

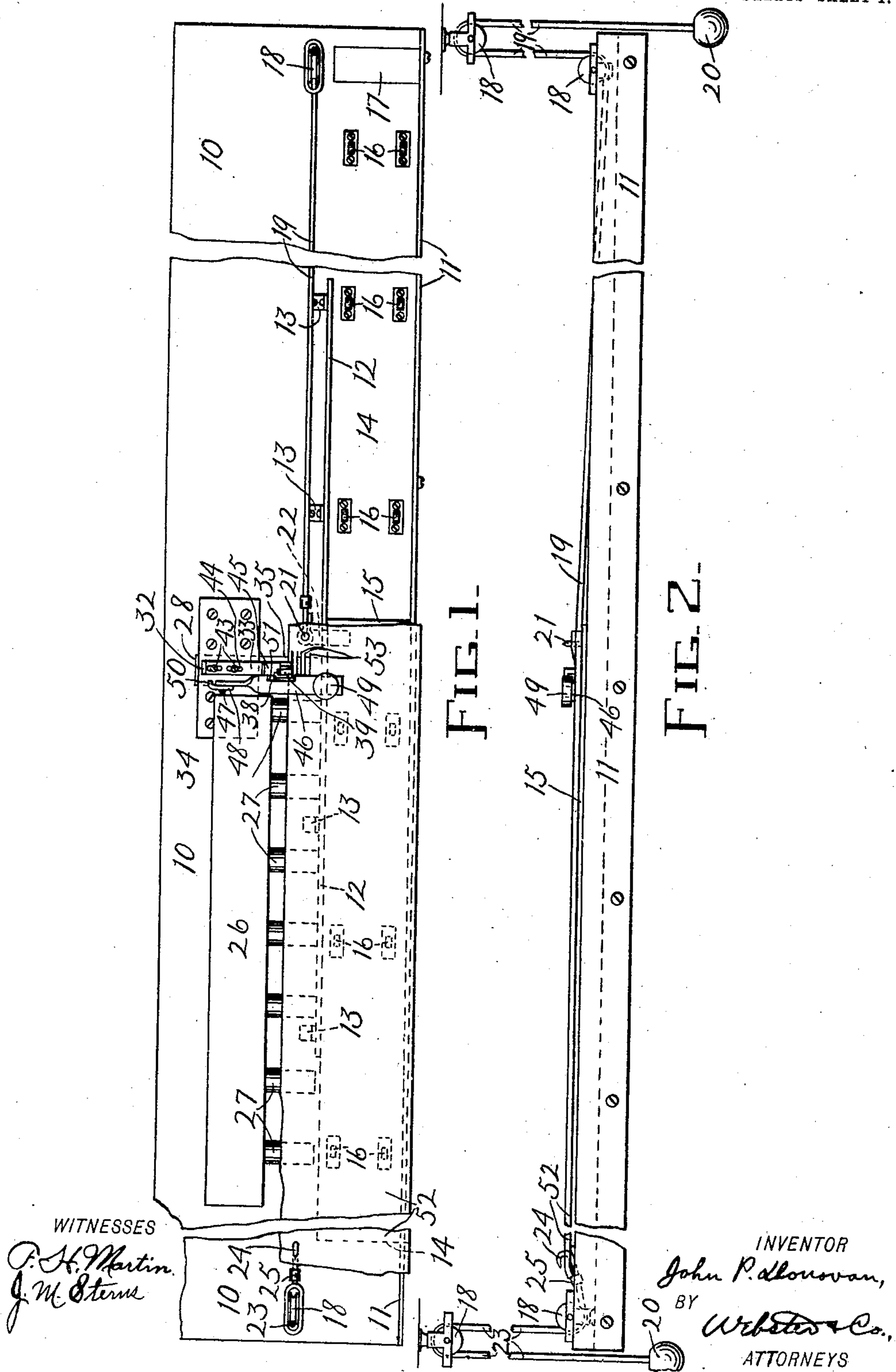
No. 865,686.

PATENTED SEPT. 10, 1907.

J. P. DONOVAN.
BEVEL STRING CUTTING MACHINE.

APPLICATION FILED MAY 14, 1907.

2 SHEETS—SHEET 1.



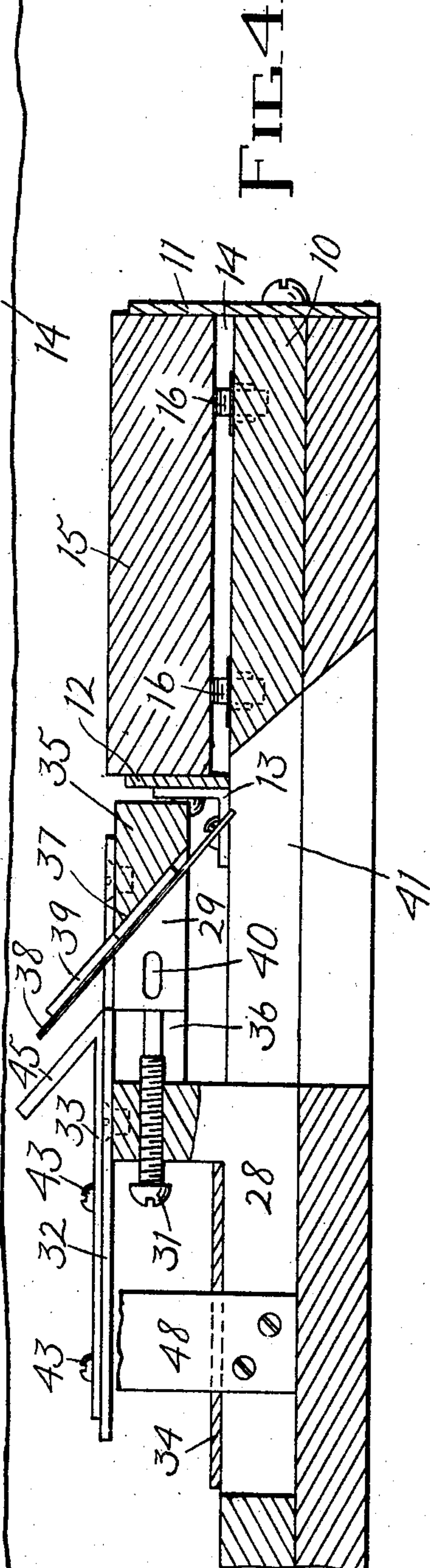
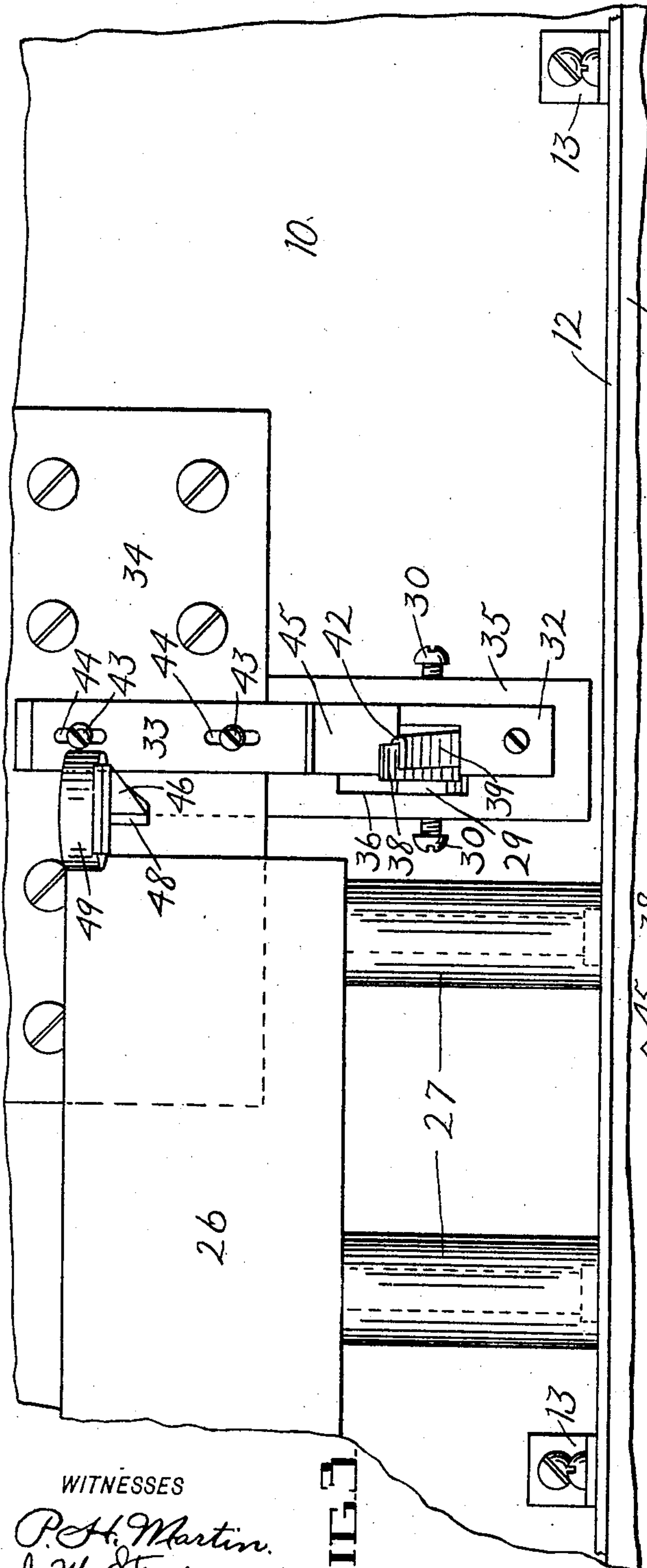
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2 SHEETS—SHEET 2.



WITNESSES
P. H. Martin.
J. M. Sterne

FIG. 3

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UNITED STATES PATENT OFFICE.

JOHN P. DONOVAN, OF WESTFIELD, MASSACHUSETTS, ASSIGNOR TO UNITED STATES WHIP COMPANY, OF WESTFIELD, MASSACHUSETTS, A CORPORATION OF MAINE.

BEVEL-STRING-CUTTING MACHINE.

No. 865,686.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed May 14, 1907. Serial No. 373,599.

To all whom it may concern:

Be it known that I, JOHN P. DONOVAN, a citizen of the United States of America, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Bevel-String-Cutting Machine, of which the following is a specification.

My invention relates to improvements in machines for cutting rawhide into strips called strings as a preliminary step in the manufacture of rawhide whip centers or cores, such strings being subsequently twisted and otherwise prepared to fit them for the purpose for which they are intended; and said invention comprises a properly positioned knife and means to hold and support the hide during the cutting process, together with such auxiliary parts or members as may be required to render the machine efficient, all as hereinafter set forth.

Different parts of the same hide usually vary more or less in thickness in consequence of which the strings cut therefrom vary in size, and it becomes necessary to grind off the surplus portions of the cores made from the larger strings in order to make these cores of the same size as these into the formation of which the smaller strings enter, thus entailing a loss in time, labor, and material; and the primary object of my invention is to avoid this loss and obtain strings which can be made into cores which are substantially uniform in size with those formed out of the strings taken from the thinner parts of the hide. This result is obtained by providing a machine to bevel two opposite sides of the string when cut. Strings thus beveled can be twisted to better advantage and with closer or tighter convolutions out of less stock than when cut in substantially rectangular shape in cross-section in the manner that strings from the thinner portions of the hide are cut and as those from the thicker portions have been cut heretofore, so that there is a saving both in the labor of grinding and in the matter of waste.

A further object of my invention is to provide a machine which materially simplifies the operation of cutting up hides, and in the practical use of which no great amount of skill or experience is necessary as is the case when the work of cutting hides into strings is done entirely by hand. The machine can be employed for cutting up whole hides, if desired, instead of exclusively for the thick parts of the same.

My machine is simple both in construction and operation, and can be adjusted to cut different sizes or widths of strings. During the cutting operation the bevel of the strings can be varied so that the cores made therefrom will be tapered as much or as little as is required.

Although particularly designed to cut strings for whip cores, I do not wish to limit my invention to this field of operation, since it may be employed to cut

strings which are adapted and intended to be utilized in other lines of manufacture.

I attain the objects and secure the advantages above pointed out by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the machine with a hide in position ready to have a string cut therefrom, portions of the table and other members being broken out; Fig. 2, a front elevation of the machine as it appears in the first view; Fig. 3, an enlarged plan view of the knife holder and adjacent parts, one of such parts, the weighted arm which prevents the hide from slipping up off of the knife during the cutting operation, being shown in its elevated position, and, Fig. 4, an enlarged cross-section through that part of the table which directly supports the knife holder, and through the hide carrier and the guides therefor, looking toward the right, said holder being in partial section longitudinally.

Similar figures refer to similar parts throughout the several views.

The machine consists generally of a suitable table which may be supported on legs or in any other convenient manner, a knife holder on the table about midway between the ends thereof, a knife in said holder, a carrier for the hide arranged to reciprocate on said table in front of said holder, means co-acting with said carrier to secure the hide in place while being cut and to assist in operating the carrier, and supporting means which are preferably revoluble for that portion of the hide which extends beyond the carrier at the back and is adjacent to the knife. These together with other parts which will be subsequently mentioned go to make up a practical machine which is efficient and satisfactory, nevertheless, I do not desire to be restricted to the construction herein shown and described, inasmuch as many changes of minor importance may be made without departing from the nature of my invention or going outside of the scope of my claims.

Referring to the drawings it will be observed that a table 10, without its legs or other supporting members, is shown, such table in the present case being made of two layers of boards. Along the front edge of this table is a vertical guide 11, and rising from said table behind said guide is another guide 12 which may be shorter than the first. The guide 11 is held in place against the front edge of the table by screws, and the guide 12 is held in place by angle-irons 13 screwed thereto and to the top of the table. The two guides are of the same height and so spaced apart and positioned as to form with that part of the table which is between a runway 14 for a hide carrier 15 which is adapted to be reciprocated practically the whole length of the table, said runway in reality extending beyond both ends of the guide 12 as herein shown.

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The carrier 15 is mounted on anti-friction rolls 16 set into the table 10 at intervals along the runway 14. A stop block 17 for the carrier 15 is provided on the table at the right-hand end of the runway. On the table back of the block 17 is a sheave 18 and above this is a second sheave 18 suspended from the ceiling. A cord 19, having a weight 20 at its free end, passes over the upper sheave and under the lower sheave to a pin 21 projecting upward from a lug 22 extending rearward from the carrier 15 near the right-hand back corner of said carrier.

At the opposite or left-hand end of the table 10 and depending from the ceiling above are two more sheaves 18 for a weighted cord 23 arranged in the same manner as is the cord 19 except that the end of said cord 23 which emerges from beneath the lower sheave has a hook 24 attached thereto. A stop piece 25 is placed on the cord 22 between the hook 24 and the adjacent sheave 18 to prevent the weight 20 at the other end of said cord from pulling said hook beneath said sheave when the hook is inactive, so that the latter is thus always retained in position ready for use.

The two weights 20 serve to keep the hide stretched or under tension while being cut into strings, as presently will be made to appear.

Behind the runway 14 and parallel therewith, starting from the transverse center of the table 10 or near such center and extending to the left some little distance, is a bar 26 which is securely fastened to the top of said table. A series of idler rollers 27 is located between the bar 26 and the runway 14, such rollers being mounted on studs projecting forward from the front edge of said bar, in the usual and well-known manner. The office of the rollers 27 is to facilitate the movement of the hide on and with the carrier and to prevent such hide, which is cut while wet, from adhering to the table, as it would be liable to do in the absence of something of this kind, and thus interfering with the proper traction and cutting of the same. These rollers will be referred to again when the description of the complete operation of the machine is reached.

I will next describe the knife holder which is situated approximately at the transverse center of the table 10 adjacent to the right hand end of the bar 26 and behind the runway 14. Such holder comprises an angle-iron 28, a wedge block 29, means for fastening said block in position and for releasing the same, (which means in the present instance consists of two screws 30 and a third screw 31), and a bed-plate 32 for an adjustable string guide 33. The back terminal of the angle-iron 28 is let into a recess in the table, and a flat plate 34 is fastened to the top of said table and to the top of such terminal, over which latter said plate extends, to hold said angle-iron in place. The angle-iron extends upward at the front end of the aforesaid back terminal, and then projects forward nearly to the guide 12 to form an arm 35. The tops of the arm 35 and the carrier 15 are on approximately the same level. The arm 35 has a vertical slot 36 therein the front end 37 of which is beveled from above downward and forward at substantially the angle which it is desired to give the beveled sides of the strings. The slot 36 is for a knife 38, a stiffener 39 and the wedge block 29. The front end of the block 29 is beveled at the same angle as that of the end 37 of the slot 36.

The screws 30 are tapped into the sides of the arm 35 and pass through such sides into engagement with the sides of the block 29, an indentation 40 being provided in each side of the block to receive the inner end of the corresponding screw; thus such block is held in the slot 36 and permitted to be forced forward therein by the screw 31 which is tapped into the rear end of said arm and passes through such end into engagement with the rear end of said block. The wedge block can be removed from the slot at any time by loosening the screws 30 sufficiently to disengage the block. When the block is forced forward by the screw 31 it binds the knife 38 and the stiffener 39 between itself and the end 37 of the slot and securely holds said knife in position to do its work. Upon loosening the screw 31 the block can be pushed back to release the knife and stiffener which latter two can then be removed from the slot 36 either from above or below, but preferably from below. A slot 41 is provided in the table 10 below the arm 35 to give access to the knife and block from below. When properly positioned the knife should be so arranged that it projects above the top of the arm 35 far enough to cut through the thickest hide with which it will be used.

The knives employed in my machine are generally very thin, for which reason I provide the stiffener 39 which is simply a flat plate or blade adapted to lie against the front side of the knife between it and the adjacent end of the slot 36 and to support that part of the knife which extends above the arm 35 so that it will not bend or break when under the strain produced during the cutting operation. The knife is arranged with its cutting edge at the left, and the stiffener is preferably provided with a flange 42 on the right-hand edge against which the dull edge of said knife is received, thus affording additional support to the knife. If a knife is employed which is of such thickness or stiffness that it can withstand the strain put upon it during the cutting operation without yielding, the stiffener may be dispensed with.

The string guide 33 is attached to the bed-plate 32 by means of screws 43 which pass through slots 44 in said guide into threaded engagement with said plate and the guide has at its front end an upwardly extending and rearwardly inclined guide piece 45, the angle of such piece being the same as that of the knife 38. The space between the knife and the guide piece 45 determines the width of the strings, and such width may be increased or decreased by loosening the screws 43 and moving the guide farther away from or nearer to said knife, after which said screws are tightened again, consequently the guide serves also in the capacity of a gage.

At the left of the knife holder is an arm 46 having one end pivoted at 47 to a lug 48, rising from one side of the rear terminal of the angle-iron 28, and provided at the other end with a weight 49. An ear 50, Fig. 1, extending from the back edge and to the right of the lug 48, lies in the path of the arm 46, when said arm is raised or turned up into its perpendicular and inoperative position, and receives the same just after it passes the center of gravity to hold it upright until the time comes to swing the arm down into an approximately horizontal position once more across the hide being cut. The arm is notched at 51 to allow it to bear on the hide

in front of the knife where its services are required to prevent the hide from working up on the knife and so off of the same during the cutting operation.

The operation of the machine as a whole is as follows:

5 A hide, or the middle section of a hide in this case, represented at 52 in Figs. 1 and 2, is fastened in place by impaling the butt end of such section on the pin 21 and by fastening the hook 24 through the opposite end of said section, the carrier 15, which was in contact
10 with the stop block 17, having been moved along the runway 14 to the left for the purpose. Although the right-hand weight 20 is now elevated it still counterbalances the left-hand weight and so the hide is under tension from the weights and it remains under such
15 tension, as the carrier is reciprocated and said weights alternately rise and fall, throughout the entire operation. The weights stretch the hide, as already stated, but one counteracts the other so far as the direct influence on the carrier and hide is concerned, hence the
20 carrier and hide can be actuated as easily in one direction as in the other. After the hide 52 has been secured on the machine as explained, a number of short slits 53, Fig. 1, are cut with a knife by hand in the butt end of said hide parallel with the back edge of the same
25 a little way from the right-hand end. The slits 53 are so spaced apart as to correspond with the proper widths of the strings. Now that portion of the hide which is adjacent to the knife 38 is lifted over said knife and brought down, with the latter in the rearmost slit 53.
30 Next the weighted arm 46 is turned down onto the hide for the reason given above. And finally the carrier and the hide are actuated to the right until said hide clears the knife, thus cutting the first string as said hide is drawn beneath the arm 46 against the sharp
35 edge of the knife 38. The first and last strings will each have only one beveled side, but they may be utilized for smaller cores. The carrier 15 and the hide 52 are next moved to the left again, after elevating the arm 46, the hide is manipulated to get the knife 38
40 into what was before the second slit 53, but which became the first slit upon the formation of the first string, said arm is lowered, and said carrier and hide are a second time actuated to the right as far as is necessary to form the second string. This string is beveled on
45 both sides, the back side having been beveled by the previous operation and the front side by the operation just completed, and said string is of the proper width which corresponds with the amount of separation between the knife 38 and the guide piece 45. It should
50 be noted in passing that the distance between each pair of slits 53 is about equal to the space between the aforesaid knife and guide or gage piece. These several acts are repeated until the entire section of hide 52 has been cut into strings, it being necessary from time to
55 time, however, to make additional slits 53 and to attach the hide at new points to the carrier pin and the hook, as it is cut away from the back. If the newly formed strings as they accumulate get in the way of the operator before the hide has been all cut up, that part
60 of the butt to which they are still attached can be severed and removed, and in any event these butt connections must all be severed finally in order to complete the string-forming operation. By grasping a
65 string during the cutting process, after it is of sufficient length for the purpose, and drawing it upward and

rearward more or less the amount of bevel will be increased with the result, provided the action be done properly, that cores subsequently manufactured from such strings will be larger at the butt than at the other end—in other words, they will taper. This is due to
70 the fact that the increased bevel produces closer convolutions in the string when the latter is twisted.

It will be seen that the back part of the hide on the machine, in which is included the part cut each time, projects behind the carrier 15, and it is to support such
75 overhanging portion without offering an excessive amount of resistance thereto that the rollers 27 are provided, said portion of the hide riding on said rollers as each string is cut. As the hide is moved with the carrier to the right the cord 23 is drawn by the hook in
80 the same direction from beneath the sheave 18 at this end of the table, the weight 20 at the other end of such cord rising meanwhile; and this cord affords a much more convenient and better holding means for the hide
85 at the end which receives said hook than would be afforded by some rigid means, as by fastening this end of the hide to the carrier for example.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a bevel-string cutting machine, with reciprocating supporting means for a hide and securing means for the ends of such hide, of a knife and means to support the same at an incline behind said supporting means for the hide. 90

2. The combination, in a bevel-string cutting machine, with a knife, means to support such knife at an incline, and a string guide having an inclined part adjacent to but out of contact with said knife, of reciprocating supporting and securing means for a hide in operative relation to the knife and guide. 95

3. The combination, in a bevel-string cutting machine, with a knife, means to support such knife at an incline, and an adjustable string guide or gage having an inclined part adjacent to but out of contact with said knife, of reciprocating supporting and securing means for a hide in operative relation to the knife and guide or gage. 100

4. The combination, in a bevel-string cutting machine, with a suitable table, a knife holder on such table, such holder having a slot therein beveled at one end, a knife in such slot against the beveled end thereof, and means to retain such knife in place, of reciprocating supporting and securing means for a hide on said table in operative relation to said knife. 110

5. The combination, in a bevel-string cutting machine, with a suitable table, a knife holder on such table, such holder having a slot therein beveled at one end, a knife in such slot against the beveled end thereof, means to retain such knife in place, and a string guide on said holder behind said knife, of reciprocating supporting and securing means for a hide on said table in operative relation to the knife. 115

6. The combination, in a bevel-string cutting machine, with a suitable table, a knife holder on such table, such holder having a slot therein beveled at one end, a knife in such slot against the beveled end thereof, means to retain such knife in place, and a string guide or gage adjustably mounted on said holder behind said knife, of reciprocating supporting and securing means for a hide on said table in operative relation to the knife and guide or gage. 120

7. The combination, in a bevel-string cutting machine, with a suitable table, a knife holder on such table, such holder having a slot therein beveled at one end, a knife in such slot against the beveled end thereof, a wedge block also in such slot, and means to force said block against said knife, of reciprocating supporting and securing means for a hide on said table in operative relation to the knife. 125

8. The combination, in a bevel-string cutting machine, with a suitable table, a knife holder on such table, such holder having a slot therein beveled at one end, a knife 130

- and a stiffener therefor in such slot against the beveled end thereof, and means to retain such knife and stiffener in place, of reciprocating supporting and securing means for a hide on said table in operative relation to the knife.
- 5 9. The combination, in a bevel-string cutting machine, of a knife and means to support the same at an incline, reciprocating supporting and securing means for a hide in operative relation to said knife, and means to hold down the hide while being cut in contact with the knife.
- 10 10. The combination, in a bevel-string cutting machine, of a knife and means to support the same at an incline, reciprocating supporting and securing means for a hide in operative relation to such knife, and a pivotally mounted weighted arm adapted to be turned down across the hide adjacent to said knife.
- 15 11. The combination, in a bevel-string cutting machine, with a suitable table provided with a runway, a hide carrier arranged to reciprocate under tension in such runway, and a hook also under tension arranged to coact with said carrier, of a knife behind said runway in operative position relative to the carrier.
- 20 12. The combination, in a bevel-string cutting machine, with a suitable table provided with a runway, a carrier arranged to reciprocate under tension in such runway and adapted to have one end of a hide attached thereto, means of attachment for the other end of said hide, and supporting means for the hide behind said runway, of a knife located in line with said supporting means behind the runway in operative position relative to the carrier.
- 25 13. The combination, in a bevel-string cutting machine, with a suitable table provided with a runway, a carrier arranged to reciprocate under tension in such runway and adapted to have one end of a hide attached thereto, means of attachment for the other end of such hide, and a series of supporting rollers for the hide behind said runway, of a knife located in line with said rollers behind the runway in operative position relative to the carrier.
- 35 14. The combination, in a bevel-string cutting machine, with a suitable table provided with a runway, a carrier arranged to reciprocate in such runway and adapted to have one end of a hide attached thereto, suitable sheaves, a cord fastened at one end to said carrier and having a weight at the other end supported by said sheaves, and means of attachment for the other end of said hide, of a knife fastened in place behind said runway in operative position relative to the carrier.
- 40 15. The combination, in a bevel-string cutting machine, with a suitable table provided with a runway, a carrier arranged to reciprocate in such runway and adapted to have one end of a hide attached thereto, suitable sheaves, a cord fastened at one end to said carrier and having a weight at the other end supported by said sheaves, and means of attachment for the other end of said hide, such means comprising a cord having a hook at one end and a weight at the other end together with suitable sheaves to support such cord, of a knife fastened in place behind said runway in operative position relative to the carrier.
- 45 50 55

JOHN P. DONOVAN.

Witnesses:

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F. A. CUTTER.