality of scraping devices adapted to remove bristles from different portions of the hog's body, the field of operation of each of said devices being fixed at substantially the same angle to the horizontal as the general angle to the horizontal of that part of the carcass' surface operated upon, and means for conveying the carcass successively through the fields of operation of said scraping devices, substantially as described.

4. A hog scraper comprising a plurality of scraping devices adapted to remove bristles from different portions of the hog's body by scraping it longitudinally, the field of operation of each of said devices being fixed at substantially the same angle to the horizontal as the general angle to the horizontal of that part of the carcass' surface operated upon, and means for conveying the carcass or body through the fields of operation of said scraping devices, substantially as described.

5. A hog scraper comprising a plurality of scraping devices adapted to remove bristles from different portions of the hog's body by scraping it downwardly, the field of operation of each of said devices being fixed at substantially the same angle to the horizontal as the general angle to the horizontal of that part of the carcass' surface operated upon, and means for conveying the body or carcass through the fields of operation of said scraping devices, the body or carcass depending from said conveying means, substantially as described.

6. A hog scraper comprising a plurality of scraping devices adapted to remove bristles from different portions of the hog's body, the field of operation of each of said devices being fixed at substantially the same angle to the horizontal as the general angle to the horizontal of that part of the carcass' surface operated upon, each of said devices including one or more traveling sprocket chains, one or more scraping blades fastened to each of said chains, and means to cause said chains to travel, and means for conveying the body or carcass through the fields of operation of said scraping devices, substantially as described.

7. A hog scraper comprising a plurality of scraping devices adapted to remove bristles from different portions of the hog's body, the field of operation of each of said devices being fixed at substantially the same angle to the horizontal as the general angle to the horizontal of that part of the carcass' surface operated upon, each of said devices including a pair of rotatable shafts, one or more sprocket wheels on each of said shafts and rotatable therewith, one or more sprocket chains, each coöperating with a sprocket wheel on each of said shafts, one or more scraping members mounted on each of said chains, and means to revolve one of said shafts, and means to convey the hog's body or carcass through the fields of operation of said scraping devices, substantially as described.

8. In a hog scraper, the combination of a pair of rotatable sprocket wheels, means to rotate one of said wheels, a sprocket chain co-acting with said wheels, one or more scrapers on said chain, and means for conveying a hog's body through the field of operation of said scrapers transversely to the plane of said chain.

9. In a hog scraper, the combination of a pair of rotatable sprocket wheels, means to rotate one of said wheels, a sprocket chain co-acting with said wheels, one or more scrapers on said chain, means for conveying a hog's body through the field of operation of said scrapers transversely to the plane of said chain, and means to prevent the hog's body from turning while being operated upon by said scrapers.

10. In a hog scraper, the combination of a pair of rotatable sprocket wheels, means to rotate one of said wheels, a sprocket chain co-acting with said wheels, one or more scrapers on said chain, means for conveying a hog's body through the field of operation of said scrapers transversely to the plane of said chain, and means to prevent the hog's body from moving away from said scrapers when being operated upon thereby.

11. In a hog scraper, the combination of an upper shaft, a lower parallel driving shaft, a plurality of sprocket wheels on each shaft, sprocket chains passing over said wheels, each chain having a number of scraper blades attached thereto, and means to convey the hog's body past said chains transversely thereto, whereby said blades may remove its bristles.

12. In a hog scraper, the combination of an upper shaft, a lower parallel driving shaft, a plurality of sprocket wheels on each shaft, sprocket chains passing around said wheels, each chain having a number of scraper blades attached thereto, means to convey the hog's body past said chains transversely thereto, whereby said blades may remove its bristles, and means to prevent the hog's body from turning as it travels along.

13. In a machine for removing bristles from hogs, the combination of scrapers for the back, scrapers for the belly, and scrapers for the sides of the hog, means for moving the hog successively through the fields of operation of each set of scrapers, and means intermediate the scrapers for the sides and those for the back and the belly for turning the hog at right angles, substantially as described.

14. In a machine for removing bristles from hogs, the combination of scrapers for the hams, scrapers for the back, scrapers for the belly, and scrapers for the sides of the hog, each of said scrapers including one or more pairs of revoluble sprocket wheels, a sprocket chain passing around each pair of said wheels, and one or more scraping blades secured to each of said chains, means to prevent the hog from turning when being operated upon by the scrapers for the back and belly, means to convey the hog successively through the fields of operation of each set of scrapers, and means intermediate the scrapers for the sides and those for the back and belly for turning the hog at right angles, substantially as described.

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