No. 882,719. PATENTED MAR. 24, 1908.

C. L. SMITH.

CARCASS SCRUBBER.

APPLICATION FILED OCT. 8, 1906.

7 SHEETS—SHEET 1.

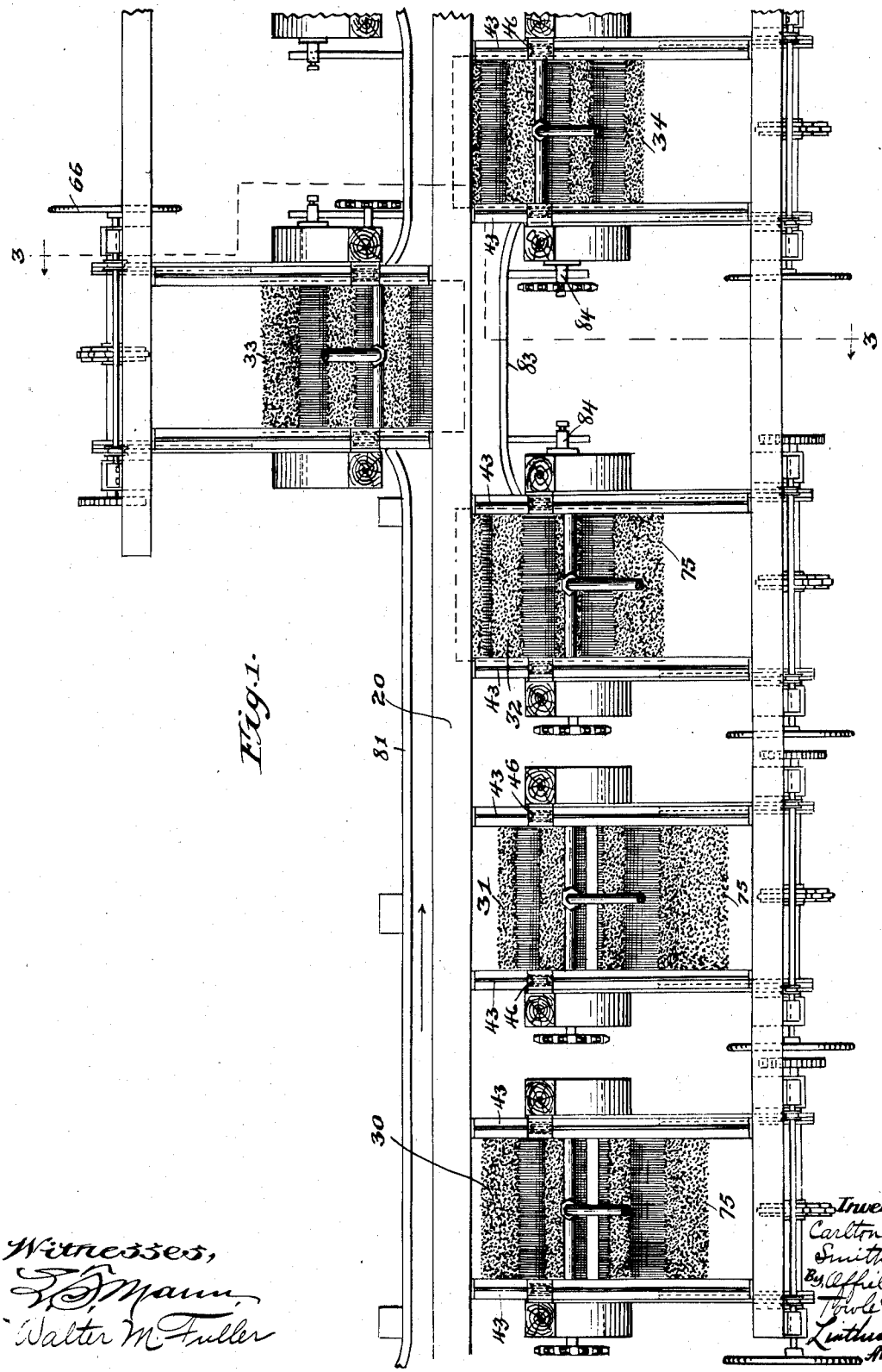


Fig. 1.

Witnesses,
L. Mann.
Walter McFuller

Inventor
Carlton L. Smith
By Offield Towle & Linthicum
Atty's.

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7 SHEETS—SHEET 2.

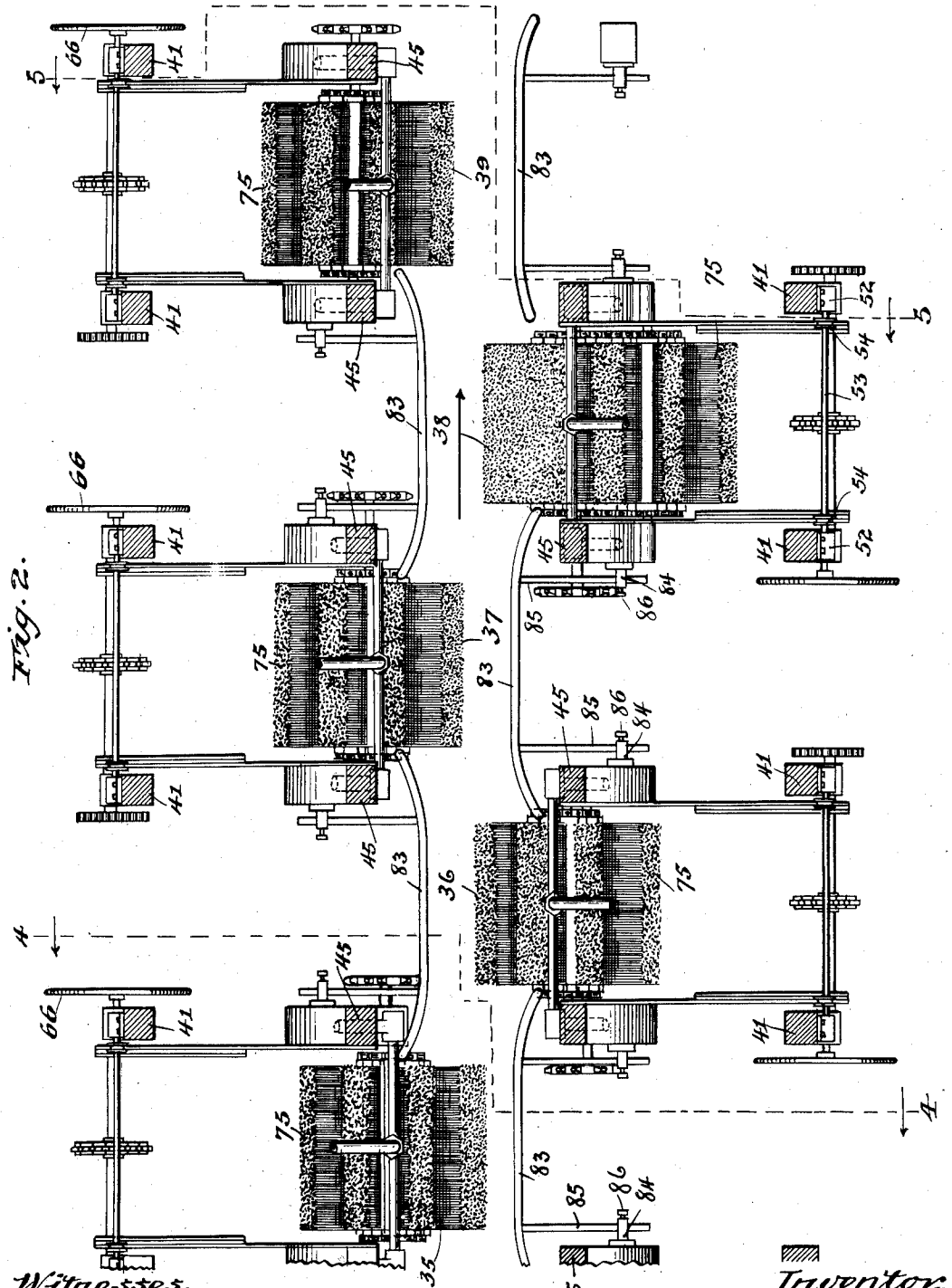


Fig. 2.

Witnesses,
R. F. Mann,
Walter M. Fuller

Inventor,
Carlton L. Smith
By Offield Towle & Linthicum
Atty's.

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7 SHEETS—SHEET 3.

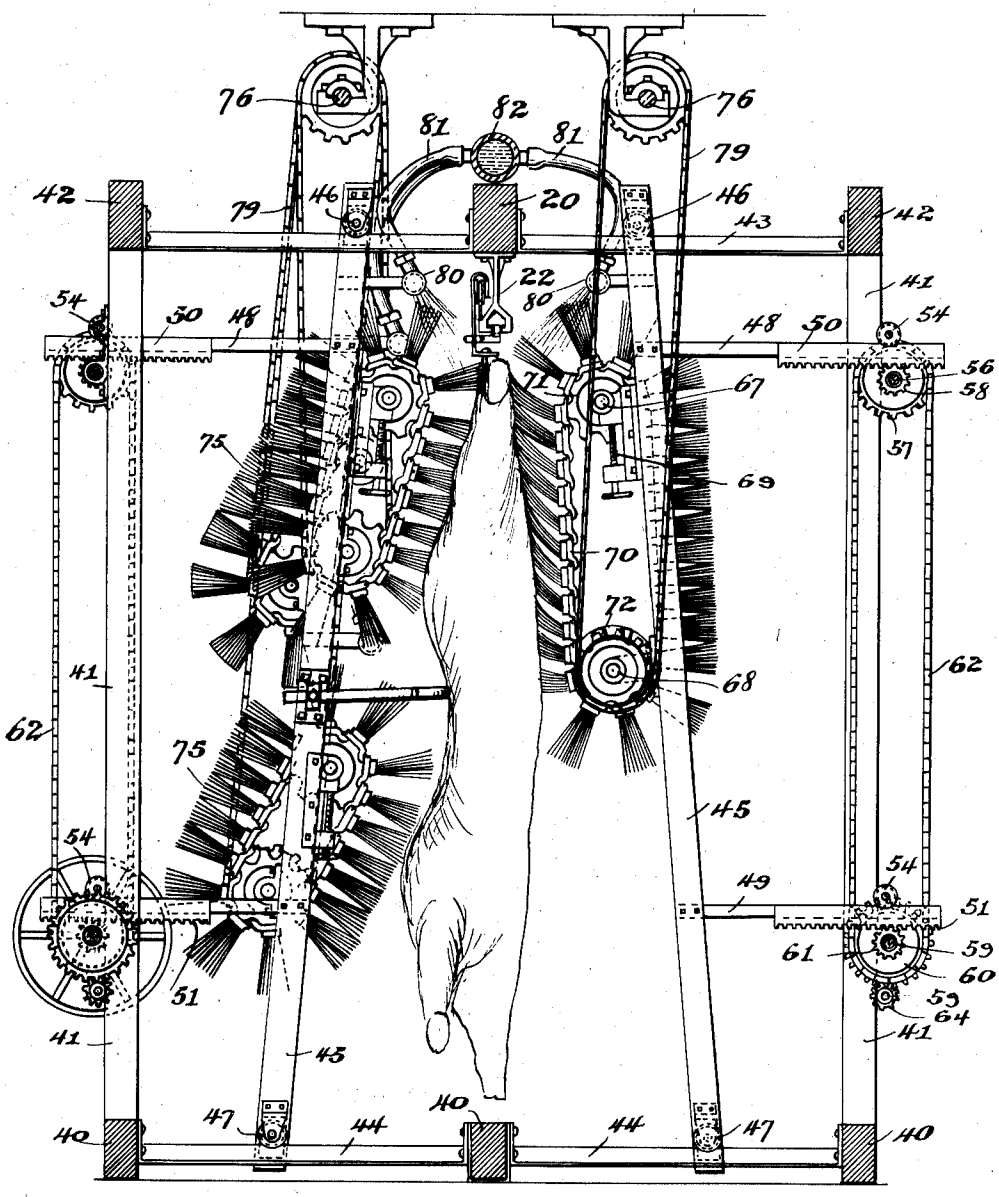


Fig. 3.

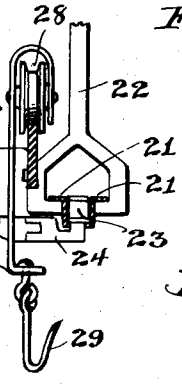


Fig. 8.

Witnesses,
F. D. Mann,
W. M. Fuller

Inventor,
Carlton L. Smith
By Offield Towle & Linthicum
Atty's.

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7 SHEETS—SHEET 4.

Fig. 4.

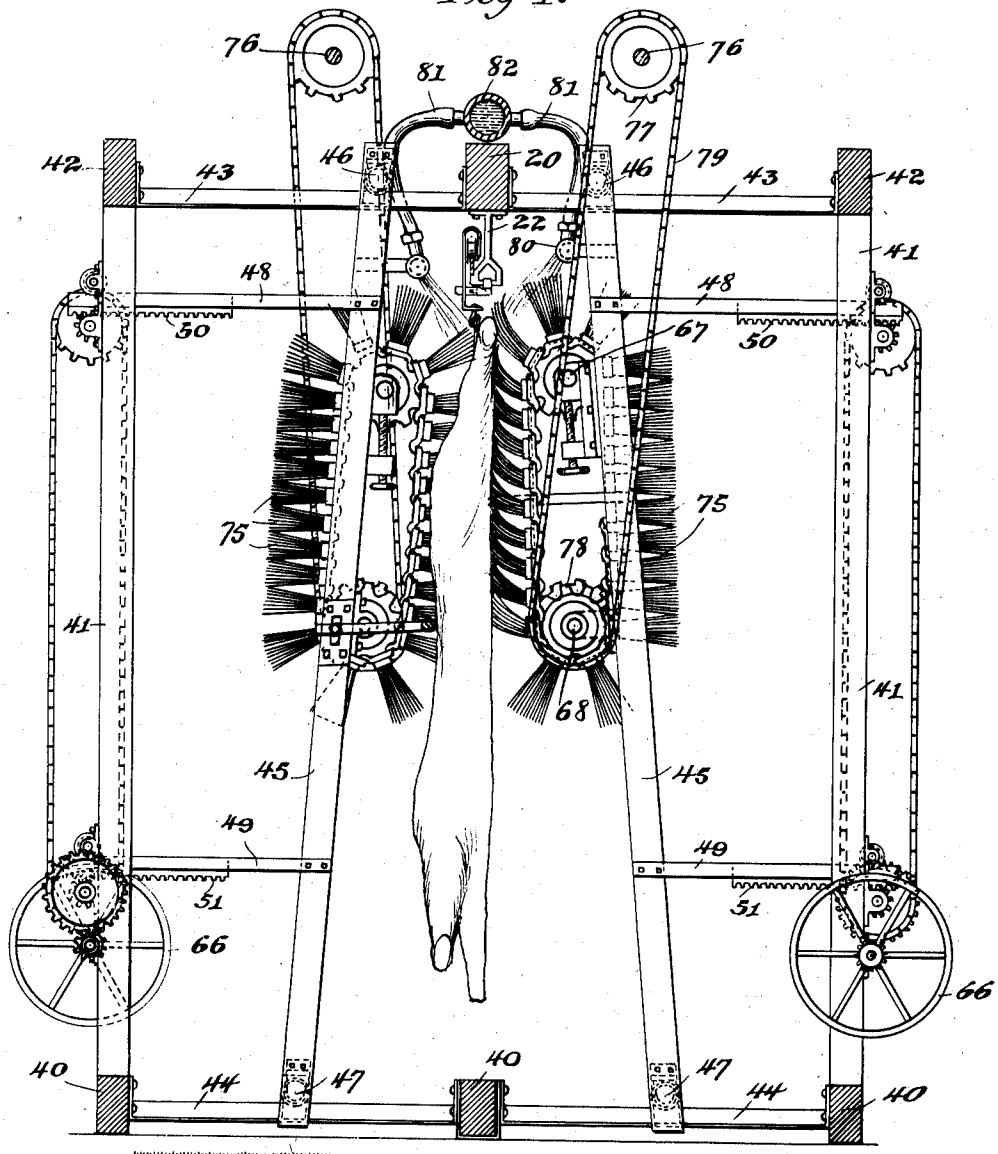


Fig. 9.

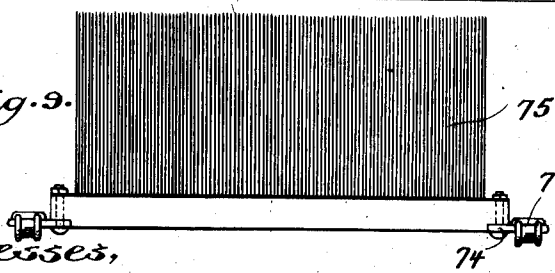


Fig. 10.

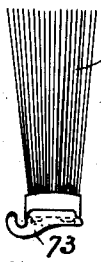
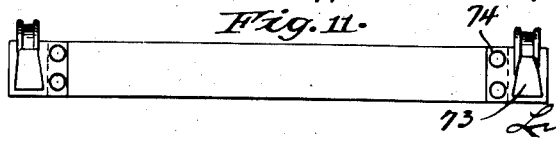


Fig. 11.



Witnesses,
S. D. Mann.
W. M. Fuller

Inventor,
Carlton L. Smith By
Offield Towle
Linthicum & Hill.

No. 882,719. PATENTED MAR. 24, 1908.

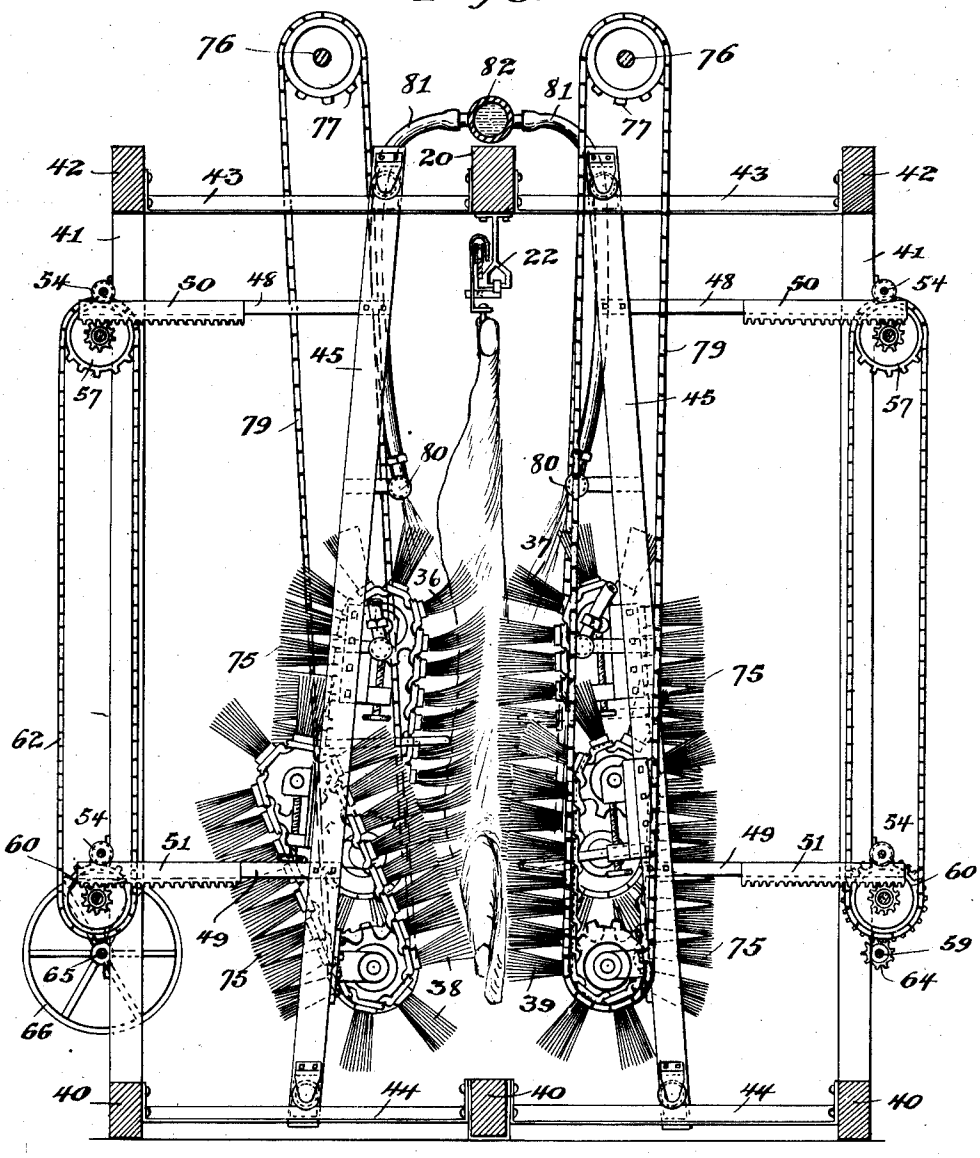
C. L. SMITH.

CARCASS SCRUBBER.

APPLICATION FILED OCT. 8, 1906.

7 SHEETS—SHEET 5.

Fig. 5.



Witnesses,
F. S. Mann,
Walter M. Fuller

Inventor,
Carlton L. Smith
By Offield Towle & Lunthicum
Attys.

No. 882,719. PATENTED MAR. 24, 1908.

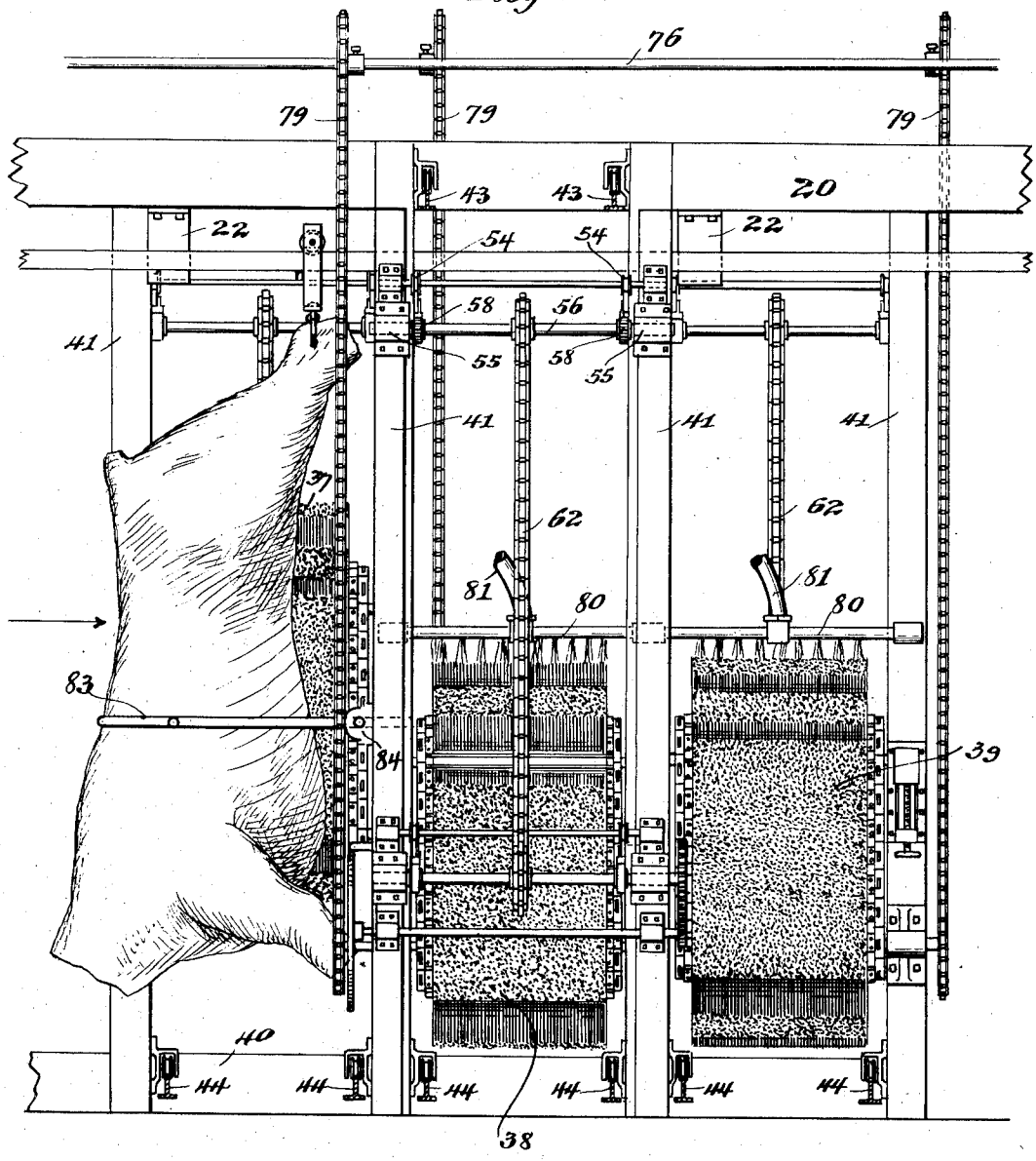
C. L. SMITH.

CARCASS SCRUBBER.

APPLICATION FILED OCT. 8, 1906.

7 SHEETS—SHEET 6.

Fig. 6.



Witnesses,
E. E. Mann,
Walter M. Fuller

Inventor;
Carlton L. Smith
By Offield Towle & Linthicum
Atty's.

No. 882,719. PATENTED MAR. 24, 1908.

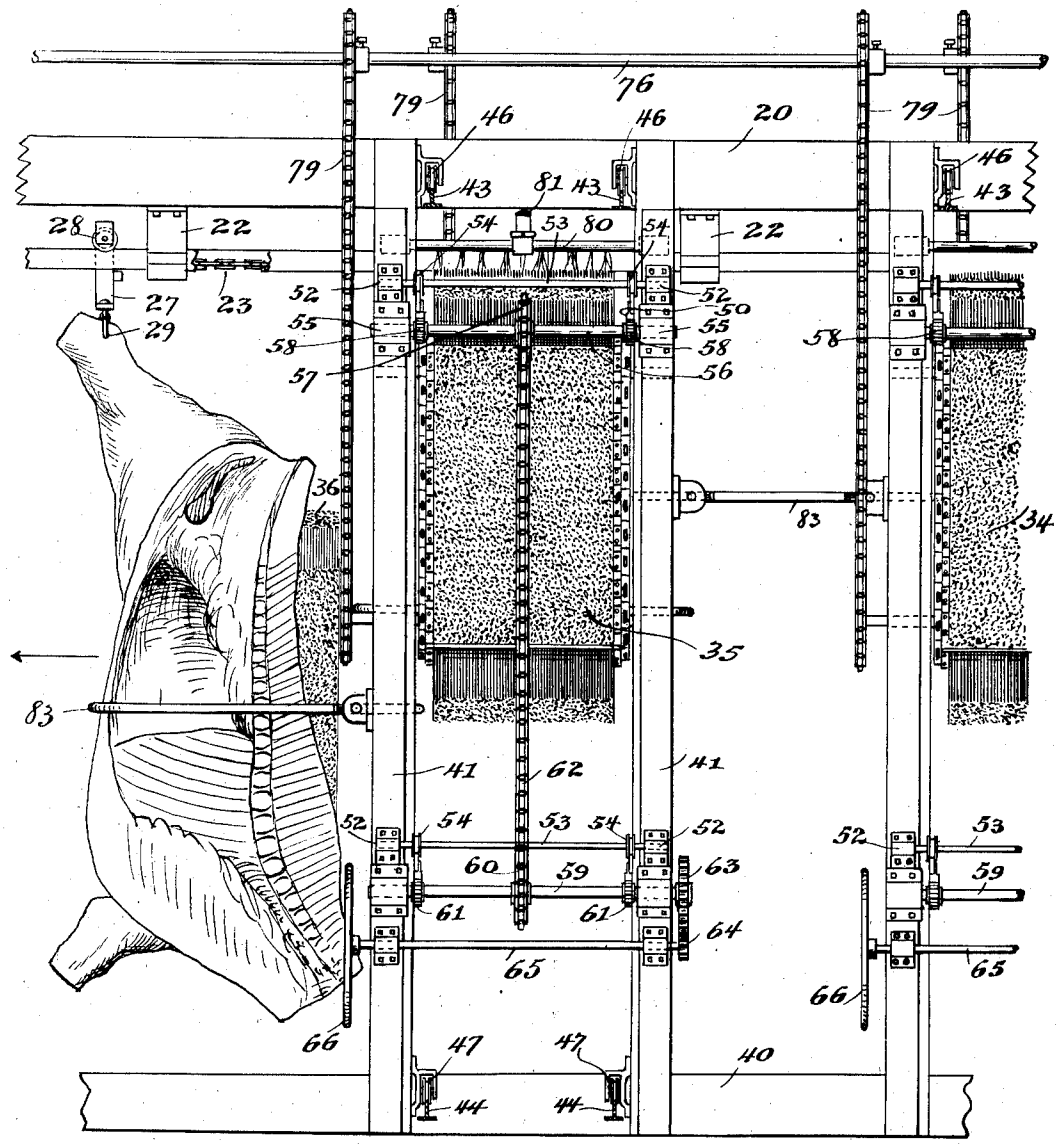
C. L. SMITH.

CARCASS SCRUBBER.

APPLICATION FILED OCT. 8, 1906.

7 SHEETS—SHEET 7.

Fig. 7.



Witnesses,
L. S. Mann,
Walter M. Fuller

Inventor,
Carlton L. Smith
By Offield Towle & Linthicum
Attys.

UNITED STATES PATENT OFFICE.

CARLTON L. SMITH, OF CHICAGO, ILLINOIS, ASSIGNOR TO ARMOUR & COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CARCASS-SCRUBBER.

No. 882,719. Specification of Letters Patent. Patented March 24, 1908.

Application filed October 8, 1906. Serial No. 338,011.

To all whom it may concern:

Be it known that I, CARLTON L. SMITH, 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 Carcass-Scrubbers, of which the following is a specification.

The object of my invention is the production of a brushing or scrubbing machine for cleaning carcasses of animals, particularly the dressed halves of steers or beeves.

When the bodies are brushed and cleaned by hand in a large slaughtering establishment the services of a number of workmen are required to perform the work, and considerable strength and care is necessary to wash off and cleanse the carcasses including the bruised parts of the body so that they will present as little blemish as possible. By the use of my improved power-driven scrubber the services of the brushing men may be dispensed with and the work is performed more quickly and satisfactorily than when manually done. In order to brush and wash all parts of the body, both the outer and the inner split side, including the deep recesses or hollows on the latter side, to clean the exposed portions of bones, and to remove the blood, the scrubber is made or built up of a number of traveling brushing devices each adapted to brush downwardly and clean a particular portion of the body and each disposed at the proper angle to most efficiently perform its function. Preferably the brushes of each device are mounted on endless sprocket chains passing around suitable sprocket wheels and are disposed substantially upright performing, while supplied with a spray of water, the brushing operation downwardly on the body which depends from a traveling conveyer carrying the half bodies through the fields of operation of the various brushing devices. Desirably each brushing device, which comprises a number of brushes fastened to the links of a pair of sprocket chains, and its operating mechanism is mounted on a frame adjustable toward and from the carcass whereby an effective cleaning of the carcasses of vairous sizes may be obtained. Although a greater or less number of brushing devices may be used as circumstances require, in a machine in actual operation I have provided a brushing mechanism for each of the following named parts of the body:—hip joint, shoulder joint, outside of shank or leg, split side of shank or leg, hip and side, upper part of split side, outer surface of shoulder, inner side of shoulder, outer side of neck, and inner side of neck.

In the accompanying drawings, which form a part of this specification, I have illustrated in detail a desirable embodiment of my invention, and in the various views of said drawings like reference characters refer to the same parts throughout.

Figure 1 is a plan view of a portion of a complete carcass scrubber and cleaner embodying my invention; Fig. 2 is a plan view of the remainder of the scrubbing device with certain parts omitted for the sake of clearness, Figs. 1 and 2, when placed end to end, illustrating a substantially complete plan of the machine; Fig. 3 is a vertical section on line 3—3 of Fig. 1 as viewed in the direction indicated by the arrows, certain minor parts being omitted for the sake of clearness; Fig. 4 is a vertical section on the line 4—4 of Fig. 2 as viewed in the direction indicated by the arrows, parts being omitted; Fig. 5 is a section on line 5—5 of Fig. 2; Fig. 6 is a side elevation of a portion of the machine and illustrates a half of a split carcass being operated upon by the brushing device for the split side of the shoulder; Fig. 7 is a side elevation of another portion of the machine as viewed from the opposite side of the device, and shows the outer side of the carcass being scrubbed by the shoulder brushing means; Fig. 8 is a vertical section through the conveyer illustrating the details of its construction; Fig. 9 is a side elevation of one of the brushes; Fig. 10 is an end view of the same; and Fig. 11 is a view showing the back of the brush.

The scrubbing and cleaning machine illustrated includes a conveyer for transporting or moving the split carcass along in a depending condition in combination with a number of brushing devices much alike in structure and operation, the various brushing mechanisms cleaning different sections of the bodies as they pass through their fields of operation. The conveyer is mounted on the under side of an overhead horizontal beam 20 and includes a pair of parallel Z-shaped bars 21 [Fig. 8] supported at intervals along beam 20 by brackets 22, the upper outwardly extended flanges of parallel bars 21 resting on and being supported by the brackets

while their lower inwardly projected flanges form a supporting trackway for a traveling chain 23 [Fig. 7] which has attached to it at intervals lateral arms 24 to each of which is pivoted a finger 25 [Fig. 8]. Supported on the brackets 22, or in any other convenient manner, is a plate 26 disposed in a vertical plane to form a track along the top edge of which the trolleys or carriers conveying the bodies to be scrubbed may travel. Each trolley or transporting carrier includes a bracket arm 27 having a grooved wheel 28 at its upper end adapted to ride on the top edge of track 26 and having at its lower end a sharp hook 29 which is thrust through the gamb of the longitudinal half of the carcass. Fingers 25 by engaging the rear edges of carriers 27 cause the latter with their loads to travel along track 26 at a uniform speed. While being conveyed thus each half carcass is operated upon by sprays of water and a number of brushing devices which thoroughly clean all parts thereof including the deep hollows or recesses on its split side. In the present instance I have shown ten of such brushing devices characterized as a whole by the reference numerals 30, 31, 32, 33, 34, 35, 36, 37, 38 and 39. The brushing devices 30 and 31 are the first to operate on the carcass and act upon the outside of the hip and shoulder joints, respectively, to brush and clean any bruises at those points, these portions of the animal being most subject to injury during transportation in the cattle cars or at other times in the pens. The staggered brushing devices 32 and 33 next operate upon the outer side and split or inner side of the leg or shank, and afterwards brushes 34 and 35 clean, respectively, the outer surface of the hip and side and the upper part of the split side of the creature. The outer and inner sides of the shoulder and neck, respectively, are scrubbed by brushing devices 36, 37, 38 and 39, respectively. As will be observed from the various views of the drawings these brushing devices are disposed at different angles to most efficiently and effectively scrub that portion of the carcass for which each is intended, and inasmuch as these brushing devices are substantially alike, except for size and inclination, a complete description of the mechanical structure and functions of one will suffice for all.

Spaced apart and lying parallel on the floor are longitudinal wooden sills or beams 40 and disposed at intervals are upright posts 41 which at their top ends support the horizontal beams 42, the latter being connected to the center support 20 by means of T-bars 43. The upstanding flanges of T-bars 43 form tracks, and at the lower part of the structure the center beam 40 is connected to the outer side sills 40 by other T-shaped tracks 44. Each adjustable brushing device includes a pair of inclined or vertical supports or beams 45 equipped at their top and bottom ends with rollers 46 and 47 adapted to travel on tracks 43 and 44, respectively. Extended outwardly and horizontally from each of these members 45 are two bars 48 and 49 each equipped for a portion of its length with a rack 50 and 51, respectively. Rotatably mounted in bearings 52 on the outer surfaces of the upright posts 41 are shafts 53 having grooved twin rollers 54 adapted to engage the upper surfaces of bars 48 and 49 to prevent the same from rising or becoming displaced. Beneath each rack 50 on bars 48 suitably mounted in bearings 55 is a shaft 56 having near its center a sprocket wheel 57 and at each end a pinion 58 meshing with the racks 50 above them. Near the lower portion of the structure beneath racks 51 is a similar shaft 59 with a sprocket wheel 60 and pinions 61 coöperating with the racks. A sprocket chain 62 passes around the two sprocket wheels 57 and 60 so that the rotation of the lower one is transmitted to the upper shaft. At one end shaft 59 has a gear 63 meshing with a pinion 64 on a lower shaft 65 provided at its opposite end with a hand wheel 66. It will be apparent from this construction that by turning hand wheel 66 and the various gears, sprocket wheels and chain, supports 45 may be fed inwardly and outwardly to the proper adjustment.

The pair of supports 45 have on their inner surfaces bearings for shafts 67 and 68, the bearing for shaft 67 being adjustable up and down by a manually actuated screw 69 so that the sprocket chain 70 passing over the two sprocket wheels 71 on shaft 67 and 72 on shaft 68 may be tightened as occasion demands. As shown there are two sprocket chains 70 and two wheels 71 and 72. Each link 73 of sprocket chains 70 has a lateral projection 74 [Figs. 9, 10 and 11] attached to an end of the back of a comparatively long brush 75. It will thus be apparent that as the sprocket chains 70 which carry the series of brushes are caused to travel the brushes will likewise travel so as to brush the carcass downwardly, as shown in the various views. On each side of the machine at its top is a driving shaft 76 whose rotation is transmitted to shaft 68 by means of sprocket wheels 77 and 78 in connection with sprocket chain 79. By driving shaft 68 instead of shaft 67 the portion of the brush chains next to the body is maintained taut.

Above each brushing device at a suitable height is a horizontal perforated water pipe 80 connected by means of a flexible hose or tube 81 with a water-main 82. By means of this arrangement a constant spray or shower of water is fed to each brushing device so that its scrubbing operation may be complete and thorough. To prevent the carcass from swinging or moving away from the rapidly

traveling brushes I provide a horizontal bar 83 opposite each of the brushing devices, the same being most clearly shown in Figs. 1, 2, 3, 6 and 7. It is necessary to make these bars or yokes 83 adjustable and a convenient arrangement to effect this result is the apertured bearings 84 mounted on the supports 45, the bars having rearward extensions 85 to pass through the apertures of bearings 84 and held in place by set screws 86. One side of the carcass slides along bar 83 while its opposite side is being scrubbed whereby the body is prevented from swinging away from the brushes.

As stated above, the various brushing devices are inclined or vertical in order to most effectively brush and cleanse the particular portion of the carcass on which it is intended to act. The leg, shoulder, and neck brushing devices are inclined a substantial amount while the others are disposed either vertically or inclined only slightly, as will be readily apparent from an inspection of the drawings. When the carcasses to be acted upon are larger and thicker or smaller and thinner than usual the brushing devices may be moved outwardly or inwardly the proper amount by the adjustment means described so as to most effectually perform the cleansing operation. In Fig. 3 I have shown the brushes acting upon an unusually large carcass and the brushing devices in said figure have been moved back a small amount to accommodate the extra large body.

I prefer to make the brushes with comparatively long bristles, as shown in Figs. 9 and 10, in order that they may reach to the bottom of the recesses on the split side of the carcass and properly clean the same.

To those skilled in the art it will be apparent that minor changes may be made in the mechanical details of the machine without departing from the substance of my invention, and the following claims are intended to cover all such modifications obvious to those acquainted with this art.

Although I have illustrated and described my invention as being applicable for scrubbing the halves of dressed beeves, it is to be understood that my invention is not limited to such use but may be employed for brushing and cleaning the carcasses of hogs, sheep, calves, etc., either whole or after being cut into parts.

I claim:

1. In a carcass scrubber, the combination of a plurality of brushing devices adapted to clean different portions of the carcass, each of said brushing devices including a sprocket chain or belt adapted to travel and one or more brushes secured thereto, the field of operation of each of said brushing devices being at substantially the same angle as the general angle of that part of the carcass' surface operated upon thereby, and means to convey carcasses or parts thereof in a definite position through the fields of operation of said brushing devices, substantially as described.

2. In a carcass scrubber, the combination of a plurality of brushing devices adapted to clean different portions of the carcass, each of said brushing devices including a sprocket chain or belt adapted to travel and one or more brushes secured thereto, the field of operation of each of said brushing devices being fixed and at substantially the same angle as the general angle of that part of the carcass' surface operated upon thereby, and means to convey carcasses or parts thereof in a definite position through the fields of operation of said brushing devices, substantially as described.

3. In a carcass scrubber, the combination of a plurality of brushing devices adapted to clean different portions of the carcass, each of said brushing devices including a sprocket chain or belt adapted to travel and one or more brushes secured thereto, the field of operation of each of said brushing devices being at substantially the same angle as the general angle of that part of the carcass' surface operated upon thereby, and means to convey carcasses or parts thereof in a definite position through the fields of operation of said brushing devices transversely to the paths of travel of said brushes, substantially as described.

4. In a carcass scrubber, the combination of a plurality of brushing devices adapted to clean different portions of the carcass by brushing downwardly, the field of operation of each of said devices being fixed and at substantially the same angle as the general angle of that part of the carcass' surface operated upon thereby, and means to convey carcasses in a definite position or parts of carcasses through the fields of operation of said brushing devices, said carcasses or parts thereof depending from said conveying means, substantially as described.

5. In a carcass scrubber, the combination of a pair of sprocket wheels adapted to rotate, a sprocket chain co-acting with said sprocket wheels, one or more brushes fastened to said chain, means to revolve one of said sprocket wheels to actuate said chain and brush or brushes, and means to convey the carcass to be scrubbed through the field of operation of said brush or brushes transversely to the plane of said sprocket chain, substantially as described.

6. In a carcass scrubber, the combination of a pair of rotatable shafts, a pair of sprocket wheels mounted on and rotatable with each of said shafts, two sprocket chains, each co-acting with a sprocket wheel on each of said shafts, one or more brushes fastened to both of said chains and adapted to travel therewith, means to revolve one of said shafts,

and means to convey the carcass to be scrubbed through the field of operation of said brush or brushes, substantially as described.

7. In a carcass scrubber, the combination of a pair of rotatable shafts, a pair of sprocket wheels mounted on and rotatable with each of said shafts, two sprocket chains each co-acting with a sprocket wheel on each of said shafts, one or more brushes fastened to both of said chains and adapted to travel therewith, means to revolve one of said shafts, and means to convey the carcass to be scrubbed through the field of operation of said brush or brushes transversely to their path of travel, substantially as described.

8. In a carcass scrubber, the combination of a pair of rotatable sprocket wheels, a sprocket chain co-acting with said sprocket wheels, one or more brushes fastened to said chain, means to revolve one of said sprocket wheels to actuate said chain and brushes, means to convey the carcass to be scrubbed through the field of operation of said brush or brushes, and means to prevent the carcass from swinging away from said brushes while being operated upon thereby, substantially as described.

9. In a carcass scrubber, the combination of a pair of rotatable sprocket wheels, a sprocket chain co-acting with said sprocket wheels, one or more brushes fastened to said chain, means to revolve one of said sprocket wheels to actuate said chain and brushes, means to convey the carcass to be scrubbed through the field of operation of said brush or brushes transversely to their path of travel, and means to prevent the carcass from swinging away from said brushes while being operated upon thereby, substantially as described.

10. In a carcass scrubber, the combination of a frame or support, a pair of rotatable sprocket wheels mounted on said frame or support, a sprocket chain co-acting with said sprocket wheels, one or more brushes mounted on said chain, means to convey the carcass through the field of operation of said brush or brushes, means to revolve one of said sprocket wheels to actuate said chain and brush or brushes, and means to adjust said frame toward or from the path of travel of the carcass, substantially as described.

11. In a carcass scrubber, the combination of a frame or support, a pair of rotatable sprocket wheels mounted on said frame or support, a sprocket chain co-acting with said sprocket wheels, one or more brushes mounted on said chain, means to convey the carcass through the field of operation of said brush or brushes transversely to their path of travel, means to revolve one of said sprocket wheels to actuate said chain and brush or brushes, and means to adjust said frame toward or from the path of travel of the carcass, substantially as described.

12. In a carcass scrubber, the combination of a frame or support, a pair of rotatable sprocket wheels mounted thereon, a sprocket chain co-acting with said sprocket wheels, one or more brushes mounted on said chain, means to revolve one of said sprocket wheels to actuate said chain and brush or brushes, means to convey carcasses through the field of operation of said brush or brushes, one or more tracks on which said frame or support is adapted to travel to secure adjustments of said brush or brushes, and means to cause said frame or support to travel on said tracks, substantially as described.

13. In a carcass scrubber, the combination of a frame or support, a pair of rotatable sprocket wheels mounted thereon, a sprocket chain co-acting with said sprocket wheels, one or more brushes mounted on said chain, means to revolve one of said sprocket wheels to actuate said chain and brush or brushes, means to convey carcasses through the field of operation of said brush or brushes transversely to their path of travel, one or more tracks on which said frame or support is adapted to travel to secure adjustments of said brush or brushes, and means to cause said frame or support to travel on said track or tracks, substantially as described.

14. In a carcass scrubber, the combination of a plurality of brushing devices adapted to clean different portions of the carcass, the field of operation of each of said devices being fixed and at substantially the same angle as the general angle of that part of the carcass' surface operated upon thereby, and means to convey carcasses in a definite position through the fields of operation of said brushing devices, substantially as described.

15. In a carcass scrubber, the combination of a plurality of brushing devices adapted to clean different portions of the carcass, the field of operation of each of said devices being fixed and at substantially the same angle as the general angle of that part of the carcass' surface operated upon thereby, and means to convey carcasses in a definite position through the fields of operation of said brushing devices, said carcasses depending from said conveying means, substantially as described.

16. In a carcass scrubber, the combination of a plurality of brushing devices adapted to clean different portions of the carcass, the field of operation of each of said devices being at substantially the same angle as the general angle of that part of the carcass' surface operated upon thereby, and means to convey carcasses in a definite position through the fields of operation of said brushing devices, said carcasses depending from said conveying means, substantially as described.

17. In a carcass scrubber, the combination

of a plurality of brushing devices adapted to clean different portions of the carcass, the field of operation of each of said devices being fixed and at substantially the same angle as the general angle of that part of the carcass' surface operated upon thereby, and means to convey carcasses in a definite position through the fields of operation of said brushing devices transversely thereto, the carcasses depending from said conveying means, substantially as described.

18. In a carcass scrubber, the combination of a plurality of brushing devices adapted to clean different portions of the carcass, the field of operation of each of said devices being fixed and at substantially the same angle as the general angle of that part of the carcass' surface operated upon, each of said brushing devices including a sprocket chain or belt adapted to travel and one or more brushes secured thereto, and means to convey carcasses or parts thereof in a definite position through the fields of operation of said brushing devices transversely to the paths of travel of said brushes, said carcasses or parts depending from said conveying means, substantially as described.

CARLTON L. SMITH.

Witnesses:
HARRY E. STAGER,
ABRAM B. STRATTON.