F. A. BRADFORD.

ROLLER PRESS FOR HIDES AND SKINS.

APPLICATION FILED FEB. 2, 1914.

1,113,189.

Patented Oct. 13, 1914.

3 SHEETS—SHEET 1.

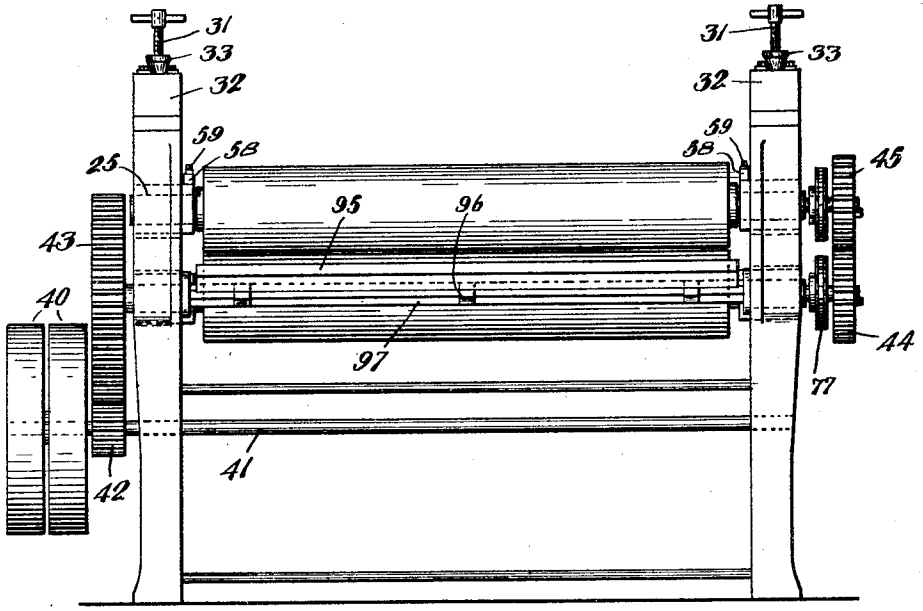


Fig. 1.

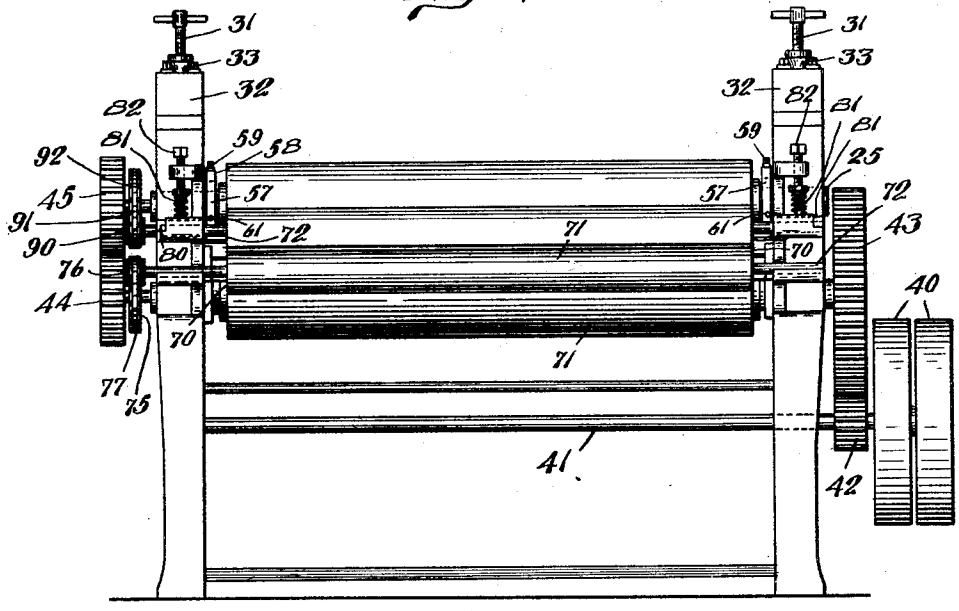


Fig. 2.

Witnesses:

H. B. Davis.

C. Doyle.

Inventor:

Frank A. Bradford

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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3 SHEETS—SHEET 2.

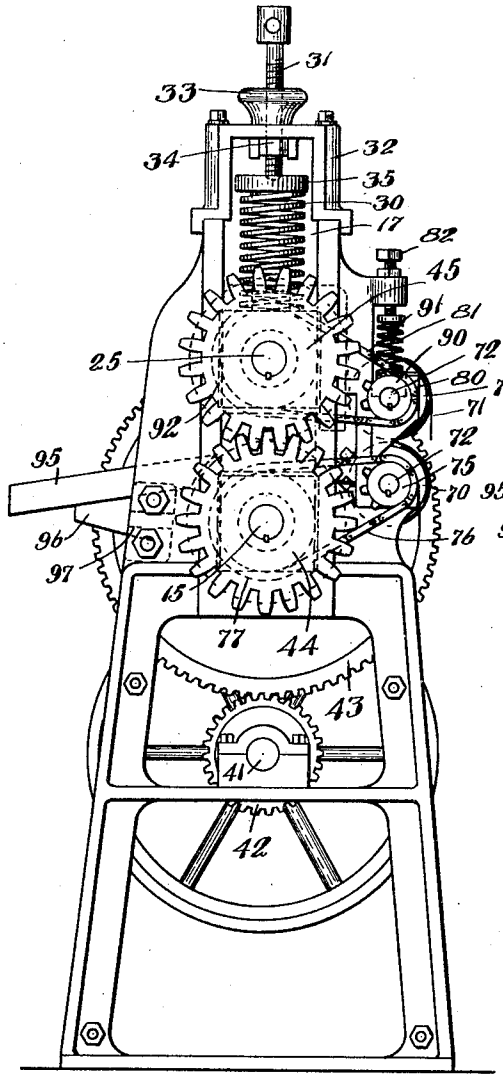


Fig. 3.

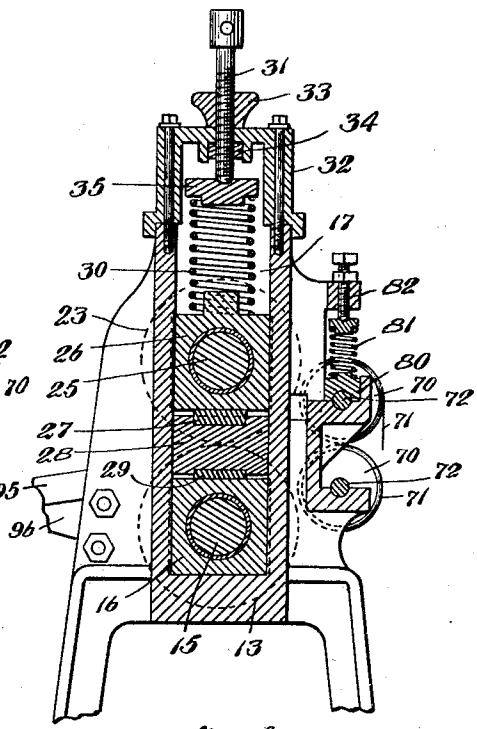


Fig. 4.

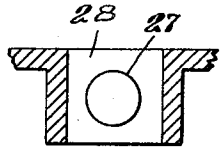


Fig. 6.

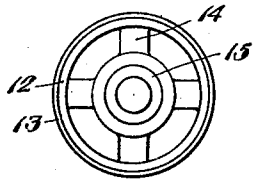


Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 7.

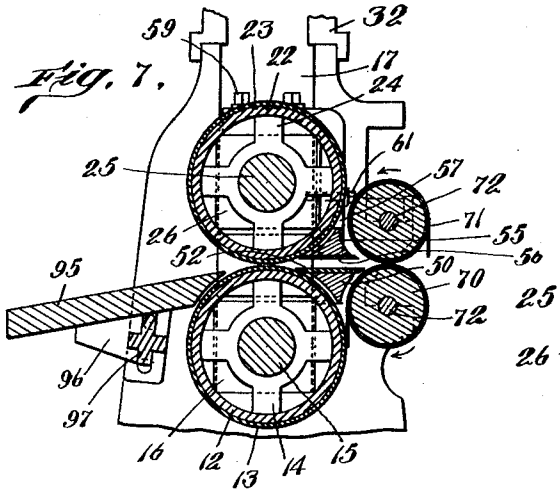
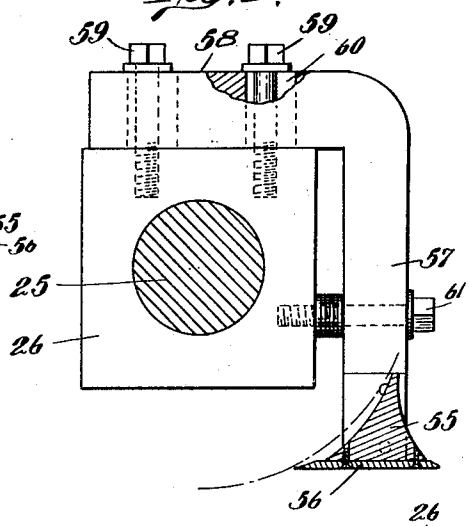


Fig. 8.



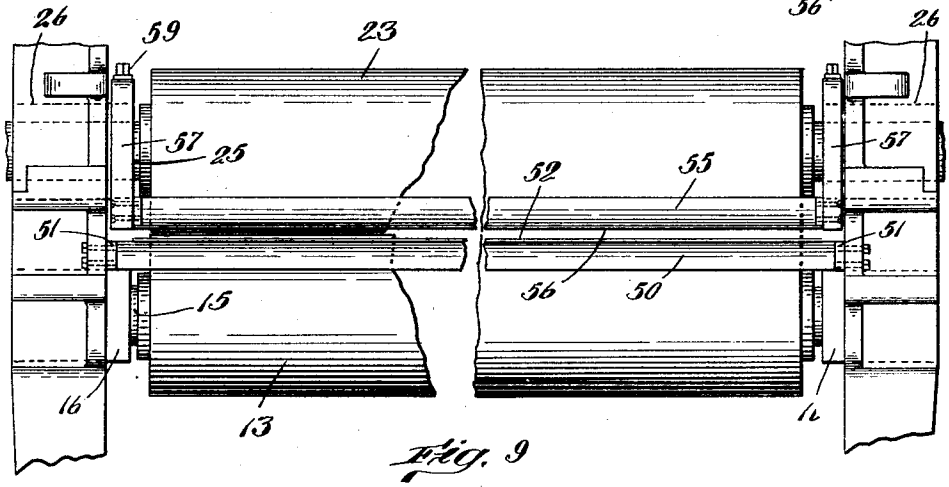


Fig. 9

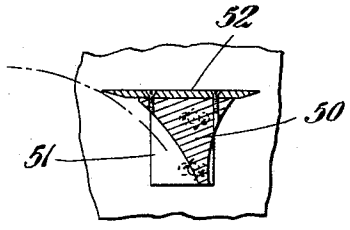


Fig. 10

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UNITED STATES PATENT OFFICE.

FRANK A. BRADFORD, OF BOSTON, MASSACHUSETTS.

ROLLER-PRESS FOR HIDES AND SKINS.

1,113,189. Specification of Letters Patent. Patented Oct. 13, 1914.

Application filed February 2, 1914. Serial No. 815,971.

To all whom it may concern:

Be it known that I, FRANK A. BRADFORD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Roller-Presses for Hides and Skins, of which the following is a specification.

This invention relates to roller-presses for leather, frequently termed "leather wringing machines," especially designed to squeeze the water and other liquid from a hide or skin during any part of the process of treating the same in the manufacture of leather, yet it may be put to other uses.

The machine embodying this invention involves a pair of heavy horizontal pressure-rolls arranged one above the other, the lower roll being stationarily supported and the upper roll being movable vertically with respect to the lower roll to accommodate hides or skins of different thicknesses as well as the variations in thickness of the hides or skins. When a hide or skin has passed through the rolls the upper roll immediately falls by gravity and to prevent injury to the rolls its downward movement is checked by bumpers. The distance which the rolls are permitted to separate is quite large to accommodate the many thicknesses of hides and skins, but when passing thick hides or skins through the machine it is not necessary or desirable that the upper roll shall return to its lowermost position each time that the hide or skin leaves the rolls, and means have been provided for adjusting the elevation of the bumpers thus to limit downward movement of the upper roll at any desired point, but as the full weight of the roll, in falling, is received upon the bumpers very substantial adjusting-means must be provided for the bumpers, and one of the objects of this invention is to provide improved and very substantial means for determining or adjusting the height of the bumpers, which is simple and not liable to get out of order and will not become injured when the great weight of a heavy roll is suddenly brought upon it. In carrying out this feature of my invention spacing-blocks are arranged between the bearing-blocks for the upper and lower rolls, which spacing-blocks are removable in order that blocks of different thicknesses may be employed as occasion demands.

The invention also involves the provision of a plurality of spacing-blocks between the bearing-blocks, as for instance, there may be main spacing-blocks and supplemental spacing-blocks, the supplemental spacing-blocks only being removable, although the other blocks may be removed when disassembling the machine; and the bumpers may be arranged in engagement with the main spacing-blocks and by them held against lateral displacement and likewise the supplemental spacing-blocks may be held against lateral displacement by said main spacing-blocks.

In the machine embodying this invention deflectors are arranged adjacent the upper and lower pressure-rolls, thereby to prevent winding of the hide or skin on said rolls, and heretofore, so far as I am aware, deflectors have been employed, which have been supported by the machine-frame and their positions relative to the rolls have been adjustable. In view of the fact that the upper roll is movable in a vertical direction with respect to the lower roll, mere adjustment of its deflector is not sufficient to prevent the hide or skin from winding on said roll, in all positions of the roll, and this difficulty is increased the greater the distance the upper roll is moved away from the lower roll, and the present invention involves a deflector for the upper roll which is supported by the movable bearing-blocks of said roll, so that it is movable in unison with said upper roll in addition to being adjustable with respect thereto.

The invention also involves deflectors of novel construction which are arranged between the pressure-rolls and the drying-rolls, and which afford a horizontal passage between them extending from the pressure-rolls to the drying-rolls, which serves as a support and guide for the hide or skin while passing from one to the other pair of rolls.

The invention also involves novel driving-means for the drying-rolls permitting up and down movements of the pressure-rolls and drying-rolls with respect to each other.

Figure 1 is a front elevation of a roller-press embodying this invention. Fig. 2 is a rear elevation of the same. Fig. 3 is an enlarged right-hand end elevation. Fig. 4 is an enlarged vertical section of a portion of the machine, taken through the bearings for the rolls. Fig. 5 is an end view of one of the rolls. Fig. 6 is a detail of an adjustment to be referred to. Fig. 7 is a vertical section of a portion of the machine, taken through the rolls. Fig. 8 is a detail of one of the bearing-blocks of the upper roll and the deflector

connected therewith. Fig. 9 is a rear view of the rolls and the deflectors associated therewith. Fig. 10 is a sectional detail of the deflector for the lower roll.

As here shown, the lower roll of the pair of horizontally arranged rolls consists of a cylindrical metallic shell 12, having thereon a cylindrical covering 13, of brass, said shell being secured to or formed integral with a plurality of spiders 14, arranged upon and secured to a shaft 15. The upper roll of the pair, as here shown, is similarly constructed, 22 representing the cylindrical metallic shell; 23 the brass covering thereon; 24 the spiders and 25 the shaft. The horizontal shaft 15 of the lower roll is set in bearings in blocks 16, 16, arranged at the bottom of vertical recesses 17, 17 in the machine-frame, being stationarily supported. The horizontal shaft 25 of the upper roll is set in bearings in blocks 26, 26, arranged in said vertical recesses 17, 17, but slidable therein vertically to admit of vertical movement of said upper roll with respect to the lower roll. The blocks 26, 26 rest on bumpers 27, 27, arranged at the top of and supported by main spacing-blocks 28, 28, which latter are fitted in said vertical recesses 17, 17, and said main supporting-blocks 28, 28, are here shown as resting upon other spacing-blocks 29, 29, here termed supplemental spacing-blocks, which latter rest upon the bearing-blocks 16, 16 of the lower roll.

The bumpers 27 are usually composed of rubber, leather, or other yielding material, and, are here shown, as of circular form and disposed in correspondingly shaped recesses formed in the tops of the main spacing-blocks 28, 28; and the supplemental spacing-blocks 29, 29, are or may be of circular form and disposed in correspondingly shaped recesses in the bottom of the main spacing-blocks 28, 28. These recesses in the upper and under sides of the main spacing-blocks serve to hold said blocks and the bumpers and the supplemental spacing-blocks against lateral displacement.

The bearing-blocks 26, 26, of the upper roll are engaged by pressure-springs 30, 30, which are arranged in upright position in the recesses 17, 17, and said springs are held under a varying pressure by adjusting-screws 31, 31 extended through end-caps 32, 32, bolted or otherwise secured to the machine frame at the upper ends of said recesses 17, 17, said end-caps closing the ends of the recesses, and any suitable form of nuts, as 33, 34, are arranged on said adjusting-screws and the lower ends of said screws engage plates 35, 35, which in turn engage the upper ends of the springs 30, 30. Obviously, turning the adjusting screws varies the amount of pressure exerted by the springs. Upon removal of the end-caps 32, all of said blocks, which, it will be observed, are superimposed, may be removed from the recesses. When a hide or skin passes between the upper and lower rolls the upper roll is lifted more or less according to the thickness thereof, and as soon as the hide or skin leaves said rolls the upper roll falls quickly, and to prevent injury to the rolls the bumpers are provided for the bearing-blocks of said upper roll. The distance the upper roll falls should not be more than is absolutely necessary, as the roll is very heavy, hence the spacing-blocks are provided for holding the bumpers at predetermined elevations according to the thickness of the hides or skins which, for the time being, are being passed through the machine, as for instance, in case thin hides or skins are being passed through the machine the spacing-blocks will be of less thickness than when thick hides or skins are being passed through the machine. It is purposely designed, therefore, that said spacing-blocks, and particularly the supplemental spacing-blocks shall be removable for the purpose of substituting blocks of different thicknesses according to the thickness of the work being done. Heretofore, means such as screws have been employed for holding the bumpers at different elevations, but in the present machine, on account of the great weight of the upper roll, adjusting-screws are insufficient to withstand the force of the heavy weight which is suddenly brought upon them, as the threads of the screws will strip off, but the spacing-blocks here shown will withstand the force of such heavy weight and will not become injured thereby. Said upper and lower rolls are designed to be positively driven, and, as a driving means here shown, a driving-pulley 40 is secured to a shaft 41, having secured to it a pinion 42, which engages a toothed-gear 43, secured to one end of the lower roll, and a toothed-gear 44 is secured to the other end of the shaft of said lower roll which engages a toothed-gear 45 secured to one end of the shaft of the upper roll.

In rear of the two rolls deflectors are arranged by which a hide or skin is prevented from winding on either roll as it passes therebetween. These deflectors are made substantially alike, but the lower one is adjustably supported adjacent the lower roll and the upper one is movably supported adjacent the upper roll to move in unison with said upper roll. Referring to Figs. 7 to 10, wherein the deflectors are more clearly shown, 50 represents a bar of approximately triangular shape in cross-section, which is arranged horizontally and extended from one to the other side of the machine and is supported at its ends by the machine frame by bolts or screws extended

through slots in the frame and into end-pieces 51 on said bar, admitting of adjustment of the bar toward and from the lower roll, and said bar has arranged on it a plate 52, which extends throughout its length or thereabout, being as long as or longer than the lower roll, and said supporting-bar is adjusted so that the front edge of the plate 52, is arranged substantially tangential to the surface of the lower roll, either in contact therewith or so close thereto as to prevent the hide or skin from passing between the plate and roll, so that said plate, when thus supported and arranged with respect to the lower roll, serves to deflect the hide or skin which passes between the rolls, thereby to prevent it from winding on said lower roll. A deflector has heretofore been arranged in this relation to the lower roll, although of different construction. Herein, the supporting-bar 50, is made of triangular form, so as to occupy a position between the lower roll and an adjacent drying-roll, to be hereinafter described, and the opposite sides of said bar are curved to correspond with the arcs of the rolls between which they are arranged, and the plate 52, extends beyond each edge of said bar a short distance, so as to terminate as closely as possible to the surfaces of both rolls, and yet present a space beneath said projecting portions, between the opposite sides of the supporting-bar and the rolls, to provide clearance for any small pieces which may pass the edge of the plate, thereby preventing clogging of the machine.

The upper deflector is constructed like the lower deflector, although its position is reversed, so as to occupy the same relation to the upper roll that the lower deflector does to the lower roll.

55 represents the substantially triangular supporting-bar of the upper deflector, which is horizontally arranged and extended from side to side of the machine, at least throughout the length of the upper roll, and 56 represents a plate secured by screws or otherwise to the under side of said supporting-bar which also extends substantially the entire length of the bar and projects beyond the bar both front and rear, so that its edge terminates as nearly as possible to the cylindrical surface of the upper roll and an adjacent drying-roll to be hereinafter described, to deflect the hide or skin in the manner heretofore described. Said upper deflector is not, however, stationarily supported, as is the lower deflector, but is secured to the lower ends of downwardly extended arms 57 of brackets, the upper horizontal portions 58 of which brackets extend over the tops of the upper bearing-blocks 26, and are secured to said blocks by screws 59, extended through slots 60 in said horizontal portions, and into the blocks, thereby admitting of adjustment of the brackets to in turn adjust the deflector toward and from the cylindrical surface of the upper-roll. These brackets are also held in fixed position by screws 61 which assist in preventing them from swinging with respect to the bearing-blocks. As the brackets are secured to the bearing-blocks 26, for the upper rolls, and the deflector is secured to the brackets, it will be noted that the deflector is movable in unison with the upper roll, and its position with respect thereto always remains the same regardless of the position of said upper roll. The means here shown for connecting the deflector with the bearing-blocks is simple, and the construction as a whole possesses considerable advantage in addition to the fact that the deflector moves in unison with the roll, whereby the deflector is enabled, in all positions of the upper roll, to act to prevent the hide or skin from winding thereon, and, as will be understood, the position of said upper roll is changeable, the necessity of a deflector thus supported with respect to it is of the greatest importance.

In rear of the pressure-rolls a pair of drying-rolls are arranged horizontally, the bite of which is in substantially the same horizontal plane as the bite of the pressure-rolls, and is arranged directly in rear of the passage between the deflectors, so that said deflectors serve to guide the hide or skin directly to them. These drying-rolls are made alike, or substantially so, and each consists of a cylinder 70, having a long strip of felt or other suitable textile material 71 wound spirally thereon, one end of the strip being attached to the cylinder and the other end being free, and said strip is wound in the direction of rotation of the roll to which it is attached. This form of roll is soft and absorbent and is not apt to wrinkle. These rolls are secured to shafts 72. The lower drying-roll is supported horizontally in stationary bearings in the machine frame, and is positively driven, and, as here shown, a sprocket-wheel 75 is secured to its shaft over which a sprocket-chain 76 passes, which also passes over a sprocket-wheel 77 secured to the shaft of the lower pressure-roll. The upper drying-roll is secured to a shaft arranged in a bearing in the frame and against bearing-blocks 80, which latter are adapted to yield in a vertical direction to admit of the upper drying-roll rising when occasion for it to do so is required. Said bearing-blocks 80, are held against upward movement by springs 81, the upper ends of which are engaged by screws 82, by which the pressure is adjusted. The upper drying-roll is positively driven, like the lower drying-roll, and, as here shown, a sprocket-wheel 90 is secured to its shaft over which passes a sprocket-chain 91, which also passes over

a sprocket-wheel 92 secured to the shaft of the upper pressure-roll.

In this particular type of machine drying-rolls of this description are of great value, as they are of simple construction and their absorbent coverings will at all times lay flat without wrinkling. By employing a sprocket-chain connected with the shaft of the upper pressure-roll, as a means for driving said upper drying-roll it will be seen that independent up and down movements of both rolls is admitted, which is a necessity, as a hide or skin when entering the machine is engaged first by the pressure-rolls and then by the drying-rolls, and when leaving the machine is disengaged first by the pressure-rolls and then by the drying-rolls. In front of the machine an inclined table is provided on which the hide or skin is laid before being fed into the machine, and said table, as here shown, consists of a board 95, arranged in an inclined position and secured to suitable supports or lugs 96, arranged on a bar 97, and which is extended from side to side of the machine-frame and is secured thereto at its ends.

I claim:—

1. In a roller-press, the combination of a horizontally arranged lower pressure-roll and stationary bearing-blocks therefor, a horizontally arranged upper pressure-roll and vertically movable bearing-blocks therefor, spacing-blocks arranged between said bearing-blocks, and yielding bumping-blocks arranged on said spacing-blocks upon which the upper bearing-blocks normally rest, said spacing-blocks being removable in order that spacing-blocks of different thicknesses may be employed, substantially as described.

2. In a roller-press, the combination of a horizontally arranged lower roll and stationary bearing-blocks therefor, a horizontally arranged upper roll and vertically movable bearing-blocks therefor, bumping-blocks on which said upper bearing-blocks normally rest, main spacing-blocks supporting said bumping-blocks, and removable supplemental spacing-blocks arranged beneath said main spacing-blocks to hold the latter in different elevated positions according to the thickness of the supplemental spacing-blocks which are employed, substantially as described.

3. In a roller-press, the combination of a horizontally arranged lower roll and stationary bearing-blocks therefor, a horizontally arranged upper roll, vertically movable bearing-blocks therefor, a plurality of spacing-blocks arranged between the upper and lower bearing-blocks, some of which are removable, and bumping-blocks arranged on the uppermost spacing-blocks on which the upper bearing-blocks normally rest, substantially as described.

4. In a roller-press, the combination of a horizontally arranged lower-roll and stationary bearing-blocks therefor, and a horizontally arranged upper roll and vertically movable bearing-blocks therefor, a plurality of spacing-blocks arranged between the upper and lower bearing-blocks some of which are removable, the uppermost spacing-blocks having recesses, and bumping-blocks arranged in said recesses on which the upper bearing-blocks normally rest, substantially as described.

5. In a roller-press, the combination of a horizontally arranged lower roll and stationary bearing-blocks therefor, a horizontally arranged upper roll and vertically movable bearing-blocks therefor, bumping-blocks on which said upper bearing-blocks normally rest, supporting-blocks for said bumping-blocks having recesses in their bottom sides and removable spacing-blocks arranged in said recesses in the supporting-blocks to hold said blocks in different elevated positions according to the thickness of the spacing-blocks which are employed, substantially as described.

6. In a roller-press, the combination of a horizontally arranged lower roll and stationary bearing-blocks therefor, a horizontally arranged upper roll and vertically movable bearing-blocks therefor, bumping-blocks on which said upper bearing-blocks normally rest, spacing-blocks supporting said bumping-blocks, and means to hold said spacing-blocks against lateral displacement, substantially as described.

7. In a roller-press, the combination of a horizontally arranged lower roll and stationary bearing-blocks therefor, a horizontally arranged upper roll and vertically movable bearing-blocks therefor, bumping-blocks on which said upper bearing-blocks normally rest, spacing-blocks supporting said bumping-blocks having recesses in their upper and under sides to receive means to prevent lateral displacement thereof, substantially as described.

8. In a roller-press, the combination of a horizontally arranged lower roll and stationary bearing-blocks therefor, a horizontally arranged upper roll and vertically movable bearing-blocks therefor, bumping-blocks on which said upper bearing-blocks normally rest, spacing-blocks supporting said bumping-blocks having recesses in their upper sides to receive the bumping-blocks and having recesses in their under sides to receive means to hold them against lateral displacement, substantially as described.

9. In a roller-press, the combination of a horizontally arranged lower roll and stationary bearing-blocks therefor, a horizontally arranged upper roll and vertically movable bearing-blocks therefor, main spacing-blocks arranged between said bearing-

blocks, bumping-blocks arranged on top of said spacing-blocks and supplemental spacing-blocks arranged beneath said main spacing-blocks, said main spacing-blocks having means for holding said bumping-blocks and also supplemental spacing-blocks against lateral displacement, substantially as described.

10. In a roller-press, the combination of a lower roll and stationary bearing-blocks therefor, an upper roll and movable bearing-blocks therefor, a deflector arranged adjacent the lower roll and fixedly supported, and a deflector arranged adjacent the upper roll, and means secured to the movable bearing-blocks of said upper roll to support said deflector, whereby it is caused to move in unison with the up and down movements of said upper roll, substantially as described.

11. In a roller-press, the combination of a lower roll and stationary bearing-blocks therefor, an upper roll and movable bearing-blocks therefor, a deflector arranged adjacent the lower roll and fixedly supported, and a deflector arranged adjacent the upper roll, brackets secured to the movable bearing-blocks of said upper roll to which said deflector is attached and by which it is supported in juxtaposition to the upper roll and is movable in unison therewith during its up and down movements, substantially as described.

12. In a roller-press, the combination of a lower roll and stationary bearing-blocks therefor, an upper roll and movable bearing-blocks therefor, a deflector arranged adjacent the lower roll and fixedly supported, and a deflector arranged adjacent the upper roll, brackets extended over the tops of the bearing-blocks of the upper rolls and adjustably secured thereto having downwardly extended arms to the lower ends of which said deflector is attached, whereby it is supported adjacent the upper roll and is movable in unison therewith, substantially as described.

13. In a roller-press, the combination of a pair of horizontally arranged pressure-rolls and a pair of horizontally arranged drying-rolls arranged in rear of said pressure-rolls, and a pair of deflectors arranged between and adjacent said rolls, each deflector consisting of a triangular supporting-bar and a plate secured thereto and projecting therefrom in opposite ways and terminating adjacent the cylindrical surfaces of the rolls and forming clearance spaces between said surfaces and the supporting-bar, substantially as described.

14. In a roller-press, the combination of a lower pressure-roll and stationary bearing therefor, an upper pressure-roll and movable bearing therefor, means to rotate said rolls, a lower drying-roll arranged in rear of said lower pressure-roll and stationary bearing therefor, an upper drying-roll arranged in rear of said upper pressure-roll and movable bearing therefor, sprocket-wheels on the shafts of all of said rolls and a sprocket-chain passing over the sprocket-wheel on the lower pressure and drying-rolls, and a sprocket-chain passing over the sprocket-wheels on the shafts of the upper pressure and drying-rolls, substantially as described.

15. In a roller-press, the combination of a pair of horizontally arranged pressure-rolls, the upper roll of the pair being movable in a vertical direction with respect to the lower roll, a pair of horizontally arranged drying-rolls arranged in rear of said pressure-rolls, a pair of horizontally arranged deflectors arranged between said pressure-rolls and drying-rolls having their adjacent faces arranged in parallel horizontal planes tangential to the surfaces of the rolls and coextensive with the distance between said rolls, thereby to present a horizontal passage extending from the pressure-rolls to the drying-rolls to support and guide the hide or skin, substantially as described.

16. In a roller-press, the combination of a pair of horizontally arranged pressure-rolls, the upper roll of the pair being movable in a vertical direction with respect to the lower roll, a pair of horizontally arranged drying-rolls arranged in rear of said pressure-rolls, a pair of horizontally arranged deflectors arranged between said pressure-rolls and drying-rolls having their adjacent faces arranged in parallel horizontal planes tangential to the surfaces of the rolls and coextensive with the distance between said rolls, thereby to present a horizontal passage extending from the pressure-rolls to the drying-rolls to support and guide the hide or skin, the lower deflector being adjustable with respect to the lower roll and the upper deflector being arranged for movement in a vertical direction in unison with the upper pressure-roll and also adjustable with respect thereto, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FRANK A. BRADFORD.

Witnesses:
H. B. DAVIS,
B. J. NOYES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."