T. F. HICKEY.

LEATHER CUTTING MACHINE.

APPLICATION FILED MAR. 14, 1917. RENEWED APR. 11, 1919.

1,319,219. Patented Oct. 21, 1919.

Fig. 1.

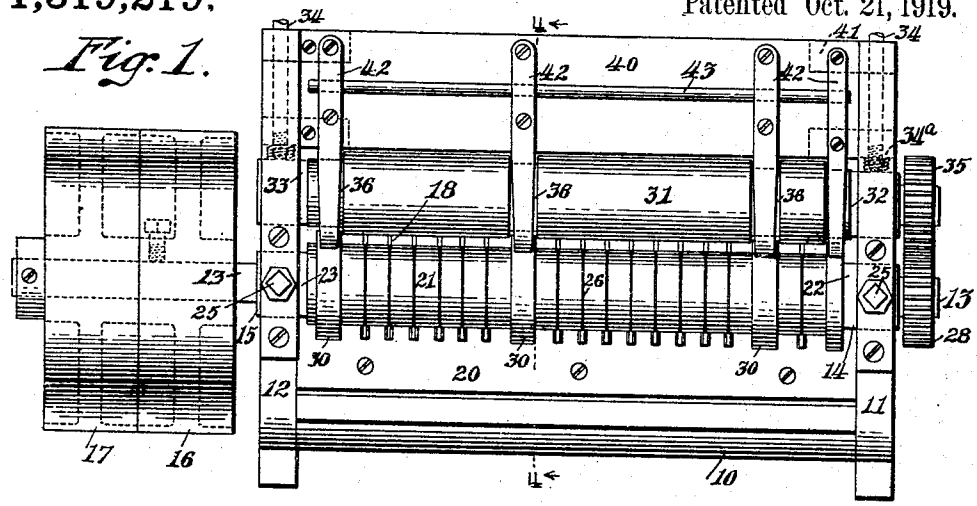


Fig. 2.

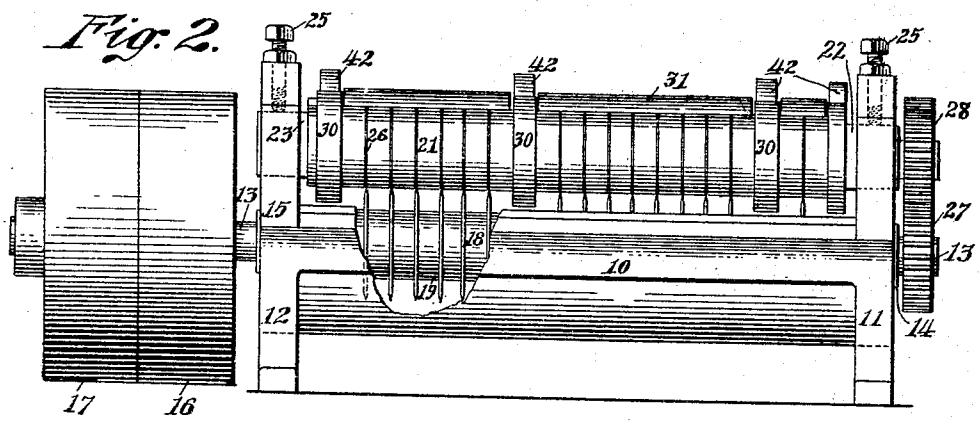


Fig. 3.

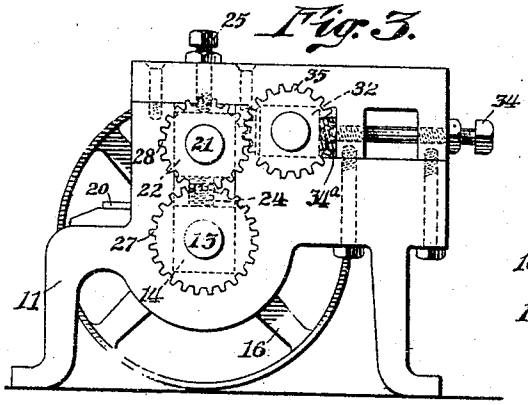
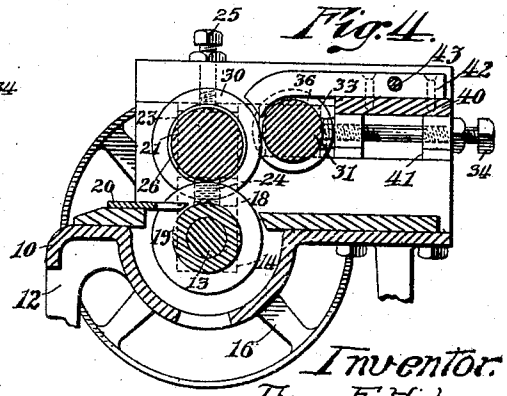


Fig. 4.



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LEATHER-CUTTING MACHINE.

1,319,219. Specification of Letters Patent. Patented Oct. 21, 1919.

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To all whom it may concern:

Be it known that I, THOMAS F. HICKEY, a citizen of the United States, residing at Shrewsbury, in the county of Worcester and State of Massachusetts, have invented a new and useful Leather-Cutting Machine, of which the following is a specification.

This invention relates to a leather-cutting machine of the type which is used in the manufacture of welting and similar leather products.

Such machines are designed to cut leather stock into narrow strips of definite widths, a plurality of strips being cut from the stock at the same time. In such machines the cutting is commonly performed by a set of rotary cutters or disk knives mounted in spaced relation on a driven shaft. It has been heretofore customary to first cut the stock by hand into relatively wide sections or strips which are then fed through the cutting machine and thus sub-divided into a considerable number of narrow strips of definite width. An irregular strip of waste was produced by this operation at each edge of each wide section of stock, and this waste became a matter of great importance as the cost of stock increased.

It is the general object of my present invention to provide for guiding the stock accurately to the rotary cutters by the use of separated guiding members of new and improved construction. In the use of my improved cutting machine it is essential that the sections of stock be first formed of the exact width to fit closely between adjacent guides, the distance between the guides being exactly equal to the combined width of a definite number of the welts or narrow strips to be produced. The slight increase in the cost of preparing the sections of stock is more than offset by the decreased waste produced in the cutting operation.

In the preferred form of my invention I provide means for guiding the stock at the cutting point and additional means for guiding the stock for a considerable distance as it approaches the cutting point.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of my invention is shown in the drawings, in which—

Figure 1 is a plan view of a leather-cutting machine embodying my invention;

Fig. 2 is a rear elevation thereof;

Fig. 3 is a right-hand end elevation thereof, and

Fig. 4 is a sectional elevation taken along the line 4—4 of Fig. 1.

Referring to the drawings the mechanism of my improved machine is mounted on a rigid structure comprising a bed 10 and end frames 11 and 12. A horizontal shaft 13 is mounted in bearings 14 and 15 in the end frames 11 and 12. Tight and loose pulleys 16 and 17 are carried by the shaft 13 and provide means for driving the shaft.

A plurality of thin circular or disk-like knives 18 are mounted on the shaft 13, said knives being spaced apart by collars 19 to form a series extending across the machine between the frames 11 and 12, certain of the knives, however, being omitted for reasons to be hereinafter explained. A stripper plate 20 is supported by the bed 10 and its slotted front portion extends between the knives 18 as shown in Fig. 4.

A pressure roll 21 is supported above the shaft 13 and the knives 18, and its end portions are rotatable in bearings 22 and 23 which are vertically movable in openings in the end frames 11 and 12. Springs 24 (Figs. 3 and 4) separate the upper and lower bearings and yieldingly force the upper bearings against adjusting screws 25 which limit their upward movement. The pressure roll 21 is provided with a series of shallow grooves 26 corresponding in position to the knives 18 and preventing engagement of the edges of the knives with the surface of the roll. The roll 21 is driven from the shaft 13 through spur gears 27 and 28. The parts thus far described are of the usual construction and form no part of my invention.

As previously stated, it is the object of my invention to provide mechanism by which a section of stock of definite width can be sub-divided into a plurality of narrow strips also of definite width without any waste of stock resulting from the cutting operation.

For the accomplishment of this object I provide the roll 21 with a plurality of collars 30 which form guiding flanges spaced apart at different distances, which distances, however, are always multiples of the fixed space between adjacent cutters 18. As shown in the drawings the different collars 30 are spaced to permit the cutting of sec-

tions into two, seven and nine strips respectively.

While the flanges 30 guide the stock at the point at which it is engaged by the cutters 18 they do not engage the stock at a sufficient distance in advance of that point to insure that the stock shall approach the cutters at the proper angle. Accordingly, I provide a guide roll 31 adjacent the pressure roll 21 and so positioned that the stock will be guided around a substantial portion of the periphery of the roll 21 before engaging the cutters 18.

The roll 31 is mounted in bearings 32 and 33 (Fig. 1), these bearings being held in horizontal openings in the end frames 11 and 12 and being forced toward the pressure roll 21 by adjusting screws 34. Springs 34[a] hold the bearings against the adjusting screws. A gear 35 may be secured to the guide roll 31, said gear meshing with the gear 28 on the pressure roll. In this construction, the guide roll also will be positively driven. Under different conditions it may be found desirable to remove the gear 35 and leave the guide roll free to rotate. This surface of the guide roll 31 is provided with a plurality of grooves or depressed portions 36 which provide clearance for the flanges or collars 30 on the pressure roll.

While the arrangement of parts thus far described will guide the stock in a reasonably satisfactory manner to the cutting knives, I have found it desirable to add a feed table or plate 40 supported on lugs 41 on the inner faces of the end frames 11 and 12 and extending across the machine. Upon this table or plate I secure a plurality of guide bars 42 spaced to correspond to the spacing of the flanges 30 and having their rear ends extending over the guide roll to points adjacent the flanges on the pressure roll, as most clearly shown in Fig. 4. I also provide a cross rod 43 extending through openings in the guide bars 42 and vertically positioned to permit the stock to pass between the rod and the table.

Having described the construction of my improved leather-cutting machine the operation thereof will be apparent. The stock is fed over the table 40 and is held closely adjacent thereto by the cross rod 43. The stock is positioned laterally by the guide bars 42 and passes over the guide roll 31 and then downward between the guide roll and the pressure roll 21. As soon as the stock passes out of engagement of the guide bars 42 it is engaged by the flanges or collars 30 and it is thus impossible for the stock to vary in lateral position, provided it is originally cut to the proper width. The stock is thus fed accurately to the cutters by which it is severed into a plurality of narrow strips which pass over the stripper plate 20 and are thereafter disposed of in any convenient manner.

Having thus described my invention it will be evident that changes and modifications can be made therein by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims, and I do not wish to be otherwise limited to the details herein disclosed, but what I claim is:—

1. A leather-cutting machine having, in combination, a driven shaft having a plurality of rotary cutting knives mounted in spaced relation thereon, a pressure roll coöperating with said knives and having projecting flanges effective to guide the edges of the stock, a guide roll adjacent said pressure roll effective to increase the arc of engagement of said pressure roll and guiding flanges with said stock, said guide roll having grooves to receive said flanges, a table, and fixed guide bars on said table overlying said guide roll in the grooves thereof and having their outer ends adjacent said flanges.

2. A leather-cutting machine having, in combination, a driven shaft having a plurality of rotary cutting knives mounted in spaced relation thereon, a pressure roll coöperating with said knives and having projecting flanges effective to guide the edges of the stock, a guide roll adjacent said pressure roll and having grooves therein to receive said projecting flanges on said pressure roll, said guide roll being effective to increase the arc of engagement of said pressure roll and guiding flanges with said stock, and means to drive said pressure roll and said guide roll positively.

3. A leather-cutting machine, having, in combination, a driven shaft having a plurality of rotary cutting knives mounted in spaced relation thereon, a pressure roll overlying said shaft and positioning the stock vertically against the action of said knives, said roll having spaced guiding flanges projecting between certain of said knives, means to adjust said roll vertically toward said knives, a guide roll adjacent said pressure roll, bearings for said guide roll, means to adjust said bearings horizontally toward said pressure roll, and fixed guide bars overlying said guide roll and extending adjacent said guiding flanges on said pressure roll.

4. A leather-cutting machine having, in combination, a driven shaft having a plurality of rotary cutting knives mounted in spaced relation thereon, a pressure roll overlying said shaft and positioning the stock vertically against the action of said knives, said roll having spaced guiding flanges projecting between certain of said knives, a guide roll positioned laterally adjacent said pressure roll and having grooves

to receive said flanges, fixed guiding bars extending over said guide roll and along said grooves to points adjacent said flanges, and means to drive both of said rolls in fixed relation to the rotation of said knives.

5. A leather-cutting machine having, in combination, a driven shaft having a plurality of rotary cutting knives mounted in spaced relation thereon, a pressure roll overlying said shaft and positioning the stock vertically against the action of said knives, said roll having spaced guiding flanges projecting between certain of said knives, a guide roll positioned laterally adjacent said pressure roll and having grooves to receive said flanges, a table adjacent said guide roll, fixed guide bars secured to said table and extending over said guide roll to said pressure roll, and a cross rod extending through said guide bars and preventing vertical displacement of the stock upon said table.

6. A leather-cutting machine having, in combination, a driven shaft having a plurality of rotating cutting knives mounted in spaced relation thereon, a pressure roll overlying said shaft and knives, guiding flanges on said pressure roll projecting into the spaces formed between certain of said cutters and effective to guide the edges of the stock, and additional means to guide the edges of the stock as it is fed to said pressure roll and flanges.

In testimony whereof I have hereunto affixed my signature.

THOMAS F. HICKEY.

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