No. 634,325 Patented Oct. 3, 1899.

E. E. CHAIN.

MACHINE FOR FILLING HIDES OR SKINS.

(Application filed Dec. 7, 1898.)

(No Model.) 6 Sheets—Sheet 1.

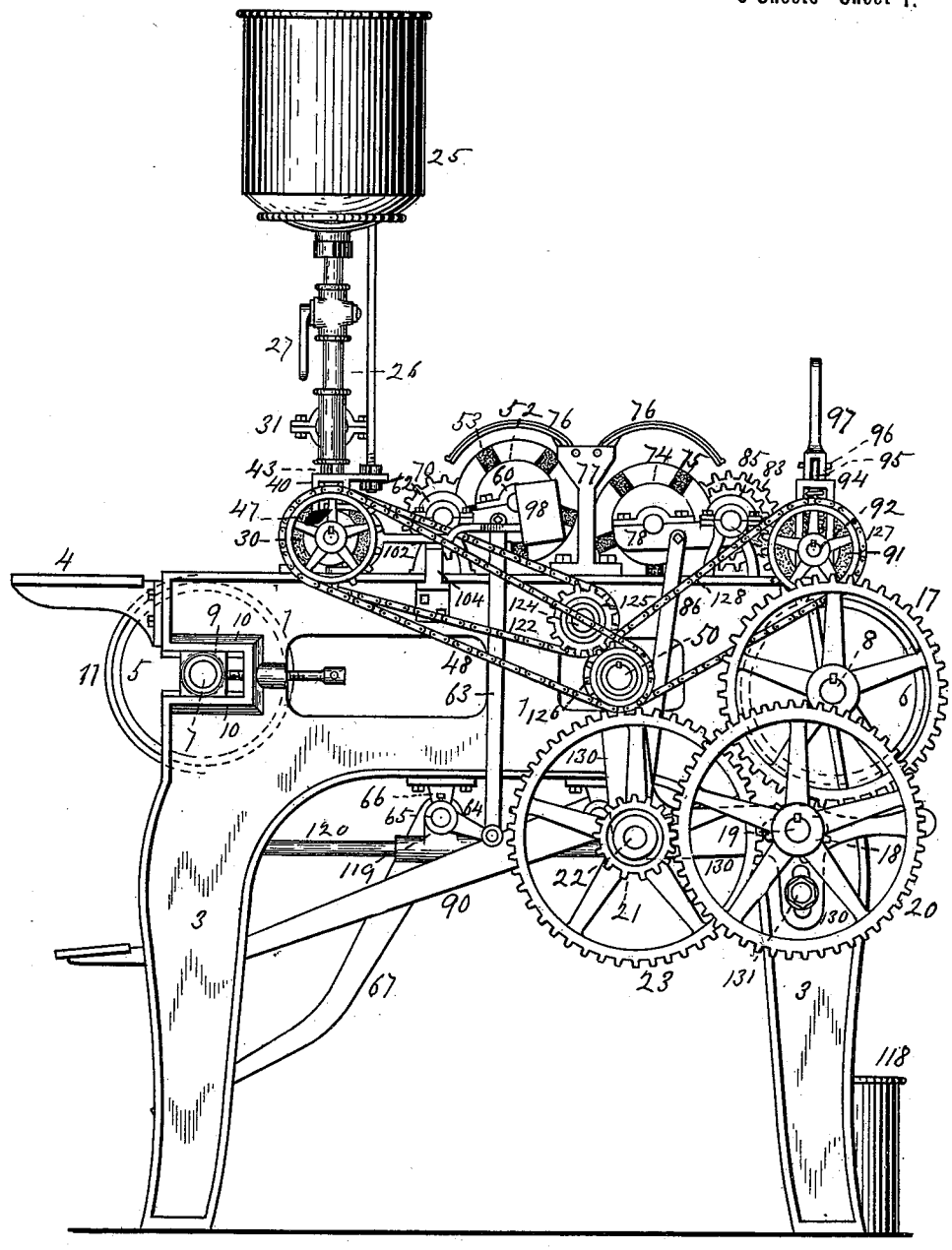


Fig. 1.

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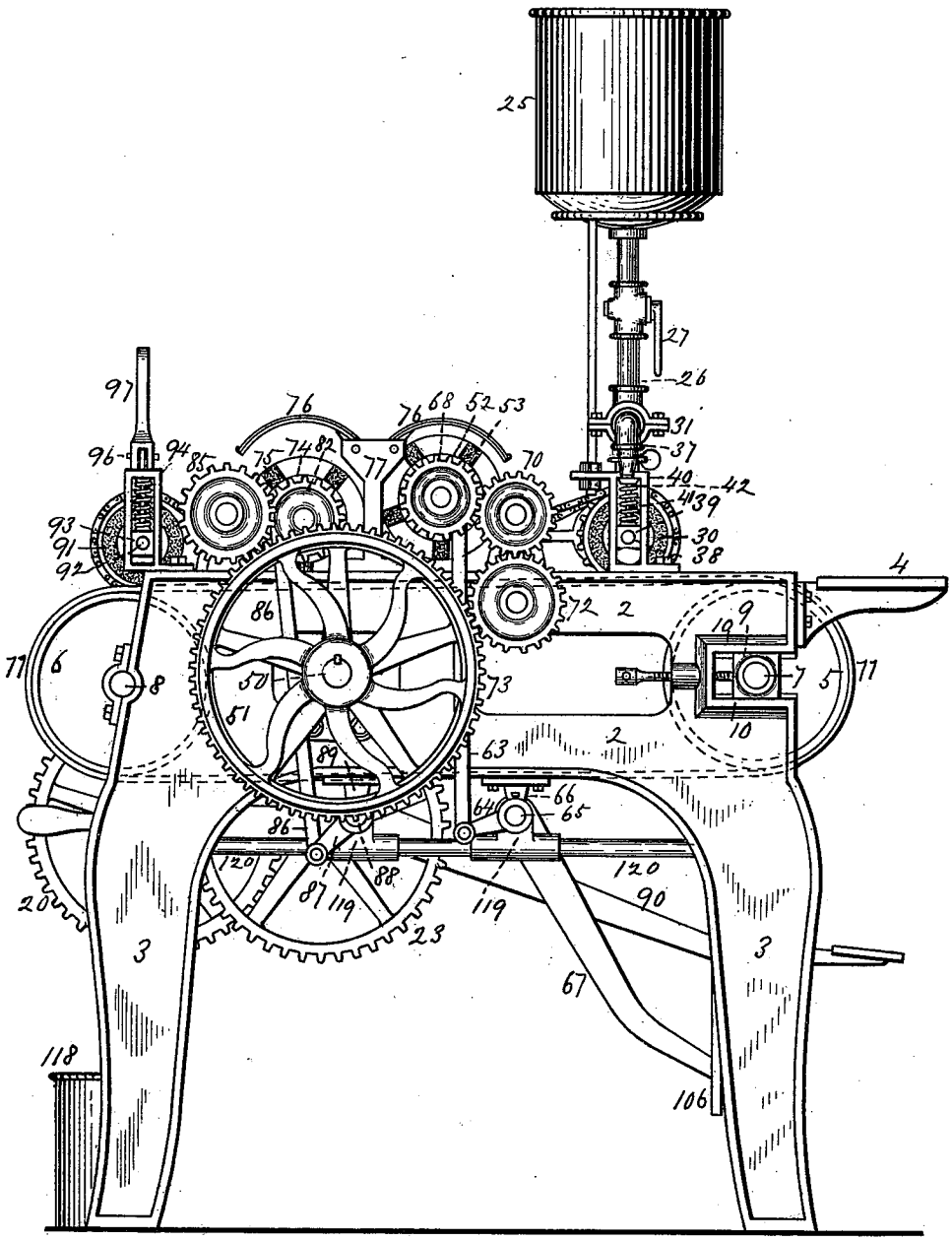


Fig. 2.

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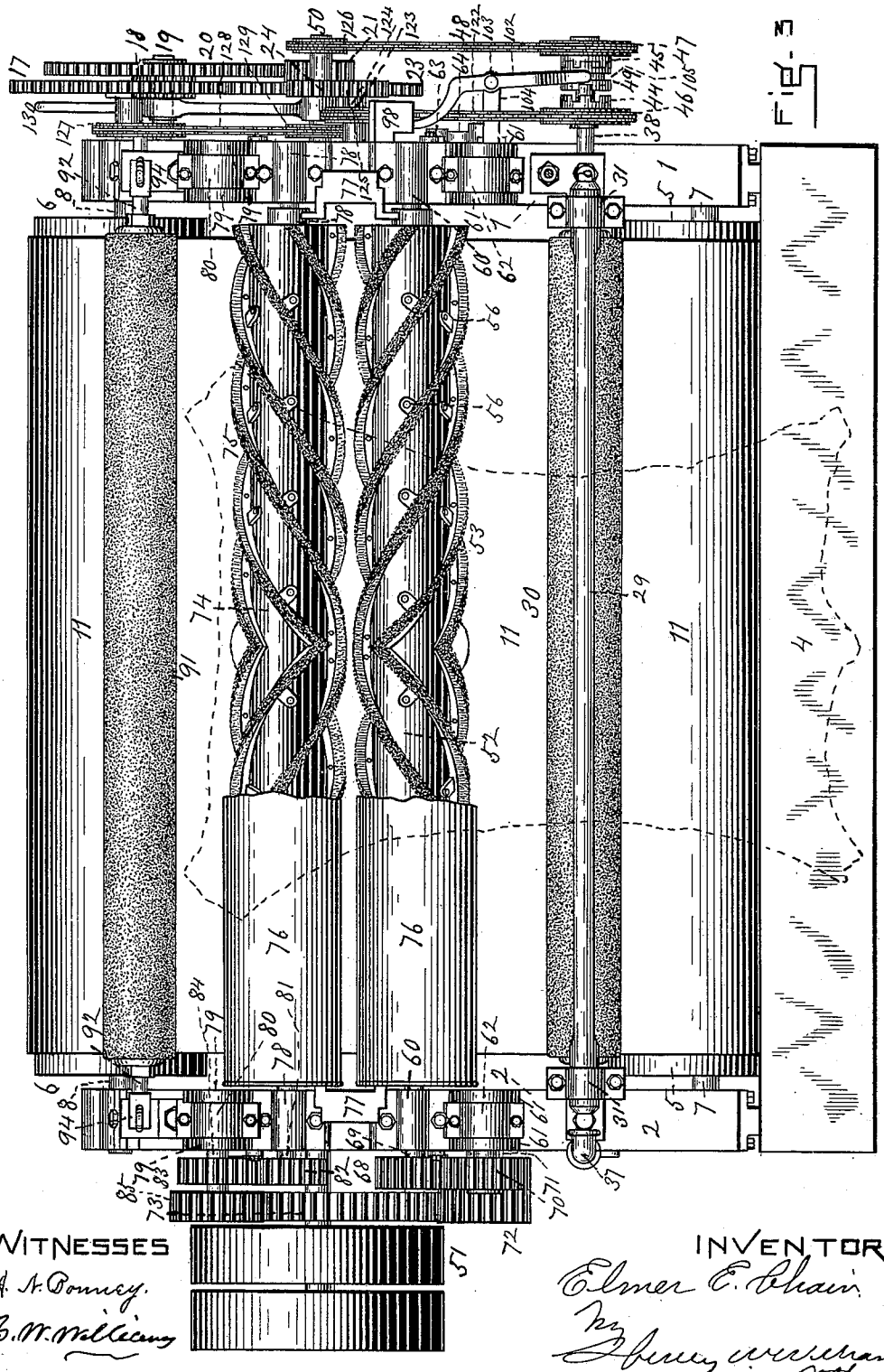


Fig. 3.

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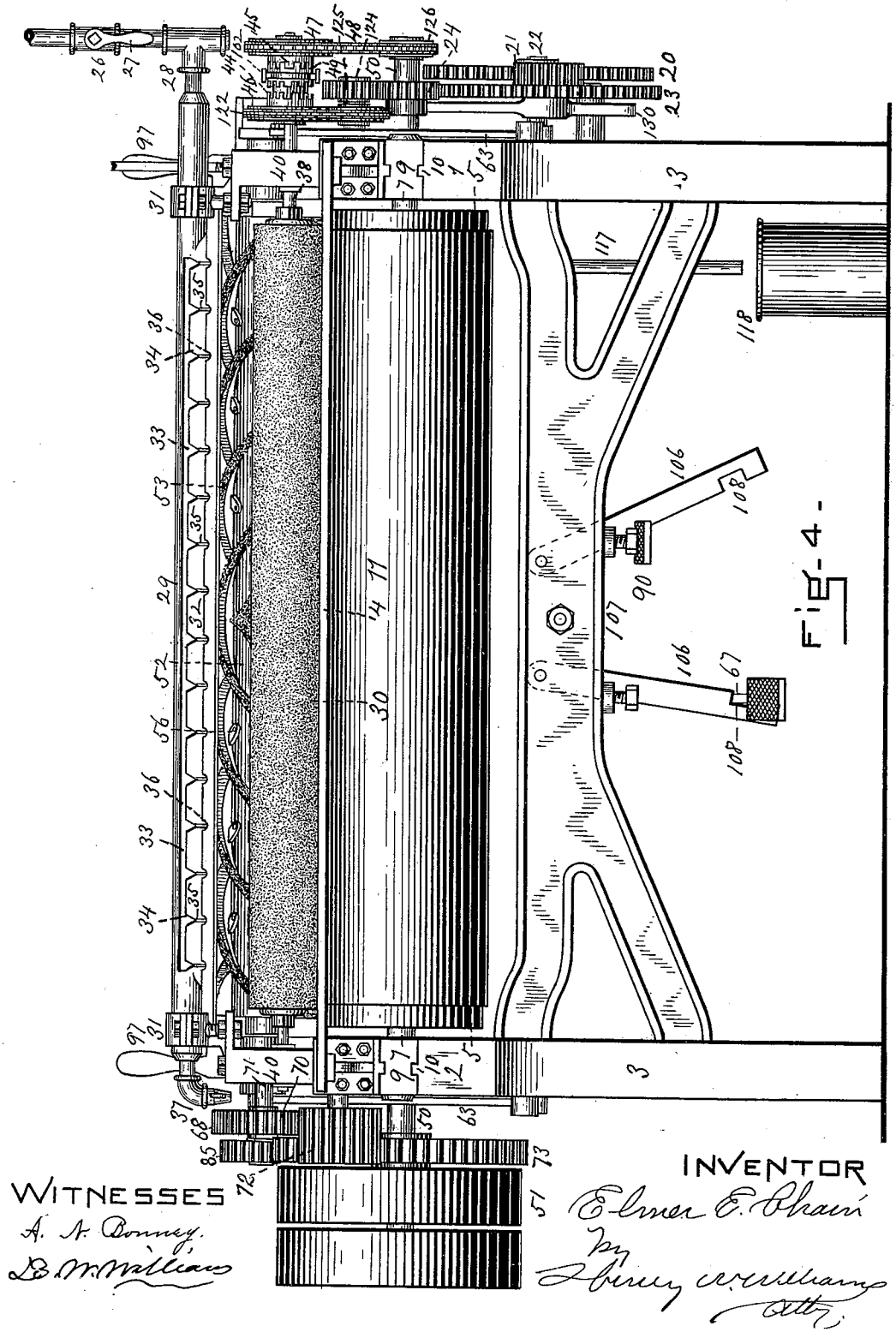


Fig. 4.

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(No Model.) 6 Sheets—Sheet 5.

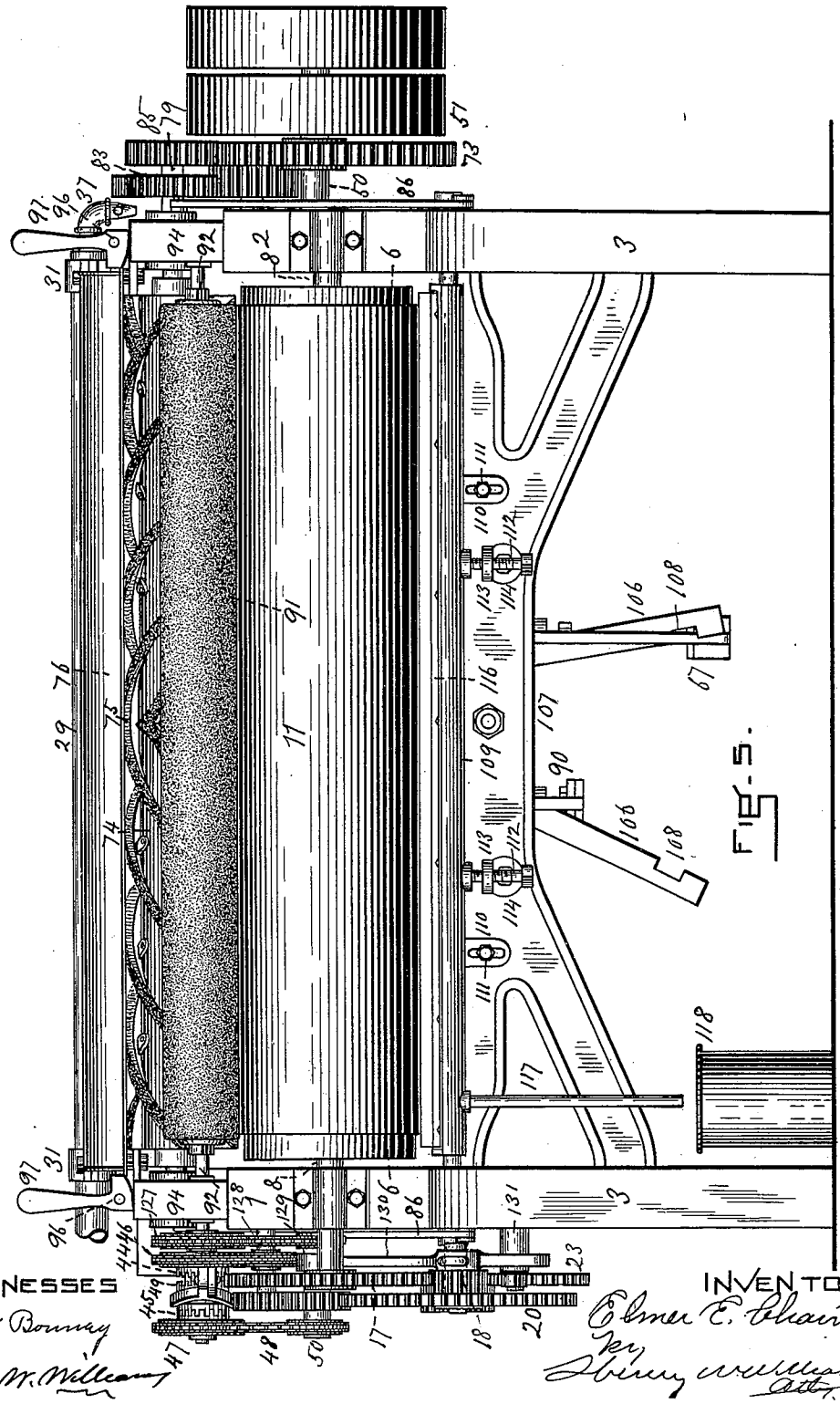


FIG. 5.

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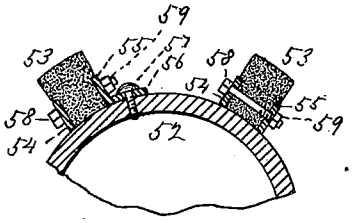


Fig. 7.

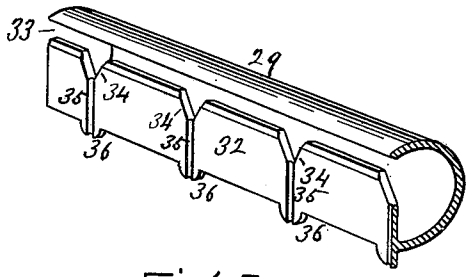


Fig. 8.

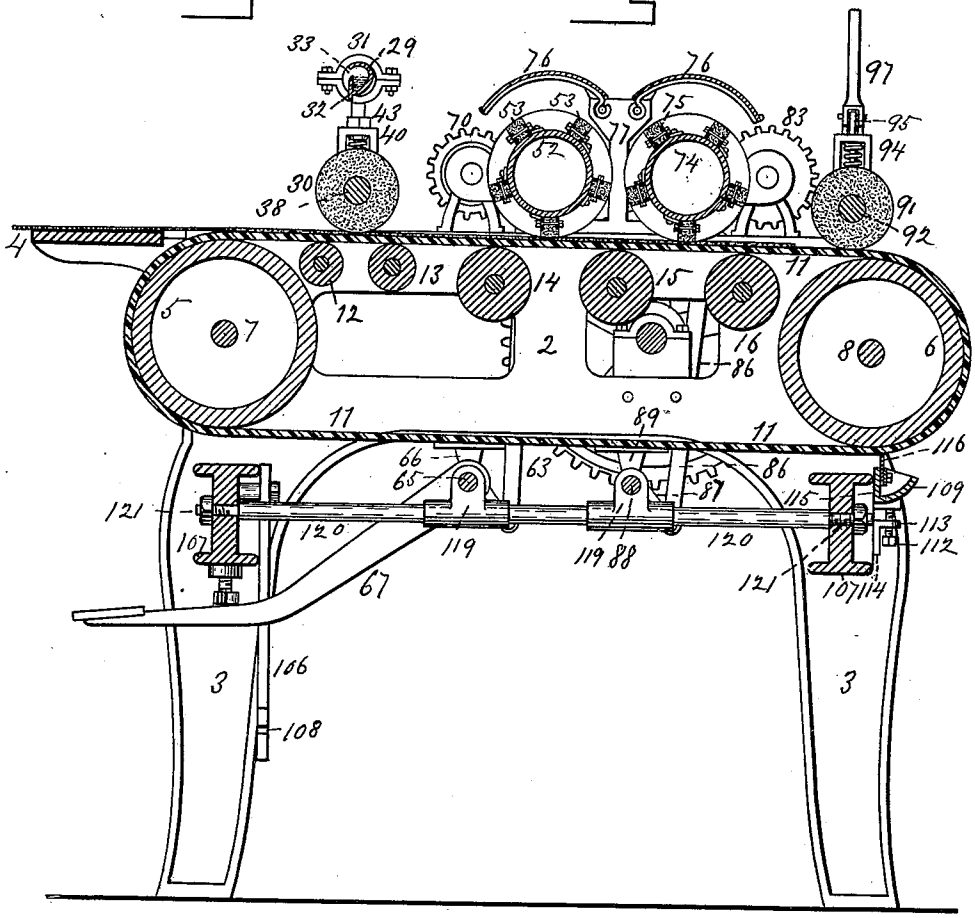


Fig. 6.

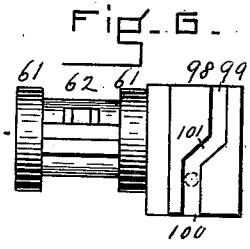


Fig. 9.

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UNITED STATES PATENT OFFICE.

ELMER E. CHAIN, OF BOSTON, MASSACHUSETTS.

MACHINE FOR FILLING HIDES OR SKINS.

SPECIFICATION forming part of Letters Patent No. 634,325, dated October 3, 1899.

Application filed December 7, 1898. Serial No. 698,495. (No model.)

To all whom it may concern:

Be it known that I, ELMER E. CHAIN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Apparatus for Seasoning or Filling Hides or Skins, of which the following is a specification.

This invention relates to that class of apparatus for treating hides and skins to the process known to those skilled in the art as "seasoning" or "filling," in which the hide or skin is drawn by means of an endless belt or carrier under mechanisms for applying to the upper surface thereof the seasoning or filling substance, for distributing said substance evenly upon the hide, for spreading or stretching the skin outwardly in different directions in order that it may be kept absolutely smooth, and for finishing the skin, all of which is accomplished during the progress of the hide or skin through the machine.

This invention is largely an improvement upon the apparatus or machine set forth and described in Letters Patent of the United States No. 583,871, granted June 1, 1897; and it consists in certain novel constructions, combinations, and arrangements of parts, whereby such machine is rendered more efficient, particularly as regards the application of the seasoning mixture and the stretching of the skin for the purpose of keeping it smooth and with an even surface as it passes through the machine.

The nature of the invention is fully described in detail below and illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the right side or end of a machine or apparatus embodying my improvement. Fig. 2 is an elevation of the opposite end or side. Fig. 3 is a plan view of the same, portions of the guards over the rubbing-in or spreading rolls being represented as broken out. Fig. 4 is a front elevation of the machine. Fig. 5 is a rear elevation. Fig. 6 is a central vertical section of the machine, taken transversely through the rolls. Fig. 7 is a sectional detail of a portion of one of the spreading-rolls. Fig. 8 is a perspective view of a portion of the trough for distributing the mixture. Fig. 9 is a detail in front elevation of one of the boxes of the forward spreading-roll.

Similar characters of reference indicate corresponding parts.

In Fig. 6 both the spreading-rolls are represented as down, while in Figs. 1 to 5, inclusive, the forward spreading-roll is raised. In Figs. 3, 4, 5, and 6 the reservoir for supplying the seasoning mixture is omitted.

Reference-figures 1 and 2 represent, respectively, the right and left ends or side plates of a suitable frame, supported by legs 3 and sustaining at their front edges a shelf or table 4. These side plates, which substantially constitute the frame, support the front and rear rolls 5 and 6 by means of their shafts 7 and 8, said shaft 7 having its bearings in boxes 9, Figs. 1 and 2, which are adapted to slide horizontally in slideways 10, formed in the frame and to be adjusted by suitable screws, thus serving to hold taut the endless belt or carrier 11, which extends from one to the other of said rolls. Supported also by said frame parallel with and between the rolls 5 and 6 are the sustaining friction-rolls 12, 13, 14, 15, and 16, Fig. 6, which serve to hold up the endless carrier or belt 11 against the downward pressure of the spreading or rubbing-in rolls and the season-roll. The carrier-belt 11 is operated by means of the gear-wheel 17, which is fast on the shaft 8 of the rear roll 6, said gear-wheel being engaged by the pinion 18 on the shaft 19, supported by the hanger 130 and carrying the gear-wheel 20, which is engaged by the pinion 21 on the shaft 22, supported by the hanger, said shaft carrying the gear-wheel 23, which is engaged by the pinion 24, Fig. 3, fast on the driving-shaft 50. The hanger 130 is adjustably secured at one end to the frame by the stud 131 and supported at its other end by the shaft 50.

25, Figs. 1 and 2, represents a reservoir containing the seasoning mixture or substance. This reservoir is connected by a vertical pipe 26, having a suitable cock 27, with a horizontal pipe 28, which connects with the distributing-trough 29. (See Figs. 1, 2, and 3, and particularly Figs. 4, 6, and 8.) This distributing-trough is horizontally situated over and parallel with the seasoning-roll 30, and is supported by suitable standards 31, Figs. 3 and 4.

As will be noticed by reference to Figs. 6 and 8, the trough is semicylindrical in shape, its front wall 32, however, being flat and vertical and extending upward from the lower edge of the semicylindrical body portion 29. The upper edge of this portion is not connected with the wall 32, and thus a space 33 is shown between said edge and the upper edge of the front wall. The upper edge of this wall is provided with numerous notches 34, from whose lower ends extend vertical grooves 35, formed on the front surface of said wall and extending down through the small extensions 36. By means of this construction the seasoning mixture is allowed to pass from the reservoir 25 into one end of the distributing-trough 29, and when it rises to a sufficient level therein the mixture flows forward through the notches 34, and thence running down through the grooves 35 drips onto the seasoning-roll 30. This downward elongation of the grooves 35, which is made possible by the downward projections 36, prevents the fluid from running along the under side of the trough. The flow is of course regulated by the cock 27, and the trough can be emptied by means of a nozzle 37, provided with suitable means for opening and closing it, Figs. 4 and 5. By means of this construction the liquid falls upon the roll in a straight line of numerous small streams or drippings, and hence the seasoning is very evenly distributed by the roll. This seasoning-roll 30 is formed or covered with a suitable absorbent, such as felt, and its function is to prevent the seasoning from dropping directly from the trough or source of supply upon the skin, as is the case in the apparatus described in the Letters Patent above referred to. Thus the seasoning is first spread into a body of the length of the roll by means of the trough; second, broken into small streams or drippings, and, third, spread upon the surface of the roll 30 before it is applied to the skin. This produces an even distribution or an unbroken thin coating or sheet of even thickness upon the surface of the skin as it is passed under the rotating roll. This seasoning or distributing roll is on a shaft 38, which is mounted in boxes 39, which slide vertically in the frame 40. From each box a rod 41, Fig. 2, extends up through said frame, said rod being surrounded by a spiral spring 42, and being provided on its upper end with an adjusting-nut 43. By adjusting these nuts the tension of the springs, and hence the pressure of the rolls upon the leather, is regulated.

Loose on one end of the shaft 38 are the two clutches 44 and 45, which are integral, respectively, with the sprocket-wheels 46 and 47, Figs. 3 and 4. The sprocket-wheel 47 is connected by the chain 48 with the sprocket-wheel 126 on the driving-shaft 50. The portion 49 of the clutch is splined on the shaft 38. It will readily be seen, therefore, that when said portion 49 is moved into engagement with the part 44, Figs. 3, 4, and 5, and power applied to the driving-pulley 51 motion in the same direction as the driving-shaft—that is, toward the operator—is imparted to the seasoning-roll 30. At the same time, by means of the gears 24, 23, 21, 20, 18, and 17, the shaft 8 is rotated in the opposite direction from the shafts 50 and 38, so that the belt or carrier 11 moves from the operator.

52 represents the forward spreading-roll or brush-roll. This is provided with the spiral brushes 53. Each of these brushes is secured in position by means of a pair of spiral bars 54 and 55. The bar 55 is provided with foot-pieces 56, which fit on the periphery of the roller and are secured thereto by suitable screws 57. The bar 54, which is parallel with the portion 55 of the fixed bar, is not secured to the roll, but lies on the opposite side of the brush 53, which is thus clamped between the two bars by means of suitable bolts 58 and nuts 59. (See Fig. 7.) By this means the brushes are held firmly in position and are easily removed for purposes of repair or replacement. This roll 52 has its bearings in swinging boxes 60, Figs. 1 and 3, which are provided with forwardly-extending arms 61, pivotally connected to the portions 1 and 2 of the frame by means of the housings 62. These swinging boxes 60 are connected by links 63, Figs. 1, 4, and 6, with the cranks 64, fast on the shaft 65, which has its bearings in hangers 66, secured to the under side of the portions 1 and 2 of the frame, said shaft having fixed upon it a treadle 67. Downward pressure upon this treadle lifts the forward spreading-roll into the position indicated in Figs. 1 to 5, inclusive, its position when down being indicated in Fig. 6. Motion is communicated to the spreading-roll 52 by means of a pinion 68, Figs. 2 and 3, on the axle 69 in the box 60 at the left end of the machine. This pinion 68 is engaged by the pinion 70 on the short shaft 71, extending from the housing 62 at that end of the machine, such pinion 70 being engaged by the pinion 72, supported by the frame and engaged by the gear-wheel 73 on the driving-shaft 50.

74 is the rear spreading-roll provided with brushes 75, secured to the roll in the same manner as the brushes 53, but reversely arranged as compared with the brushes of the forward roll. The two rolls are provided with suitable covers or guards 76, supported by standards 77, mounted on the frame. The rear roll 74 is mounted on swinging boxes 78, from which extend rearwardly the arms 79, which are pivotally connected with the portions 1 and 2 of the frame by the boxes or bearings 80. The axle 81 at the left end of the roll 74 (see Figs. 2, 3, and 5) has fast on it a gear-wheel 82, which is engaged by a pinion 83 on the shaft 84, extending from the arms 79 at that end of the machine. On the same shaft 84 is the pinion 85, which is engaged by the gear-wheel 73 on the driving-shaft 50. By this arrangement of gear the rear spreading-

roll 74 is rotated in a reverse direction from that of the forward spreading-roll 52. This rear roll is adapted to be raised and lowered in a similar manner to the forward roll by means of links 86, Figs. 1, 2, 5, and 6, which extend down from the swinging boxes 78 and are connected at their lower ends with the cranks 87, fast on the shaft 88, which has its bearings in hangers 89, secured to the under side of the portions 1 and 2 of the frame. This shaft has fixed on it a treadle 90. This arrangement is exactly similar to the arrangement for lifting the forward spreading-roll and operates in a like manner to lift the rear spreading-roll.

91 is a finishing-roll adjustably mounted upon the machine in manner similar to the mounting of the roll 30—that is to say, its shaft 92 is mounted in sliding boxes 93, held down by springs within the frames 94. The rods 95 extend up from the boxes 93 through this frame and are supported by pivots 96, which are sustained by bifurcated handles 97, whose lower ends are formed into cams, Fig. 5, whereby when the handles are pressed down the finishing-roll is lifted. This roll is provided with a suitable elastic and preferably absorbent surface, whereby it smooths and finishes the skin and absorbs surplus seasoning mixture.

When the hide is to be fed into the machine, the parts are in the position indicated in Figs. 1 to 5, inclusive, the forward spreading-roll 52 being raised and the parts 49 and 45 of the clutch in engagement. The carrier-belt 11 is moving toward the rear of the machine, and the under surfaces of the seasoning-roll 30 and the rear spreading-roll 74 are rotating in the same direction. As the forward edge of the skin, which is indicated by broken lines in Fig. 3, is carried in by the belt 11 the skin is caught between the seasoning-roll and the belt and the seasoning mixture applied thereby, said mixture being dropped upon the seasoning-roll by means of the mechanism above described. As the skin progresses it passes under the forward spreading-roll 52, which, being raised, does not come in contact with it, and is caught between the belt and the rear spreading-roll 74, whose arrangement of brushes has the effect of spreading the forward end of the skin outward and forward—that is to say, toward the rear end of the machine. Further progress of the skin brings it under the roll 91, which finishes its surface. When the forward portion of the skin has been operated upon in the manner above described by the rear spreading-roll, it is desirable to bring the forward spreading-roll to bear upon it, inasmuch as the under portion of the forward spreading-roll rotates toward the front of the machine, and the brushes thereon being reversely arranged from the brushes on the rear spreading-roll have the effect of spreading the skin outwardly and rearwardly—that is, toward the front of the machine. The forward spreading-roll is therefore dropped upon the skin by raising the treadle 67, as shown in Fig. 6, and the rear spreading-roll may be raised or not, as desired, by pressing down the treadle 90. Thus it will be seen that the forward part of the skin is pressed or stretched outwardly and forwardly and the rear part outwardly and rearwardly, the practical effect being outward forward diagonal stretching and outward rearward diagonal stretching, which from the shape of a hide at its corners is exactly what is needed to preserve its smoothness and prevent it from wrinkling as it passes through the machine.

It is advisable that when the forward spreading-roll 52 is dropped, so as to act upon the hide, the direction of the rotation of the seasoning-roll 30, which when the forward spreading-roll was raised corresponds with the direction of the rotation of the rear spreading-roll, should be reversed to correspond with the direction of the forward spreading-roll. In other words, the seasoning-roll should rotate toward the front edge of the hide when the front portion is passing under it and toward the rear edge when the rear portion is passing under it, so that the seasoning-roll will not tend to neutralize the good effects of the spreading-rolls. Hence when the spreading-roll 52 drops the rotation of the seasoning-roll is reversed by means of the following mechanism.

The right-hand box 60 of the forward spreading-roll has rigidly secured to its outer edge a cam 98, (see Figs. 1, 3, and 9,) provided on its front surface with a cam-groove, which is of the shape indicated in Fig. 9—that is to say, with its portions 99 and 100 in two vertical planes—connected by the diagonal portion 101. The rear end of a horizontal lever 102, Figs. 1 and 3, is pivoted at 103 to a supporting-arm 104, extending from the portion 1 of the frame, and the forward bifurcated portion of said lever engages in the groove 105 in the portion 49 of the clutch. When the forward spreading-roll 51 is dropped by lifting the treadle 90, the rear end of the shipping-lever 102 is moved from the portion 100 of the cam-groove into the portion 99 thereof, thus moving the portion 49 of the clutch into engagement with the portion 44 thereof. The sprocket-wheel 46 on this portion of the clutch is connected by the chain 122, Figs. 1, 3, 4, and 5, with the sprocket-wheel 123 on the stud 124, supported by the frame, said stud having fast on it the pinion 125, which is engaged by the pinion 24 on the driving-shaft 50. This reverses the seasoning-roll 30.

The treadles 67 and 90 are adapted to be locked when in a lowered position by means of the swinging bars 106, Figs. 4, 5, and 6, pivotally hung from one of the cross-pieces 107 of the frame and each provided with the notches 108 for engagement with the treadles, so that either treadle may be locked in a lowered position.

The shaft 92 of the finishing-roll 91 is provided with the sprocket-wheel 127, Figs. 1, 3, and 4, which is connected by the chain 128 with the sprocket-wheel 129 on the driving-shaft 50.

109, Figs. 5 and 6, represents a horizontal trough adjustably secured to the rear side of the cross-bar 107 by means of the slotted supports 110 and bolts 111. The trough is adjusted vertically by means of screws 112, which extend upward to the under side of said trough, through internally-screw-threaded brackets 113, which extend rearward from the bosses 114, secured to the rear side of said cross-bar 107. This trough consists of a curved rear wall, which is designated as 109, and a vertical front wall 115. This front wall has secured to it a horizontal scraper or doctor 116, which bears against the under side of the carrier-belt 11 and cleans its surface, dropping the substance scraped therefrom into the trough 109. The bottom of this trough is perforated to receive the pipe 117, Figs. 4 and 5, through which the contents may be conducted into a suitable receptacle 118.

Additional support is preferably given to the shafts 65 and 88 by means of brackets 119, extending upward from tubes 120, supported by rods 121, whose ends are secured to the cross-bars 107. (See Figs. 1, 2, and 6.)

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for seasoning or filling hides or skins, the combination with the carrier 11 and means for actuating the same and the spreading-roll 52 and mechanism for lifting the same from and dropping it upon the surface of the carrier; of the seasoning-roll 30 resting on the carrier between said spreading-roll and the front edge of the machine; and mechanism for imparting rotation to said seasoning-roll and reversing said rotation, substantially as described.

2. In an apparatus for seasoning or filling hides or skins, the combination of the carrier 11 and means for actuating the same and the spreading-roll 52 and mechanism for lifting the same from and dropping it upon the surface of the carrier; of the seasoning-roll 30 resting on the carrier between said spreading-roll and the front edge of the machine; mechanism for imparting rotation to said seasoning-roll; and mechanism intermediate of the mechanism for imparting rotation to the seasoning-roll and the mechanism for raising and dropping said spreading-roll whereby said raising or dropping of the spreading-roll reverses the rotation of the seasoning-roll, substantially as set forth.

3. In an apparatus for seasoning or filling hides or skins, in combination, the carrier 11 and mechanism for actuating the same, the seasoning-roll 30 on the shaft 38 supported by the frame; the clutch consisting of the parts 44 and 45 loose on said shaft and the intermediate part 49 splined thereon; the forward spreading-roll 52; the swinging boxes 60 supporting the axles of said spreading-rolls; the cam 98 rigidly secured to the outer side of one of said boxes and provided with the cam-grooves 99 and 100 connected by the diagonal cam-groove 101; mechanisms for imparting rotation to the spreading-roll and seasoning-roll; mechanism for raising and lowering said spreading-roll; and the shipping-lever 102 engaging at its opposite ends said cam-groove and portion 49 of the clutch, whereby the seasoning-roll is rotated in the same direction as the forward spreading-roll when the latter is down and in a reverse direction when the latter is raised, substantially as described.

4. In an apparatus for seasoning or filling hides or skins, in combination, the carrier 11 and mechanism for advancing the same; the seasoning-roll 30 supported by the frame; the two spreading-rolls 52 and 74; the swinging boxes supporting the axles of said spreading-rolls and each consisting of the box 60, arms 61 and housings 62 between said arms, said arms supporting the shafts for communicating motion to gears on said axles; trains of gear between the spreading-rolls and the driving-shaft for imparting motion to said rolls; mechanism for imparting rotation to the seasoning-roll; mechanisms for lifting and dropping the spreading-rolls and for locking them respectively in raised positions; and mechanism intermediate of the forward spreading-roll and the seasoning-roll whereby lifting the former reverses the rotation of the latter, substantially as set forth.

5. In an apparatus for seasoning or filling hides or skins, the combination with the spreading-roll and the spiral lines of brushes thereon; of the pair of parallel bars 54 and 55 the latter being provided with the integral foot-piece 56 whereby they are attached to the roll and the former being separated from and unattached to the roll, said bars being secured together on opposite sides of the brushes, substantially as described.

6. In an apparatus for seasoning or filling hides or skins, in combination; the frame, and the driving-shaft 50; the carrier-belt, rolls 5 and 6 supporting the shafts 7 and 8, the latter being provided with the gear-wheel 17, and gears 20, 21 and 24 intermediate of the gear 17 and the driving-shaft; the seasoning-roll 30 supported by the shaft 38, the clutch 44, 45 provided with the sprockets 46, 47, the gear 126 on the driving-shaft and connected by a chain with the sprocket 45, the gears 24, 125 and 123 intermediate of the sprocket 46 and the driving-shaft, the last-named gear being connected with the sprocket 46 by a chain; the spreading-roll 52 and gears 68, 70, 72 and 73 intermediate of said spreading-roll and the driving-shaft; the rear spreading-roll 74 and gears 82, 83 and 85 intermediate of said roll and the gear 73; and the finishing-roll 91 and sprockets 127 and 129

connected by a chain and intermediate of said roll and the driving-shaft, substantially as set forth.

7. In an apparatus for seasoning or filling hides or skins, the combination with the frame and the rolls 5 and 6 and traveling belt 11; of the trough comprising the portions 109 and 115, the scraper or doctor 116 extending from said portion 115 up against the traveling belt; the slotted guides 110 and screws extending through them to the frame; the bosses 114 on the frame 8 provided with the brackets 113; and adjusting-bolts extending through said brackets to the under side of the trough, substantially as described.

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