W. B. TURNER.

MACHINE FOR APPLYING LIQUID TO SKINS.

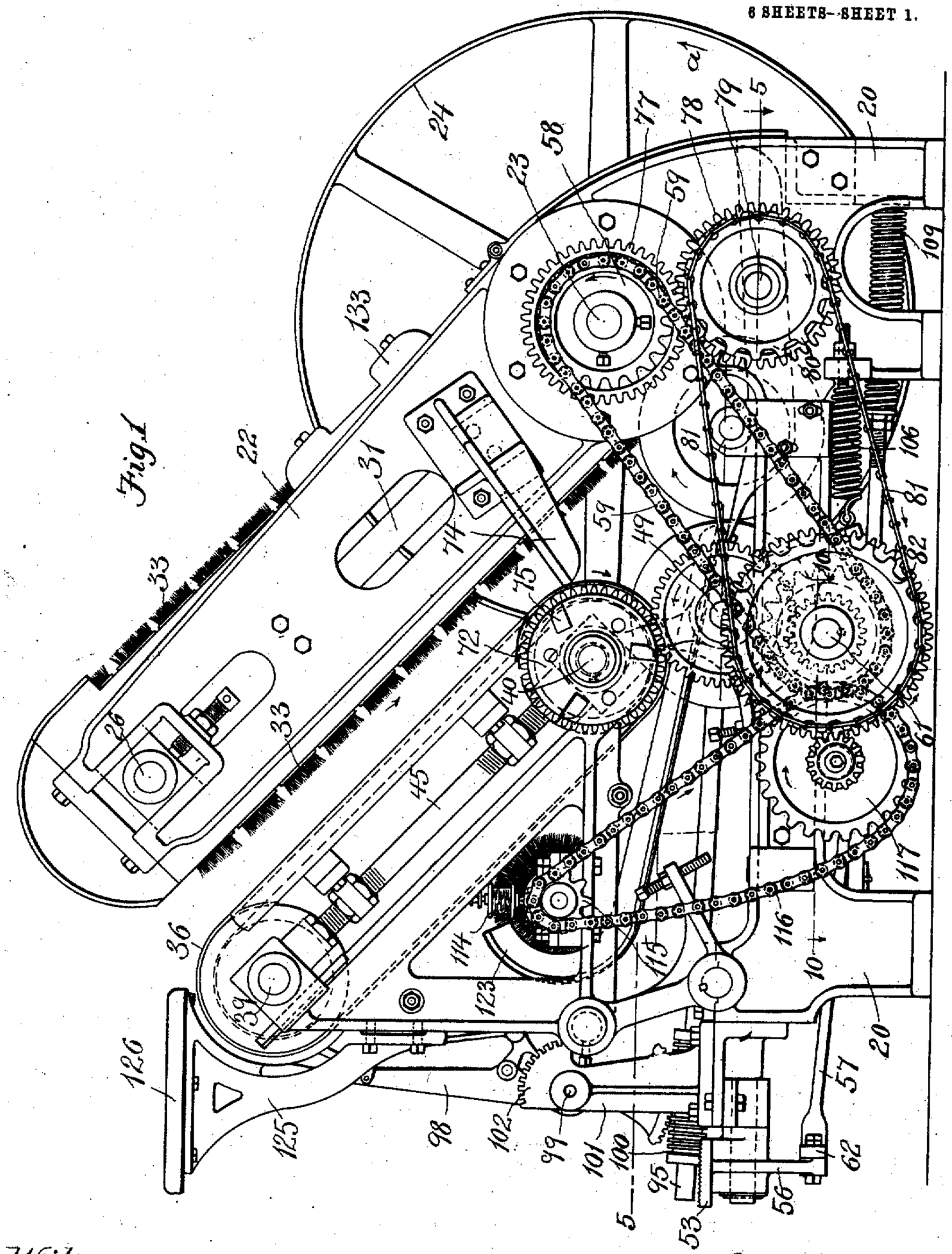
APPLICATION FILED OCT. 9, 1906.

917,683.

Patented Apr. 6, 1909.

6 SHEETS—SHEET 1.

Fig. 1



Witnesses:
H. A. Hall
H. L. Folsom

Inventor:
William B. Turner
by Wright Brown Quinby & May
attys

THE NORRIS PETERS CO., WASHINGTON, D. C.

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Fig. 2.

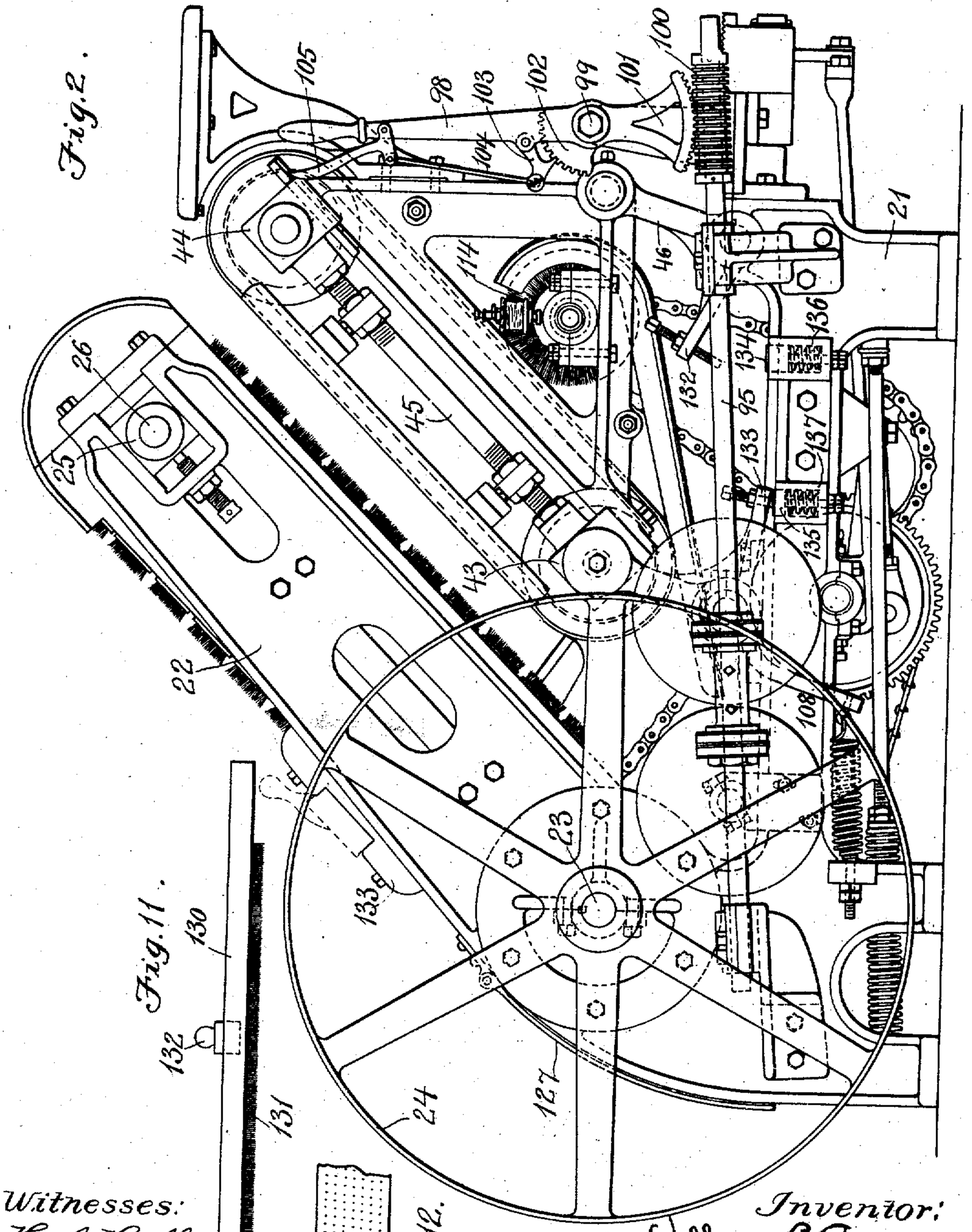
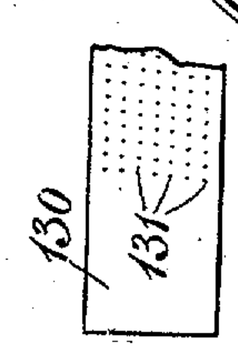


Fig. 11.

Fig. 12.



Witnesses:
H. A. Hall
A. L. Folsom.

Inventor:
by William B. Turner
Wright Brown Quinby & May
Attys

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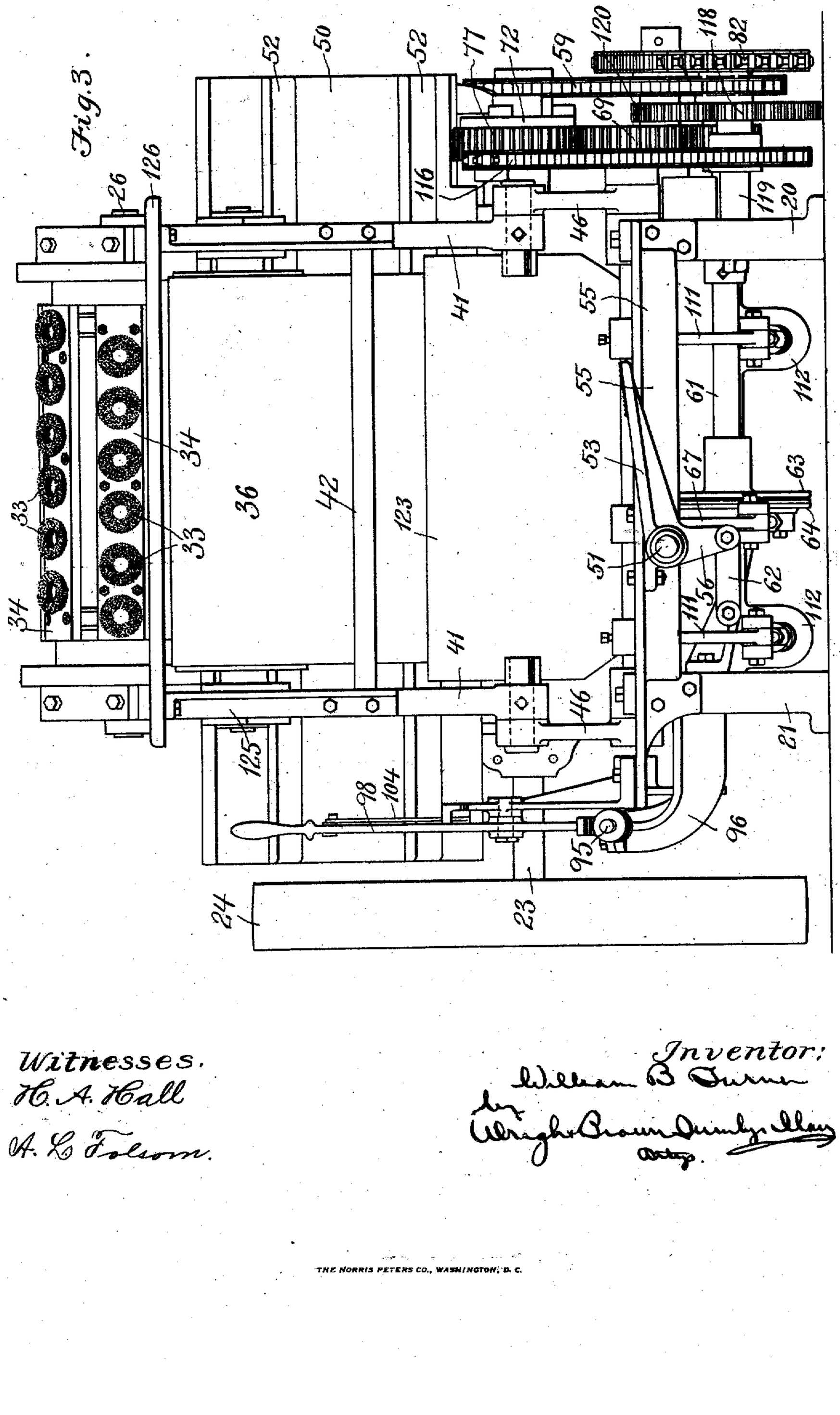
6 SHEETS—SHEET 3.

Fig. 3.



Witnesses.
H. A. Hall
A. L. Folsom.

Inventor:
William B Turner
by Wright Brown Quinby & Clay
Attys.

THE NORRIS PETERS CO., WASHINGTON, D. C.

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6 SHEETS—SHEET 4.

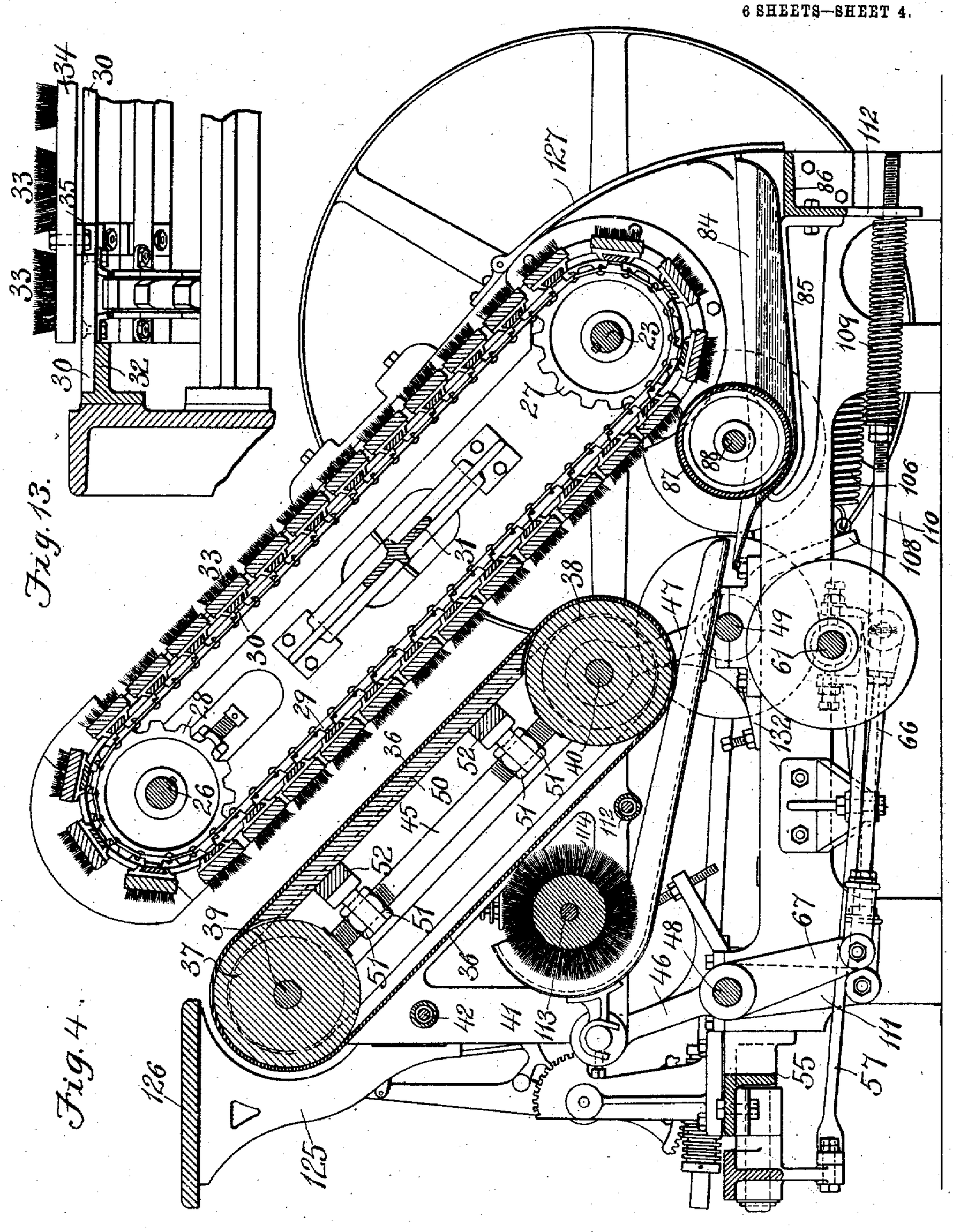

Fig. 13.

Fig. 4.

Witnesses:
H. A. Hall
A. L. Folsom.

Inventor.
William B. Turner
by
Albright Brown Dunlap & May
Attys

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6 SHEETS—SHEET 5.

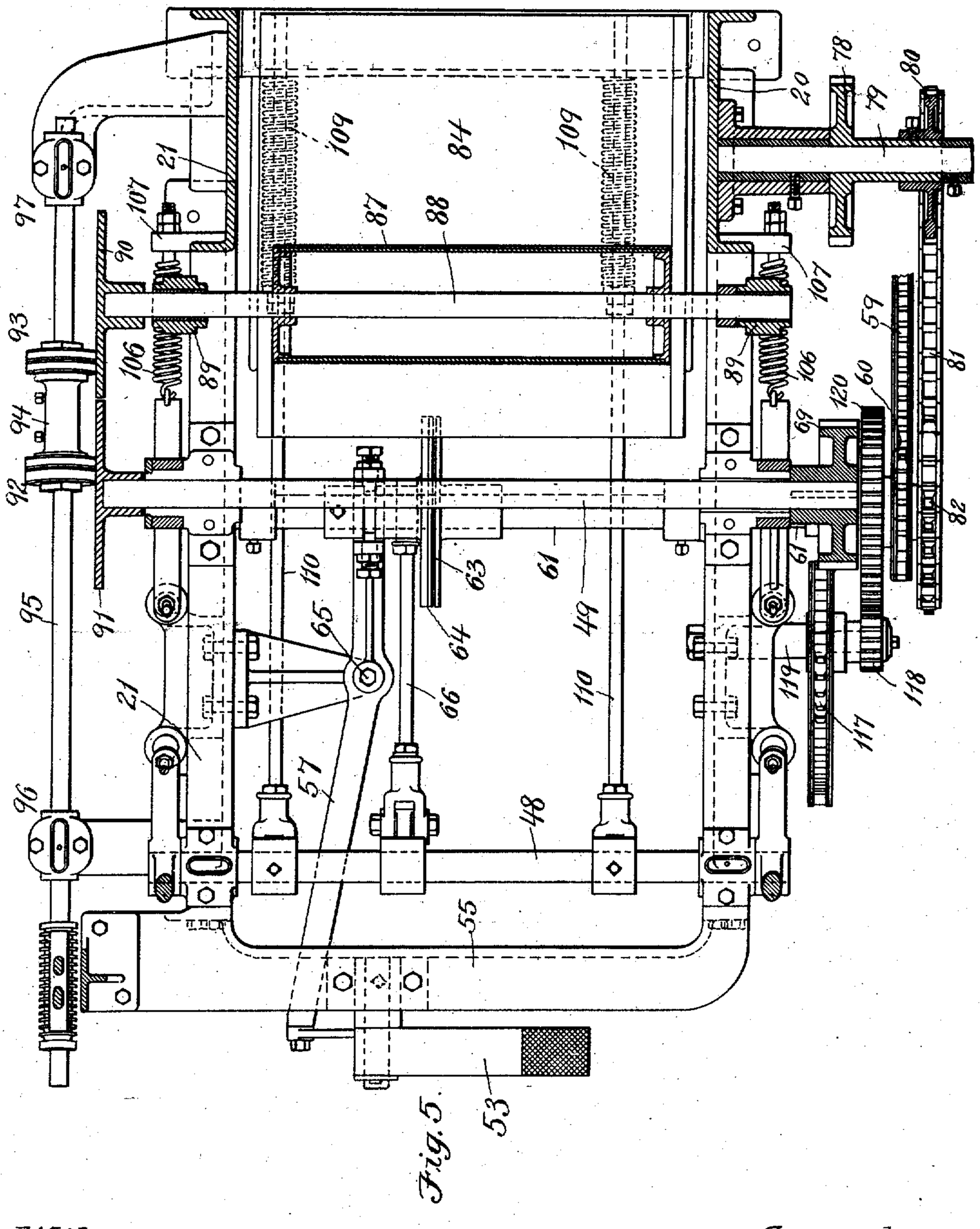

Fig. 5.

Witnesses:
H. A. Hall
A. L. Folsom.

Inventor:
William B. Turner
by Albright Brown Dunlap & May
Attys

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6 SHEETS—SHEET 6.

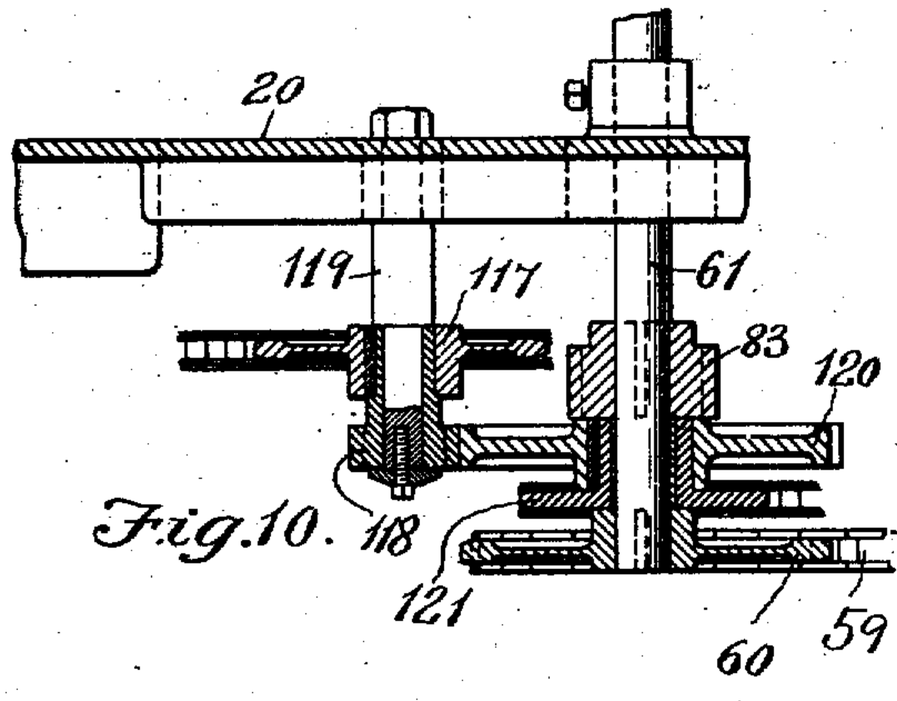


Fig. 10.

Fig. 7

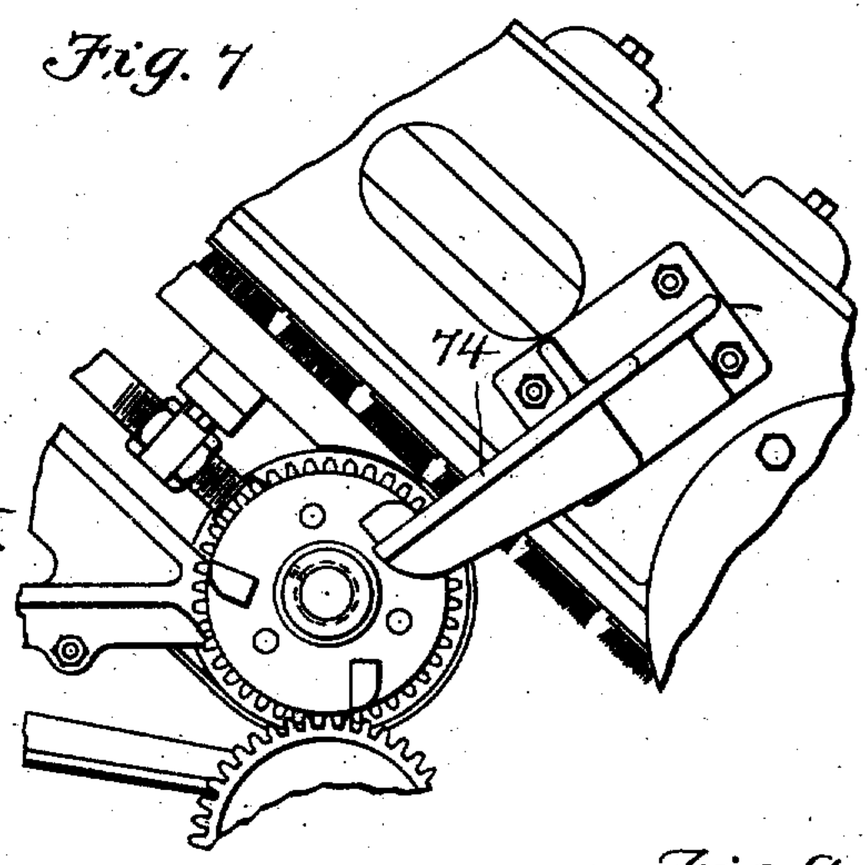


Fig. 8.

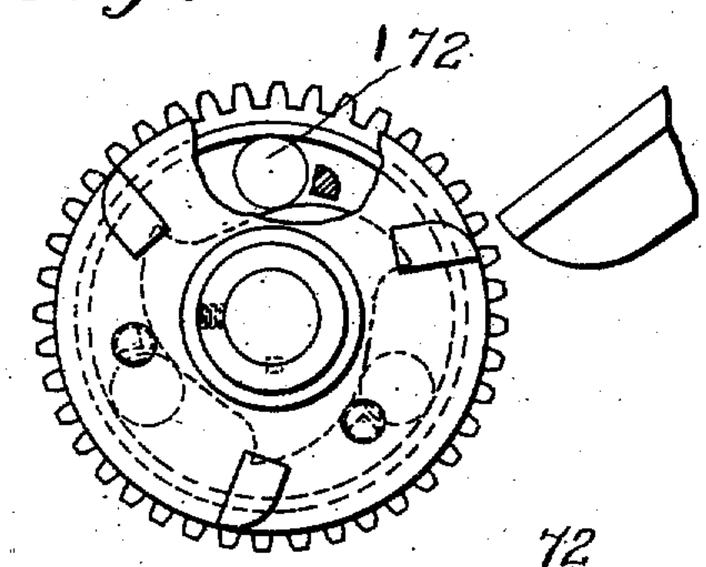


Fig. 9.

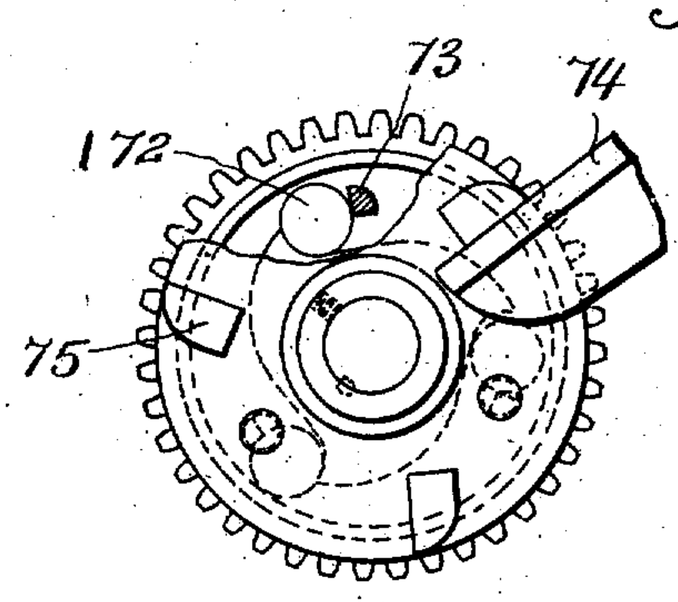
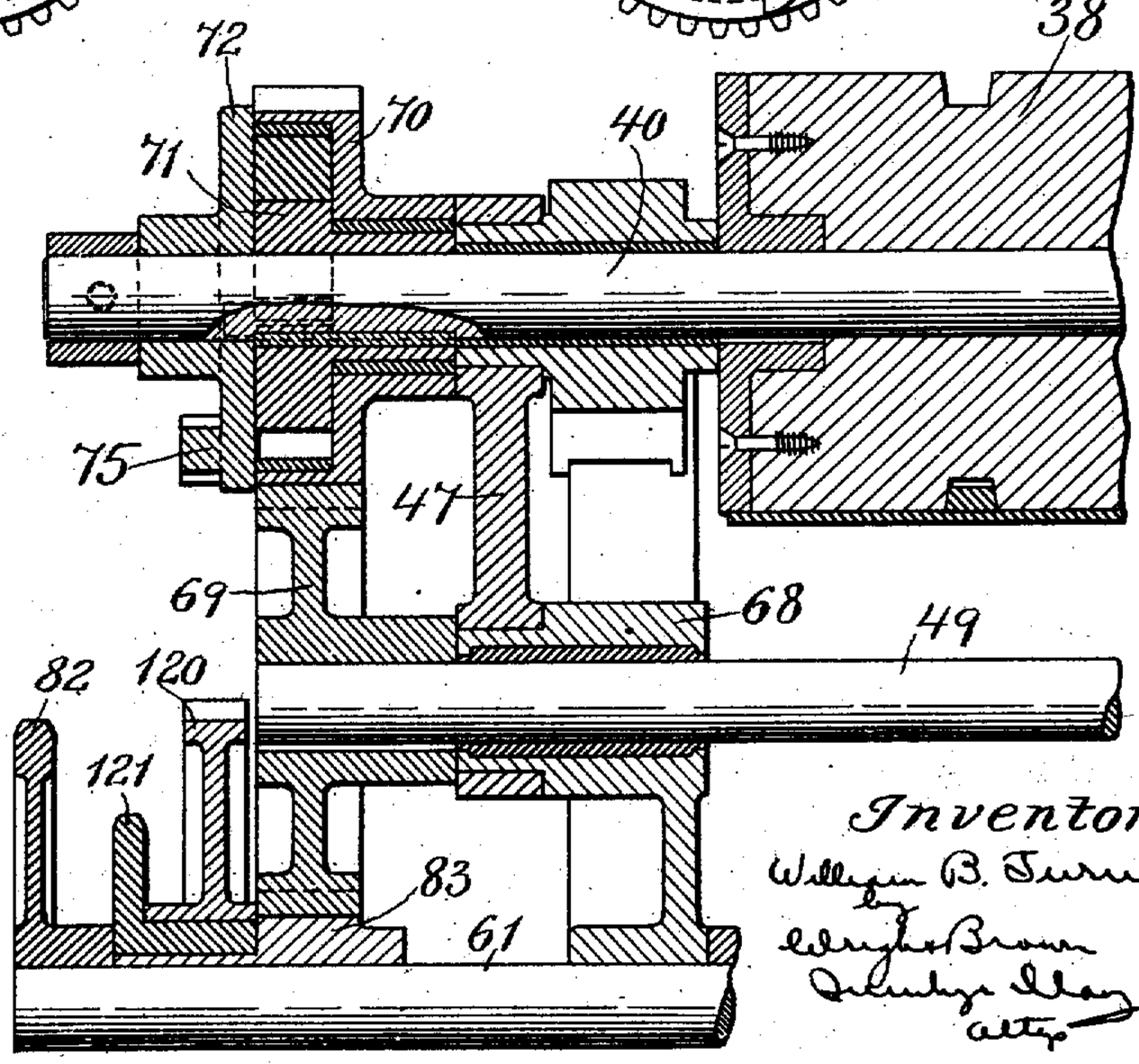


Fig. 6.



Witnesses:
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A. L. Folsom.

Inventor:
William B. Turner
by
Wright Brown
Quinby & May
attys

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM B. TURNER, OF MELROSE, MASSACHUSETTS, ASSIGNOR TO THE TURNER TANNING MACHINERY COMPANY, OF PEABODY, MASSACHUSETTS, A CORPORATION OF MAINE.

MACHINE FOR APPLYING LIQUID TO SKINS.

No. 917,683. Specification of Letters Patent. Patented April 6, 1909.

Application filed October 9, 1906. Serial No. 338,154.

To all whom it may concern:

Be it known that I, WILLIAM B. TURNER, of Melrose, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Applying Liquid to Skins, of which the following is a specification.

This invention has relation to leather treating machinery and more particularly to machines for scouring, seasoning, oiling or similarly treating hides or skins.

The present invention has for its object to provide certain improvements in machines of the character illustrated and described in my co-pending application Serial No. 201,177, filed April 1, 1904, in which a plurality of members are arranged upon a traveling carrier so as to successively engage and treat a skin which is placed upon a support movable toward and from the brushes.

The character of the present improvement will be understood from the accompanying drawings and the following specification.

Referring to said drawings,—Figure 1 represents in side elevation a machine embodying the invention. Fig. 2 represents an elevation from the other side of the machine. Fig. 3 represents a front elevation of the machine. Fig. 4 represents a longitudinal section through the machine. Fig. 5 represents a section on the line 5—5 of Fig. 1. Fig. 6 represents an enlarged section through the gearing which drives the work support. Fig. 7 represents the work support in position to hold the skin or work in proper relation to the working member and the means by which the movement of the work support is stopped. Figs. 8 and 9 represent the clutch mechanism interposed between the gearing and one of the rolls for the traveling work support. Fig. 10 represents a horizontal section through the gearing which drives the cleaning roll, being a section on the line 10—10 of Fig. 1. Figs. 11 and 12 (Sheet 2) illustrate a comb which may be utilized to clean the brushes of the working member. Fig. 13 (Sheet 4) illustrates the method of mounting the brushes on the working member.

The machine, to the details of which it will be understood the invention is not limited, comprises side standards 20 21 suitably connected and braced. The rear portions of said standards are elongated upwardly and forwardly at an inclination both to the vertical and in the horizontal as indicated at 22. These portions 22 of the frame serve to support the working member which, as will be explained, consists of an endless carrier provided with a plurality of brushes or other skin treating devices or members.

Journaled in the rear ends of the side standards and at the bases of the portions 22 thereof, is the power shaft or main shaft 23, to which power is applied through the medium of a large belt pulley 24. From this shaft power is applied or transmitted to the various operative portions of the machine. Journaled in boxes 25 adjustable in guideways at the upper ends of the portions 22 of the standards, is a shaft 26 arranged in parallelism with the main shaft 23. These two shafts are equipped with sprocket wheels 27 28 respectively to receive the chains 29, the links of which are connected at intervals by slats 30 so as to constitute an endless carrier for the skin treating members. The portions 22 of the frames are connected by a cross-brace 31 and each is provided with an inwardly projecting flange 32 (as illustrated in Fig. 13) upon which the projecting ends of the slats may rest. The engagement of the slats with these flanges prevents the carriers from sagging at points between the sprocket wheels. Each of these slats is beveled, as clearly illustrated in section in Fig. 4, and the backs or bars 34 of the brushes 33 are provided with grooved dove-tailed clips 35 which may be engaged with the slats 30. By this construction, each of the brush backs or bases 34 may be removed by sliding it endwise, it being also necessary to permit this to remove the caps at the ends of the portions 22 of the standards. Upon each bar or back 34 are inserted or otherwise suitably secured masses of bristles to form a series of brushes or other members which when in their active positions form a flat surface. The main shaft 23 is rotated in the direction of the arrow *a* in Fig. 1, so that the traveling endless working member (comprising the endless carrier and the brushes) is caused to travel so that its active under stretch or portion moves from the shaft 26 toward the shaft 23, the outer or upper inactive stretch of the member moving in the opposite direction.

The work support or work supporting member is endless. It consists of an apron 36 of vulcanized rubber and canvas or other suitable material which is stretched about rolls 37 38 mounted on shafts 39 40 respectively. These shafts are journaled in a movable frame comprising sides 41 connected and braced by cross-bars 42. Preferably the boxes 43 for the shaft 40 are bolted to the frame whereas the boxes 44 for the shaft 39 are slidingly mounted on the upper end of the frame, the frame itself being substantially triangular when seen in side elevation as illustrated in Fig. 2. Between the boxes 43 and 44 are screw bars 45 whose ends are oppositely threaded so that by rotating said screw bars, the shaft 39 may be adjusted toward or from the shaft 40 to tighten or loosen the work supporting member 36.

It will be observed from the drawings that the work support is arranged substantially parallel to but below the working member so as to normally leave a space between them for the insertion of a skin to be treated. The frame for the work support is mounted upon parallel links 46 47 so that the work support may be moved toward and from the working member without destroying its parallelism therewith. The links 46 are secured to a shaft 48 which is journaled in the front portion of the same while the links 47 are loosely fulcrumed on a shaft 49 as illustrated in Fig. 4. Below the upper stretch of the work support 36 there is a flat plate or table 50 which prevents the flat operative stretch thereof from sagging under the weight of the skin and the pressure of the brushes of the working member. This support is secured to the screw bars 45 and is adjustable transversely thereof, being secured after adjustment by lock-nuts 51 on said screw bars. As a matter of detail, it may be said that the table 50 is attached to cross-bars 52 having yokes straddling the screw bars 55 and adapted to be engaged by the lock-nuts 51.

The work support and its frame are moved by power toward the working member, the power transmitting devices being under the control of the operator. To this end, there is arranged in the front of the machine a foot treadle 53 fulcrumed upon a stud 54 projecting forwardly from a cross-bar 55 connecting the standards 20 21. This treadle projects transversely across the machine and is provided with a short depending arm 56 connected by a link 62 to a lever 57. To understand how this lever controls the power transmitting devices, it will be necessary to first explain the gearing by which the movement of the work supporting frame is effected.

Referring to Figs. 1, 3, 5 and 10, it will be seen that secured to a shaft 61, substantially midway between its ends, is a driving friction disk 63 in close proximity to a movable driven friction disk 64 loose on the shaft and adapted to be moved longitudinally thereon. The shaft 61 is driven from the shaft 23 by gearing to be hereinafter described. The lever 57, previously referred to, is fulcrumed at 65 upon a bracket projecting inwardly from the side standard 21 and is provided at its inner end with a yoke to engage the hub of the friction disk 64 so that, by depressing the lever 53, the disk 64 may be frictionally engaged with the disk 63 to cause its rotation. The disk 64 has a crank pin which is connected by an adjustable rod or pitman 66 with an arm 67 rigidly secured to and depending from the shaft 48, to which it will be remembered the parallel links 46 are rigidly secured. Thus, when the treadle 53 is depressed and the friction disks are engaged, the shaft 48 will be rocked to move the work supporting member into operative or active relation to the working member, thus closing the space between them. By this mechanism, the operator is compelled to exert but little effort in effecting the movement of the work supporting member from an inactive to an active position.

I have stated that the work supporting member is moved by power under the control of the operator in its operative position. It is maintained in this position so long as the operator continues to press down the foot treadle 53, and is returned to inactive or inoperative position by springs 106 106 (see Fig. 5). The rear ends of these springs are attached to brackets 107 projecting laterally from the standards 20 21 and their forward ends are connected to arms 108 which are rigidly secured to the links 47. As the work supporting member moves back into inactive position, it is cushioned by springs 109 109, which encircle rods 110, whose forward ends are connected to arms 111 rigidly secured to the shaft 48 and depending therefrom. The rear ends of the rods 110 pass through apertures in lugs 112 depending from the cross-bar 86 as shown in Fig. 4. One end of each spring 109 abuts against a lug 112, whereas the other bears against one or more washers and lock-nuts on said rod 110. For the purpose of limiting the movement of the work support there are additional arms 132 133 formed on or secured to the parallel links 46 47, which project toward each other as shown in Fig. 2. These arms have projecting screws at their ends adapted to engage cushioned plungers 134 135, arranged in cylinders 136 137, formed on a casting attached to the standard 21. The screws alternately engage the plungers which cushion the force of the impact of the work support as it reaches the limit of its inward or outward movement.

In order that the skin may be properly presented to the working member and spread out, mechanism is provided by means of which the upper stretch of the working member is caused to travel in the same direction as the adjacent stretch of the working member. I find, however, that, for a variety of reasons, the work supporting member should cease its movement when it comes to its operative position. Consequently mechanism is provided by which the work supporting member is caused to travel when the frame is in an inactive position and is brought to a state of rest as soon as the frame and the work supporting member reaches an active or operative position, or is in coactive relation to the working member. The mechanism by which this is accomplished is illustrated in Figs. 1, 3, 5, 6, 7, 8, and 9, to which reference may now be had.

The roll 38 is rigidly secured upon its shaft 40, which, as previously stated, is journaled in the links 47. As illustrated in Fig. 6, the links 47 are pivoted upon the bearing 68 through which the shaft 49 extends. Keyed upon the shaft 49 is an intermediate gear 69 which intermeshes with and drives a gear 70 mounted to revolve about the axis of the shaft 40. Said gear 70 is recessed to receive a roll clutch member 71 which is keyed upon the shaft 40 and upon whose hub is journaled the hub of the gear 70. This roll clutch member is formed as illustrated in Figs. 8 and 9 so as to receive between it and the rim of the gear 70 a plurality of rolls 172. When these rolls are in the position illustrated in Fig. 8, the two members 71 and 70 are clutched together in the usual manner common to clutches of this character. When the rolls however are seated in the sockets in the member 71, the two members are unclutched as illustrated in Fig. 9. In order to move the rolls into their inactive positions, there is journaled loosely upon the shaft 40 a disk 72 having fingers 73 which project inwardly for engagement with the rolls. When the disk 72 is loose, the rotation of the gear or member 70 tends to move said rolls into a position where they are wedged between it and the member 71. By interposing an obstacle to the rotation of the plate 72, the rolls will be held from revolution so as to force them back from their wedged positions and the member 71 and the shaft 40 will at once cease rotation. It will be observed that secured to one of the standard portions 22, there is a stop 74 in such position that, when the working member and its frame are moved to active position, one of several projections 75, extending from the face of the plate 72, will engage the stop and thus prevent rotation of the shaft 70 and consequently effect a cessation of movement of the work support. The intermediate gear 69 is driven from the main shaft 23 through the medium of a gear 77 secured to the said main shaft intermeshing with and driving a gear 78 on a stud shaft 79 supported by a standard 20. Secured to said gear 78 is a sprocket wheel 80, connected by a sprocket chain 81 with a sprocket wheel 82, keyed to the shaft 61. Likewise keyed to said shaft 61 is a pinion 83 which engages with and drives the intermediate gear 69. As thus described, the upper stretch of the work supporting member moves downwardly and rearwardly so as to position a hide or skin thereon and spread it out when the said hide is inserted between it and the working member. When the operator causes the work supporting member to be moved toward the working member, one of the projections 75 engages the stop 74 as soon as the work supporting member reaches its operative position, and the travel of said work supporting member thereupon immediately ceases. The shaft 61 which also carries the friction disks for moving the work support bodily toward the working member, is thus rotated from the shaft 23.

In the event that the machine is employed for applying seasoning or other liquid to the skin, I utilize a tank or receptacle 84 (see Fig. 4) which is supported upon brackets 85 attached to a cross-brace 86 at the rear end of the machine. An applying roll or instrumentality 87 is partially immersed in the liquid and is so arranged that its periphery is engaged by the brushes or other liquid applying devices of the working member as they travel past it, as clearly illustrated in the last-mentioned figure. This roll may be constructed in any convenient manner though I preferably use a brass shell which may or may not be shod with textile material. Said roll is secured upon a shaft 88 journaled in bearings 89 as illustrated in Fig. 5, and on its left-hand projecting end, has secured to it a friction disk 90 by which rotation is imparted thereto. On a similar end of the shaft 49 there is another friction wheel or disk 91 the face of which is flush with the face of the friction wheel 90. For the purpose of transmitting rotation from the disk 91 to the disk 90, two friction wheels 92 93, of any suitable material, are secured upon a hub 94, the periphery of the wheel 92 engaging the face of the disk 91 and the periphery of the wheel 93 engaging the face of the disk 90. The hub of the wheels 92 93 is secured on a shaft 95 arranged from front to rear of the machine and supported in guides 96 97 projecting laterally from the standard 21 as illustrated in Figs. 2 and 3. The shaft 49, as previously stated, is rotated from the main shaft so that, through the friction gearing thus described, the shaft 88 and therefore the roll 87 will be rotated to

apply liquid to the brushes of the working member. By shifting the rod 95 in one direction or the other, the speed of rotation of the roll 87 will be varied, and the amount of liquid delivered thereby will be increased or diminished. The shifting of the rod 95 is accomplished by a hand lever 98 fulcrumed at 99 at the front of the machine, as illustrated in Figs. 2 and 3. The lower portion of the handle is segmental and is provided with teeth engaging complemental circular rack teeth 100 formed on a sleeve secured to the rod or shaft 95 so that an oscillation of the handle 98 will effect a reciprocation of the said rod or shaft. Secured to the bracket 101, which supports the pivoted stud 99, is a tooth segment 102, with which may be engaged a locking dog 103 connected by a link 104 with a supplemental handle 105 pivoted to the main handle 98. The function of this dog 103 is to hold the handle lever 98 in any position in which it may be moved.

In order that the work supporting member may be cleaned, I journal in its frame a shaft 113, upon which is secured a cylindrical brush 114, whose periphery is in engagement with or impinges upon the understretch of the work supporting member. The shaft 113 and the brush 114 are rotated so that the periphery of the brush moves in a direction opposite the direction of movement of the contacting portion of the work supporting member by the following mechanism:—On the right hand end of the shaft 114 is secured a sprocket wheel 115 which is driven by a sprocket chain 116 from a sprocket wheel 117 (see Figs. 1 and 10). This sprocket wheel is keyed upon the hub of a pinion 118, said pinion being journaled loosely upon a stud shaft 119 projecting laterally from the standard 20. The pinion 118 intermeshes with and is driven by a relatively large gear wheel 120 keyed upon the hub of a sprocket wheel 121. This sprocket wheel is mounted loosely upon the shaft 61 and it is driven by sprocket chain 59 tracking upon a sprocket wheel 58 rigidly secured upon the shaft 23. The sprocket chain 116 is sufficiently loose so as not to interfere with the movement of the frame which supports the work supporting member in its movement toward and from the working member. The function of the cleaning brush is to remove from the work supporting member any surplus liquid which may remain thereon, and hence a shield 123 is placed in front of and under the brush, said shield being elongated to form a trough which is inclined toward and delivers the surplus liquid into the tank or receptacle 84.

Attached to the frame for the work supporting member are brackets 125, to the upper ends of which is secured a horizontal table 126. This table projects over the roll 37 and partially over the work supporting member so that a skin may be thrown over the table and a portion thereof project into the space between the working member and the work suporting member. With his hands or with his breast the operator presses the projecting portion of the skin against the edge of the table so as to prevent its being drawn too far forward and downward by the work supporting member.

As a matter of convenience, there is placed at the rear end of the machine a hinge cover or shield 127 (see Fig. 4) which covers the lower portion of the working member and conceals the tank or receptacle 84 so as to prevent the liquid from spattering on the floor.

For the purpose of combing or cleaning the brushes on the working member, I may utilize a comb such as illustrated in Fig. 11, consisting of a bar 130 provided with rows of pins or teeth 131. The comb has a handle 132 and the ends of the bar 130 may be removably held in socket pieces 133 affixed to the top of the portions 22 of the side standards.

The operation of the machine may be briefly recapitulated as follows:—The operator throws a skin over the table 126 so that substantially a half thereof falls to the space between the work supporting member and the working member. The work supporting member, in traveling downward, spreads out the folds of the skin. Firmly holding the skin against the table, the operator depresses the treadle 53 and the work supporting member and its frame are moved by power into an operative position with relation to the working member. When the work supporting member reaches its operative position so that the skin thereon may be engaged by the brushes of the working member, one of the projections 75 on the plate 72 strikes the stop 74 and the work supporting member ceases its traveling movement and remains at rest so long as the frame is elevated. The liquid applying roll 87 delivers liquid to the brushes of the work supporting member which engage and rub or otherwise treat the skin. In case the operator is of the opinion that too much or insufficient liquid is being supplied to the brushes, he moves the handle lever 98 in one direction or the other to vary the speed of rotation of the roll 87. After that portion of the skin, which is in position to be treated, has been sufficiently treated, the operator raises his foot from the treadle 53 and the springs 106 move the work supporting member back to its initial inoperative position. As it moves forward, the work supporting member commences to travel so that its surface is thoroughly cleaned by the cleaning brush 114; and the operator re-

verses the skin and places the untreated portion upon the work supporting member and the operation thus described is repeated.

It will be observed from Fig. 4 that, when the frame for the work supporting member is in its highest and rearmost position, the parallel links 47 46 are substantially vertical so that but little power is required to hold it at this point. The mounting of the work supporting member upon the parallel links enables the disposition of the work supporting member and the working member with their coöperating stretches in parallelism so that all portions of the skin may be treated with the same degree of pressure, and the pressure may be increased or diminished by varying the force with which the friction plates 64 and 63 are held together by the treadle 53 and its connections with the disk 64.

While the invention as illustrated and described is embodied in a liquid applying machine, yet many features thereof may be utilized with equal facility in unhairing, scouring and other leather treating machines, in which event the brushes would be replaced by the proper working members. Consequently the details of the machine may be greatly varied without departing from the spirit and scope of the invention. Moreover it should be understood that the phraseology and terms which I employ are for the purpose of description and not of limitation except where the context demands it.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what I claim is:—

1. A machine of the character described, comprising an endless working member and a work supporting member arranged in parallelism with a space between them for the reception of a skin to be treated, means for operating said working member, and parallel links supporting one of said members whereby it may be moved bodily toward and from the other, while retaining their parallelism.

2. A machine of the character described, comprising an endless carrier having skin treating members thereon, a work support arranged in parallelism with one of the stretches of said carrier, parallel links supporting said work support and means for moving said work support toward and from the endless carrier.

3. A machine of the character described comprising an endless carrier having skin treating members thereon which form a flat operative surface, a work support having a flat surface parallel with and below the under stretch of the said carrier, said carrier and said work support being inclined to the vertical and horizontal, parallel links supporting said work support, and means for moving the work support toward and from the said carrier.

4. A machine of the character described, comprising a movable working member, an endless work supporting member, means for moving one of said members toward and from the other, a power shaft and power transmitting mechanism actuated by said shaft for intermittently moving said work support longitudinally, without affecting the movement of said working member.

5. In a machine of the character described, comprising an endless carrier having skin-treating members thereon, an endless work support having one of its stretches in parallelism with the complemental stretch of the endless carrier for the said skin-treating members, a movable frame for the said work supporting member, parallel links upon which said frame is mounted, and a driving member for said work supporting member having its axis coincident with the axis of movement of one of the links.

6. A machine of the character described, comprising a working member, an endless work supporting member, means for moving one of said members toward and from the other, means for moving said work support longitudinally, and means for automatically stopping the longitudinal movement of the work support when it is adjacent the working member.

7. A machine of the character described, comprising a working member, a shaft, means connecting said shaft with said working member to operate the latter, an endless work supporting member, means for moving one of said members toward and from the other, a shaft for causing said work supporting member to travel longitudinally, power transmitting mechanism for rotating said last mentioned shaft, a clutch interposed between said power transmitting mechanism and said shaft, and means for operating said clutch to disconnect said mechanism from said shaft to stop the movement of said shaft, and therefore of said work supporting member, while the latter continues to operate.

8. In a machine of the character described, a working member, a work supporting member having a flat operative surface, and means for moving one of said members bodily toward the other, said means comprising a shaft, power transmitting mechanism driven by said shaft and connected to the movable member to move it, and a treadle for controlling the operation of said power transmitting mechanism.

9. In a machine of the character described, a traveling endless working member, a work supporting member having a flat supporting surface, mechanism for actuating the work-

ing member, a treadle, a power shaft, and power mechanism actuated by said shaft and controlled by said treadle for moving one of said members into coöperative relation to the other.

10. In a machine of the character described, a working member consisting of an endless carrier having liquid applying devices thereon, a work supporting member having a flat supporting surface for coaction with one stretch of the working member, a treadle a power shaft and power mechanism actuated by said shaft and controlled by the treadle for moving the work support bodily into coactive relation to the working member.

11. In a machine of the character referred to, a working member, a work supporting member, a power shaft, power transmitting devices for actuating said shaft for moving one of said members into coactive relation to the other, and independent means for returning the movable member to its initial position.

12. In a machine of the character referred to, a working member, a work supporting member, a power shaft, means actuated by said shaft for moving one of said members into and out of coactive relation to the other, and means for cushioning said member when it is moving to an inactive position.

13. In a machine of the character referred to, a working member, a work supporting member, a power shaft, means actuated by said shaft for moving one of said members into and out of coactive relation to the other, and means for cushioning said member at the limit of its movement toward active position.

14. In a machine of the character referred to, a working member, a work supporting member of which one is movable toward and from the other, parallel links supporting the movable member, a foot treadle, an arm connected to one of the links, a driven friction disk, a crank pin thereon connected to said arm, a driving friction disk, and means operated by said treadle for engaging and disengaging said disks, substantially for the purpose set forth.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WILLIAM B. TURNER.

Witnesses:
M. B. May,
A. L. Folsom.