(No Model.) 3 Sheets—Sheet 1.

W. FLANAGAN.

HOG SCRAPING MACHINE.

No. 301,707. Patented July 8, 1884.

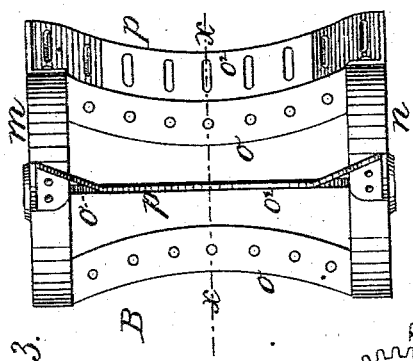

Fig. 3.

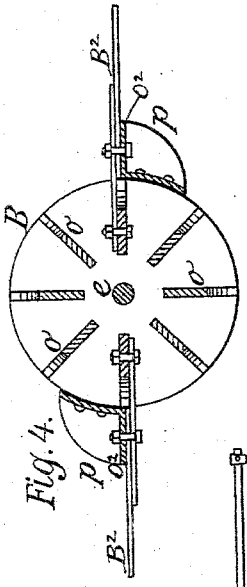

Fig. 4.

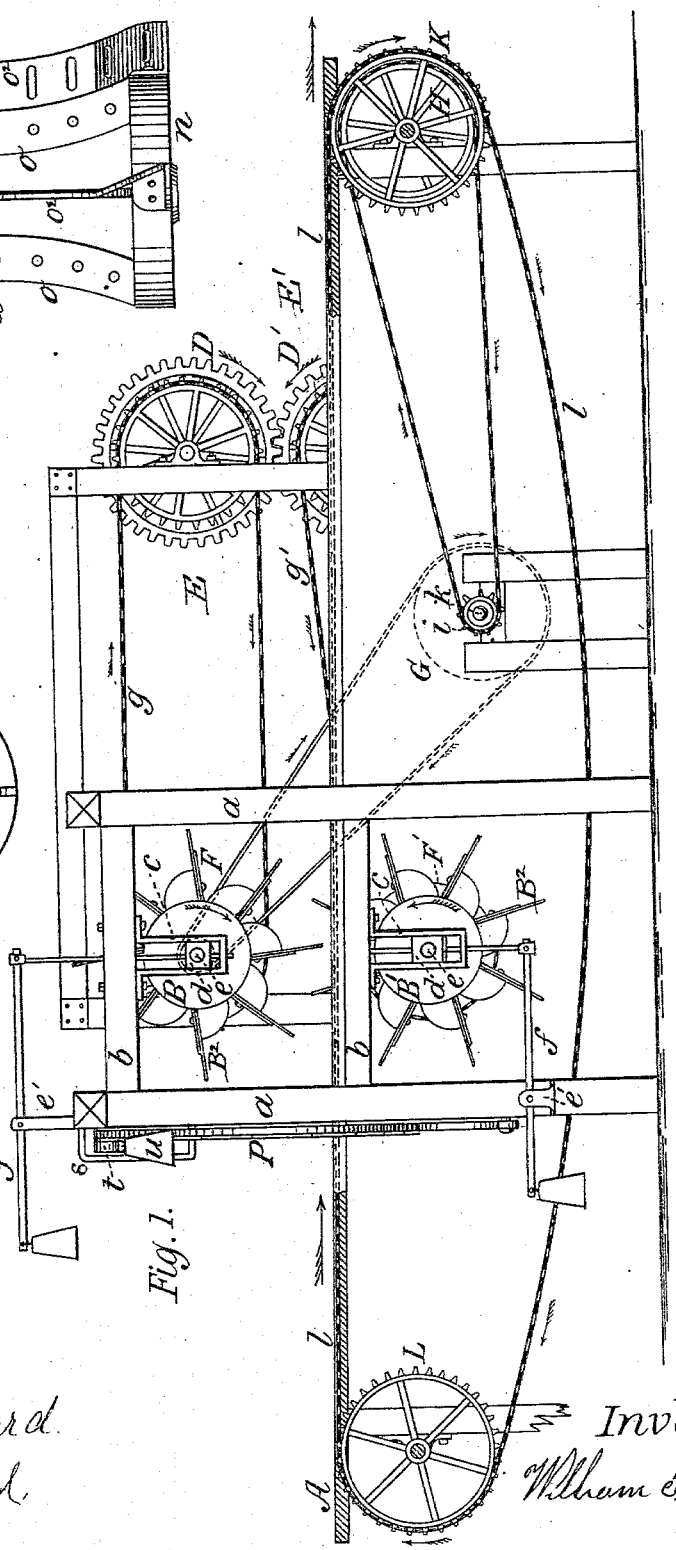

Fig. 1.

Witnesses:

C. E. Hayward

W. F. Ford.

Inventor:

William Flanagan

(No Model.) 3 Sheets—Sheet 2.

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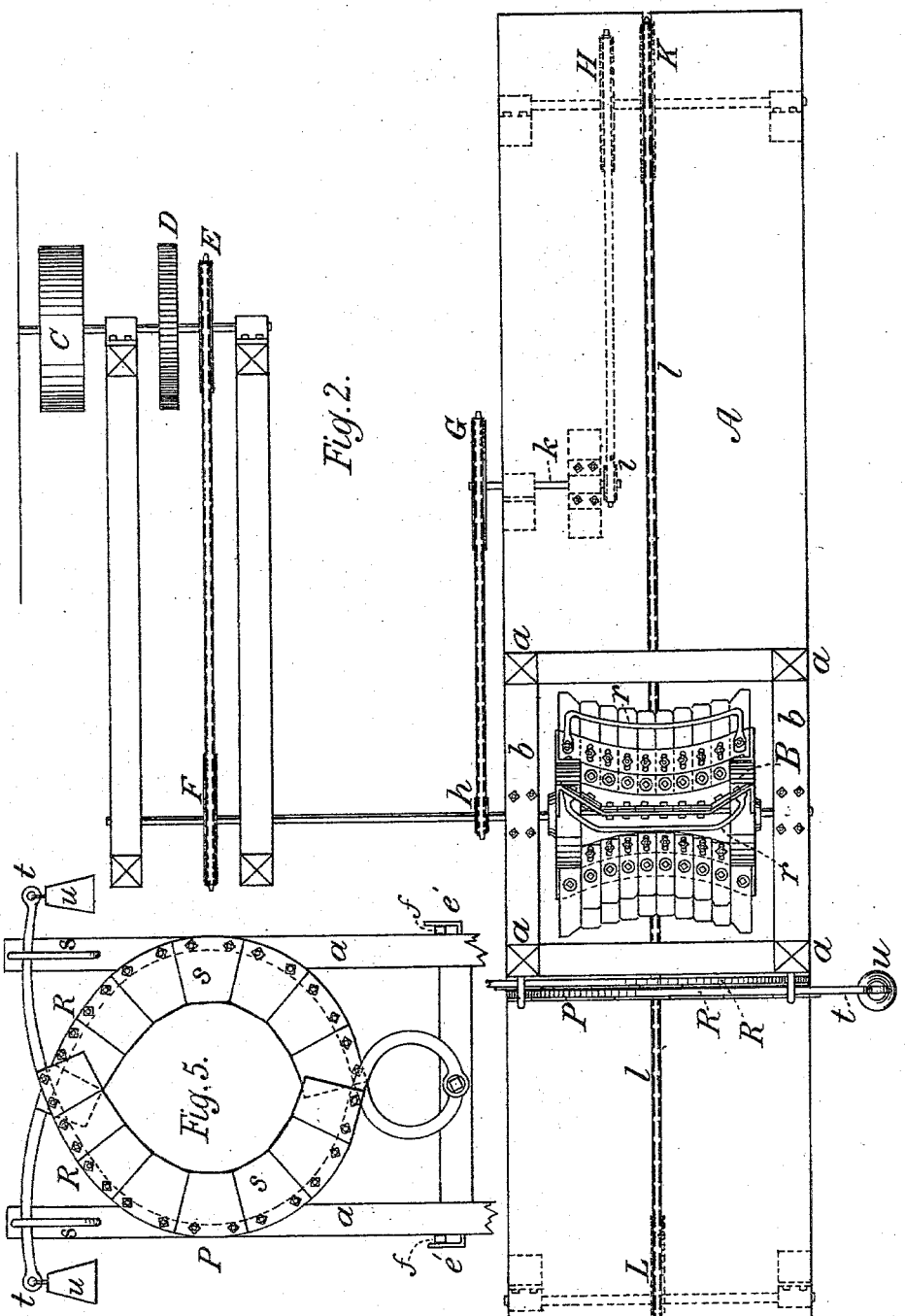

Fig. 2.

Fig. 5.

Witnesses:

C. E. Hayward

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Inventor:

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(No Model.) 3 Sheets—Sheet 3.

W. FLANAGAN.

HOG SCRAPING MACHINE.

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Fig. 6.

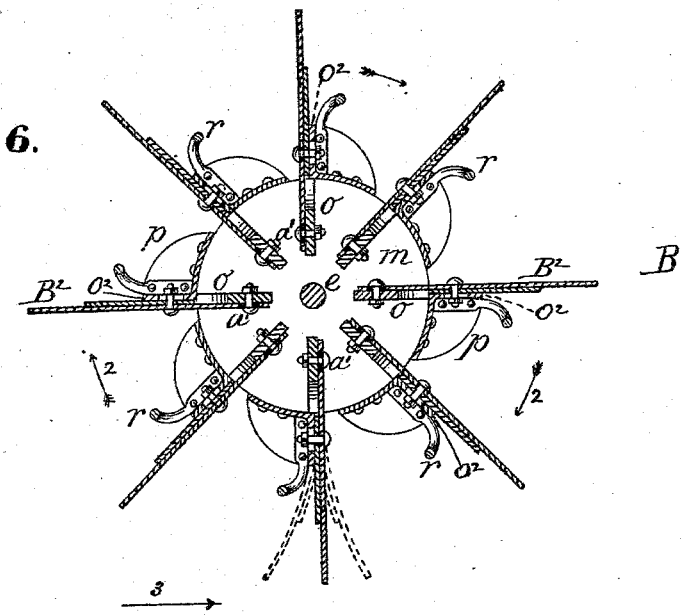
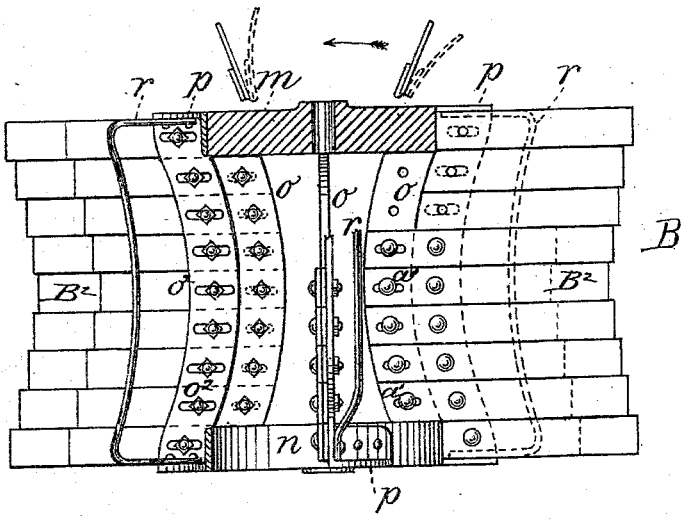


Fig. 7.



Witnesses:

Lutie Norris.

D. C. Huntemann

Inventor:

William Flanagan

by Johnson & Johnson

his Attys.

UNITED STATES PATENT OFFICE.

WILLIAM FLANAGAN, OF CHICAGO, ILLINOIS.

HOG-SCRAPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,707, dated July 8, 1884.

Application filed July 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FLANAGAN, 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 new and useful Improvements in Hog-Scraping Machines, of which the following is a specification.

My invention relates to improvements in machines for pulling the bristles and scraping and cleaning hogs; and the objects of my improvements are to remove the bristles by pulling them loose, so as to leave them in condition for use in the arts, and subsequently scraping and cleaning the hog, the operations being separate and distinct, but successive and continuous from the pulling device to the scraping and cleaning device, and the work quickly and effectually done.

Referring to the accompanying drawings, Figure 1 represents in side elevation my machine for scraping hogs to remove the bristles; Fig. 2, a top view of the same. Fig. 3 shows a side view of one of the reels to which scraping-blades are attached; Fig. 4, a cross-section of the reel, showing two only of the scraping-blades attached. Fig. 5 shows an end view of the non-revolving elastic ring-scraper and the manner of connecting it with and supporting it in the frame in front of the reel-scrapers. Fig. 6 shows a cross-section of one of the reel-scrapers with its scraping-blade complete, and Fig. 7 is a side view and partial horizontal section of the same on the line *x x* of Fig. 3.

In the operation of the machine, the hog is drawn through the scraping appliances upon a table or platform, A, suitably supported. The scraping operation consists of two separate and distinct steps or successive operations, the first of which is effected by a device which acts to pull the bulk or main portion of the bristles from the hog, and the second is to complete the removal of the bristles and to clean the skin by a scraping operation. These pulling and scraping appliances are arranged in a suitable frame, so that the pulling appliance operates above the table, while the scraping-reels operate above and below the table. This frame is arranged near the middle of the length of the table, and consists of a strong framing of side posts, *a a*, and cross-beams *b b*, the latter carrying the hangers *c c* for the journal-boxes *d d* of the scraping-reel shafts, which are arranged crosswise the table—one above and the other below it, as shown in Fig. 1. At the front end of this frame the pulling device P (shown in Fig. 5) is arranged to receive the hog in the first operation, from which the hog is carried to the scraping-reels. This pulling device consists of a ring of steel blades, said ring being made in two sections connected so as to yield in relation to each other, to allow the ring to open to receive and to close its scraping edges upon the hog, or to conform to hogs of varying sizes. The blades S are attached separately, forming a circle, to a single or to two strong bars, R, made of spring-steel, which are connected at their lower ends, R′, to the table-frame at a suitable point beneath the table, and are curved each of a form similar to a semicircle, with their upper or free ends crossing each other, so that the scraping ends of the blades will form a ring of spring-blades. The free ends *t t* of the bar or bars are confined by loops *s* to the frame-posts, and are loaded with weights *u*, to balance the force and adjust the blades to the shape of the body of the hog as it is pulled through the ring. The blades S occupy radial relations to the ring, and are of such a length and shape as will give them the required pulling action, and to form an unbroken line, acting to pull the bristles loose from the skin as the hog is drawn through the opening in the ring.

The scraping-reels B B′ consist each of disks *m n*, fixed upon a shaft, *e*, and a suitable number of flat radial metal ribs, *o*, secured equidistant to and between the disks. The ribs may be straight or curved toward the reel-shaft, and the scraping-blades B^2 are secured to them by screw-bolts in position side by side, with their free ends extending a suitable distance beyond the circumference of the disks to give them the required elasticity. These blades are narrow steel plates, and are all of the same length, so that the line formed by their free scraping ends will be curved toward the reel-shaft, so as to form an opening between the blades of the two reels through which the hog is drawn. This terminal curved scraping-edge may be formed by blades of equal length secured to the curved reel-ribs, or by blades of unequal length secured to straight ribs. The scraping-blades are sup-

ported upon supplementary metal ribs, o^2, secured upon the circumference of the disks and to which they are also bolted, and thus arranged may be used in single rows. I prefer, however, to use the scraping-blades in double rows to secure a better scraping action, and attach the second row to the outside ribs so that their ends will extend beyond the ends of the inner row, both rows being fastened to the outer ribs by the same screw-bolts. These blades may be made adjustable, so as to project them more or less from the reel, the outer ribs and the outer blades being slotted for the purpose. Each row of scraper-blades is provided with a guard-rail, *r*, secured to end flanges of the outer ribs, as shown in Figs. 6 and 7, and these rails may be made adjustable by slots in their ends, and they form rigid stops to receive the rebound of the blades as they are released from the scraping action. When double rows of blades are used, each row acts with a separate scraping-line, as the blades of each row are placed lapping upon each other, so that the scraping-lines will describe circles of different diameters. These scraping-reels are arranged so that the blades of the lower reel will revolve above the table, and the upper reel is placed vertically over the lower one, so that their blades will lap each other as they are revolved, but leave an opening between their curved scrapers sufcient to allow the hog to be drawn through between them to receive the action of each row above and below. The scraping-reels are adapted to move toward and from each other to allow the hog to be drawn through them in contact with their scrapers, and for this purpose the boxes of the reel-shafts are connected with weighted levers *f f* by sliding rods, the said levers being mounted in suitable brackets, *e'*, and operating to give the reels the required pressure upon the hog.

The table has a central longitudinal slot or opening within which an endless chain, *l*, is supported to travel on a plane with the table, and forms the means for pulling the hog upon the table through the hair-stripping and scraping devices, the hog being fastened to the moving chain by a hook. This pulling-chain is stretched upon sprocket-wheels K L, suitably supported beneath the table, and is driven from the upper scraping-reel by a chain passing over a sproket-pinion, *h*, on the shaft of said reel to a sprocket-wheel, G, on a short shaft, *k*, having a sprocket-pinion, *i*, from which a belt passes to the sprocket-wheel H on the shaft of the pulling-chain wheel K. The upper scraping-reel is revolved by a chain-belt, *g*, passing over a sprocket-wheel, F, on the shaft of said reel to a sprocket-wheel, E, on the shaft of the driven pulley C, which shaft gears, by the cog-wheels D D', with a shaft below, having the sprocket-wheel E', from which the chain belt *g'* passes over a sprocket-wheel, F', on the shaft *e* of the lower scraping-reel, as shown in Figs. 1 and 2. These chain belts operate to revolve the scraping-reels in directions toward each other, and contrary to the forward motion of the chain running between the reels, as shown in Fig. 1.

In the operation, the hog, being first scalded, is placed upon the table, hooked to the chain, and pulled, by the connected working parts, through the fixed bristle-pulling ring device P, which acts to pull the bristles loose and leave them in good condition to be used in the arts. From this ring or pulling device the hog is drawn through the opening between the scraping-reels, which are self-adjusting to the shape and size of the hog, their blades rapidly scraping off all the remaining hair on the body, removing the dandruff and scales, and cleaning the skin. This operation is repeated in quick succession.

Referring to the scraping-reels, the springs are of steel, of sufficient strength to give them the proper yielding and scraping action. When the blades are released from operation on the body of the hog, they spring back and strike the guard-rail *r*, to throw off the hair and dandruff that adhere to them, and then rebound to their former position. This action is seen in Fig. 6, in which the dotted lines show the blades as thrown back against the guard-rails, after being freed of the hog, and the rebound of the blades from the guard-rails.

The arrows 2 2 show the direction of rotation of the scraping-reels, and the arrow 3 the direction in which the hog is drawn through the reels.

I claim—

1. The combination, in a hog-scraping apparatus, of the table A and the self-adjusting scraping-reels B B', with a primary ring-scraping device, P, the scraping-blades whereof are rendered self-adjusting to the hog in a plane at right angles to the passage of the hog, and a pulling-chain, substantially as described, for the purpose specified.

2. The combination, with a table, of a primary scraping device composed of scraping-blades arranged upon curved carrying-arms having their free ends crossing and adapted to expand and contract automatically in a plane at right angles to the passage of the hog being scraped, and a pulling-chain, substantially as herein set forth.

3. The primary scraping device P, consisting of a ring formed by rods or arms, R, having free ends lapping each other and weighted, provided with blades and adapted to expand and contract in two parts, upon a pivot outside of said ring, combined with a table-support and a pulling-chain, substantially as herein set forth.

4. The primary scraping device consisting of curved bars each having a series of blades arranged to form an unbroken central ring-opening, the said bars pivoted at their lower ends, crossed at their upper free ends, provided with weights, and confined in proper relation to each other, whereby said bars are allowed to automatically adjust themselves to the body of the hog in the operation of draw-

ing it through said scraping device, substantially as described.

5. The self-adjusting reels arranged as described, each having a series of radial ribs arranged in double rows, and a series of scraping-blades arranged thereon side by side in lapped relation to each other, forming separate rows, having their free ends terminating in separate scraping edges or lines describing circles of unequal diameters, substantially as herein set forth.

6. The self-adjusting reels arranged as described, each having a series of radial ribs, a series of scraping-blades arranged thereon side by side, and a guard-rail, *r*, arranged to form a stop to each series of scraping-blades, substantially as described, for the purpose specified.

7. The self-adjusting scraping-reels having radial ribs combined with adjustable scraping-blades and guard-rails therefor, substantially as herein set forth.

8. The scraping-reels B B′, consisting of the disks *m n*, the radial ribs *o p*, the spring-blades adjustably secured thereon, and the guard-rails *r*, in combination with the table A, the pulling-chain *l*, and suitable means for operating the scraping-reels and the pulling-chain, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM FLANAGAN.

Witnesses:
W. F. WOOD,
C. E. HAYWARD.