F. J. & M. A. ZDANOWSKI.

LEATHER STAKING MACHINE.

APPLICATION FILED DEC. 11, 1908.

915,530.

Patented Mar. 16, 1909.

3 SHEETS—SHEET 1.

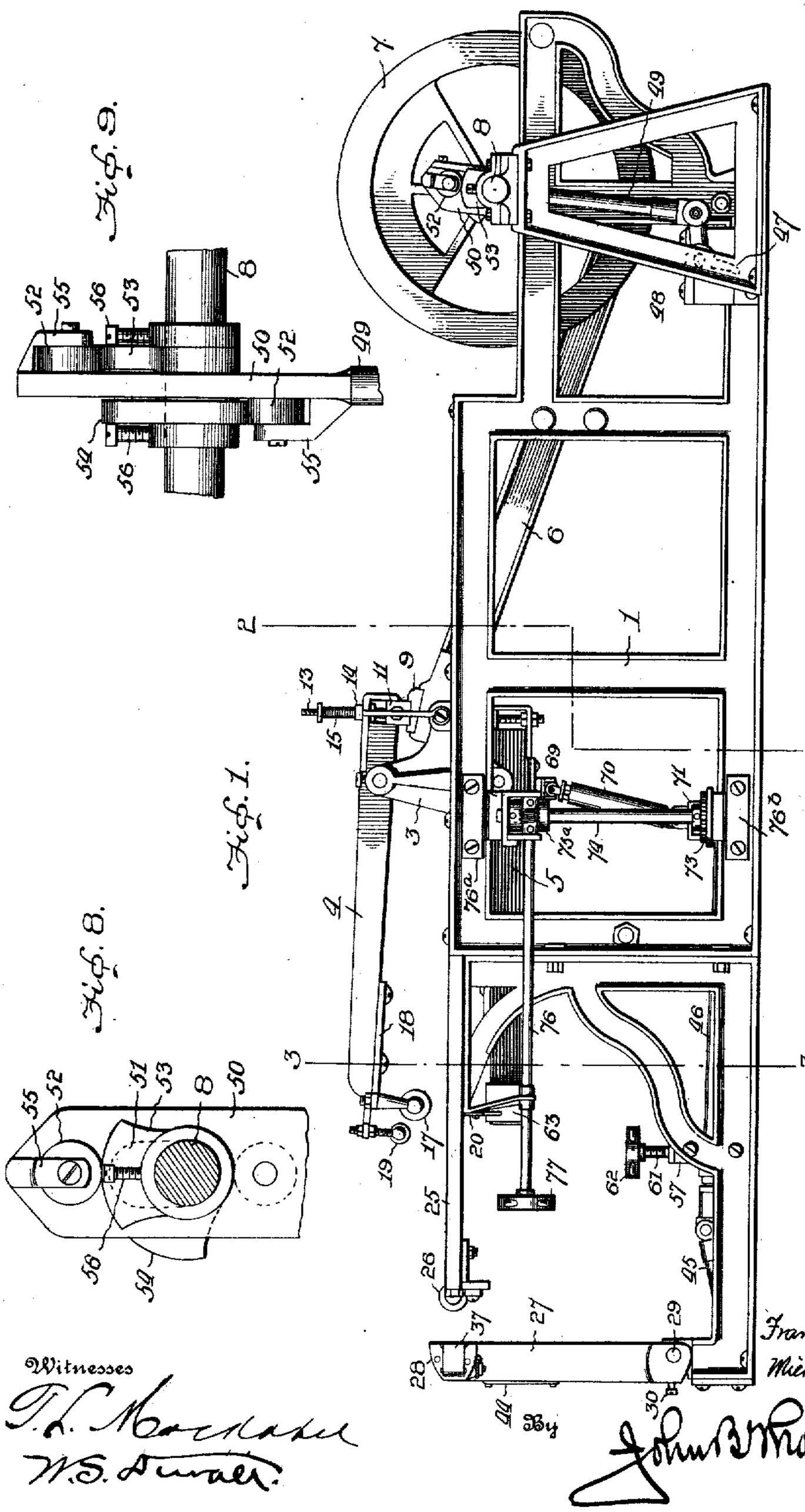

Fig. 1.

Fig. 2.

Fig. 8.

Witnesses

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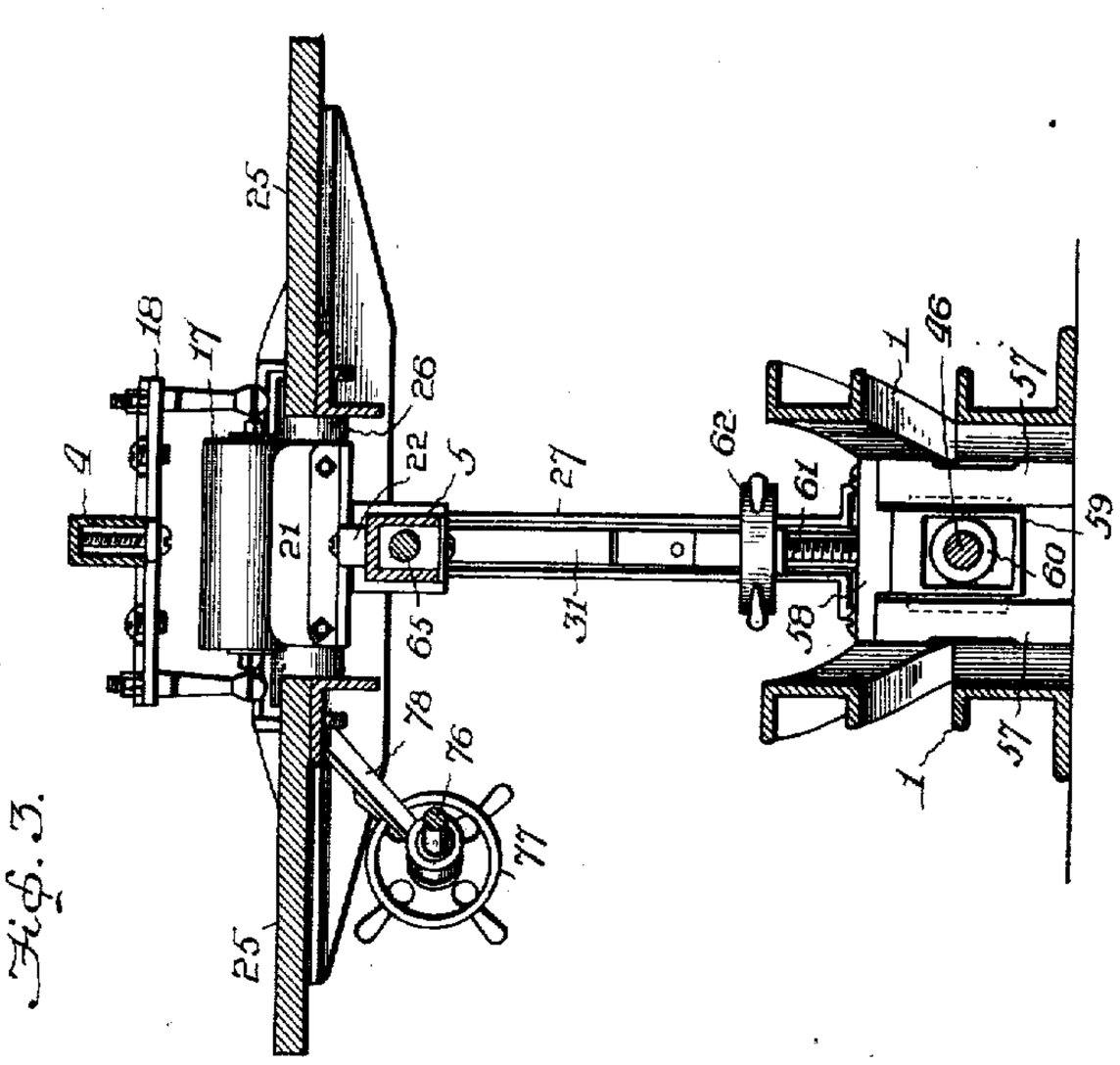

Fig. 3.

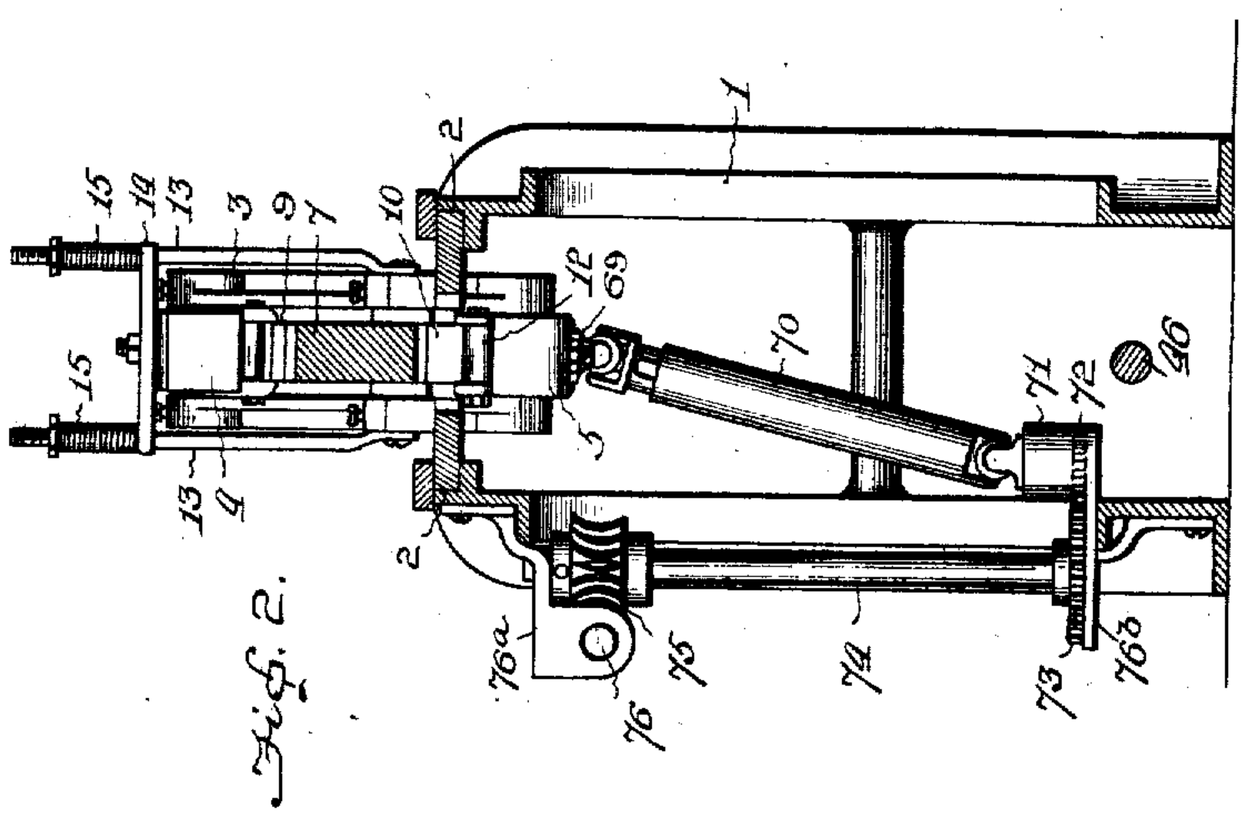

Fig. 2.

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3 SHEETS—SHEET 3.

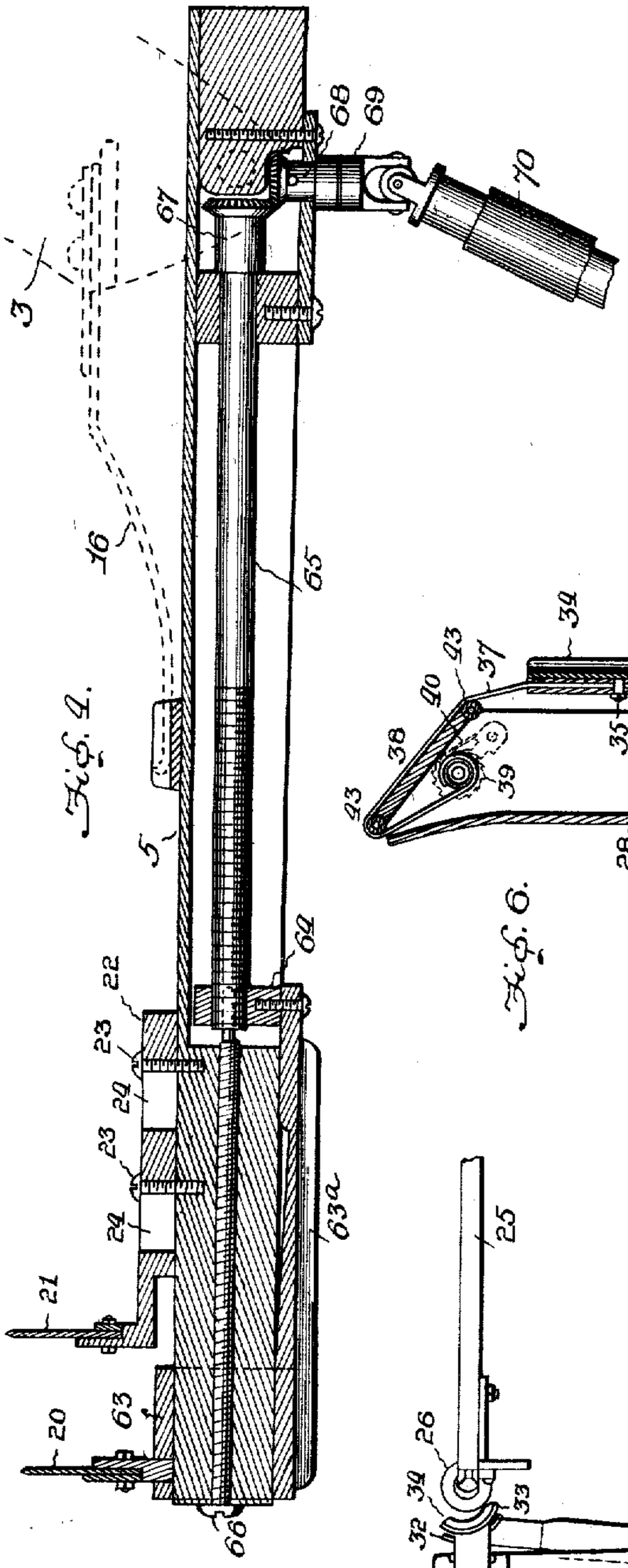

Fig. 4.

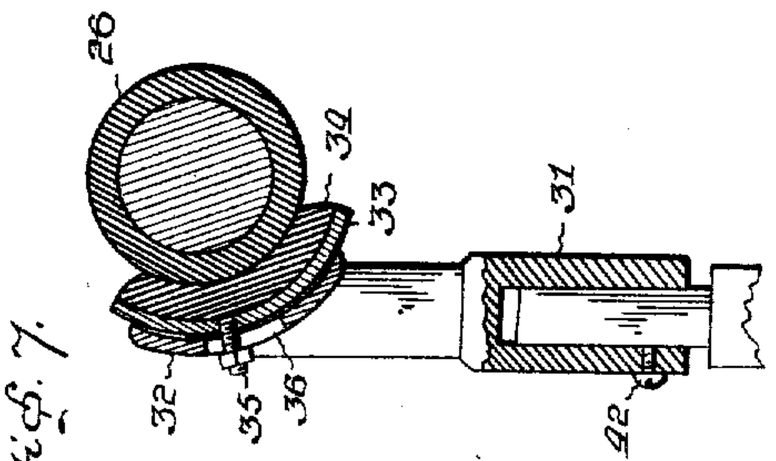

Fig. 7.

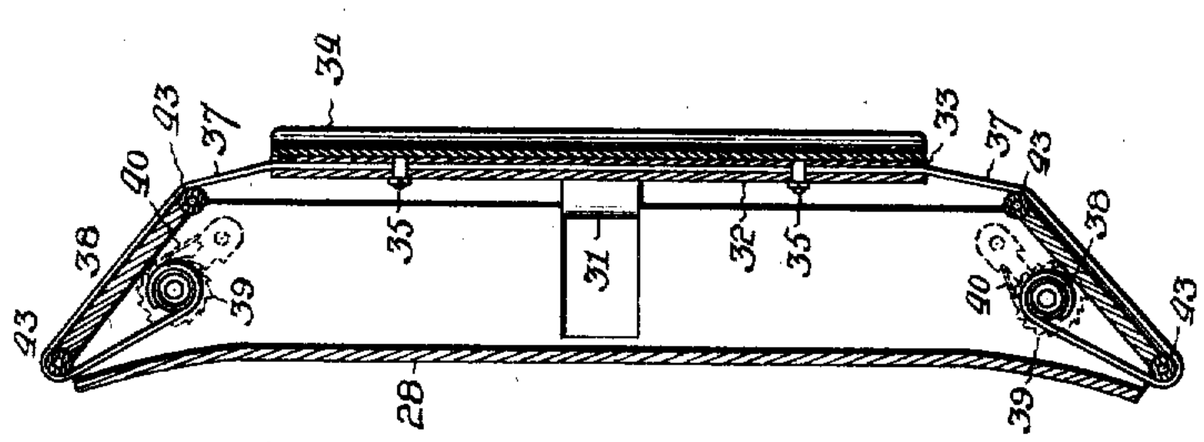

Fig. 6.

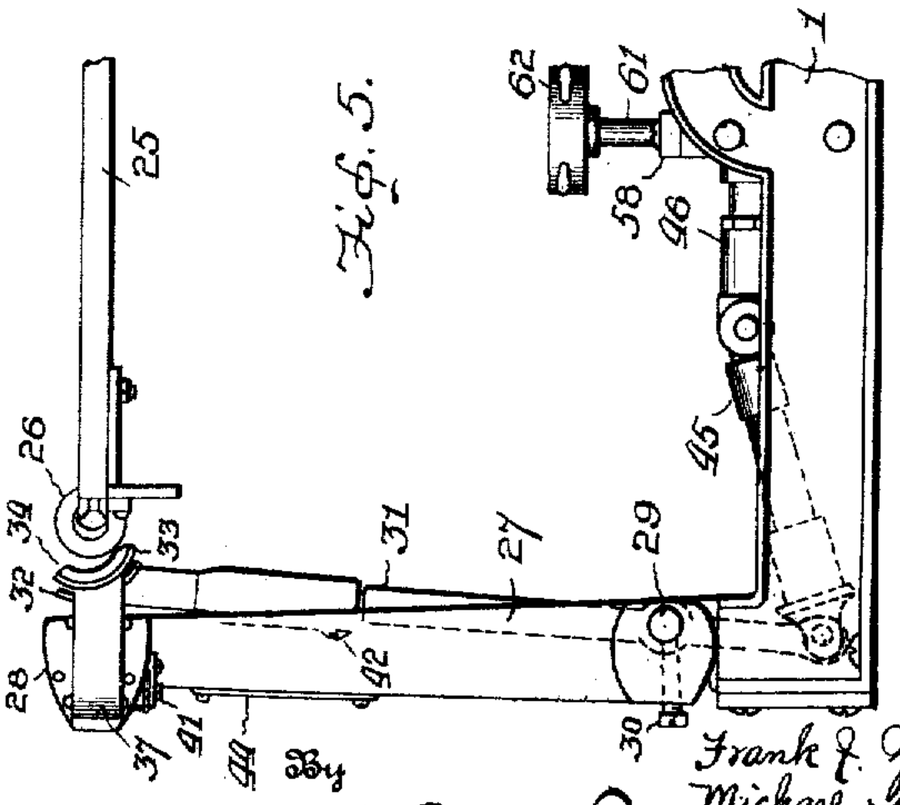

Fig. 5.

Witnesses:-

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UNITED STATES PATENT OFFICE.

FRANK J. ZDANOWSKI AND MICHAEL A. ZDANOWSKI, OF PHILADELPHIA, PENNSYLVANIA.

LEATHER-STAKING MACHINE.

No. 915,530. Specification of Letters Patent. Patented March 16, 1909.

Application filed December 11, 1908. Serial No. 466,982.

To all whom it may concern:

Be it known that we, FRANK J. ZDANOWSKI and MICHAEL A. ZDANOWSKI, citizens of the United States of America, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a Leather-Staking Machine, of which the following is a specification.

Our invention is an improvement in machines for treating hides, skins, or leather, and relates more especially to staking or stretching machines of that class which comprise a pair of reciprocating staking-jaws, having rollers and knives, respectively, which are adapted to close on the skin or leather and subject the same to a scraping and stretching operation while being held at one end by the operator or attendant who shifts the skin or leather as required until every portion of the same has been treated or staked. In machines of this character it is customary to have a table for convenience in shifting the skin or leather during the forward or open movement of the staking-jaws, and at the forward end of the table there is usually a roller between which and the body of the operator one end of the skin or leather is held during the staking operation. For the purpose of increasing or diminishing the tension of the jaws, according to the texture of the skin or leather being staked, some means are usually provided for adjusting the rollers and knives with respect to each other.

The primary object of our invention is to provide a simple and effective mechanical device which operates in conjunction with the roller at the forward end of the table to hold the skin or leather during the staking operation, and thus relieve the operator of the danger or bodily harm which usually attends the pressing of his body against the skin or leather in holding it against the roller.

A further object of the invention is to provide certain mechanism by which one of the knives of the lower staking-jaw may be readily and accurately adjusted during the operation of the machine.

With these principal objects in view our invention consists in the particular construction and arrangement of certain detail parts or mechanisms of a leather staking machine, all as hereinafter fully described and specifically set forth in the appended claims.

In the accompanying drawings, which form a part of this specification:—Figure 1 is a side elevation of a leather staking machine embodying our invention. Fig. 2 is a cross-sectional view on the line 2—2 of Fig. 1. Fig. 3 is a similar view on the line 3—3 of Fig. 1. Fig. 4 is a longitudinal sectional view through the lower staking-jaw, showing the means of adjustment for one of the knives. Fig. 5 is a detail view of the forward end of the machine. Fig. 6 is a horizontal sectional view through the upper end of the post or standard, and including the movable part of the gripping device. Fig. 7 is a transverse sectional view through the upper part or engaging-head of the movable member of the gripping device. Figs. 8 and 9 are detail views of the cams for operating the gripping mechanism.

Like numerals of reference indicate like parts in all the figures of the drawings.

In the present instance we have shown our invention as applied to a conventional type of leather staking machine, but of course it will be readily understood that the same may be applied to other forms of machines similar in construction to that herein shown. This machine comprises a supporting frame 1, the intermediate portion of which is provided at its upper end with opposite slide-ways 2, in which travels a slide or carriage 3 carrying the upper and lower staking-jaws 4 and 5, respectively, and pivoted to the rear end of said slide or carriage is a connecting-rod or pitman 6, extending from a pitman-wheel 7, the latter being mounted on a main driving-shaft 8, journaled in suitable bearings at the upper part of the rear end of the supporting-frame, whereby a reciprocating motion may be imparted to the slide or carriage and the staking-jaws carried thereby, said staking-jaws being pivoted near their rear ends in the slide or carriage for the purpose hereinafter explained. In addition to the reciprocating motion the outer or forward ends of the staking-jaws are opened and closed in the operation of staking the leather, and this open and closing motion is imparted by means of opposite cams 9 and 10 on the forward end of the pitman-rod which act upon the rearwardly projecting ends of the upper and lower staking-jaws, respectively. As will be seen the upper jaw is provided with the usual adjustable cam-block 11 coöperating with the cam 9, and the lower jaw with a similar cam-block, as 12, coöperating with the cam 10 at the underside of the pitman-rod. The rear end of the upper staking-jaw, or cam-block thereon, is held in engagement

with its operating-cam by means of tension-rods 13 which rise from the slide or carriage 3 and pass upward beyond the guide-plate 14 to receive the compression springs 15, while the rear end of the lower staking-jaw, or cam-block thereon, is held in engaging with its operating cam by means of a flat spring 16, which extends forwardly from the carriage and bears upon said staking-jaw. The connection and arrangement of these parts are such that the front ends of the staking-jaws will be opened and remain open during the forward movement of the slide or carriage and jaws, and will be closed and remain closed during the rearward movement of the carriage and jaws.

At the forward end of the upper staking-jaw there is a roller 17, attached thereto by a bracket-plate 18, and this jaw may be provided also with an auxiliary roller 19, disposed in front and on a line with the upper part of the roller 17. The lower staking-jaw is provided at its forward end with a pair of spaced apart knives 20 and 21, the upper edge of the knife 21 being on a plane slightly above the plane of the upper edge of the companion knife 20, as shown in Fig. 4 of the drawings. These knives coöperate with the rollers 17 and 19, to clamp upon opposite sides of the leather and impart the staking operation, and in order to vary the tension said knives are adjustable upon the jaw. The adjustability of the rear knife 21 is secured by means of the bracket-plate 22 to which the knife is bolted, said bracket-plate being secured upon the upper side of the staking-jaw by means of set-screws 23 passing through slots 24 in the bracket-plate; while the front knife is adjusted by means of certain mechanism hereinafter described and which forms part of our invention. The rollers and coöperating knives work through a longitudinal opening in the table 25 supported at the front end of the machine, and at the forward end of said table is attached, in a suitable manner, the roller 26, against which one end of the leather or skin is held during the staking operation.

The parts thus far described are common to the conventional type of leather staking machines, and the operation thereof will be readily understood by those skilled in the art, for the skin or leather to be staked having been placed upon the table while the staking-jaws are advancing in their open position and held against the roller 26 will be clamped between the rollers and knives of the staking-jaws and subjected to a staking operation during the rearward movement of said jaws, and after each such operation the operator or attendant shifts the skin or leather until every portion of the same has been properly treated or staked.

For the purpose of holding the skin or leather against the roller 26 during the staking operation of the jaws we provide certain holding or gripping mechanism, which we will now describe.

At the forward end of the machine rises a post or standard 27, having a hollow cross-piece 28 at its upper end which provides a convenient rest against which the operator may lean, and is also adapted to receive the upper transverse member or engaging portion of the holding device, for which purpose the inner side of said hollow cross-piece is open, as shown in Fig. 6. The post or standard is pivoted at its lower end on the projecting ends of a transverse pin 29 fixed in the upturned ends of the base pieces of the supporting-frame of the machine, whereby the upper end or cross-piece of said post or standard may be adjusted to and from the table, and to secure the same in adjusted position set-screws 30 are threaded in the lower end thereof to impinge against the pin 29, as indicated in dotted lines, Fig. 5. Pivoted on the transverse pin between the upturned ends of the base pieces of the supporting-frame is an extensible rod 31, the lower end of which depends below the pin and is connected to an operating-shaft, hereinafter described. The upper end of this extensible rod is provided with a cross-piece 32, having a concavity in which is seated a curved plate 33 carrying a padding 34 adapted to co-act with the roller 26 to clamp the skin or leather against said roller. The padding is glued or otherwise attached to the plate and the latter is provided with bolts 35 by which it is connected to the cross-piece 32, said cross-piece having slots 36 through which the bolts pass and which permit of the padding and its carrying-plate being adjusted with respect to the periphery of the roller. As will be seen, the upper part of the rod and the engaging member thereof enter the hollow standard and hollow cross-piece when moved away from the roller, and when the engaging member is in contact with the roller there is a space between said engaging member and the cross-piece of the standard, and in order to prevent the skin or leather from being accidentally pushed into this space and caught between said arts we provide flexible guard-strips 37, which extend from the ends of the engaging member across the ends of the hollow cross-piece 28 and into the latter where they are attached to spring-actuated rollers 38, adapted to keep the guard-strips taut during the forward and backward movements of the engaging member at the upper end of the extensible rod. For increasing the tension of the guard-strips the springs of the rollers are tightened by means of the ratchet-plates 39 and engaging pawls 40, said ratchet-plates having squared gudgeons 41 (Fig. 5), by which they may be turned with the use of an ordinary wrench. The guard-strips pass over rollers 43 at oppo-

site sides of the end pieces of the hollow cross-piece 28, said rollers being employed to reduce friction. As will be understood the guard-strips wind and unwind on the spring-rollers as the engaging member of the holding device moves backward and forward. The rod 31 is made in two parts or sections, the lower section being reduced at its upper end to take into a socket at the lower end of the upper section, (see Fig. 7), and so that said upper section may be raised and lowered on the lower section, and thereby adjust the rod as to length. The adjustment is secured or fixed by means of a set-screw 42, threaded through the front wall of the socket to impinge against the reduced upper end of the lower section of the rod. This adjustment, in connection with the adjustment of the pad and its carrying-plate, permits the engaging member at the upper end of the extensible rod to be properly positioned with respect to the roller 26, and take up for any wear on the engaging surfaces. For convenience in adjusting the set-screw 42 the hollow post or upright 27 is provided with an opening giving access to said screw and normally covered by a plate 44. It will be understood, of course, that this holding device should move forward to engage and press the skin or leather against the roller 26 when the staking-jaws have reached their forward position, and should continue to hold the skin or leather during the rearward movement of the jaws in the staking operation. In order to accomplish this operation of the holding device it is actuated directly from the main driving shaft 8 by means of intermediate connections. These connections comprise a short connecting-rod 45, swiveled at one end to the lower end of the extensible rod 31 and at the other end to a long connecting-rod 46 extending from one member of a bell-crank lever 47, mounted on a suitably supported transverse shaft 48, said bell-crank lever being operated or rocked by means of a vertical connecting-rod 49, which is reciprocated by cams on the shaft 8. The upper end of the connecting-rod 49 is provided with an enlarged flat-portion or plate 50, having a slot 51, (indicated in dotted lines in Fig. 8,) through which the shaft passes and is also provided at opposite sides with rollers 52, with which the cams 53 and 54 engage, respectively. The rollers are journaled in brackets, as 55, formed integrally with the plate 50 of the connecting-rod, and the cams are provided with set-screws 56 so that they may be adjusted with respect to the rollers. As will be seen the cams are arranged so that they will positively actuate the connecting-rod, that is to say, one of the cams will raise the rod and hold it raised until the other cam engages to lower the rod, the latter cam then holding the rod lowered until the engagement of the first mentioned cam. The cams are shaped so as to impart the proper movements to the swinging holding device at the front end of the machine, that is to say the cam 54, having the longer periphery, acts to move the engaging member of said holding device against the roller 26, or interposed skin, when the staking jaws are at their forward position, and hold it in this position, during the rearward movement of the staking-jaws, while the other cam, 53, serves to move said engaging-member backward or away from the roller to release the skin and to hold the engaging-member temporarily within the hollow cross-piece 28 of the standard or post 27.

For the purpose of adjusting the swinging holding device so that its pressure against the roller 26 may be regulated, the short connecting-rod 45 extends at an upward inclination from the lower end of the rod 31 to its connection with the connecting-rod 46, and the latter extends at a slight downward inclination to the bell-crank lever, whereby the raising and lowering of the front end of said connecting-rod 46 will change the location of the upper end of the holding device and cause it to press against the roller either hard or lightly, according to the adjustment of the connecting-rod. For adjusting this connecting-rod we provide a frame secured between the side pieces of the supporting frame and comprising vertical pieces 57 connected by an upper cross-piece 58, the said vertical pieces having grooves at their inner edges to receive a slide 59, the latter carrying a trunnioned sleeve 60 through which the connecting-rod 46 passes. The slide is raised and lowered by a screw 61 connected thereto and threaded through the cross-piece 58, said screw having a conventional form of hand-wheel 62 at the upper end for turning the same.

For the purpose of adjusting the front staking-knife 20 by an attendant or operator stationed in front of the standard or post 27 we provide certain adjusting means which we shall now describe. Said knife, 20, is secured in a suitable manner to a sleeve 63 slidable upon the font end of the staking-jaw 5, and having a rearwardly projecting member 63^a disposed at the underside of said jaw and provided at its rear end with a block 64 projecting into a longitudinal recess in the staking-jaw, as shown in Fig. 4. A rod 65 is threaded through this block and turns loosely in a recess therefor in the front end of the jaw, being centered by a screw 66. The turning of this rod will of course move the knife-holder or sleeve 63 backward or forward, according to the direction the rod is turned. The rear end of the rod has fixed thereon a beveled gearwheel 67, in mesh with a similar gearwheel 68, on a short vertical shaft 69, which latter is connected by a universal-joint, as shown, to an extensible rotatable shaft 70 connected at its lower

end by a universal-joint to a short shaft 71 journaled in a supporting-bracket 76^b. The short-shaft 71 carries a pinion 72 in mesh with a gearwheel 73 on the lower end of a vertical shaft 74 journaled at its lower end in the supporting-bracket 76^b and at its upper end in a bracket 76^a, said brackets being secured to the supporting-frame of the machine as shown in the drawings. At the upper end of the vertical shaft 74 there is a worm-wheel 75 in mesh with a worm 75^a on a horizontal operating-shaft 76, extending forwardly and provided at its front end with a conventional form of hand-wheel 77 for turning the same. The operating shaft 76 is supported at its rear end in depending ears of the supporting-bracket 76^a, and near its front end by means of a bracket 78. The operation of adjusting the forward staking-knife by means of the mechanism just described will be readily apparent, and it will be noted, by reference to Fig. 1, that the operating hand-wheel 77 is located within convenient reach of the attendant or operator stationed in front of the post or standard 27. The extensible rotatable shaft 70 does not interfere with the perfect operation of the lower staking-jaw, and it will be noted that the connection of this shaft is directly below the pivot of said jaw so that the extension and contraction of the shaft is caused principally by the reciprocating movements of the jaw.

Having thus described our invention, what we claim as new, and desire to secure by Letters-Patent, is:—

1. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a post or support in front of the roller and spaced therefrom, an engaging-device coöperating with the roller and movable between the post or support and said roller, and means for operating said engaging device from the driving shaft.

2. In a leather staking machine, the combination with a driving shaft, staking-jaws, and means for operating the latter, of a roller against which the skin or leather is held during the staking operation, and means for holding the skin or leather against said roller comprising a vertical post or standard in front of the roller, a rod pivoted at the lower end of the post or standard and having an engaging member coöperating with the roller and means for operating the rod from the driving-shaft.

3. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a vertical post or standard in front of the roller, a rod pivoted at the lower end of the vertical post or standard and provided at its upper end with a member coöperating with the aforesaid roller, a two-part connecting-rod connected to the pivoted rod and having its parts disposed at an angle to each other, means for operating the two-part connecting-rod from the driving-shaft, and means for raising and lowering one of the parts of the connecting-rod.

4. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a movable device coöperating with the roller to hold the skin or leather, a connecting-rod connected to said movable device and composed of two sections connected together and extending at an angle to each other, means for operating said connecting-rod from the driving shaft, and means for raising and lowering one of the sections of the connecting-rod, substantially as shown and for the purpose set forth.

5. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a vertical rod pivoted near its lower end and having a member at its upper end coöperating with the roller to hold the skin or leather, a connecting-rod connected to the lower part of the vertical rod and composed of two longitudinal sections connected together so as to extend at an angle from each other, means for operating said connecting-rod from the driving-shaft, and means for adjusting the connecting-rod to change the relative angle of the sections thereof.

6. In a leather staking-machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a vertical rod pivoted near its lower end and provided at its upper end with a member coöperating with the roller to hold the skin or leather, a connecting-rod connected to the vertical rod and composed of two longitudinal sections connected together and disposed at an angle to each other, a slide having a trunnioned collar through which one section of the connecting-rod extends, a frame in which the slide is movable, a screw threaded through the frame and connected to the slide, and means for operating the connecting-rod from the driving-shaft, substantially as shown and described.

7. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation,

a post or standard pivoted at its lower end for adjustment to and from the roller, and set-screws for holding the post or standard in fixed position; together with a vertical rod pivoted at the lower end of the post or standard and having a member at its upper end coöperating with the roller to hold the skin or leather, and means for operating the rod.

8. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a hollow post pivoted at its lower end for adjustment to and from the roller and having a hollow cross-piece at its upper end, a vertical rod pivoted in the hollow post and having a member at its upper end adapted to coöperate with the roller to hold the skin or leather, said rod and its engaging member being movable within the hollow post and its cross-piece, and means for operating the vertical rod from the driving-shaft, substantially as shown and described.

9. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a post located in front of the roller and having a cross-piece at its upper end, a vertical rod pivoted at the lower end of the post and having a member at its upper end adapted to coöperate with the roller to hold the skin or leather, means for operating said rod from the driving-shaft, and guard-strips at the ends of the aforesaid member adapted to close the opening between the end of the member and cross-piece of the post, substantially as shown and described.

10. In a staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a post located in front of the roller and having a cross-piece at its upper end, a vertical extensible rod pivoted near the lower end of the post and having a member at its upper end adapted to coöperate with the roller to hold the skin or leather, means for adjusting said member with respect to said roller, and means for operating the rod from the driving-shaft, guard-strips secured to the ends of the member and extending therefrom across the ends of the cross-piece of the post and into said cross-piece, friction-rollers over which the strips pass, and spring-actuated rollers mounted within the hollow cross-piece of the post and to which the guard-strips are attached, together with a ratchet and pawl for increasing the tension of the spring of each roller, substantially as shown and described.

12. In a staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a device, as a roller, against which the skin or leather is held during the staking operation, a post located in front of the roller and having a cross-piece at its upper end, a vertical extensible rod pivoted near the lower end of the post and having a member at its upper end adapted to coöperate with the roller to hold the skin or leather, means for adjusting said member with respect to said roller, and means for operating the rod from the driving-shaft.

13. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a roller against which the skin or leather is held during the staking operation, a vertical pivoted rod having a cross-piece at its upper end adapted to move to and from the roller, said cross-piece being curved in cross-section, and having slots, a pad correspondingly curved to fit within the cross-piece and having securing bolts passing through the slots in said cross-piece, whereby said pad may be adjusted with respect to the periphery of the roller; together with means for operating the rod from the driving-shaft.

14. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a roller against which the skin or leather is held during the staking operation, a vertical extensible rod pivoted at its lower end and provided at its upper end with a cross-piece curved in cross-section, a pad correspondingly curved to fit within the cross-piece, means for adjusting the pad within the cross-piece, and means for operating the rod from the driving-shaft.

15. In a leather staking machine, the combination with a driving-shaft, staking-jaws and means for operating the latter, of a roller against which the skin or leather is held during the staking operation, a post in front of said roller, a vertical rod pivoted at the lower end of the post and having a member at its upper end coöperating with the roller to hold the skin or leather, and means for operating

the vertical rod from the driving-shaft; together with a movable sleeve on one of the staking-jaws carrying one of the knives, a rod operating said sleeve, an operating shaft having a hand-wheel near the aforesaid post, and gearing intermediate the operating-shaft and adjusting-rod including an extensible rotatable shaft, substantially as shown and described.

16. In a leather staking machine, the combination with a driving-shaft, staking-jaws and means for operating the latter, of a sleeve slidable on the lower jaw and carrying one of the staking devices, a screw-rod for adjusting said sleeve, a vertical extensible rotatable shaft geared to the screw-rod, and an operating-shaft geared to said vertical extensible rotatable shaft, substantially as shown and described.

17. In a leather staking machine, the combination with a driving-shaft, staking-jaws, and means for operating the latter, of a sleeve slidable on the lower jaw and carrying one of the staking devices, a screw-rod engaging the sleeve to adjust the same on the jaw, a vertical extensible rotatable shaft geared to the screw-rod and supported at its lower end by a short shaft supported in a bracket attached to the supporting-frame of the machine, said extensible rotatable shaft being connected by universal joints at each end, a vertical shaft geared to the aforesaid short shaft, and having a worm-wheel at its upper end, and a horizontal operating shaft having a worm in mesh with the worm-wheel, substantially as shown and described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRANK J. ZDANOWSKI.
MICHAEL A. ZDANOWSKI.

Witnesses:
HERMAN F. GRUNINGER,
LILLIAN GRUNINGER.