W. D. QUIGLEY.

LEATHER SPLITTING MACHINE.

APPLICATION FILED OCT. 9, 1912.

1,075,792.

Patented Oct. 14, 1913.

7 SHEETS—SHEET 1.

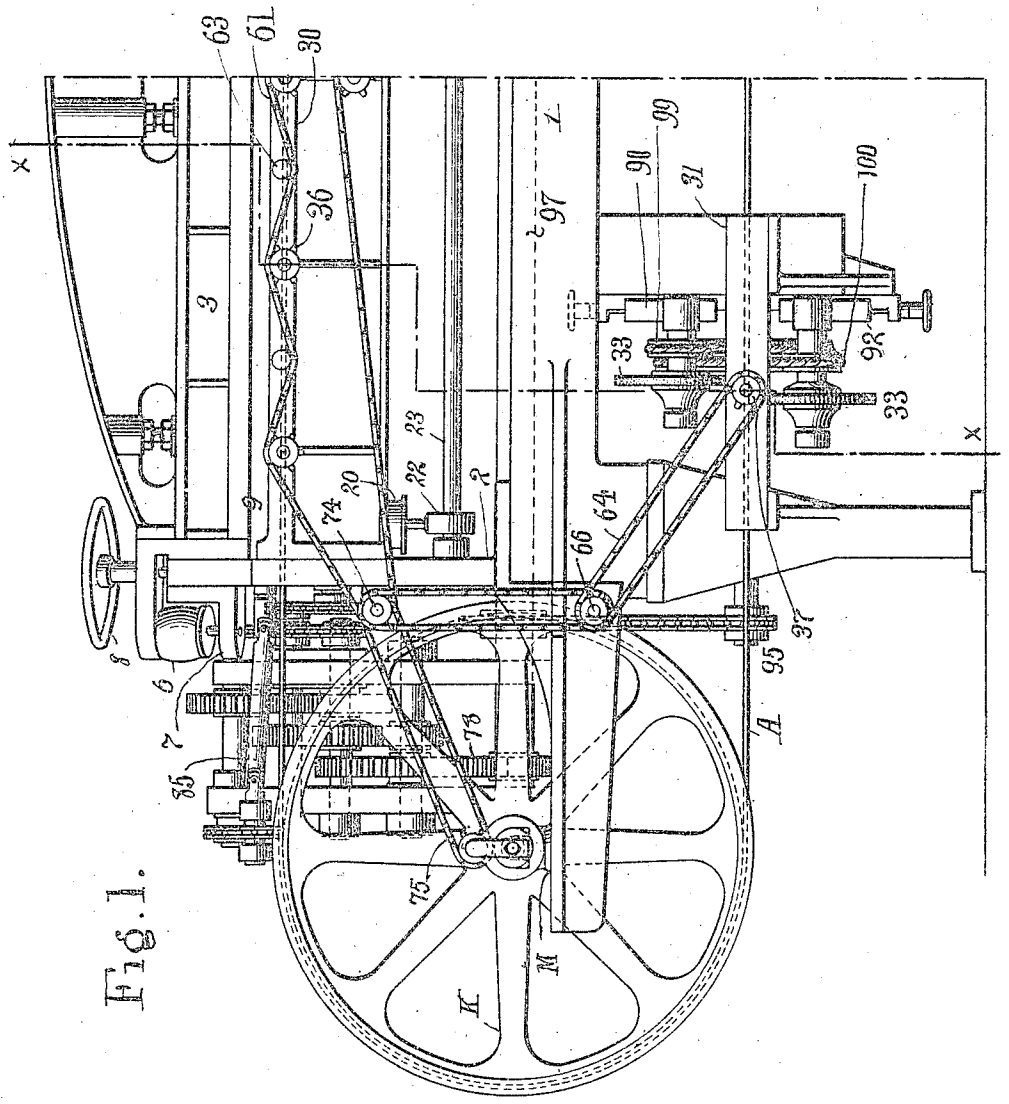



Fig. 1.

Witnesses:
May T. McGarry
Gertrude V. Porter.

Inventor
William D. Quigley
By his Attorney
Paul Benjamin

W. D. QUIGLEY.

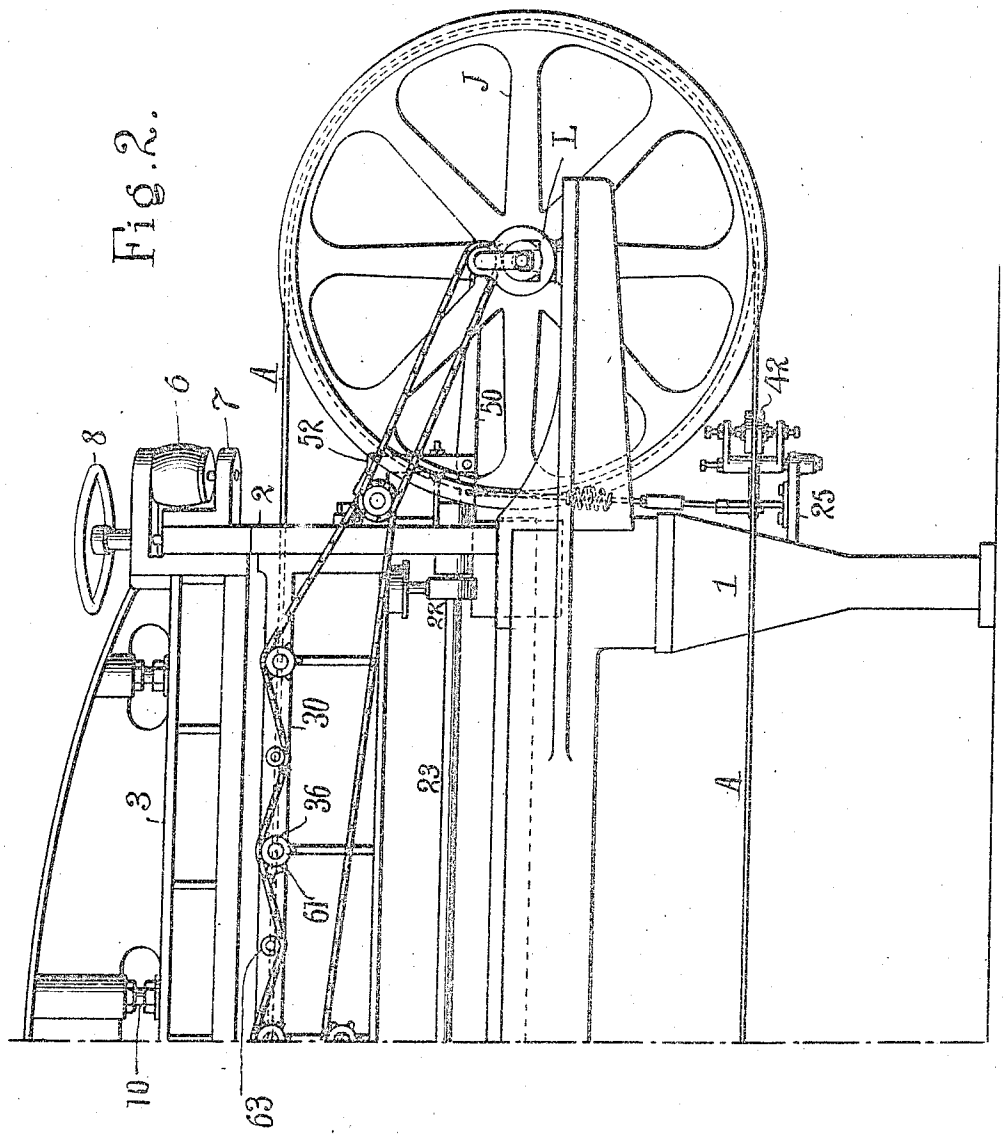
LEATHER SPLITTING MACHINE.

APPLICATION FILED OCT. 9, 1912.

1,075,792. Patented Oct. 14, 1913.

7 SHEETS—SHEET 2.

Fig. 2.




Witnesses:
May T. McGarry
Gertrude V. Porter.

Inventor
William D. Quigley
By his Attorney
Paul Benjamin

W. D. QUIGLEY.

LEATHER SPLITTING MACHINE.

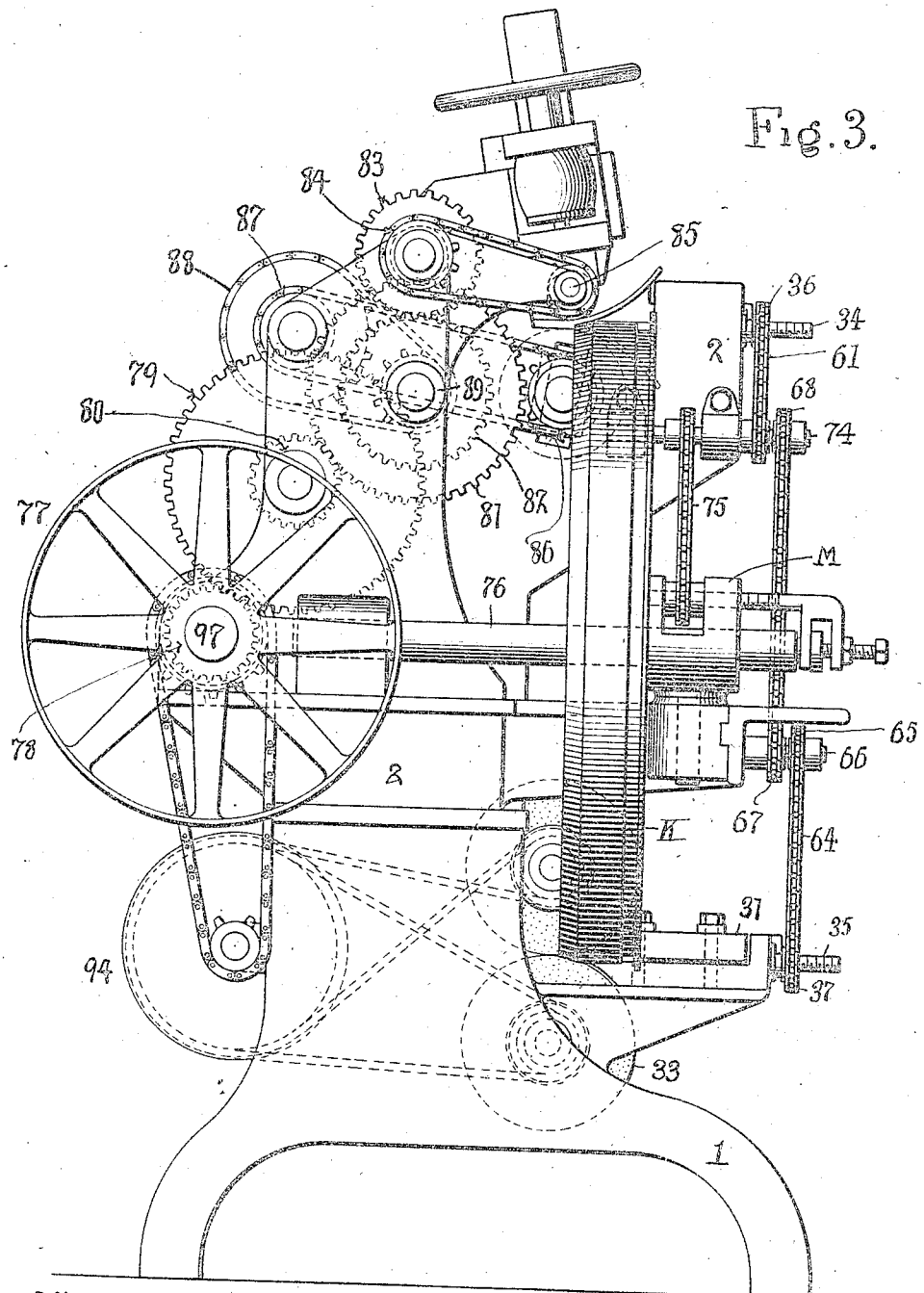
APPLICATION FILED OCT. 9, 1912.

1,075,792.

Patented Oct. 14, 1913.

7 SHEETS—SHEET 3.

Fig. 3.




Witnesses:

May T. McGarry

Gertrude M. Porter

Inventor

William D. Quigley

By his Attorney

David Benjamin

W. D. QUIGLEY.

LEATHER SPLITTING MACHINE.

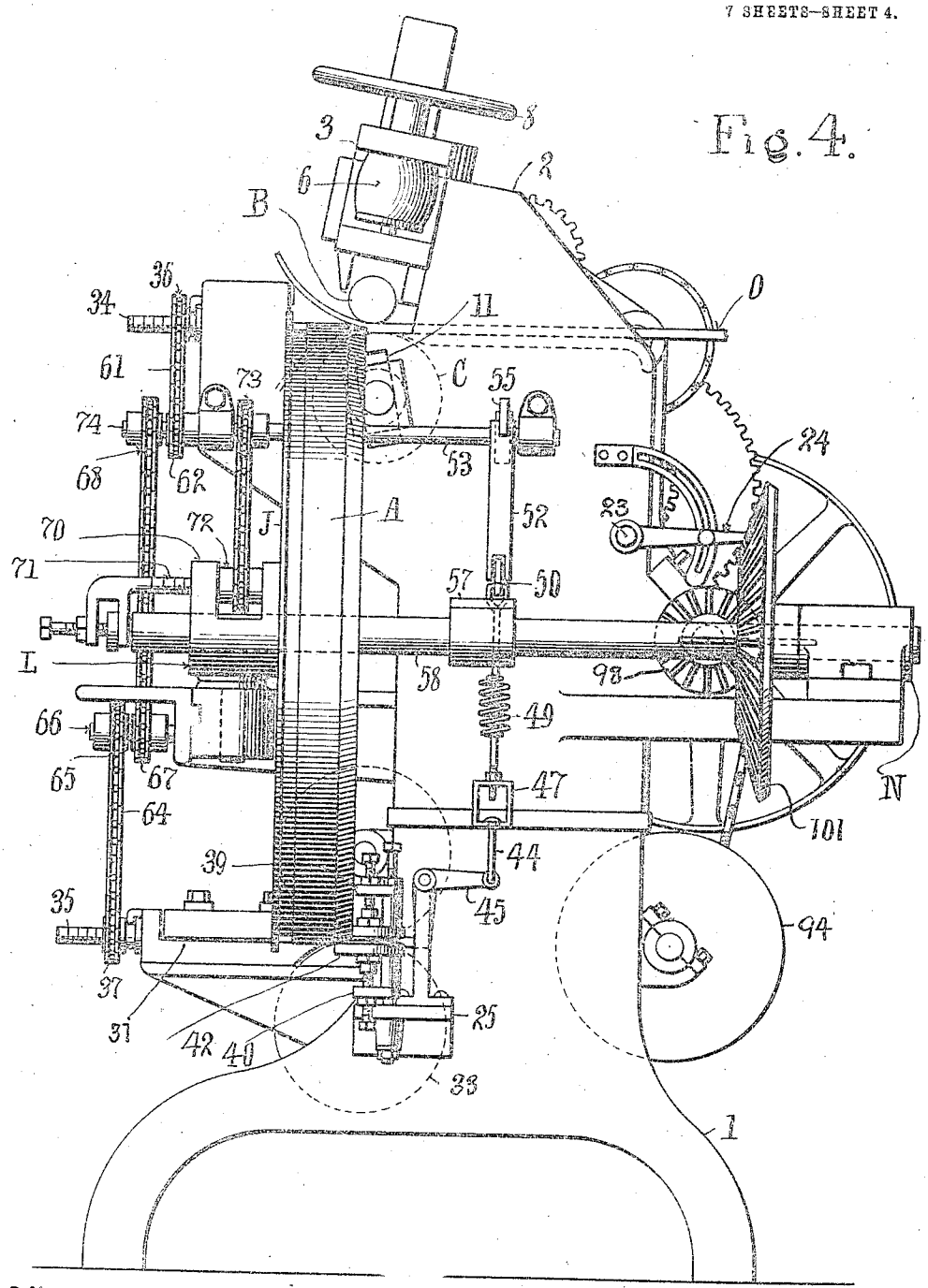
APPLICATION FILED OCT. 9, 1912.

1,075,792.

Patented Oct. 14, 1913.

7 SHEETS—SHEET 4.

Fig. 4.




Witnesses:

May T. M. Garry

Gertrude I. Porter.

Inventor

William D. Quigley

By his Attorney

Carl Benjamin

W. D. QUIGLEY.

LEATHER SPLITTING MACHINE.

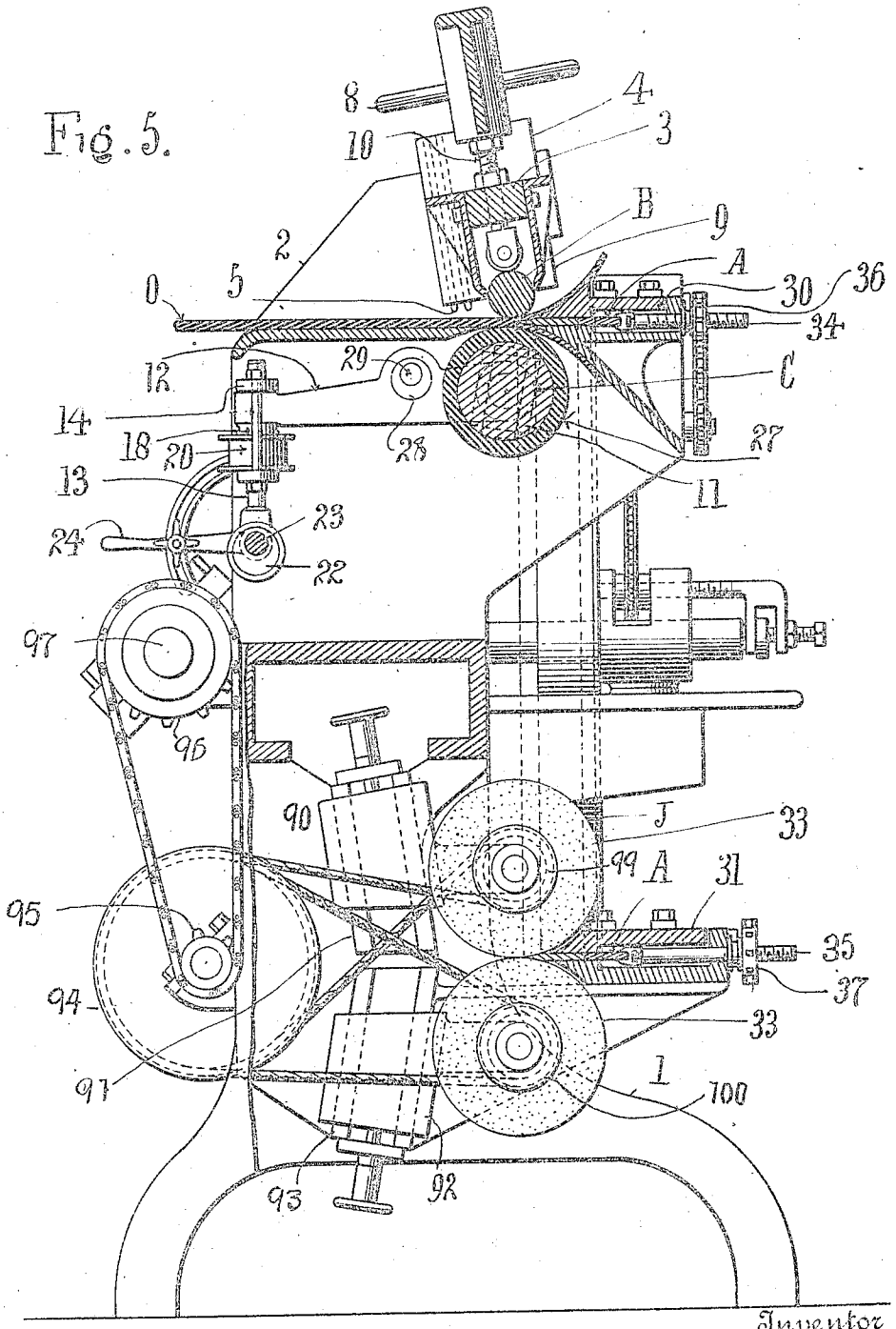
APPLICATION FILED OCT. 9, 1912.

1,075,792.

Patented Oct. 14, 1913.

7 SHEETS—SHEET 5.

Fig. 5.




Witnesses:

Mary T. McCarry

Gertrude T. Porter

Inventor

William D. Quigley

By his Attorney

Carl Bryan

W. D. QUIGLEY.

LEATHER SPLITTING MACHINE.

APPLICATION FILED OCT. 9, 1912.

1,075,792.

Patented Oct. 14, 1913

7 SHEETS—SHEET 6.

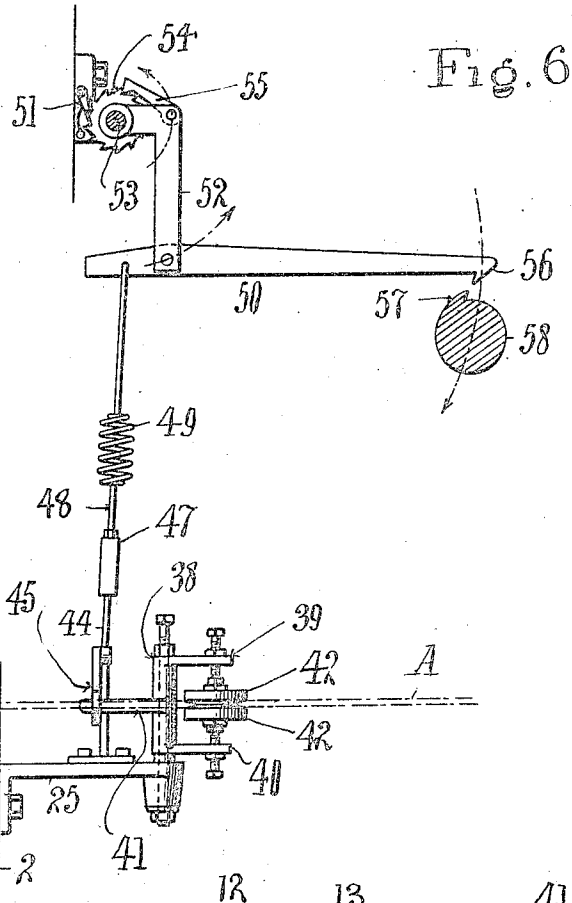
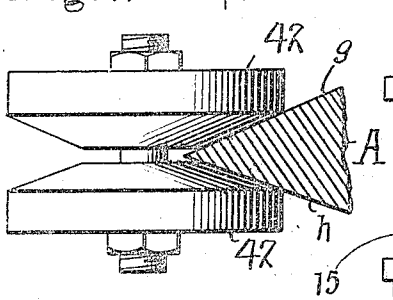



Fig. 6.

Fig. 7.



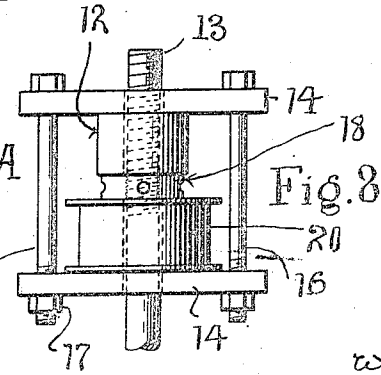




Fig. 8.

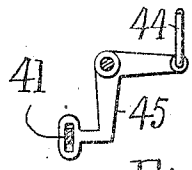



Fig. 9.

Witnesses:
Mary F. McGarry
Gertrude V. Porter.

Inventor
William D. Quigley
By his Attorney
Paul Benjamin

W. D. QUIGLEY.

LEATHER SPLITTING MACHINE.

APPLICATION FILED OCT 9, 1912.

1,075,792.

Patented Oct. 14, 1913.

7 SHEETS—SHEET 7

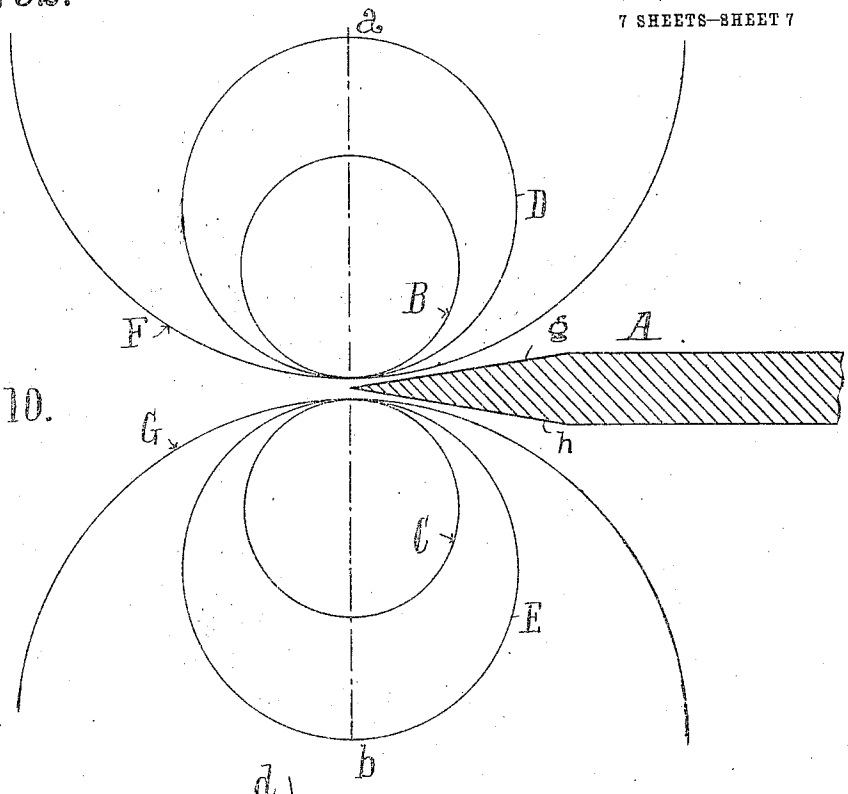



Fig. 10.

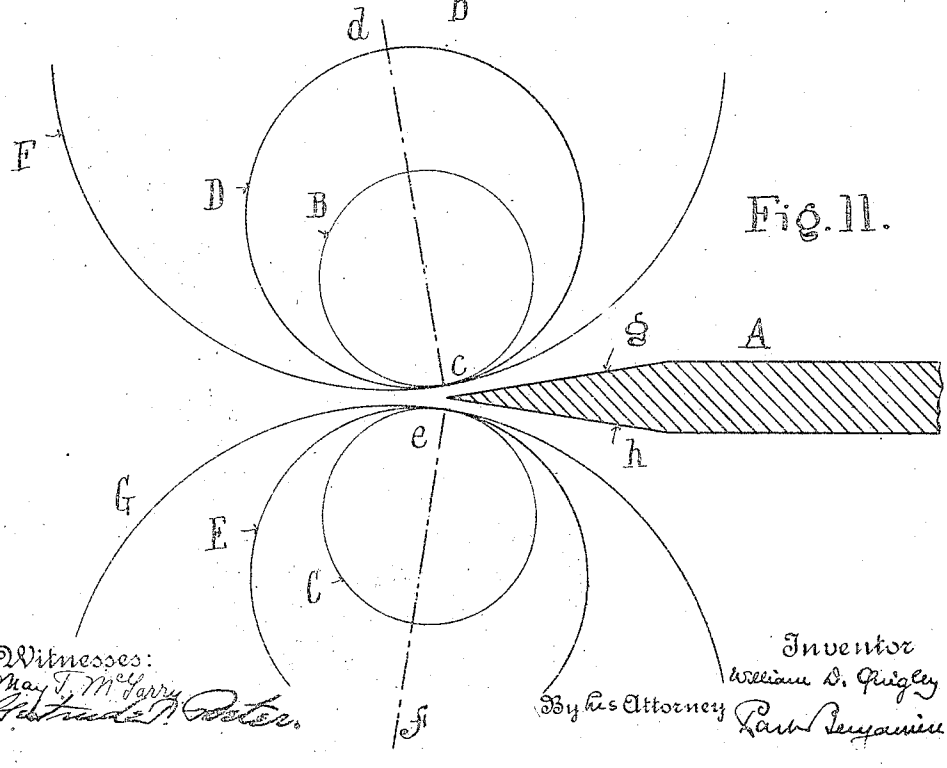



Fig. 11.

Witnesses:

May T. McGarry

Edward D. Coster.

Inventor

William D. Quigley

By his Attorney Louis Benjamin

# UNITED STATES PATENT OFFICE.

WILLIAM D. QUIGLEY, OF EAST BOSTON, MASSACHUSETTS.

## LEATHER-SPLITTING MACHINE.

1,075,792. Specification of Letters Patent. Patented Oct. 14, 1913.

Application filed October 9, 1912. Serial No. 724,799.

*To all whom it may concern:*

Be it known that I, WILLIAM D. QUIGLEY, a citizen of the United States, residing at East Boston, in the county of Essex and State of Massachusetts, have invented a certain new and useful Improvement in Leather-Splitting Machines, of which the following is a specification.

The invention relates to leather-splitting machines, and provides a new arrangement of upper and lower feed rolls, whereby ample clearance is provided to enable the edge of the splitting-blade to be set at or very close to the line of maximum compression of the hide between the rolls, and means whereby the adjusted position of the blade is automatically maintained despite the withdrawal of said edge by reason of the abrasion thereof by the sharpening devices.

The invention further consists in the means for supporting the lower feed roll and for adjusting the same with reference to the splitting-blade, in the construction of the blade, sharpening devices, and in the various combinations and instrumentalities more particularly pointed out in the claims.

In the accompanying drawings Figures 1 and 2 taken together form an elevation of the rear side of the machine. Fig. 3 is an elevation of the left hand end, and Fig. 4 is an elevation of the right hand end, of the machine as shown in Figs. 1 and 2. Fig. 5 is a section on the line $x$, $x$ of Fig. 1. Fig. 6 is a detail view of the controlling mechanism for automatically restoring the blade edge to adjusted position with respect to the feed rolls and sharpening devices. Fig. 7 is an enlarged side elevation of the feeling disks 42. Fig. 8 is an enlarged side elevation of the device for regulating the resiliency of the support for the lower feed roll. Fig. 9 is a detailed view of the bell crank lever 45. Figs. 10 and 11 illustrate the principle of the roll adjustment, hereinafter described.

Similar numbers and letters of reference indicate like parts.

The machine belongs to the type in which the hide, supported on a suitable table, enters between feed rolls and is so carried over the continuously moving blade whereby it is split. As is well understood, the best relation between the cutting edge of the blade and the rolls exists when said edge is set as close as possible to the line of maximum compression of the hide between the rolls. Just to the extent that the blade edge is distant from this line of maximum compression, the hide travels unsupported and therefore has opportunity to depart from a true plane and to become more or less buckled before it is split. The splits are then no longer made of uniform thickness and the number of splits obtainable from a given hide is reduced; with consequent imperfect work and economic loss. The setting of the blade edge with respect to the line of maximum compression is determined by the clearance between the rolls and blade: that is to say, the greater the clearance, the more closely can the edge be set to the line of maximum compression. This clearance in turn depends upon the radius of curvature of the rolls, and the space between them. If the radius of curvature of either or both rolls be increased, other things remaining equal, the clearance will be diminished, and therefore the blade must be re-set to a new position, farther distant from the compression line. Similarly, if one roll be moved toward or from the other, so as to vary the space between the rolls, (as in the case when it is desired to make splits of different thicknesses,) then it becomes necessary to re-set the blade in accordance with the new roll adjustment. The change in radius of curvature of a roll occurs under working conditions, even when no actual adjustment of the roll itself is made. Thus, for example, if a hide be passed between the rolls measuring, say, five millimeters in thickness, and the split to be taken off of the top of that hide is only one millimeter in thickness, then the four millimeters of remaining thickness of the hide will practically increase the radius of curvature of the lower roll to that extent, and will reduce the clearance and so require the blade to be set back from the compression line proportionately. Again, if the lower roll, for example, have an elastic covering which becomes flattened under the pressure transmitted through the hide, again the curvature radius of the flattened part of the roll becomes augmented, with consequent decrease in the clearance, and necessity, as before, for re-setting the blade. All of these conditions occur when the axes of rotation of the two rolls lie in one and the same vertical plane, perpendicular to the plane of the blade.

In Fig. 10 I have illustrated diagrammatically how the clearance space for the blade becomes diminished, as above described, when the radius of curvature of one or both of the rolls is varied. Here A represents the blade, having beveled surfaces *g*, *h* forming the edge. B and C are respectively the upper and lower feed rolls. The dotted line *a*, *b* represents the line of maximum compression of the hide which lies in the vertical plane passing through the axes of rotation of the rolls. The clearance spaces between the rolls B, C and the beveled surfaces *g*, *h* of the blade A are here shown to be wide enough to permit the edge to be brought to the compression line *a*, *b*; but it is obvious that if the blade edge be kept in the same position and the rolls B, C be enlarged, as shown at D, E, then the clearance between rolls and blade will be reduced; while if said rolls be still further enlarged, as shown at F, G, a still further reduction of the clearance will follow; so that it will be necessary to set the blade for a considerable distance back from the compression line *a*, *b* (to the right of the drawing Fig. 10) in order to regain the original amount of clearance. Now this enlargement of the rolls may be required for various reasons, such as to secure a better grip on the hide, or to render the rolls less capable of bending or deformation, and so on. The problem then is, despite enlargement of the rolls or increase of the radius of curvature, no matter how occurring, to maintain a sufficient clearance between rolls and blade without any backward resetting of the blade whatever. At first sight, this problem may seem to be impracticable of solution, because, as I have pointed out, it is affected not merely by direct changes in radius of curvature of the rolls, but by such accidental conditions as the thickness of the hide intervening between the blade and one roll or the other, and also by the automatic departure of the blade edge from the compression line, due to constant wearing away of said edge by the ordinary sharpening devices constantly abrading it while in operation. It will be seen, therefore, that the solution factors are complex, and that they involve not merely an initial relation between blade and rolls, but means coacting with that blade for automatically maintaining that relation despite the grinding away of the edge. For purposes of description, my practical solution of the problem, one embodiment of which is illustrated in the accompanying drawings, may, therefore, be conveniently divided into two parts; namely, the construction whereby a suitable clearance is maintained between the rolls, despite increase in radius of curvature and other conditions hitherto noted, whereby the blade edge may always be placed in the desired proximity to the compression line, and second, in the means whereby the said edge is constantly restored to adjusted position despite its withdrawal therefrom, as by the wearing away of its metal by the usual sharpening devices.

The principle underlying my arrangement of the feed rolls will be best understood from a comparison of Fig. 11 with Fig. 10. Assume the rolls B, C, as before, to be enlarged to the size D, E; but instead of placing the centers of the rolls in the vertical plane represented by compression line *a*, *b*, let them be placed respectively in the converging planes represented by the lines *c*, *d*, and *e*, *f*, each of which planes is located in front of the edge of the blade and is inclined to a plane including the edge and transverse axis of said blade. Preferably these planes are at right angles to the beveled surfaces *g*, *h* which form the edge of the blade. The angle of inclination to the vertical is the same for both planes *c*, *d* and *e*, *f* and may be about 6°. It will be seen that the clearance space between the circular peripheries of the enlarged rolls D, E and the beveled surfaces *g*, *h* of the blade A will not be diminished as in Fig. 10, and that this holds true even if the rolls be enlarged to the sizes F, G. Or, in other words, despite the enlargement of the radius of curvature of the rolls, the clearance above and below the blade will not be diminished, and hence it will not be necessary to move the blade away from the compression line, as in the case of Fig. 10. All that is required, therefore, in order to maintain proper clearance during the splitting operation without re-setting of the blade and under all conditions whether temporary and due to the displacement of the rolls by varying thickness of the hide, or to adjustment of the rolls nearer to or farther from the beveled surfaces of the blade, or to enlargement of radius of curvature of the rolls, is simply to arrange these rolls so that when they are displaced or when their curvature radii vary or are varied from any cause, their axes will move, not in the line of compression *a*, *b*, in the vertical plane, but in converging planes *c*, *d* and *e*, *f*, located as described, and preferably at right angles respectively to the beveled surfaces *g*, *h* of the blade.

The foregoing applies to the machine herein illustrated, in which both the upper and the lower roll are adjustable, as described. I do not limit myself to the construction wherein both rolls are adjustable, since only one of them may be so arranged, any other suitable means for coacting with said adjustable roll to convey the hide to the splitting-blade being provided. In such case, the clearance between the adjustable roll and the blade will be modified as set forth.

I will now describe in detail the means

for supporting the rolls and for causing their axes of rotation to move in the converging planes aforesaid.

1 is the lower or fixed frame of the machine, carrying end standards 2. Extending between the standards is a frame 3, having at its ends plates 4 which support the journals of the upper feed roll B and which have ribs to enter guide-ways 5 on the standards 2. The frame 3 at its ends is extended beyond the standards and is supported on rubber springs 6 resting on brackets 7, Fig. 2. Suitable screws operate by hand-wheels 8 and bearing on the upper edges of the standards serve to adjust frame 3 in its guide-ways. On each side of frame 3 are bolted plates 9, Fig. 5, having their lower edges inwardly inclined, which plates receive the roll B. The upper side of roll B bears against rollers carried by adjusting screws 10 passing through said frame 3. The inclination of the guide-ways 5 corresponds to that of the line *c*, *d*, in Fig. 11, so that the path of movement of the roll B is as described in connection with said figure; namely, in a plane perpendicular to the plane of the upper beveled surface *g* of the blade A.

In order to cause the rotation axis of the lower feed roll C to move in an inclined plane represented by the line *e*, *f* of Fig. 11, I journal said roll at its ends in boxes supported on suitably inclined guide-slots 11, Fig. 4, in standards 2, and I support said boxes on levers 12, pivoted on said standards. One of said levers is shown in Fig. 5. In the end of the long arm of each lever 12 is an opening, through which loosely passes a threaded rod 13, Fig. 8. Said rod also loosely passes through two bars 14, which are connected by the headed bolts 15, 16, threaded to receive nuts 17. On the threaded rod 13 below lever 12 is an adjusting nut 18, below which is a rubber spring 20, the lever and spring bearing respectively on the bars 14. The rod 13 passes loosely through spring 20. The rod 13 at its lower end carries a strap which surrounds a cam 22 on a rock shaft 23, journaled between standards 2, and on said rock shaft is a handle 24, by means of which said shaft may be turned and which may be secured by a clamping nut received in a curved slot in a fixed guide.

The following adjustments are now to be noted: By turning the nut 18, the bars 14, spring 20 and the end of the lever 12 are moved unitedly up or down on the rod 13. In this way I effect the initial setting of the lower feed roll C with respect to the splitting-blade A. By turning the nuts 17, I compress more or less the rubber spring 20. This regulates the resilience of said spring, for the following purpose: The lower feed roll is provided with a covering 27, Fig. 5, of india-rubber or other elastic material. After the initial adjustment of the lower roll with respect to the blade, different thicknesses of hide up to a certain limit may be permitted to pass between the blade and said lower roll, by reason of the yielding of said elastic covering 27, without causing bodily displacement of said lower feed roll. But in case the hide thickness exceeds the limit thus provided for, a downward displacement of the lower feed roll must be allowed. This is controlled by the resilience of the rubber spring 20, which in turn is regulated by the nuts 17, so that the lower feed roll will not begin to move downwardly until the pressure of the hide over and above that required to compress the elastic covering 27 is sufficient to overcome the regulated resistance of spring 20.

The function of the rock shaft 23, cam connected to rods 13, and the handle 24, is to enable the lower feed roll to be dropped down for any desired distance to permit of removal or repairs.

It will be obvious that if the lower feed roll were supported by levers such as 12, mounted on ordinary fixed pivots, its path of movement when bodily depressed against the resilience of spring 20, as above described, would be a curve, and that this would be incompatible with the free sliding movement of its journal boxes in the straight guide-slots 11. This difficulty is avoided by inserting in a circular opening in said lever 12 a disk 28, Fig. 5, free to turn in said opening, and providing in said disk an eccentrically placed aperture for the reception of the pivot pin 29. This expedient permits not only of a turning motion of the lever on its pivot, but also of a longitudinal motion of said lever, sufficient to prevent jamming of the journal boxes in the guide-ways, while moving therein.

The elastic covering 27 on the lower feed roll not only permits varying thicknesses of hide (up to a certain limit, as described,) to pass between the rolls, but when said lower roll is a positively driven roll, as is here the case, it gives to said roll a much more powerful grip on the hide than can be obtained with a metal or other hard roll. Hitherto it has not been found desirable to use positively driven elastic feed rolls, because as I have already pointed out, the compression of and drag upon their yielding surfaces flattens the curvature and so reduces the clearance space between roll and blade, so that the initial setting of roll to blade must in such case be sufficient to allow of ample clearness, despite the maximum flattening of the roll curvature; and that means a certain initial withdrawing of the blade edge from the compression line. With my construction, due to the placing of the rolls

with their axes of rotation in converging planes on the feed side, this curvature flattening does not require any such initial adjustment of the blade, and hence I am enabled to use a positively driven elastic surfaced roll, with this hitherto serious disadvantage eliminated.

I will now describe the devices for restoring the blade edge to normally adjusted position after the same has become withdrawn therefrom through the operation of the machine.

The blade A is of the usual band form, passing over the pulleys J, K. Its upper portion is received in guides or jaws 30, Fig. 5, from which the edge protrudes to enter between the rolls B, C. The lower portion of the blade is received in guides or jaws 31, from which the edge protrudes to enter between the sharpening disks 33. In the upper jaws are a number of setting out screws 34, having their inner ends swiveled in blocks which receive the back of the blade. Similarly, in the lower jaws is a single setting out screw 35, having its end swiveled in a block which also receives the back of the blade. On the screws 34 are sprocket nuts 36. On screw 35 is a sprocket nut 37. By means of screws 34, the working edge of the blade may be adjusted with respect to the line of compression of the hide, and by means of the screw 35 the blade edge may be adjusted with respect to the sharpening disks 33.

I will now describe the means whereby the blade edge is kept automatically in adjusted position between the feed rolls with respect to the compression line.

Referring to Figs. 4, 6, 7 and 9: Pivoted on a bracket 25 projecting from one of the standards 2 is a sleeve 38 having three arms 39, 40, 41. Supported between the arms 39, 40 upon adjustable screws and freely rotating are two feeling disks 42, Fig. 7, separated from one another and having their lower circumferential edges beveled to fit against the beveled surfaces *g*, *h* of the blade A. The actual edge of the blade lies between the disks and does not come in contact with them. The third arm 41 on sleeve 38 extends through a slot in the vertical arm of a bell crank lever 45, Fig. 9, pivoted on a standard on said bracket 25. The other arm of lever 45 is connected to a rod 44 which extends loosely through the lower member of a rectangular frame 47, Figs. 4 and 6, and is headed above said member. A threaded rod 48, adjustably connected to frame 47, is secured to a helical spring 49, which is connected to the short arm of a lever 50. Lever 50 is pivoted to a right angled arm 52 which is loose on a shaft 53 journaled in bearings on the side of standard 2. Fast on shaft 53 is a ratchet wheel 54 with which engages a hook pawl 55 pivoted on arm 52. A spring holding pawl 51 also engages with ratchet wheel 54. On the long arm of lever 50 is a hook 56 which, when suitably depressed, engages with a projection 57 on the shaft 58 of blade pulley J, Figs. 4 and 6, and shaft 58 is journaled in the usual bearings L, N on standard 2. The operation of this mechanism, so far as described, is as follows: The preponderating weight of the long arm of lever 50, acting through the linkage described upon feeling disks 42, causes said disks normally to be pressed resiliently against the blade A, the adjustment then being such that the hook 56 is in the position shown in Fig. 6, and hence out of engagement with the projection 57. If by reason of the grinding away of the beveled surfaces of blade A, or from any other cause, the blade edge becomes withdrawn from its initial adjusted position either with respect to the compression line at the feed rolls, or with respect to the grinding disks, then the blade surfaces against which the disks 42 press tend to recede from said disks, and the disks follow them. The long arm of lever 50 then descends, bringing hook 56 into the path of rotation of projection 57, so that engagement of hook and projection follows. The arm 52 is then drawn to the right of Fig. 6, turning on shaft 53 as a pivot, and the pawl 55 engages with ratchet wheel 54 and moves that wheel ahead one tooth, so turning shaft 53. Because of this turning of shaft 53, a three-fold result follows: first, the blade edge is restored to its original position with respect to the line of compression from which it may have departed by reason of wear and grinding—second, the blade edge is restored to its original position with respect to the sharpening disks, so that they may again operate effectively upon it—and third, inasmuch as both results must be accomplished without sliding the blade across the faces of its supporting pulleys J, K, (which would, of course, involve considerable friction) the pulleys J, K themselves are bodily moved with the blade, and in the same direction. These results are accomplished in the following way:

(*a*) The return of the blade to its original position with respect to the line of compression is effected by simultaneously rotating all of the screws 34 in guides 30. This is done by an endless sprocket chain 61 Fig. 4, which passes over a sprocket pulley 62 on shaft 53 and engages with all of the sprocket nuts 36 on screws 34, by passing alternately over said wheels and under guide rollers 63, Figs. 1 and 2, and over a sprocket wheel 77 on short shaft 74 at the other end of the machine, as shown in Fig. 3. Hence all of said screws 34 acting on the back of the blade push the edge forward and toward the compression line.

(b) The movement of the blade toward the grinding disks 33 is effected by means of adjusting screw 35. The sprocket nut 37 is rotated by a chain 64, Figs. 3 and 4, leading to a sprocket wheel 65 on a short shaft 66, on which is a second sprocket wheel 67, receiving motion from a sprocket wheel 68 on shaft 74.

(c) The blade pulleys are moved bodily in the direction of the above-described movement of the blade, as follows: One of the journal bearings L for pulley shaft 58 has two upwardly extending arms 70, Fig. 4, through which loosely passes the threaded rod 71. On said rod between the arms 70 is a sprocket nut 72, connected by a sprocket chain to a sprocket wheel 73 on shaft 53. The rod is bent downwardly and yoked to engage in a circumferential groove in the pulley shaft 58. Hence when the nut 72 is rotated in proper direction, the shaft 58 and the pulley J carried thereby are moved to the right of Fig. 4. In order to cause the other blade pulley K, Fig. 3, to move simultaneously and in like manner, a third sprocket wheel on the short shaft 74, supported on the standard 2 at the opposite end of the machine Fig. 3, is connected by a sprocket chain 75 to a precisely similar arrangement of nut, sprocket wheel and screw rod associated with the journal bearing M and shaft 76 of said pulley K.

The sequence of the whole compensating operation may now be summed up, as follows: By reason of the wearing away of the blade A, its edge leaves its proper position with respect to the compression line between the rolls B, C, leaves its proper position with respect to the sharpening disks 33, and moves away from the feeling disks 42. The disks 42, however, follow the blade by reason of their constantly maintained pressure thereon, until the hook 56 on lever 50 engages with the projection 57 on the pulley shaft 58. The ratchet wheel 54 is at once operated to turn shaft 53. Shaft 53 then, through sprocket wheel 73 and sprocket nut 72, moves the shaft 58 of pulley J to the right of Fig. 4, and through sprocket wheel 62 and the long sprocket chain 61, which extends across the machine, also rotates short shaft 74 on the opposite end of the machine, Fig. 3, and short shaft 74 by sprocket chain 75 causes a similar movement of the shaft 76 of the other blade pulley K, so that both pulleys J and K—and hence the band blade A supported on them—are moved in the same direction to carry the blade bodily toward the feed rolls B, C and the sharpening disks 33. The long sprocket chain 61 simultaneously operates all the sprocket nuts 36 on the setting out screws 34 which move the upper part of the blade toward the fed rolls. It also, through shaft 74, sprockets 68 and 67, and sprocket wheel 65 on shaft 66, operates through sprocket chain 64 the setting out screw 37, which moves the lower part of the band blade A toward the sharpening disks 33. In this way, the blade is brought back to its normal position with respect to compression line and sharpening disks. But in returning to that normal position the blade pushes back the feeling disks 42 which now, moving in the reverse direction from before, raise the lever 50 out of engagement with the projection 57 on pulley shaft 58 and prevents further rotation of the ratchet wheel 54. I find by actual trial that this device is sensitive to even small amounts of abrasion of the blade, and that when once properly timed and adjusted, it will immediately operate to accomplish the above-stated results.

It is to be observed that the disks 42 are constantly feeling the blade, and that just as soon as the blade, by reason of abrasion or displacement, starts to withdraw from them, they follow it, the lever 50 really acting as a sort of steelyard or scale arm which is constantly weighing the pressure of the blade on the disks, so that as that pressure relaxes the lever tilts by reason of the preponderance of its longer and heavier arm, until the hook 56 on that arm engages with the rotating pulley shaft 58 and holds on until that shaft in its rotation draws the projection 57 from the hook. The pawl 55 then is moved, by the spring 49 acting on the short arm of the lever 50, once more into engaging position.

It will be apparent that the lever 50 by its movement visually indicates the change of position of the edge of the blade, and will continue so to do if the pawl 55 be thrown off so that no motion is transmitted to shaft 53. Where it is desired to use the mechanism actuated by the feeling disks 42 in this way as an indicating device only it will be, of course, necessary to operate by hand the sprockets 36 to move the blade back to normal position.

Both rolls B and C are driven. Power is applied to the first motion or driving pulley 77, Fig. 3, on the shaft 97 of which is a gear 78, which drives gear 79. On the shaft of gear 79 is a gear 80, which engages gear 81: on the shaft of gear 81 is a gear 82, which engages gear 83, on the shaft of which is a sprocket 84, which by chain connects with a sprocket on the knuckle-jointed shaft 85, Fig. 1, of upper feed roll B. Roll C is driven by a sprocket wheel 86 on its shaft actuated by a chain driven by sprocket wheel 87, on the shaft of which is a sprocket wheel 88 driven by a chain from sprocket wheel 89 on the shaft of gears 81 and 82.

The sharpening disks 33 are disposed in different vertical planes, so that they act successively. The upper disk 33 is supported by a shaft journaled in a carriage 90, Fig. 5,

which slides on ways 91 and is adjusted by a hand wheel and screw. Lower disk 33 is supported on a shaft journaled in a carriage 92 which slides on ways 93 and is also adjusted by a hand wheel and screw. On the disk shafts are single-sheaved pulleys 99, 100. Journaled on the frame of the machine is a double-sheaved pulley 94, on the shaft of which is a sprocket wheel 95 connected by chain to sprocket 96 on the shaft 97 of driving pulley 77. The pulleys 99 and 100 are driven from the double-sheaved pulley 94, preferably by an endless belt which lies in the two sheaves of pulley 94 and in the single sheave of each of the pulleys 99 and 100. The band blade pulleys J, K are driven by bevel pinion 98, Fig. 4, also on the shaft 97 of driving pulley 77, which pinion engages with bevel pinion 101 on shaft 58 of blade pulley J, said pinion being keyed to said shaft 58 to permit the longitudinal movement of said shaft in its journals, as already described. It is to be further noted that the hide enters between the rolls under slight pressure at first, and then in proceeding to the splitting-blade, passes the line of maximum compression before being released by the elastic covering of the lower feed roll. When, however, this roll is forced bodily from its initial position, the line of maximum compression changes, by moving away from the blade; but the splitting conditions do not change, because the same cause which displaces the roll—namely, the increased thickness of hide—also compresses the elastic covering which therefore exerts increased pressure upon the hide at the splitting line.

I claim:

1. A leather-splitting machine, comprising feed rolls and a splitting-blade having its edge between said rolls: the axis of rotation of one of said rolls being movable in a plane located in front of the edge of said blade and inclined to a plane including the edge and transverse axis of said blade.

2. A leather-splitting machine, comprising feed rolls and a splitting-blade having its edge between said rolls: the axes of rotation of said rolls being movable in inclined planes located in front of the edge of said blade and converging to a plane including the edge and transverse axis of said blade.

3. A leather-splitting machine, comprising feed rolls and a splitting-blade having a surface beveled to the cutting edge: the axis of rotation of one of said rolls being movable in a plane located in front of the edge of said blade and disposed at a right angle to the plane of said beveled surface.

4. A leather-splitting machine, comprising feed rolls and a splitting blade having on opposite sides surfaces beveled to the cutting edge: the axes of rotation of said rolls being located in front of the edge of said blade and in planes respectively disposed at right angles to the planes of said beveled surfaces.

5. A leather-splitting machine, comprising feed rolls, one of said rolls having its surface everywhere elastic, a splitting blade having its edge between said rolls, and means for resiliently supporting said elastic roll.

6. A leather-splitting machine, comprising feed rolls, one of said rolls having an elastic surface, a splitting-blade having its edge between said rolls, means for resiliently supporting said elastic roll, and means for varying the resiliency of said supporting means.

7. A leather-splitting machine, comprising feed rolls, one of said rolls having an elastic surface, a splitting-blade having its edge between said rolls, means for resiliently supporting said elastic roll, and means for adjusting said elastic roll with respect to said blade.

8. A leather-splitting machine, comprising a frame, upper and lower feed rolls, a splitting-blade having its edge between said rolls, a lever pivoted to said frame and supporting on one arm said lower feed roll, resilient means coacting with the opposite arm of said lever for opposing depression of said lower roll, and means for guiding the axis of rotation of said lower roll in a plane located in front of the edge of said blade and inclined to a plane including the edge and transverse axis of said blade.

9. A leather-splitting machine, comprising a frame, upper and lower feed rolls, a splitting-blade having its edge between said rolls, a lever pivoted to said frame and supporting on one arm said lower feed roll, resilient means coacting with the opposite arm of said lever for opposing depression of said lower roll, and means for guiding the axis of rotation of said lower roll in a plane located in front of the edge of said blade and inclined to a plane including the edge and transverse axis of said blade, the said lever being longitudinally movable on its pivot to permit said roll axis to travel in said inclined plane.

10. A leather-splitting machine, comprising a frame, upper and lower feed rolls, a splitting-blade having its edge between said rolls, a lever supporting on one arm said lower feed roll, a loose circular disk having an eccentric opening and seated in said lever, a fixed pivot on said frame received in said opening, means for guiding the axis of rotation of said lower roll in a plane located in front of the edge of said blade and inclined to a plane including the edge and transverse axis of said blade, and resilient means coacting with the opposite arm of said lever for opposing depression of said lower roll.

11. A leather-splitting machine, comprising a frame, a splitting-blade, upper and lower feed rolls, a lever pivoted to said frame and supporting on one arm said lower feed roll and having an opening in its opposite arm, a threaded rod secured at its lower end to a fixed abutment and loosely passing through said opening, bars loose on said rod and disposed respectively above and below said lever arm, bolts connecting said bars, a nut on said rod below said arm, and a spring interposed between said nut and said lower bar.

12. A leather-splitting machine, comprising a frame, a splitting-blade, upper and lower feed rolls, a lever pivoted to said frame and supporting on one arm said lower feed roll and having an opening in its opposite arm, a threaded rod secured at its lower end to a fixed abutment and loosely passing through said opening, bars loose on said rod and disposed respectively above and below said lever arm, threaded bolts connecting said bars, nuts on said bolts, a nut on said rod below said arm, and a spring interposed between said nut and said lower bar.

13. A leather-splitting machine, comprising feed rolls, a splitting-blade having its edge between said rolls, means for adjusting said blade with respect to the line of maximum compression of the hide between said rolls, and automatic means controlled by the withdrawal of the edge of the blade away from said rolls for operating said adjusting means to restore the edge of said blade to normal position.

14. A leather-splitting machine, comprising feed rolls, a splitting-blade having its edge between said rolls, a sharpening device for said blade, means for adjusting said blade with respect to said sharpening device, and automatic means controlled by the withdrawal of the edge of the blade away from said sharpening device for operating said adjusting device to restore said edge to normal position.

15. A leather-splitting machine, comprising feed rolls, an endless band splitting-blade having its edge between said rolls, pulleys supporting said blade, means for adjusting said blade with respect to the line of maximum compression of the hide between said rolls, means for adjusting said blade with respect to said sharpening device, and automatic means controlled by the withdrawal of the edge of the blade from normal adjusted position for operating both of said adjusting means to restore said blade edge to said normal position.

16. A leather-splitting machine, comprising feed rolls, an endless band splitting-blade having its edge between said rolls, pulleys supporting said blade movable in the direction of their axes of rotation, a sharpening device for said blade, means for independently adjusting parts of said blade with reference respectively to said rolls and to said sharpening device, and automatic means controlled by the withdrawal of the edge of said blade from normal adjusted position for operating both of said adjusting means to restore said blade edge to said normal position.

17. A leather-splitting machine, comprising feed rolls, a splitting-blade, means for adjusting said blade with respect to the line of maximum compression of said hide between said rolls, a member supported in resilient contact with the cutter edge of said blade, and means operated by the movement of said member due to the withdrawal of said edge therefrom for controlling said adjusting means to restore said blade edge to normal adjusted position.

18. A leather-splitting machine, comprising a splitting-blade, a sharpening device for said blade, means for adjusting said blade with respect to said sharpening device, a member supported in resilient contact with the cutting edge of said blade, and means operated by the movement of said member due to abrasion of and consequent withdrawal of said edge therefrom for controlling said adjusting means to restore said blade edge to normal adjusted position.

19. A leather-splitting machine, comprising feed rolls, an endless band splitting-blade, pulleys therefor, shafts for said pulleys, means for adjusting said blade with respect to the line of maximum compression of the hide between said rolls, mechanism, normally disconnected, for transmitting motion from one of said pulley shafts to said adjusting means, a member supported in resilient contact with the cutting edge of said blade, and means operated by the movement of said member due to the withdrawal of said edge therefrom for establishing mechanical connection in said transmitting mechanism and thereby causing motion to be transmitted from said pulley shaft to said adjusting means to restore said blade edge to normal adjusted position.

20. A leather-splitting machine, comprising feed rolls, an endless band splitting-blade, pulleys therefor, shafts for said pulleys, means for moving said pulleys in the direction of their axes of rotation, means for adjusting said blade with respect to the line of maximum compression of the hide between said rolls, means for adjusting said blade with respect to said sharpening device, a movable member supported in resilient contact with the cutting edge of said blade, mechanism, normally disconnected, for transmitting motion from one of said pulley shafts to said several pulley

moving and blade adjusting means, and means operated by the movement of said member due to the withdrawal of said edge therefrom for establishing mechanical connection in said transmitting mechanism and thereby causing motion to be transmitted to said several pulley moving and blade adjusting means to restore said blade edge to normal adjusted position.

21. A leather-splitting machine, comprising feed rolls, an endless band splitting-blade, supporting pulleys therefor, shafts for said pulleys, means for moving said pulleys in the direction of their axes of rotation, means for adjusting said blade with respect to the line of maximum compression of the hide between said rolls, a sharpening device for said blade, means for adjusting said blade with respect to said sharpening device, a rotatable shaft, mechanism for transmitting motion from said shaft to said several pulley moving and blade adjusting means, mechanism, normally disconnected, for transmitting motion from one of said pulley shafts to said last-named shaft, a member supported in resilient contact with the cutting edge of said blade, and means operated by the movement of said member due to the withdrawal of said edge therefrom for establishing mechanical connection in said last-named transmitting mechanism and thereby causing motion to be transmitted to said several pulley moving and blade adjusting means to restore said edge to normal adjusted position.

22. A leather-splitting machine, comprising a splitting-blade, an upper feed roll, and a lower feed roll having an elastic surface: the axis of rotation of said lower feed roll being movable in a plane located in front of the edge of said blade and inclined to a plane including the edge and transverse axis of said blade.

23. A leather-splitting machine, comprising a splitting-blade, an upper feed roll, and a lower feed roll having an elastic surface, the axis of rotation of said lower feed roll being movable in a plane located in front of the edge of said blade and inclined to a plane including the edge and transverse axis of said blade, and means operating upon the withdrawal of the edge of said blade from said rolls for moving said blade to restore said edge to normal position with respect to the line of maximum compression of the hide between the rolls.

24. A leather-splitting machine, comprising a splitting-blade having beveled surfaces forming an edge, a movable member held in pressing contact against said beveled surfaces of said blade, means actuated by the movement of said member in one direction due to withdrawal of said blade surfaces for moving said blade in the opposite direction to restore said edge to normal position.

25. A leather splitting machine comprising a splitting blade, feed rolls, and means controlled by said blade for indicating the position of the cutting edge thereof with respect to said rolls.

26. A leather splitting machine comprising a splitting blade, feed rolls, and means controlled by the abrasion displacement of the cutting edge of said blade for indicating the position of said edge with respect to said rolls.

27. A leather splitting machine comprising a splitting blade, feed rolls, a movable member held in pressing contact against the cutting edge portion of said blade, and means actuated by said member for indicating the position of said edge.

28. A leather splitting machine comprising a splitting blade, feed rolls, a movable member held in pressing contact against the cutting edge portion of said blade, and a pivoted index arm actuated by said member for indicating the position of said edge.

29. A leather-splitting machine, comprising feed rolls, a splitting-blade having its cutting edge between said rolls, a movable member held in pressing contact against a beveled surface of said blade adjacent said edge, means actuated by the movement of said member due to the withdrawal of said blade surface to indicate the position of said edge of said blade, and means for restoring said edge to normal position.

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

WILLIAM D. QUIGLEY.

Witnesses:

GERTRUDE T. PORTER,

MAY T. MCGARRY.