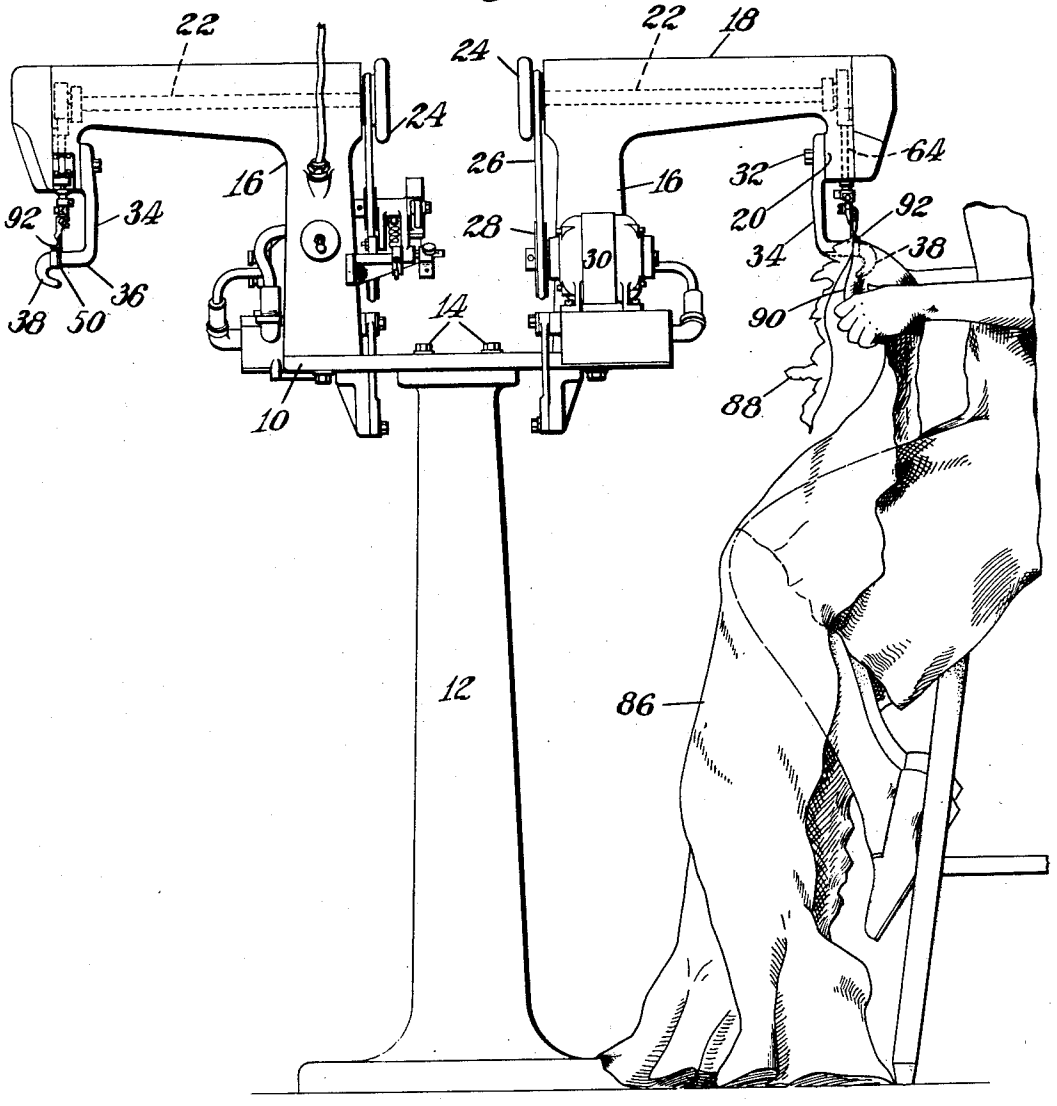
Nov. 21, 1933. C. C. WEBSTER ET AL 1,935,867

TRIMMING MACHINE

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Fig.1.



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Fig. 2.

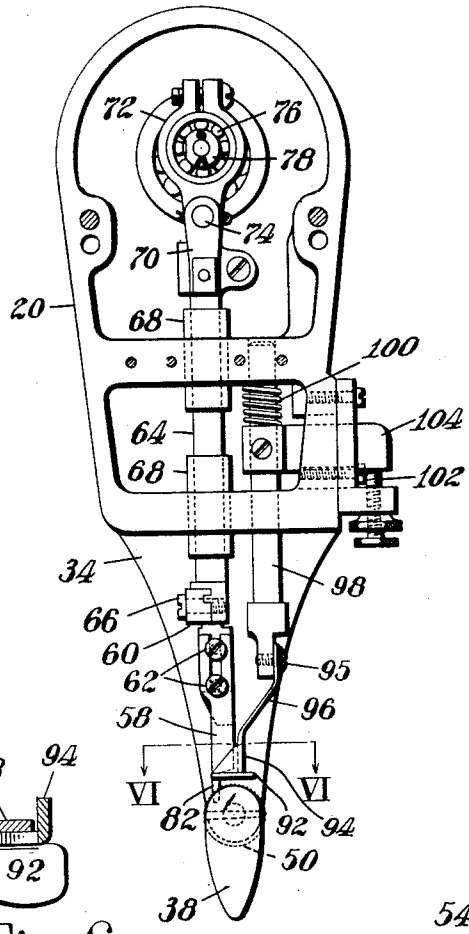


Fig. 3.

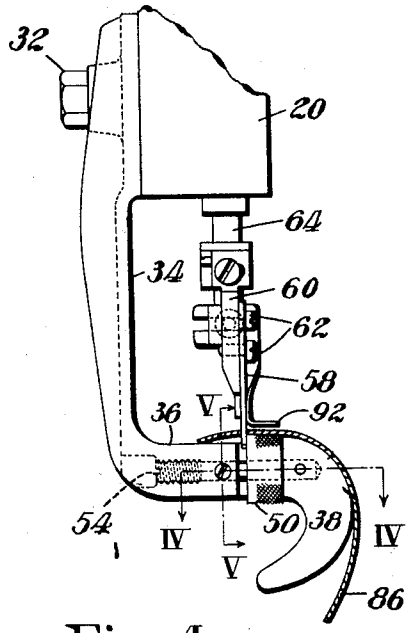


Fig. 4.

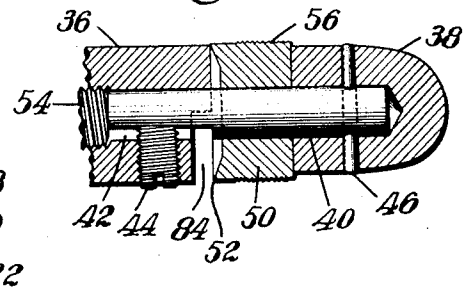
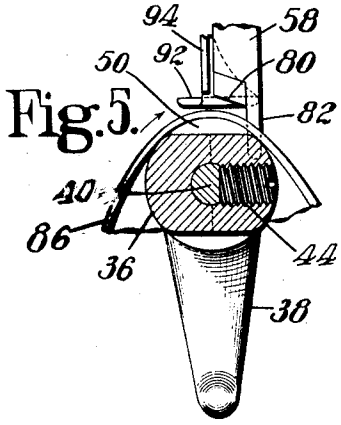


Fig. 6.

Fig. 5.



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TRIMMING MACHINE

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Application May 31, 1930. Serial No. 457,790

8 Claims. (Cl. 164—47)

This invention relates to trimming machines, and is herein illustrated as embodied in a machine adapted to cut flexible sheet material. Because of the special utility of such a machine for trimming tanned skins, the invention will be described with particular reference to that class of work.

After being tanned, and again after being colored, skins are commonly attached to drying frames by clamps or by tacks driven through their margins. If clamps are used they form lumps or blisters in the margins of the skins, while, if tacks are used, they tear and distort the margins in consequence of shrinking of the skins. As a result, the margins of dried, tanned skins are commonly marked by many small irregularities, torn holes and other mutilations, and in many cases their edges are exceedingly ragged. Moreover, the edges of the skins, between the clamps or tacks, curl to some extent while drying, the more ragged portions often being curled more than the relatively even portions.

Subsequently, the skins are worked on by staking machines, and some of them are later worked on by glazing machines. At these stages of working, if the edges of the skins are ragged or curled or if torn holes remain in their margins, the staking or glazing instrumentalities frequently fold or crease the ragged or curled edges, which, by reason of the lumps thus formed, cause tearing of the skins. To avoid such tearing it is common practice to trim the margins of dried, tanned skins prior to staking them. Then too, irrespective of all technical considerations, well-trimmed skins command higher prices than ragged-edged skins.

Heretofore, this trimming has been done entirely by hand, either with shears or knives, but hand work is wasteful of considerable stock that could be saved and used if more efficient trimming apparatus were employed.

In view of the conditions above set forth, an object of the present invention is to provide a trimming machine by which soft, flexible sheet material, such as ragged margins of dried, tanned skins, may be trimmed evenly and rapidly without requiring skill on the part of the operator and without requiring any considerable manual effort.

To this end, the machine illustrated as embodying the invention comprises a stationary work-supporting horn of special construction designed to facilitate manipulation of large and moderately heavy work-pieces of sheet material draped thereon, the horn comprising two fixed work-supporting members one of which is detachably connected to and supported by the other, and a rotatable cutting-bed arranged between and engaging confronting faces of the fixed members. A cutter is arranged to co-operate with the cutting-bed and is provided with mechanism by which it is operated to sever the sheet material progressively as the latter is fed crosswise of the horn. Preferably, and as illustrated, the machine is also provided with a member arranged in front of the cutter and above the cutting-bed, this member being spaced from the cutting-bed a distance slightly greater than the thickness of the work-piece to maintain the latter in contiguous relation to the cutting-bed without obstructing edgewise movement of the work-piece in any direction.

Preferably too, the cutting-bed is made of hardened steel and is provided with a shearing edge with which the cutter co-operates to sever the material with a shearing cut. As illustrated, the cutting bed is a cylindrical and freely rotatable member inserted into the horn so that its peripheral surface will be engaged by the under surface of the work, to the end that it may be rotated by the drag of the work fed over it.

Referring to the drawings,

Fig. 1 is a side elevation including two trimming machines mounted back to back on a common supporting column, each of said machines embodying the present invention;

Fig. 2 is a front elevation of the head portion of one of said machines, the front cover plate being removed;

Fig. 3 is a side elevation including a portion of one of the machine heads, a stationary work-supporting horn affixed thereto and the parts that co-operate therewith to do the trimming;

Fig. 4 is a horizontal section through the structure intersected by broken lines IV—IV of Fig. 3;

Fig. 5 is a vertical section through the horn in the plane indicated by line V—V of Fig. 4; and

Fig. 6 is a horizontal section through the structure intersected by broken lines VI—VI of Fig. 2.

According to the assemblage illustrated in Fig. 1, two trimming machines are mounted back to back on a table or platform 10, the center of which is affixed to a supporting column 12 by bolts 14, the frames 16 of the two machines being thereby offset in opposite directions from the vertical center of the column to provide large unobstructed spaces under them in which to manipulate the draped skins or other sheet material to be trimmed. This offset relation of the machines from the column also provides ample space for the knees of the operators, who sit on

stools facing each other while at work. Moreover, the mounting of two machines at opposite sides of the center of each column balances the distribution of the total weight with respect to the center of gravity. The two trimming machines being identical in construction, a description of one of them will suffice.

The frame 16 comprises a hollow overhanging portion 18 and a head 20 at the outer end thereof. A horizontal operating shaft 22 extends through the hollow frame portion 18 and is mounted in bearings therein, the rear end of the shaft being provided with a pulley 24 to which rotation is transmitted by a belt 26 from a pulley 28 carried by the armature shaft of an electric motor 30.

An underslung work-supporting horn the butt-end of which is affixed to the head 20 by a bolt 32 comprises two fixed sections and a rotatable section between them, one of the fixed sections including a depending portion 34, and a substantially horizontal portion 36, the other fixed section being a detachable curved tip portion 38. As illustrated in Fig. 4, the tip portion 38 is provided with a cylindric stem 40 and the portion 36 is provided with a socket 42 to receive the stem which may be fastened therein by any preferred means, for example, a set-screw 44 screwed into the portion 36. Preferably, one side of the stem 40 is flattened as illustrated in Fig. 5 to prevent turning movement of the tip portion 38 when the parts are set up for use. The portion 38 and the stem 40 are to all intents and purposes integral, although, for economy of manufacture, they may be made of separate pieces and fastened rigidly one to the other. As shown, the stem is driven tightly into a bore in the portion 38 and is keyed by a taper pin 46. The stem 40 provides a convenient means for mounting a cutting-bed 50 between the fixed portions 36 and 38 of the horn. As illustrated in Figs. 3 and 4, the cutting-bed 50 is provided with a central hole by which it is mounted on the stem 40. The cylindrical shape of the stem provides for turning movement of the cutting-bed, while the connection between the stem and the portion 36 of the horn provides for adjusting the tip portion 38 lengthwise of the axis of the stem to take up end-play of the cutting-bed.

The cutting-bed is illustrated as a cylindrical member and is made of hardened steel. Its periphery projects slightly above the adjacent end of the tip portion 38 and above the adjacent end of the supporting portion 36. A circular shearing edge 52 is formed at one end of the cutting-bed, this end being preferably arranged at the rear, that is, toward the supporting portion 36 of the horn. This end of the cutting-bed is preferably dished as shown in Fig. 4 to give an acute form to the shearing edge and to provide clearance for dirt that might otherwise become lodged between the confronting ends of the cutting bed and the supporting portion 36 and thereby resist rotation of the cutting-bed. To guard against clamping pressure against the cutting-bed by the portions 36 and 38 of the horn, the portion 36 is preferably provided with an adjustable abutment, for example, a screw 54, arranged to arrest the stem 40 as it enters the socket 42. A band of the periphery of the cutting-bed may be knurled as indicated at 56 (Fig. 4) to increase the tractive effect of work drawn over it and thereby insure rotation of the cutting-bed by the work.

A cutter, preferably a reciprocatory chisel-shaped cutter 58, is arranged to co-operate with the shearing edge 52 of the cutting-bed to sever ragged or otherwise mutilated marginal portions of skins and other sheet material having similar characteristics of pliability and penetrability. The cutter 58 is affixed to a holder 60 by screws 62. The holder 60 is affixed to a vertically movable cutter-bar 64 by a screw 66. The cutter-bar is guided by sleeves 68 fixed in the head 20, its upper end being provided with a coupling member 70 to which an eccentric-strap 72 is connected by a pivot pin 74. A ball-bearing 76 forms connection between the strap 72 and an eccentric 78 carried at the forward end of the operating shaft 22.

Referring to Fig. 5, the cutter 58 is provided with a cutting edge 80 and with a downwardly projecting pilot portion 82 which remains in lapped relation to the shearing edge 52 of the cutting-bed when the cutter is raised to its highest position as shown in Figs 2, 3 and 5. The supporting portion 36 of the horn is cut away at one side (Fig. 4) to provide a space 84 in which the cutter 58 may move up and down without obstruction.

In handling skins that have been tanned, colored and otherwise treated for the production of a finished surface it is necessary to avoid wrinkling, creasing or otherwise disfiguring that surface. For this reason the tip portion 38 of the horn is formed to impart an easy curvature to a skin when, as shown in Figs. 1, 3 and 5, the upper margin of the skin is laid horizontally on the cutting-bed while the rest of the skin hangs from the horn. Accordingly, the cross-sectional shape of the tip portion 38 is preferably circular to conform to the contour of the cutting-bed 50. Moreover, the tip portion projects forwardly and curves downwardly in front of the cutting-bed, the radius of this curvature being great enough to facilitate drawing the skin upwardly by shifting the upper margin thereof horizontally toward the rear of the horn. Again, the tip portion is preferably made of steel and its surface polished to enable the skin to slide easily.

In practice an operator seated on a stool as illustrated in Fig. 1 presents a skin 86 to the machine by grasping the margin of the skin with both hands, one at each side of the horn and cutting-bed and by laying the intervening portion of the margin horizontally on the cutting-bed. The cutter 58 operates continuously so long as current is supplied to the motor 30. The edges of the skins are commonly so irregular as to require no more than ordinary skill and judgment on the part of the operator to determine a satisfactory course of trimming. As shown in Fig. 2, the pilot 82 of the cutter 58 is at the left-hand side and the cutting edge 80 extends from the right-hand edge of the pilot to the right-hand edge of the body of the cutter. Thus, to trim progressively the operator feeds the upper margin of the skin from right to left, skewing the skin from time to time as may be necessary or desirable to lead the trimming cut along a course approximately parallel to the general configuration of the skin. The original or irregular edge of the skin is indicated at 88, while the trimmed edge of the body of the skin is indicated at 90. As the trimming progresses, the operator shifts his or her hands along its margin, meanwhile tensioning slightly the intermediate portion of the skin on the horn and guiding the margin manually until the entire circuit of the skin has been traversed. The substantially horizontal work-supporting

surface of the cutting-bed and of the horn not only supports the weight of the skins but also supports some if not all of the weight of the operator's hands and forearms while the trimming is in progress. In fact, as more of the weight of the hands and forearms is imposed upon the work-piece less effort is required to prevent the latter from slipping forwardly from the cutting-bed.

The illustrated machine is further provided with means arranged above the cutting-bed 50 to prevent the trimmed edge of the skin from being raised appreciably from the cutting-bed by the frictional drag of the cutter 58, said means being spaced from the cutting-bed a distance slightly greater than the estimated average thickness of the skin to avoid obstructing edgewise movement of the skin in any direction. For this purpose, a smooth foot 92 is provided preferably by bending the lower end of a sheet metal cutter-guard 94 of angular cross-section. The cutter 58 is arranged in the angle of this guard as shown in Fig. 6, one flange of the guard lying in front of the cutter and the other flange lying at the feeding-in side, viz., the right-hand side, to prevent the operator's fingers from touching the cutter.

The shank 96 of the cutter-guard is affixed, by a screw 95, to a vertically adjustable rod 98 which, though pressed downwardly by a compression spring 100, is sustained at the desired level by an adjusting screw 102 underlying a finger 104 affixed to the rod. This finger also sustains the downward thrust of the spring 100. In practice the operator has merely to turn the screw 102 to adjust the foot 92 to the desired level. Then if a portion to be trimmed is thicker than the space between the foot and the cutting-bed 50, the spring 100 will permit the foot to rise so that the thick spot may be drawn past it without much extra effort. In such a case the turning of the cutting-bed will minimize the retarding effect of the foot 92.

Having described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:—

1. A trimming machine comprising a rotatable cylindrical member the periphery of which is arranged to serve as a cutting-bed, means by which said member is supported, a work-engaging foot confronting but retractable from said periphery, spring-stressed means by which said foot is normally urged toward said member, an adjustable abutment by which said foot may be regulatably spaced from said periphery, a cutter arranged to co-operate with said member, and means arranged to operate said cutter.

2. A trimming machine comprising two fixed work-supporting members one of which is detachably connected to and supported by the other, a rotatable cutting-bed arranged between and engaging confronting faces of said fixed members, a cutter arranged to cooperate with said cutting-bed, and mechanism for operating said cutter.

3. A trimming machine comprising two fixed work-supporting members, a stem by which they are rigidly connected, a rotatable cutting-bed arranged on said stem between said members, a cutter arranged to cooperate with said cutting-bed, and mechanism for operating said cutter.

4. A trimming machine comprising a fixed horn of which a portion extends horizontally, a tip member having a stem by which it is detachably affixed to said portion of the horn but spaced therefrom, a rotatable cutting-bed between said portion and said tip member, a cutter arranged to cooperate with said cutting-bed, and mechanism arranged to operate said cutter, said tip member being curved to impart an easy curvature to a work-piece of flexible sheet material draped thereon.

5. A trimming machine comprising a power-operated cutter, a rotatable shearing member, two fixed work-supporting members between which said shearing member is arranged, and a stem on which said shearing member is mounted, said fixed members being relatively adjustable against opposite end faces of said shearing member to maintain the latter in cooperative relation to said cutter.

6. An underslung work-supporting horn for trimming machines comprising a pendent section, a tip section rigidly connected thereto, and a rotatable section interposed between them to function as a cutting-bed, the butt-end of said pendent section having provision for affixing it to the frame of a trimming machine.

7. A work-supporting horn for trimming machines comprising a series of three sections and a stem rigidly connecting the two outer sections to support one of them, the intermediate section being rotatably mounted on said stem and formed to serve as a cutting-bed, and the other one of said outer sections having means by which it may be affixed to the frame of a trimming machine.

8. A work-supporting horn for trimming machines comprising a series of three sections and means by which the two outer sections are rigidly but separably connected so as to be relatively adjustable against the ends of the intermediate section which is rotatable relatively to the outer sections, one of said outer sections having means by which it may be affixed to the frame of a trimming machine.

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