No. 693,561. Patented Feb. 18, 1902.

W. H. MOORE.

LEATHER COLORING MACHINE.

(Application filed Feb. 27, 1901.)

(No Model.) 4 Sheets—Sheet 1.

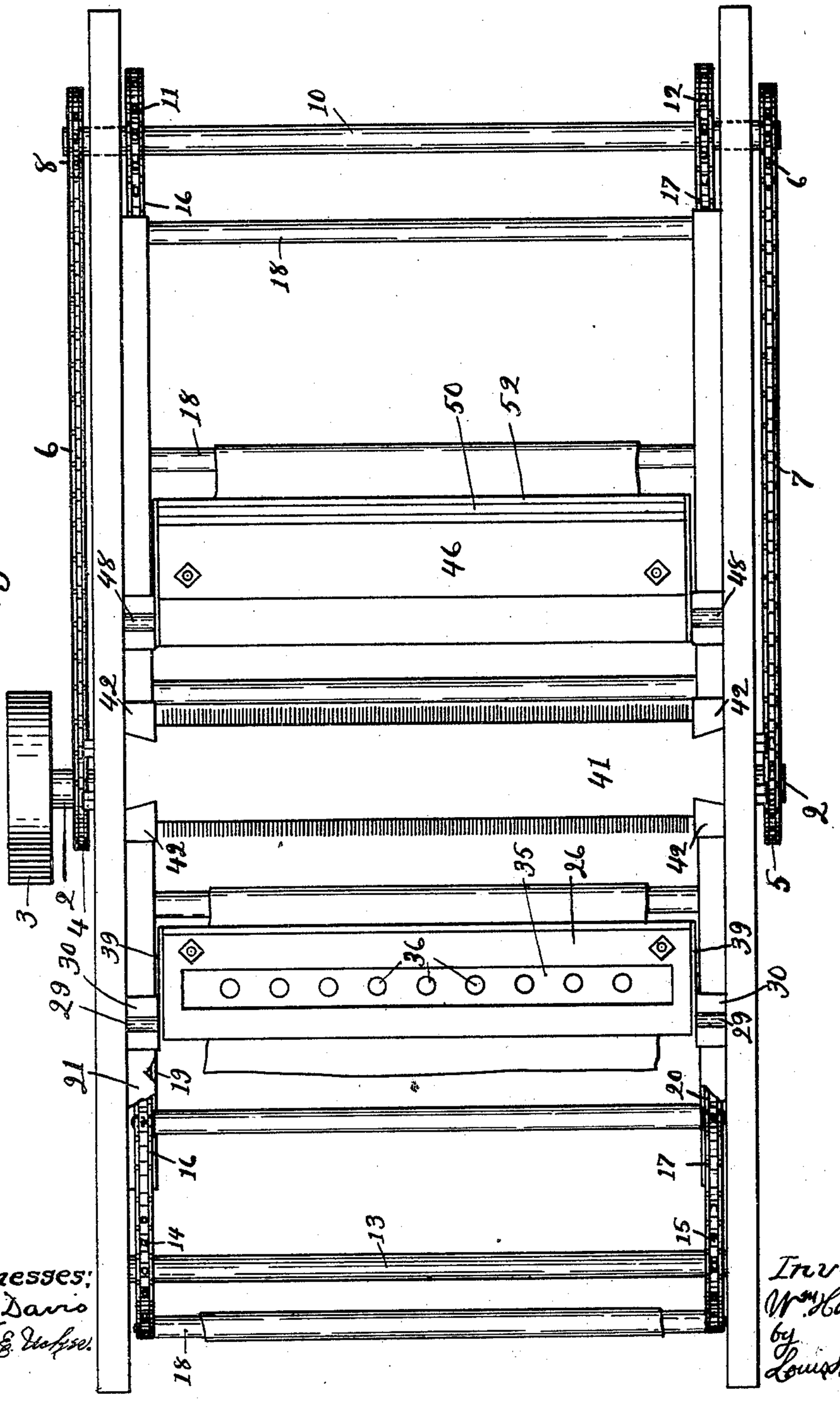

Fig. 1.

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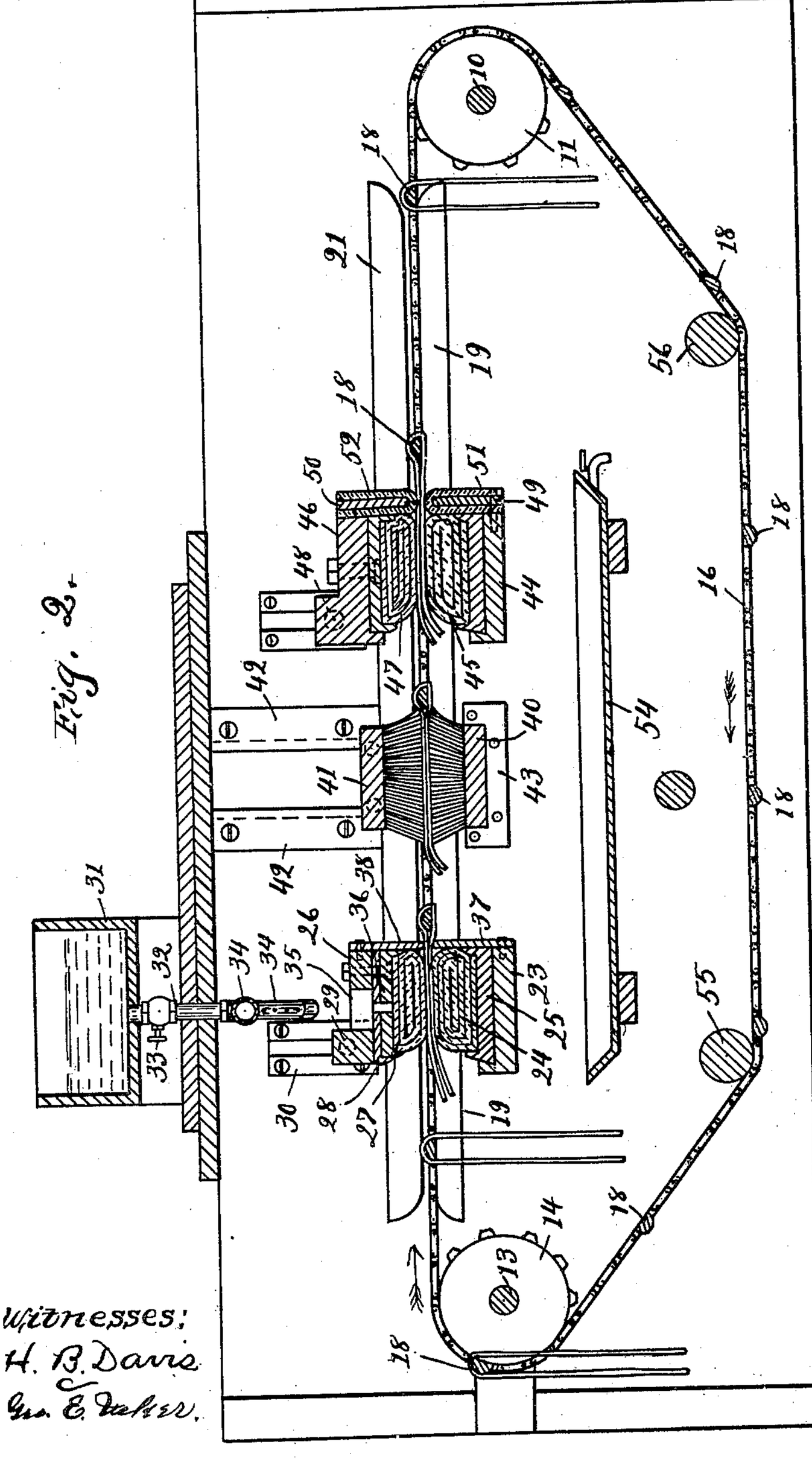
(No Model.) 4 Sheets—Sheet 2.

Fig. 2.



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(No Model.) 4 Sheets—Sheet 3.

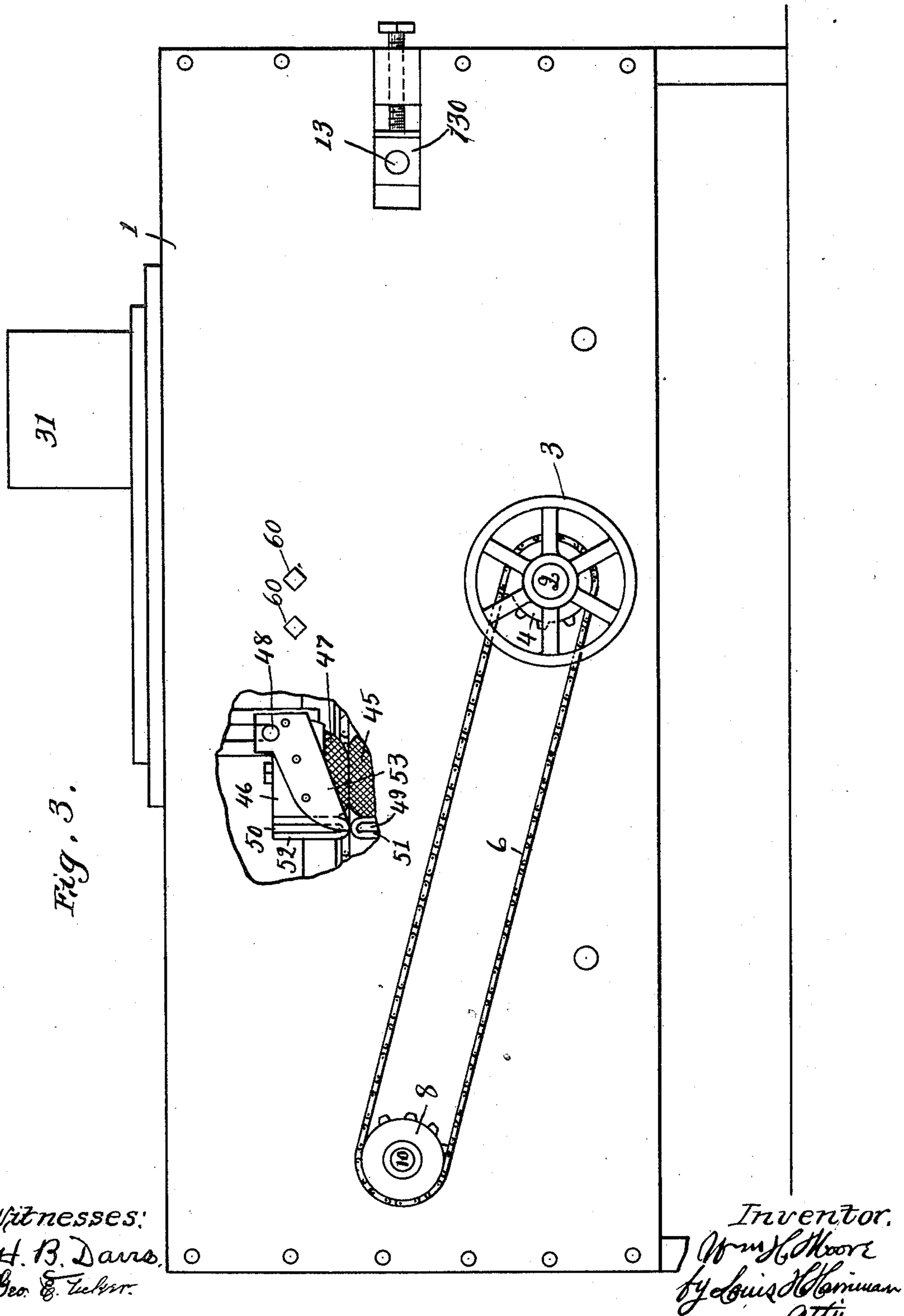

Fig. 3.

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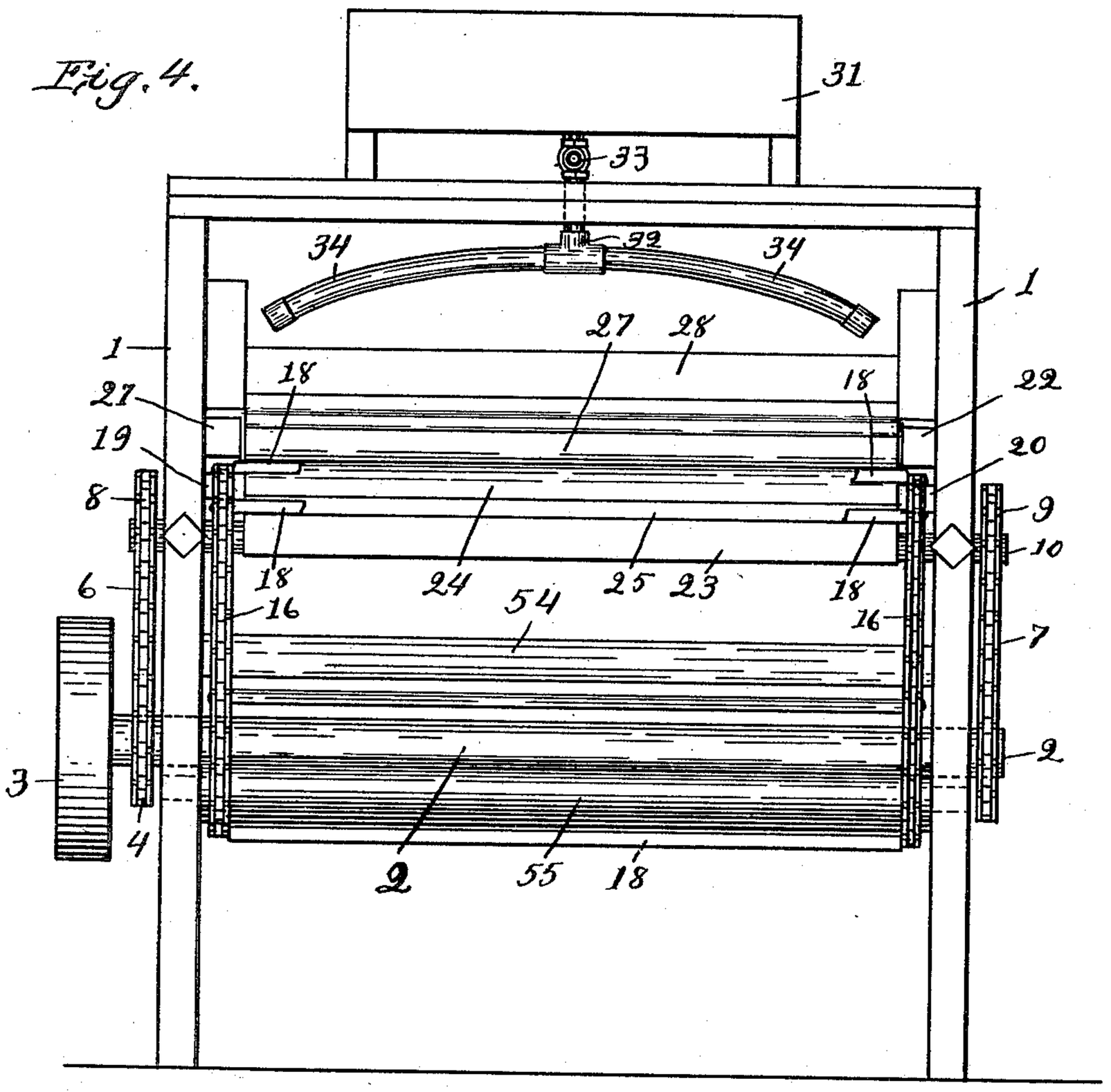
(No Model.) 4 Sheets—Sheet 4.

Fig. 4.



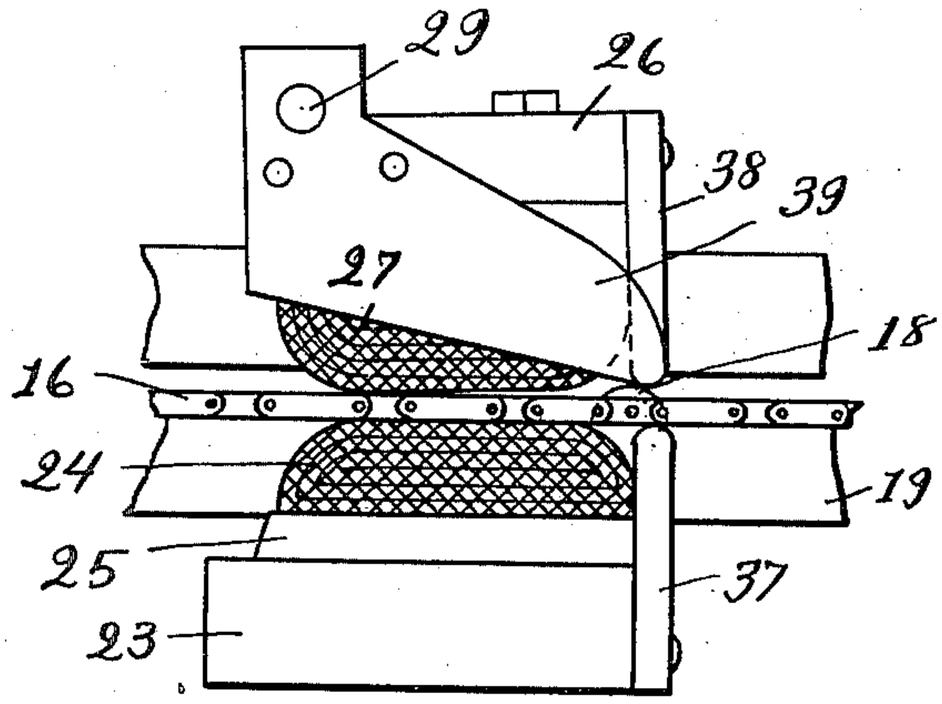


Fig. 5.

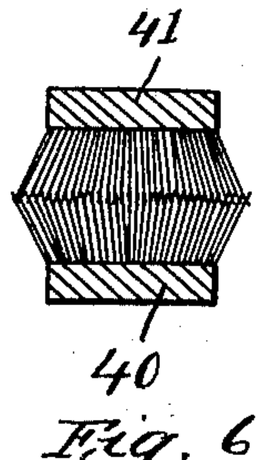


Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM H. MOORE, OF SALEM, MASSACHUSETTS, ASSIGNOR TO MOORE LEATHER MACHINE COMPANY, OF KITTERY, MAINE.

LEATHER-COLORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 693,561, dated February 18, 1902.

Application filed February 27, 1901. Serial No. 49,026. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. MOORE, a citizen of the United States, and a resident of Salem, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Leather-Seasoning Machines, of which the following is a specification.

Various machines have been produced for covering the grain side of tanned skins with seasoning or coloring, which is spread over the surface thereof in the finishing process; but none of these machines have been found to work satisfactorily. So far as I am aware these machines use rollers or brushes for applying the seasoning to the skins, with the result that it is simply laid onto the surface of the skins without being forced or rubbed into the skin, as it is by the hand process. The result from this imperfect method of applying the seasoning is that the seasoning is spread unevenly over the surface, so that some parts thereof are too heavily and some parts too thinly coated. It also often happens that there are folds in the skin, and when the skin is stretched out uncoated or uncolored strips will appear. It has also been attempted to supply the coloring by means of pads secured to a rotating drum; but this machine has not been found to be practical, for it is slow in operation and does not do its work perfectly. These prior machines are, moreover, defective for the reason that the flesh side of the skin will be covered more or less with seasoning or blacking. This greatly injures the sale of the skin, and therefore impairs its value, though it does not actually damage it for practical use. There are, however, certain specially-prepared skins in which it is essential that the flesh side be kept perfectly clean, and the seasoning can only be applied to these by the hand process. For these reasons many large factories still resort to the old hand method of applying and rubbing in the seasoning with a hand-pad. This hand method is by no means satisfactory, for the reason that it is very expensive as compared with any machine method and also for the reason that even with the greatest care it is not possible to distribute the seasoning, &c., evenly over the surface, so that some parts of the skin will be too bright, showing an excess of seasoning, and other parts will be too dull, showing an insufficiency thereof.

The object of my invention is to produce a machine which may be used for seasoning, coloring, oiling, enameling, or japanning skins and which will cover the entire grain side of the skin to be treated evenly and thoroughly and rub in the liquid as thoroughly as by the hand method, which will smooth out all folds in the skin, so that the seasoning will be applied to all parts of the grain-surface thereof, which enables the seasoning to be applied to the skin without having any of it smut the flesh side, which pulls out the skin flat, so that it will dry perfectly smooth, which renders the skin even more pliable and soft than it is rendered by the hand method, and which will treat the skins as fast as they can be handled.

For convenience in description I will refer to the substance which is applied to the skin as "seasoning."

According to my invention I provide two stationary pads, which are saturated with seasoning and are pressed together and draw the skins between the same by means of bars, around which the skins are doubled, said bars being carried between the pads by constantly-driven chains. In connection with said pads I also provide two jaws or blades, which grasp the skin after it has been drawn between the pads, so that it will be laid out flat, removing all folds or wrinkles. I further provide two fixed flat-faced brushes, which are arranged facing each other, so that the ends of the bristles of one overlap the bristles of the other and between which the skin is drawn, spreading the seasoning evenly over the surface of the skin and covering those portions which were not covered while it was passing between the pads. I also provide a pair of finishing-pads, between which the skin is drawn after leaving the brushes, which remove the superfluous seasoning, rub it into the skin, equalize the distribution of the seasoning, and give the surface a uniform appearance. In connection with these finishing-pads I provide two blades, which are covered with thick rubber, which pull out the

skin flat and stretch it so that it will lie perfectly smooth.

By the employment of my invention I secure all the advantages of the hand process and avoid all the disadvantages thereof.

For a complete understanding of my invention reference is made to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view showing the machine with the top removed. Fig. 2 is a central vertical section thereof. Fig. 3 is a side elevation. Fig. 4 is an elevation of the front thereof. Fig. 5 is a detail view of one end of the pads. Fig. 6 is an enlarged cross-section of the brushes.

The main casing 1 of the machine is provided with a main driving-shaft 2, carrying a pulley 3, to which the power is applied. Sprocket-wheels 4 and 5 are secured to said shaft on opposite sides of the casing, and chains 6 and 7 pass over said sprockets and over sprockets 8 and 9, respectively, the latter being secured to the projecting ends of shaft 10, which extends across and is journaled in the rear end of the casing. Sprockets 11 and 12 are secured to shaft 10 inside the casing. A shaft 13 is journaled in adjustable bearings 130 in the front end of the casing and carries sprockets 11 and 12, respectively. Chains 16 and 17 pass over said sprockets 11 and 14 and 12 and 15, respectively, and a series of parallel bars 18 are secured at their ends by rivets to the links of said chains, said bars being flat on the sides which come next the sprockets and curved or oval on their opposite sides, (see Fig. 2,) and being arranged somewhat more than half the length of an ordinary skin apart. Guide strips or supports 19 and 20 are provided on the inner side of the casing for chains 16 and 17, respectively, as they pass from the uppermost points of the front sprockets to the uppermost points of the rear sprockets. The upper or supporting surfaces of these guides are level and identical with the surfaces represented by the under sides of the chains when they are drawn taut from their front to their rear sprockets, so that the chains cannot sag in the least as they pass from front to rear, and the bars 18 will be carried at precisely the proper elevation while they are passing between the pads and brushes, hereinafter described. Guide-strips 21 and 22 are also provided directly above and parallel with the guides 19 and 20, the distance between the under surfaces of the guides 21 and 22 and their companion guides 19 and 20 being slightly greater than the thickness of the chains or ends of bars 18, so that while the chains will be permitted to pass freely between their respective guides there will be no possibility of the chains being thrown upwardly to any material extent and slipping on their sprockets. It may be noted in this connection that it is essential to the successful operation of my machine that the bars 18 be carried perpendicular to the planes of the sprockets and that if one of the chains should slip on its sprockets, so as to carry the bars into a diagonal position, the machine would have to be stopped and readjusted For these reasons and reasons which will hereinafter appear the guides will be seen to perform very important functions in my machine.

A horizontal support 23 is provided at its ends in the sides of the casing, and a pad 24, which is secured to the backing 25, rests in a recess which is formed in the upper side thereof. (See Fig. 2.) A horizontal support 26 is arranged directly over pad 24 and also has a pad 27 on the backing 28 removably secured in a recess formed in the under side thereof, as shown in Fig. 2, and said support 26 is pivoted on trunnions 29, which are located in each end thereof, above and near the front edge thereof. Said trunnions rest in suitable bearings 30 and permit the face of pad 27 to rest fairly on the face of pad 24. The position of said trunnions is such that when the support 26 is swung upwardly a short distance the engaging surfaces will be wholly separated. The pads 24 and 27 may be made of rolls of flannel or other suitable absorbent material.

A tank 31 for holding the seasoning or other liquid is supported on a platform which rests on the sides of the casing. A discharge-pipe 32, having a regulating-valve 33 therein, leads from the bottom of said tank, and two branch pipes 34, having a series of perforations in their under sides and closed ends, extend laterally from said pipe. Said branch pipes are located directly over a channel or trough 35, which is formed in the upper side of support 26, and the bottom of said trough is provided with a series of holes 36, which lead through the support 26 and backing 28 to the pad 27, as shown in Figs. 1 and 2.

The rear edges of supports 23 and 26 are respectively provided with steel blades 37 and 38, said blades being arranged so that their adjacent edges meet when the pad 27 rests on the pad 24. The meeting edges of said blades are smooth and rounded, so that there are no sharp edges thereon. (See Fig. 5.)

Each end of the support 26 has a lifting finger or plate 39 secured thereto, (see Fig. 5,) said fingers having an inclined lower edge which extends down to the level of the lower edge of blade 38, slightly in front of said blade, and also extends rearwardly for a short distance. The upper surfaces of the guides 19 and 20 are just on a level with the upper edge of blade 37, (see Fig. 5,) so that as the bars 18 are carried between the blades 37 and 38 by the driving-chains the flat sides of said bars are carried just above the upper edge of blade 37, and the curved sides thereof will in turn engage the inclined edges of the fingers 39 just before they will engage the blade 38, so that, as the under sides of the bars are firmly supported by the guides 19 and 20,

the whole support 26 will be swung up on its trunnions 29 each time a bar passes thereunder, separating the blades 37 and 38 sufficiently to permit the bar to pass between them. As the highest point of a bar passes beyond the meeting-points of the blades, the bar will simultaneously pass out of engagement with the fingers 39, permitting the blade 38 to drop on the descending side of the bar as it passes from between the blades.

An elongated brush 40, having a substantially flat or level face throughout, is arranged laterally of the casing in the rear of pad 24 and has its ends secured between guides 42, with its back down and resting on supports 43 on each side of the casing. The ends of the bristles of the brush extend a short distance above the level of the upper surface of the guides 19 and 20. A second brush 41, which is similarly constructed to brush 40, is removably secured to bolts 60 directly above and in the opposite position to said brush 40, so that its bristles extend slightly below the upper surface of guides 19 and 20. The ends of the bristles of these brushes thus overlap slightly. (See Fig. 6.) The surfaces of both brushes are in planes parallel to the plane of the rods when they are resting on the guides and so arranged that when the skins are drawn between them by the bars, as hereinafter described, the bristles will bear on both exposed surfaces of the skins with equal force. The bristles are preferably of some soft hair.

A fixed support 44 carries a removable pad 45 in the rear of the brushes 40 and 41, said support and pad being constructed and arranged substantially the same as support 23 and pad 24, above described. A support 46 carries a pad 47, which is removably secured thereto, and said support is pivoted on trunnions 48 in the same manner as the support 26, previously described. Blades 49 and 50 are also secured to the rear edges of supports 44 and 46, respectively, as before described with reference to blades 37 and 38, but in this instance each blade is provided with a thick rubber covering 51 and 52, for the purpose hereinafter described. Each end of support 46 is provided with lifting-fingers 53, (see Fig. 3,) which are arranged and operate in the same manner as previously described with reference to fingers 39.

A drip-pan 54 is provided below the pads and brushes to catch the drippings therefrom.

Having described the construction of my machine, the operation may be described as follows: Before starting, the tank 31 is filled with seasoning or other liquid which it may be desired to apply to the skins. The valve 33 is opened, allowing the seasoning to flow through the branch pipes 34, drip into the channel 35, and thence pass through the holes 36 into pad 27. This pad becomes thoroughly saturated with the seasoning, which soaks down into the pad 24, saturating the same also. The machine is then started, driving the chains 16 and 17 in the direction of the arrows in Fig. 2 and carrying the cross-bars 18 between the pads, blades, and brushes before described. A workman stands at the front end of the machine or end next shaft 13 and hangs each skin which is to be treated on the cross-bars as they pass about the sprockets 14 and 15, so that they will be doubled with the flesh side in, as indicated in Fig. 2. The ends of bars 18 are drawn along between the guides, so that the bars are carried directly between the pads 24 and 27, drawing the skins which have been placed thereon after them, as also indicated in Fig. 2. While a skin is being drawn between said pads 24 and 27, the grain side thereof will be liberally covered with the seasoning. The pads will yield or be compressed as each bar passes between them, and this compression will to a certain extent cause the seasoning to run out of the pads onto the skin. As the bars are comparatively sharp at both edges and the pads very flexible, the latter will not be pressed apart in advance of the front edge of the bar, so that the fold in the skin will be covered as thoroughly as any other part of the skin. The upper pad will also expand as soon as the thickest part of the bar passes any point therein and rest on the entire descending side of the bar, so that the part of the skin which is held next the curved side of a bar will be engaged by the upper pad as thoroughly as will the part of the skin which comes next the flat side be engaged by the lower pad. After a bar passes any part of the pads the swinging upper pad simply presses the doubled skin in between itself and the lower pad with a pressure equal its weight. After the skin is drawn from between the pads the upper pad will apply a fresh supply of seasoning to the lower. The flow of the seasoning must be adjusted so that one pad will not become more saturated than the other. It has been found in practice that if the flow is too fast the lower pad will become more saturated than the upper. When the rounded surface of a blade strikes the lifting-fingers 39, the upper pad will be swung upwardly, separating the blades 37 and 38, so that the bar may pass between them, as previously described. As soon as the thickest part of the bar has passed the blades the upper blade will drop down on the lower, so that the skin will be grasped between them with sufficient force to pull it out flat and straight and smooth out all the wrinkles.

It often happens that a skin will have folds or plaits, so that there will be parts of the grain-surface which will not be touched by the first set of pads. These folds will all be straightened or pulled out flat by the blades 37 and 38, so that when a bar draws a skin between the brushes 40 and 41 the seasoning will be spread out over the portions thereof which were not touched by the pads 24 and 27. These brushes will also act to spread the seasoning smoothly over the entire sur-

face of the skin and will rub it into the skin to a certain extent. As the brushes are set closely together and as their faces present a large working surface, all parts of the grain of the skin will be thoroughly brushed. The bar then draws the skin between the finishing-pads 45 and 47. These pads contain no seasoning other than what they absorb from the skins as they pass between them. Their principal function, therefore, is to take up any superfluous seasoning which may remain on the surface of the skins and also rub it into the skins. These pads also finish the process of distributing the seasoning over the surface of the skin which may not have been fully accomplished by the brushes. The pads also give a finished and even appearance to the skins.

The rubber coverings 51 52 of the blades 37 and 38 prevent any possibility of these blades marring the surface of the skin, and as they grasp the skin with considerable force they act to rub in the seasoning and also pull the skin out straight and flat, so that when it is hung up to dry it will dry smooth.

The skins will be removed from the bars at the rear end of the machine as they pass around the rear sprockets, and the operation will then be complete, so far as applying a particular liquid is concerned, it generally being found unnecessary to run a skin through twice.

In some instances it is specially desirable that the flesh side of the skin be kept perfectly clean, and in such cases each skin will first be folded from neck to butt, so that practically none of the flesh side will be exposed, and then the skin is doubled again across a bar, so that one-half only of the skin will be covered with seasoning when it goes through the machine. After a skin has been through once it will simply be taken off the bar and doubled across again, with the side which has been treated in, and passed through the machine a second time. This will cover the whole grain-surface without any chance of the flesh side being marked by the bar or of its being covered at its edges by the skin being doubled unevenly across the bar.

The pads and brushes are all made removable, so that the same machine can be used for the different purposes referred to in the preliminary part of the specification. In some of these processes the brushes will be removed, and in others both the brushes and finishing-pads will be removed.

Various changes from the above-described construction may be made without departing from the spirit of my invention. For example, the lower pads may be pivoted and pressed upwardly by a spring and the upper be fixed, the cross-bars may be made of different shape, and even a stout wire be substituted therefor; but substantially the precise construction which I have disclosed above I consider far preferable to any other of which I am at present aware.

The speed at which the cross-bars may be driven and the rapidity with which the skins may be treated are practically dependent only on the rapidity with which the workmen may place the skins on the bars and remove them. In practice the machine is preferably run at such a speed that each cross-bar will carry through a skin. The chains which carry the cross-bars may be made much longer than shown in the drawings, and thus serve as a conveyer to carry the skins to even a different floor of the factory.

The word "stationary" is used in connection with the pads in the claims in the sense that they are stationary with respect to the work which passes between them, although they may or may not be fixed with respect to each other.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is as follows:

1. A leather-coloring machine comprising a carrier for the skins which is adapted to convey them while doubled, two pads which are relatively stationary with respect to said carrier, said pads being arranged one above the other with their faces pressed together and one of said pads being movable with respect to the other, so that they may automatically separate to permit the carrier to pass therebetween, means for supplying a suitable liquid to said upper pad, and means for driving said carrier so that it will conduct the skins between said pads.

2. A leather-coloring machine comprising two stationary pads having faces which are pressed together, a carrier comprising a rod and means for conducting the same between said pads, means for permitting the faces of said pads to automatically separate as said rod passes between said pads, and means for supplying a suitable coloring liquid to said pads.

3. A machine of the class described comprising two pads, one of which is fixed and the other of which is pivoted so that it may swing into and out of engagement with the fixed pad, one of said pads being arranged directly over the other, means for supplying a suitable liquid to the upper pad, and means for drawing a skin between said pads while it is doubled.

4. A machine of the class described comprising a fixed support, a pad carried on the upper side thereof, a pivoted support having a pad secured to the under side thereof and resting on said first-named pad, a pair of endless belts, a cross-bar which is secured to each of said belts, means for driving said belts and causing said bar to pass between said pads, and means for supplying a suitable liquid to said pads, whereby a skin may be drawn doubled between said pads.

5. A leather-coloring machine comprising

two flat-faced stationary pads having their faces pressed together, means for supplying a suitable liquid to said pads, two endless belts, a series of parallel cross-bars connecting said belts, means for driving said belts so that said bars will be carried between said pads, and means for permitting one of said pads to move away from the other as the bars pass between them.

6. A leather-coloring machine comprising a pair of stationary pads having their faces pressed together, means for supplying a suitable liquid to said pads, a pair of endless chains, a series of parallel bars secured at their ends to said chains, means for driving said chains and for causing the same to carry said bars between said pads, a pair of blades having rounded edges, one of said blades being fixed and having its edge arranged in close proximity to the path of said bars beyond the pads, the other blade being movable, means which act constantly to move the edge of the latter into engagement with the edge of said fixed blade, and means for causing said movable blade to move away from said fixed blade as said bars pass between them.

7. A leather-working machine comprising a carrier consisting essentially of a pair of endless belts, one or more bars which are secured at their ends to said belts, means for driving said belts, guiding-supports for one side of each belt which are adapted to cause said bars to travel in a predetermined path, a fixed blade having its edge arranged closely adjacent the path of said bars and on the side thereof next said supports, a movable blade which is appositely arranged to said fixed blade and is normally in the path of said bars, and means connected to said movable blade which are adapted and arranged to engage a part of said carrier and move said latter blade away from said fixed blade and outside of the path of said bars each time a bar passes thereby.

8. A leather-coloring machine comprising a carrier consisting essentially of a pair of endless belts having one or more bars which are secured at their ends to said belts and means for driving the latter, guiding-supports for one side of each belt which are adapted to cause said bars to travel in a predetermined path, a fixed pad having its face arranged closely adjacent the path of said bars and on the side thereof next said supports, a movable pad which normally has its face pressed against said fixed pad, and means connected to said movable pad which are adapted to engage a part of said carrier and move said latter pad away from said fixed pad and outside the path of said bars, each time a bar passes between said pads.

9. A machine of the class described comprising a fixed support, a pad carried thereby, a movable support, a pad carried thereby which rests on said first-named pad, a blade having a dull or smooth edge carried by each support, the edges of said blades being adapted to engage each other when said pads are in engagement, a pair of endless chains, a series of parallel bars secured at their ends to said chains, means for driving said chains and for causing the same to carry said bars between said pads and blades, said means comprising a guiding-support for one side of each chain which is arranged on a level with the blade of said fixed support, and a lifting-finger carried by said movable support which is adapted to engage each bar as it is about to pass between said blades, whereby said movable support will be lifted and said blades will be separated to permit the passage of each bar.

10. A leather-coloring machine comprising a carrier which extends across the machine and over which the skins may be hung, means for driving said carrier in a predetermined path, means for applying a suitable liquid to the surface of the skins as they are carried thereby, a pair of relatively stationary blades having smooth edges which are normally arranged in close proximity to each other, means for automatically separating said blades as said carrier passes between them, and for causing them to engage the skins as they are drawn between the blades, and means for spreading the liquid over the surface of the skins after they have been drawn between the blades.

11. A machine of the class described comprising a pair of endless chains, means for driving the same, a series of bars which are connected at their ends to said chains, said bars being flat on one side and curved on the other, a pair of blades having smooth edges one of which is fixed and the other movable, means for holding the edges of said blades together, means for guiding said bars so that their flat sides will pass close to the edge of said fixed blade, a finger connected to said movable blade which is adapted to engage the curved side of each bar in advance of its passage between said blades and to lift said movable blade, and means for applying a suitable liquid to a skin as it is carried by one of said bars.

12. A machine of the class described comprising two fixed supports, pads carried on the upper sides of said supports, two pivoted supports having pads secured to the under sides thereof which rest on the pads of said fixed supports, respectively, means for supplying a suitable liquid to one of said upper pads, a pair of chains having a series of bars connected thereto at their ends, means for driving said chains and for guiding said bars so that they will pass between both pairs of pads, and from the one to which the liquid is applied to the other.

13. A machine of the class described comprising a pair of stationary pads, means for supplying a suitable liquid to said pads, a pair of rubber-covered blades of comparatively non-resilient material, means for causing said blades to engage opposite sides of a skin, means for drawing a skin between said

pads and between said blades while the latter are in engagement with said skin.

14. A machine of the class described comprising a lower support, a pad which is secured to the upper side thereof, an upper support having a pad on its lower side, one or more passages through said upper support, means for supplying a suitable liquid to said passages, and means for drawing a skin between said pads while it is doubled.

15. A leather-coloring machine comprising two stationary pads having broad faces which are normally pressed into engagement with each other, one of said pads being arranged above the other, means for supplying a suitable liquid to the upper pad so that the lower pad may be supplied therefrom, a carrier comprising a bar and means for conducting the same between said pads, and means for permitting the faces of said pads to automatically separate as said bar passes between them and then to engage the surface of the skin as it is drawn between them.

16. A leather-coloring machine comprising two stationary pads having broad flat faces which are normally pressed together, means for supplying a suitable liquid to each pad, a carrier comprising a bar and means for conducting the same between said pads, and means for permitting the faces of said pads to automatically separate as said bar passes between them and then to engage the surface of the skin as it is drawn between them.

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

WM. H. MOORE.

Witnesses:
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GEO. E. UCKER.