

No. 711,172.

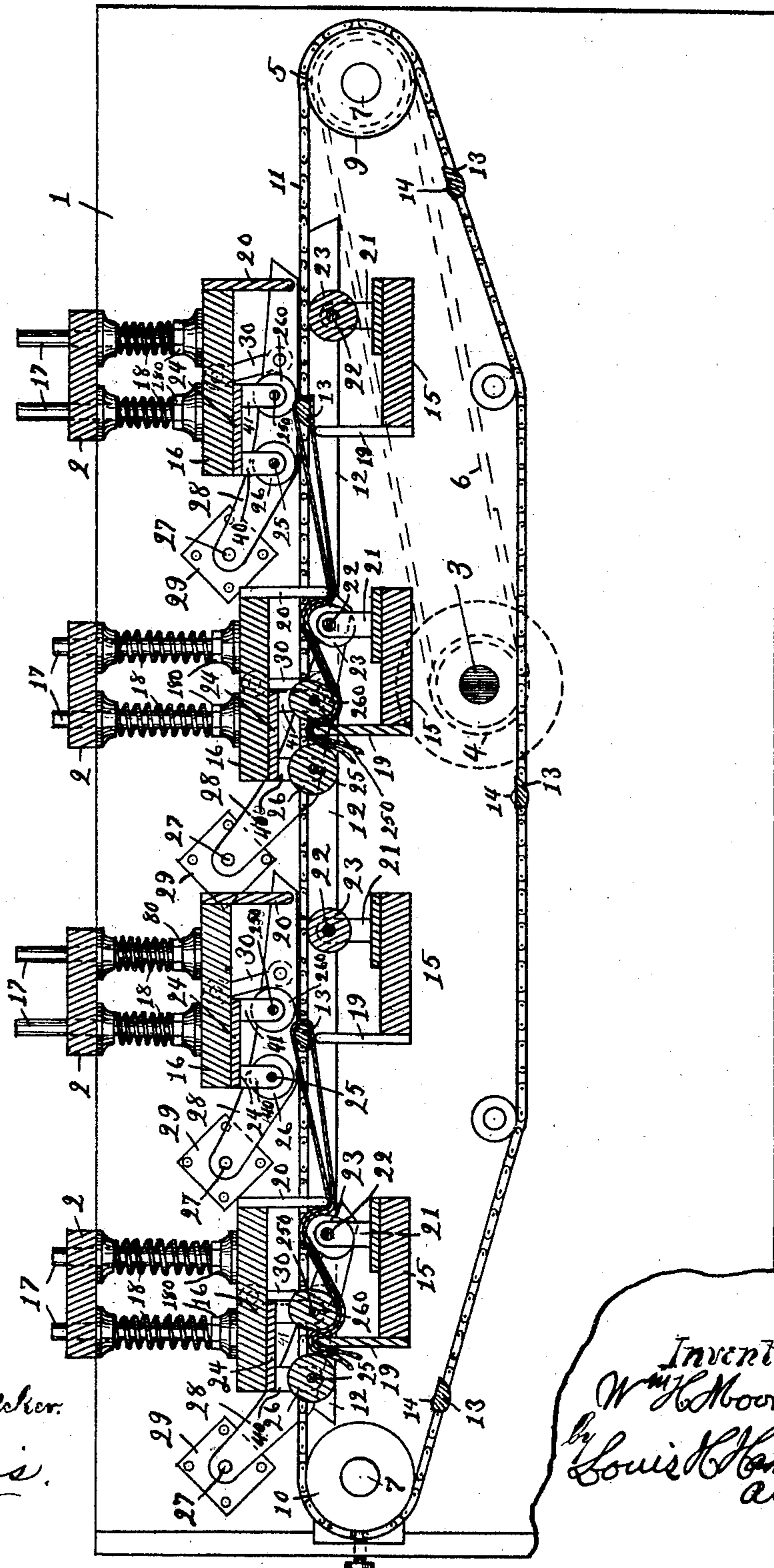
Patented Oct. 14, 1902.

W. H. MOORE.
LEATHER STAKING MACHINE.

(Application filed Mar. 8, 1902.)

(No Model.)

4 Sheets—Sheet 1.



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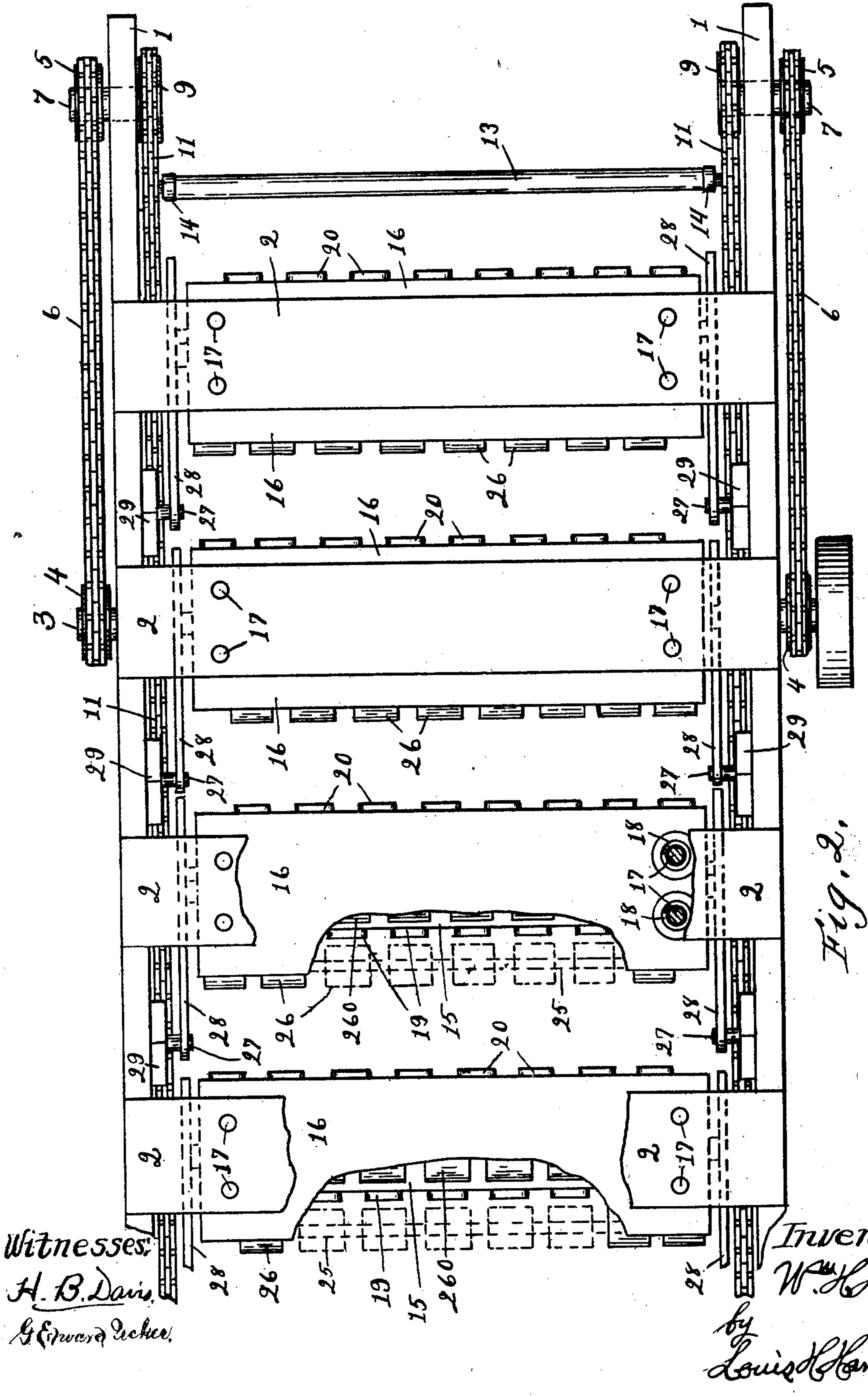
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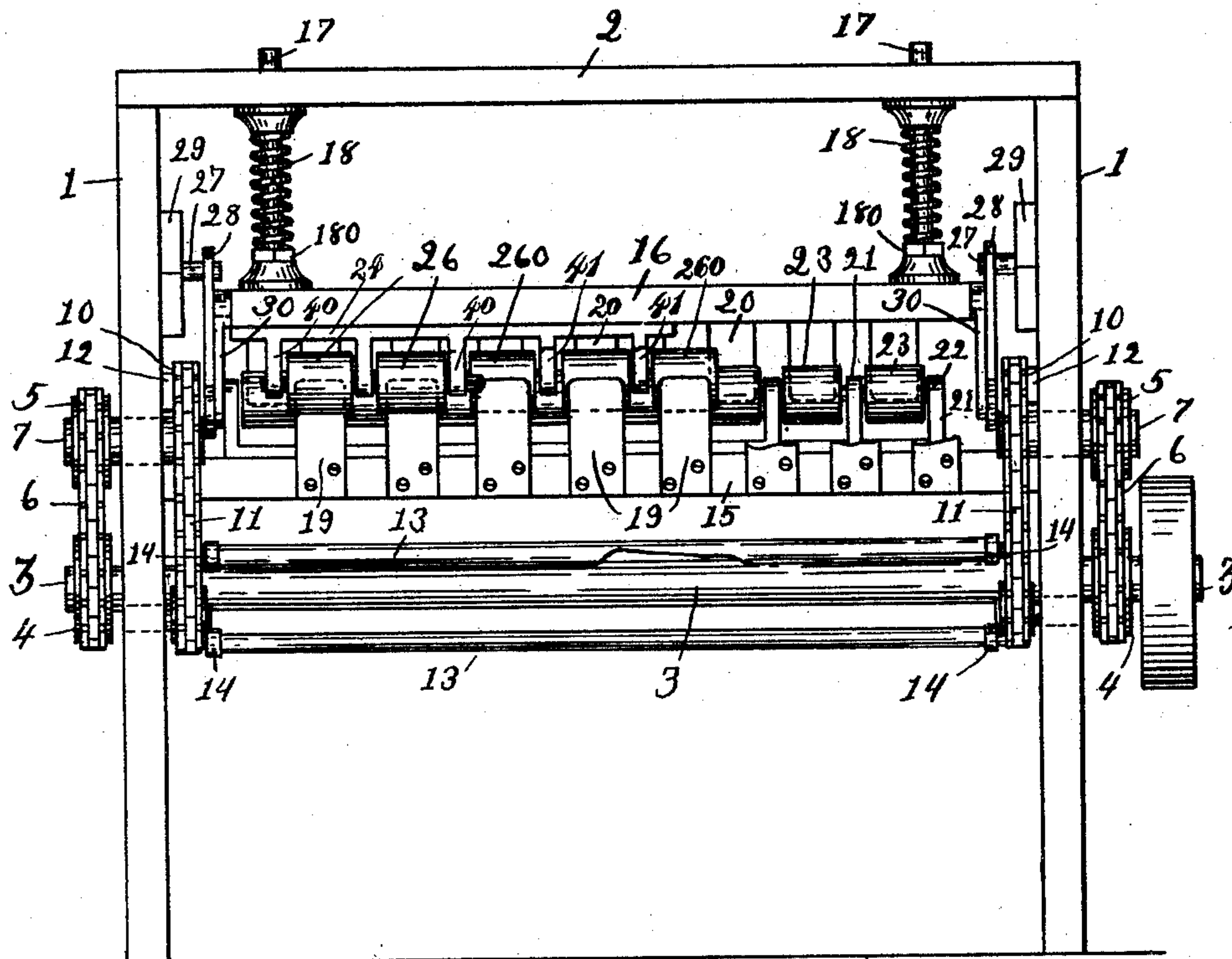


Fig. 3.

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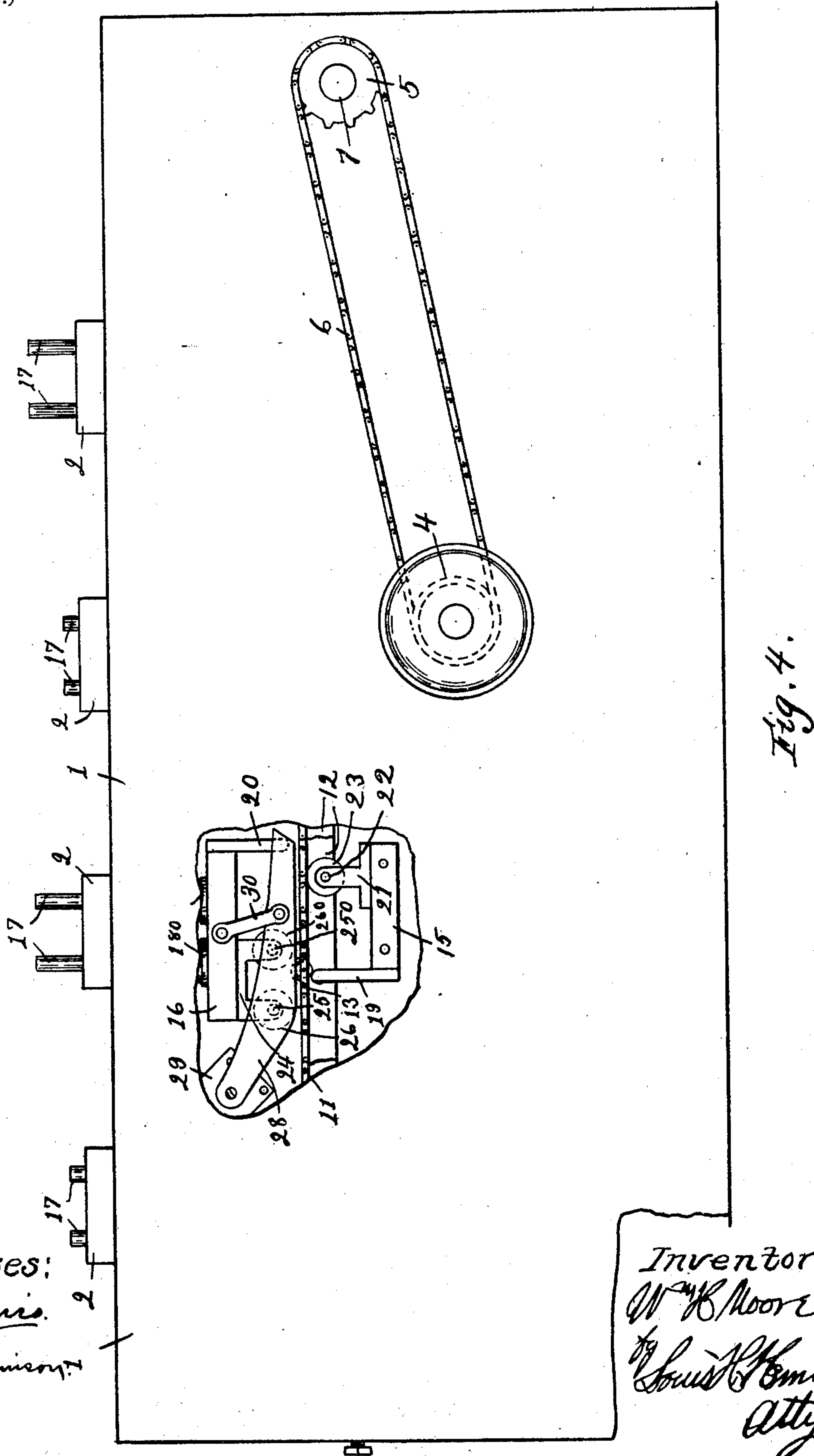
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

WILLIAM H. MOORE, OF SALEM, MASSACHUSETTS.

LEATHER-STAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 711,172, dated October 14, 1902.

Application filed March 8, 1902. Serial No. 97,284. (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-Staking Machines, of which the following is a specification.

This invention relates to a form of machine for subjecting skins to the process known as "staking." While various forms of machines which are designed for this purpose have been produced, yet the forms of staking-machines most generally used are those having a knife which is brought down on the skin and drawn across the same while it is held by the workman, the skins being moved to a new position while the knife is raised and again advanced. As the skin is usually moved so that these strokes are from the middle portion of the skin outwardly there is a great tendency to cause the skin to be stretched too much in the middle, so that it will be baggy at this point and the skin will not lie flat when the upper-leather cutter wishes to cut out the skin from patterns. Such a result is not only objectionable, but the time necessary to stake a skin by this process makes the staking process a very important item in the cost of producing the finished skins.

The object of my invention is to produce a leather-staking machine which is adapted to stretch and manipulate all parts of the skin equally and remove all wrinkles, and which will do this as rapidly as the skins can be conveniently handled. I accomplish this object by the mechanism hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal cross-section of the entire machine on line X X of Fig. 2. Fig. 2 is a plan view thereof, partly broken away. Fig. 3 is an elevation of the front end of the machine, broken away at different points. Fig. 4 is a side elevation of the machine, showing the casing partly broken away.

As shown in the drawings, the main body of the machine consists of two upright frames 1, which are connected at their upper edges by cross-bars 2. A main driving-shaft 3 is

provided with sprockets 4 at each side of the machine, which drive correspondingly - arranged sprockets 5 by means of chains 6. The shafts 7 of sprockets 5 are journaled in the frames and carry sprockets 9 close to the inner sides of the frame, said shafts 7 being located near the rear or discharge end of the machine. Two sprockets 10 are journaled at the front end of the machine in line and on a level with sprockets 9, and carrier-chains 11 pass about said sprockets and over ledges or shelves 12, which extend in line with a horizontal tangent to the upper portion of both sprockets and support the under sides of the chains 11 as they are driven forwardly. A series of parallel carrier-bars 13 extend transversely of the machine and are connected at their ends to said carrier-chains 11, small friction-rolls 14 being journaled on said bars near their ends. A series of supports 15, preferably four in number, are secured at their ends to said frames and extend beneath the cross-bars 2, and a second series of movable supports 16 are arranged directly above supports 15. Guide-rods 17 are connected to and extend vertically from supports 16, so that when said supports are lifted they will be guided vertically through cross-bars 2, and springs 18 are preferably interposed between said supports 16 and cross-bars, the tension of which may be adjusted by nuts 180.

A series of vertically-arranged blades 19 are secured to and project upwardly from supports 15, the blades on each support being arranged in line and with a space between their side edges which is somewhat less than the width of the blades. A second set of blades 20 is arranged to and extend vertically down from each movable support 16, the blades of each set being arranged in line at regular intervals and opposite the open spaces between the blades 19 on the support 15, above which a particular support 16 is arranged. (See Figs. 2 and 3.) It is particularly essential that the lower blades 19 in one set be each arranged opposite the open spaces between the lower blades in the next succeeding set, and that likewise the blades 20 in each upper set be arranged opposite the open spaces between the blades of the next succeeding upper set. In practice the width of the open spaces and blades are such that each

blade will overlap the succeeding open space by about half an inch on each side thereof.

A row of hangers 21 is secured to each lower support and extend upwardly therefrom behind the row of downwardly-extending blades 20 on each upper support. A rod 22 passes through each hanger and through the center of a series of cylindrical flexible rubber rolls 23, which are arranged between each hanger and journaled on rod 22. Said hangers are so located that each roll is held close to or against the side of a blade 20 and as closely as possible to the rounded edge thereof, the axis of the rolls being slightly above or on a level with the lower ends of the blades 20 when the latter are in their normal position. The rolls are held from longitudinal movement by the hangers 21 and are of such a length as to project slightly beyond each side edge of the blades. (See Fig. 3.)

Each upper support has a base-plate 24 secured thereto, each plate having a double row of hangers 40 41 projecting therefrom, said hangers being arranged opposite the spaces between the blades 19 of each lower support and the hangers 40 being arranged in front of and hangers 41 in rear of each row of blades 19. Rods 25 and 250 pass through said hangers 40 41, respectively, substantially on a level with the edges of blades 19, and rolls 26 260 are respectively journaled on said rods 25 250, said rolls being held closely adjacent to or against opposite sides of said blades 19 when the parts are in their normal position.

A lifting-arm 28 is pivoted on a pin 27 to a bracket 29 adjacent each end of each upper support 16, each of said brackets being secured to the frame. Any convenient form of loose connection is provided between said arms and supports 16, so that when these supports are lifted by the arms, as hereinafter described, the supports may move in a vertical direction, while the arms swing about their pivots. The particular form of loose connection which is preferably used in this relation consists of links 30, which are pivoted to the arms and to the adjacent ends of supports 16 near the middle of the latter. This particular form of connection is preferable to a sliding or pin-and-slot connection, as there is less friction between the connecting parts. The lower edge of each arm 28 is provided with two straight edges which are arranged at an angle to each other and connected by an easy curve, these edges forming a bearing-surface for the rolls 14, as hereinafter described.

The operation is as follows: The carrier-chains 11 are driven, and as each bar 13 passes about the sprockets 10 at the front end of the machine a skin is hung about it, so that it is doubled as nearly as possible in the middle with its flesh side out. As the bar advances toward the blade the rolls 14 on the bar engage the first straight portion of the edges of the arms 28, and as the bar is advanced to

the first upper support 16 the latter will be lifted vertically, drawing the blades 20 and rolls 26 260 above the path of the carrier-bar, as shown in Fig. 1. The upper edges of the lower blades 19 and the surface of the lower rolls 23 are just below the level of the shelves 12, so that the under sides of the bars 13 just pass thereabove. By the time the bar reaches the first set of rolls 26 they will have been lifted above the upper side thereof, (see Fig. 1,) and as rolls 14 on the bar will have then reached the second straight portion of the lifting-arms the support 16 will be held in this position until the bar passes the upper blades 20 of a set, and the rolls 14 pass beyond the ends of the lifting-arms 28. The support 16 is then free to drop or to be forced down by springs 18 into its initial position. When the bar has passed the blades 20 of one set, it will have drawn the skin between the blades and rolls, so that when support 16 drops the rolls 26 260 will bend the skin sharply over the edges of blades 19, pressing the skin against both sides of the blades. The rolls 23 will also press the skins against the front sides of blades 20, so that the skin will be bent sharply about the latter set of blades as it is drawn along by the bar and will be drawn taut and stretched as it is drawn from between the blades and rolls, so that the action of the rolls in pressing the skin against the sides of the blades makes it impossible to pull the skin from between the blades and rolls without a very strong pull by the carrier-bar. This pull will draw the skin tightly about the bar and stake the portion which is unwrapped thereabout as thoroughly as those portions which are engaged by the blades. As the blades in both the lower and upper sets are respectively arranged so that each blade of each lower set is arranged in front of the open spaces between the blades of the succeeding lower set, and as each blade of each upper set is likewise arranged with respect to the succeeding upper blades, and as all these blades overlap, it follows that each upper and lower surface of the skin will receive the same amount of manipulation.

The result accomplished by the series of narrow blades arranged at intervals is far superior to that which would be accomplished by a wider or continuous blade by reason of the varying thickness of every skin—that is, the thick portions of the skin will hold a continuous or long blade away from the thin portions thereof, so that the latter portions will not receive proper manipulation, while with my series of narrow blades each blade will act independently and to the same extent upon the portions of the skin which it engages. The narrow blades are pressed into the skin where they engage it in a manner which would be impossible with a long blade, thus removing the wrinkles and softening the skin more thoroughly than by previous methods.

In putting out machines where short blades are employed which act against a table it

has been found necessary to set the blades obliquely to the carrier to stretch the skirts of the skin laterally; but with my machine an oblique arrangement of the blades is unnecessary, as the skin is grasped firmly by the rubber rolls and held so that it cannot move inwardly to an appreciable extent. The skirts of the skin are thus as thoroughly staked and stretched as any other part of the skin. When the skin is ready to be staked, it is usually dry, hard, and not flexible. For this reason when the skins are first placed in the machine it will withstand a strong pull, while after it is stretched and softened it is more likely to break when subjected to an excessive strain. For this reason I adjust the springs 18 by nuts 180, so that the tension of each succeeding set of springs following those between which the skin is first drawn is gradually reduced. I am thereby enabled to first subject the skin to a vigorous pull or manipulation and gradually reduce the strength of this manipulation as the skin passes between the succeeding blades and rolls, so that all danger of breaking or tearing the skin is avoided.

Various changes may be made without altering the character of my invention. For example, the relative positions of the blades and rolls may be somewhat changed and the rolls 260 may be omitted. I, however, consider it particularly essential that a series of rolls be held adjacent or against the front sides of the blades or the sides thereof next the direction from which the skins are fed, so that the skins will be held by the rolls and blades up to the very point at which they are drawn over the edges of the blades. For this reason the skins will be thoroughly staked to their edges, while prior to my invention much difficulty has been experienced in producing a machine which would accomplish this result.

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

1. A leather-staking machine comprising two sets of blades, said blades being arranged with spaces between their side edges, and the blades in one set being arranged opposite the spaces between the blades of the other set, means for drawing the skins over said blades and means for pressing the skins against the side of each blade closely adjacent its edge.

2. A leather-staking machine comprising two sets of blades, having rounded edges and corners, said blades being arranged with spaces between their side edges, and the blades in one set being arranged opposite the spaces between the blades of the other set, means for drawing the skins over said blades and means for pressing the skin against the side of each blade closely adjacent its edge.

3. A leather-staking machine comprising two sets of blades which project toward each other, the blades in one set projecting past the edges of the blades of the other set, said blades being arranged with spaces between

their side edges, and the blades in one set being arranged opposite the spaces between the blades of the other set, means for drawing the skins over said blades and means for pressing the skins against the side of each blade closely adjacent its edge.

4. A leather-staking machine comprising two supports, each having a set of blades secured thereto, said set of blades being oppositely arranged so that the blades project toward each other, the blades of each set being arranged with spaces between the side edges thereof, the blades in one set being arranged opposite the spaces in the other set, means carried by one support which are adapted to press the skin against the blades of the opposite support, and means for drawing the skin between said supports and blades.

5. A leather-staking machine comprising two supports, each having a set of blades secured thereto, said sets of blades being oppositely arranged so that the blades project toward each other, the blades of each set being arranged with spaces between the side edges thereof, the blades in one set being arranged opposite the spaces in the other set, a series of cushions carried by each support, the cushions carried by one support being arranged to press the skin toward the sides of the blades on the opposite support, and means for drawing the skin between said cushions and blades.

6. A leather-staking machine comprising two supports, each having a set of blades secured thereto, said set of blades being oppositely arranged so that the blades project toward each other, the blades of each set being arranged with open spaces between the side edges thereof, the blades in one set being arranged opposite the spaces in the other set, a series of rolls which are journaled on each support, the rolls on one support being adapted to yieldingly press the skin toward the sides of the blades on the opposite support, and means for drawing the skins between said rolls and blades.

7. A leather-staking machine comprising two supports, each having a set of blades secured thereto, said set of blades being oppositely arranged so that the blades project toward each other, the blades of each set being arranged with spaces between the side edges thereof, the blades in one set being arranged opposite the spaces in the other set, a series of flexible rolls which are journaled on each support, the rolls on one support being arranged adjacent the sides of the blades on the other support, and means for drawing the skins between said blades and rolls.

8. A leather-staking machine comprising two sets of blades which extend in the same general direction, the blades in each set being arranged with spaces between their adjacent side edges, and the blades in one set being arranged opposite the spaces in the other set, two other sets of blades which extend in the opposite direction from those of

said first-named sets and overlap the same, and are arranged with spaces between their edges which are opposite the blades in the other set, and means for drawing the skins between said blades.

9. A leather-staking machine comprising two sets of blades which extend in the same general direction, the blades in each set being arranged with spaces between their adjacent side edges and the blades in one set being arranged opposite the spaces in the other set, two other sets of blades which extend in the opposite direction from those of said first-named sets and overlap the same, and are arranged with spaces between their side edges which are opposite the blades in the other set, said sets of oppositely-projecting blades being arranged alternately, and means for drawing the skins between said blades.

10. A leather-staking machine comprising a fixed support, and a movable support which is arranged adjacent thereto, means for yieldingly pressing the latter toward the former, a series of relatively narrow blades which are secured to said supports and respectively project therefrom toward each other, a series of cushions which are secured to each support and are respectively arranged adjacent the sides of the blades on the opposite support, a carrier mechanism comprising a bar, and means for conducting the same between said blades and cushions, means, operated by said carrier mechanism, for moving said movable supports away from the fixed support as the bar passes therebetween.

11. A leather-staking machine comprising two oppositely-arranged supports, one of which is movable, a blade which is secured to one of said supports and projects toward the other, a cushion which is secured to the opposite support, and is normally held in proximity to the side of said blade, a carrier mechanism comprising a bar and means for conducting the same between said blades and cushion, and means operated by said carrier mechanism for separating said supports just prior to the passage of the bar therebetween, and means for returning said supports to their normal position, whereby when the skin is drawn between said blade and cushion by the bar it will be drawn at a sharp angle over the edge of said blade.

12. A leather-staking machine comprising two oppositely-arranged supports one of which is movable, a blade which is secured to one of said supports and projects toward the other, a flexible roll which is secured to the opposite support, and is normally held in proximity to the side of said blade, a carrier mechanism comprising a bar and means for conducting the same between said blades and roll, means operated by said carrier mechanism for separating said supports just prior to the passage of the bar therebetween, and means for returning said supports to their

normal position, whereby when the skin is drawn between said blade and roll by the bar, it will be drawn at a sharp angle over the edge of said blade.

13. A leather-staking machine comprising a fixed support and a movable support which is guided to move in one direction from said fixed support, means for yieldingly forcing the movable support toward the fixed support, a blade which is secured to one of said supports and extends toward the other in the direction of the path of movement thereof, a flexible roll which is journaled on the opposite support, and is held against the side of said blade beyond its edge, a carrier mechanism comprising a bar and means for conducting the same between said blade and roll, and means operated by said carrier mechanism for forcing said movable support aside to permit the passage of said bar therebetween, said means permitting the support to immediately return to its normal position upon the passage of said bar thereby.

14. A leather-staking machine comprising two supports, one of which carries a series of blades arranged at intervals the other of which carries a series of cushions which are normally held in close proximity to the sides of the blades, and closely adjacent their edges, a skin-carrier, means for causing same to draw the skins between said blades and cushions; and means for automatically separating said cushions and blades to permit the passage of the skin-carrier therebetween.

15. A leather-staking machine comprising two blades which project in opposite directions means for drawing the skins between said blades in one direction, and means for pressing the skin against the sides of the blades next the direction from which the skin is fed.

16. A leather-staking machine comprising means for feeding the skins in one direction, two blades one of which is nearer to the point from which the skin is fed than the other, said blades projecting in opposite directions, means for pressing the skin against opposite sides of one blade and against the side of the other blade which is next and to the direction from which the skin is fed.

17. A machine of the character described comprising a series of successively-arranged blades and means for yieldingly pressing the skins against said blades, means for conducting the skins between said blades and said means successively, and means for successively varying the tensions with which the skin is held against said blades, substantially as described.

18. A machine of the class described, comprising two oppositely-arranged supports, one of which is movable, means for guiding the movable support so that it will move in one direction away from the other support, a carrier mechanism which is adapted to draw

the skins between said supports, means carried by said supports which are adapted to engage the skin as it is drawn therebetween, an arm which is pivoted at a fixed point in
5 said machine, a loose connection between said arm and said movable support, and means for engaging said arm so as to automatically move the movable support away

from the other support, so as to permit the passage of the carrier therebetween.

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

WM. H. MOORE.

Witnesses:

LOUIS H. HARRIMAN,

H. B. DAVIS.