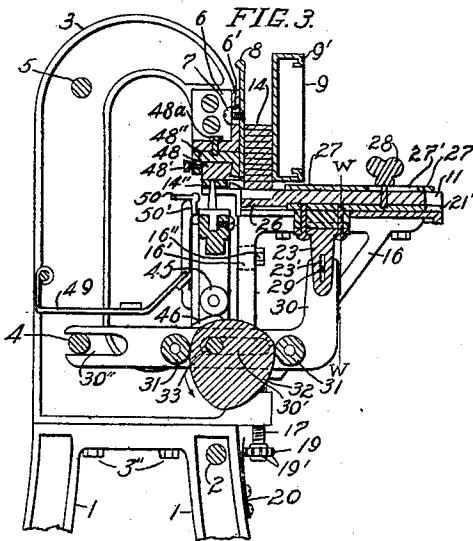
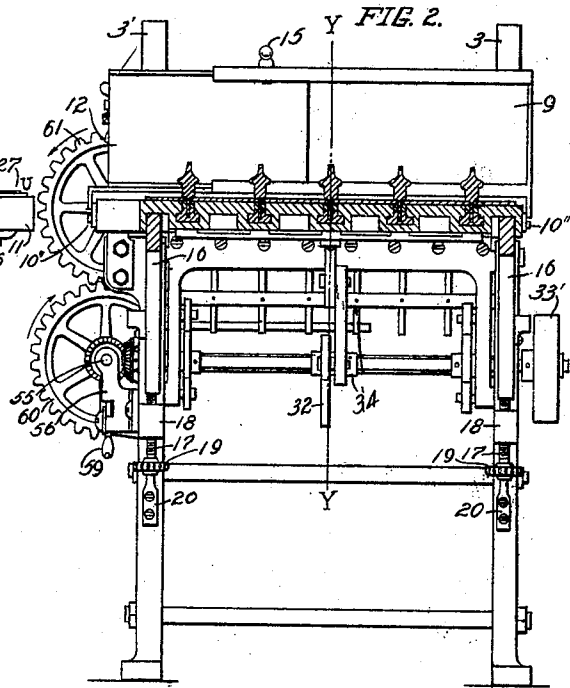
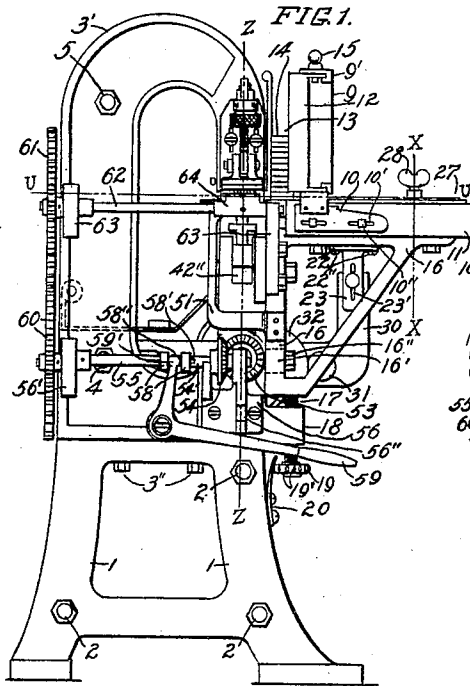


J. THORNTON.
STRAP WORKING MACHINE.
APPLICATION FILED JUNE 9, 1909.

969,308.

Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.

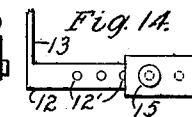
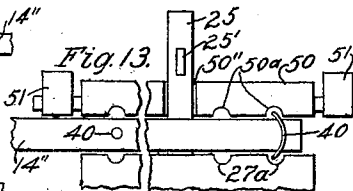
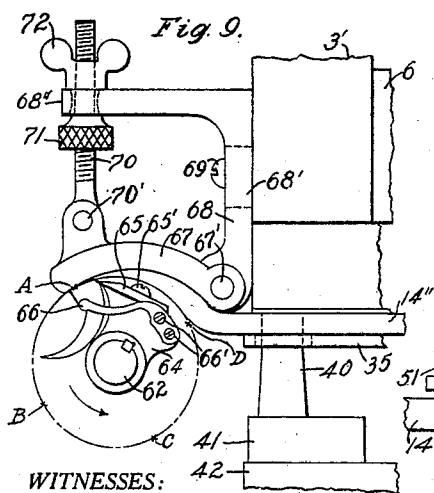
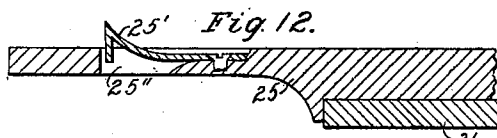
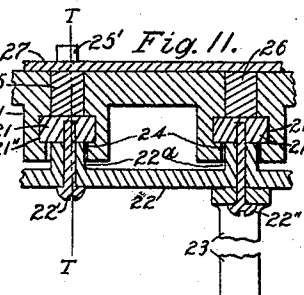
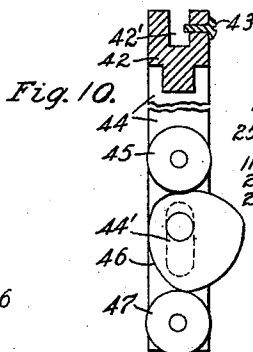
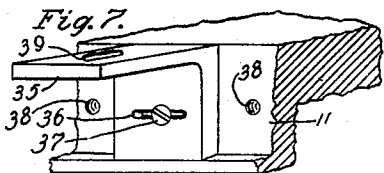
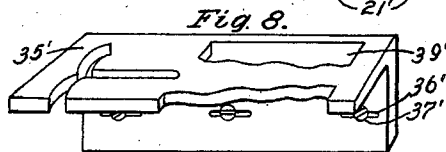
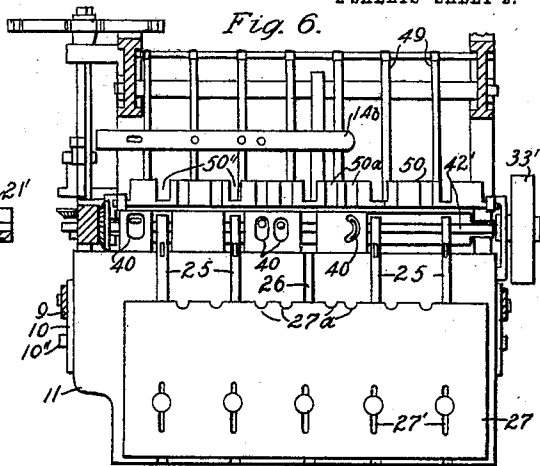
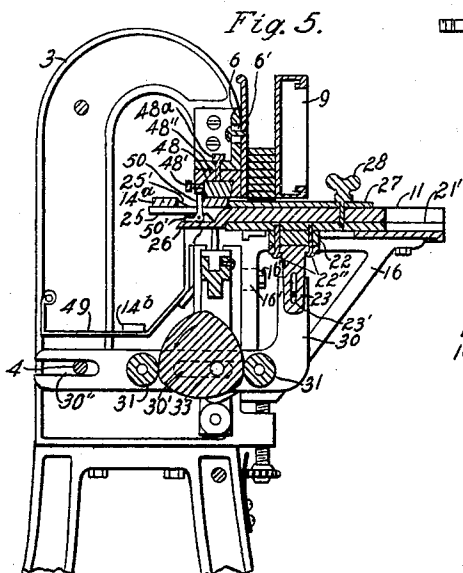


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2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES THORNTON, OF ST. JOSEPH, MISSOURI.

STRAP-WORKING MACHINE.

969,308.

Specification of Letters Patent.

Patented Sept. 6, 1910.

Application filed June 9, 1909. Serial No. 501,188.

To all whom it may concern:

Be it known that I, JAMES THORNTON, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Strap-Working Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in strap working machines, and particularly applies to that class of machines, which are used for working straps of leather, in the manufacture of harness and the like; and the objects of my improvements are to provide a neat, simple, substantial and durable strap working machine, which will automatically feed leather straps, in rapid succession one at a time into said machine, punch variously spaced holes of any predetermined diameter, through said straps skive one of the ends thereof, die cut, to any desired shape, certain parts of said straps and billet or round the other ends, and thereafter automatically eject said straps from the machine, into a rack; and be readily adjusted to proper adjustment for performing any one or all of the useful operations, on straps of various lengths, widths and thicknesses.

Further objects are, to so construct said machine, that it shall be positive in its movements, and accurate in the performance of the described operations, occupy the minimum amount of floor space, be comparatively cheap in cost of manufacture, and require the minimum amount of power.

I attain these objects by the mechanism illustrated in the accompanying drawing, in which:—

Figure 1. is an end view. Fig. 2. is a longitudinal section, on the line X X, seen in Fig. 1., looking toward the left. Fig. 3. is a transverse section, on the line Y Y, seen in Fig. 2 looking toward the right. Fig. 4. is a longitudinal section, on the line Z Z seen in Fig. 1., looking toward the right, showing the parts in punching position. Fig. 5. is a section, similar to Fig. 3., showing the parts in feeding and ejecting position. Fig. 6 is a horizontal section, on the line U U, seen in Fig. 1., looking downward. Fig. 7. is an enlarged view, in perspective, of a strap support and a portion of the table of the machine. Fig. 8. is an enlarged view in perspective of one of the other various forms of strap supports that are used. Fig. 9 is

an enlarged front view in detail, of the skiver. Fig. 10 is an enlarged transverse section of the die holder, on the line V V, seen in Fig. 4 looking toward the right. Fig. 11 is an enlarged section in detail of certain parts, cut transversely to the driving bars, on the line W W, seen in Fig. 3, looking toward the left. Fig. 12 is an enlarged longitudinal section, in detail of a part of one of the ejectors, on the line T T, seen in Fig. 11. Fig. 13 is an enlarged top plan in detail of the strap stop and of a part of the feed plate. Fig. 14 is a top plan of the strap box extension and part of the strap box.

My invention comprises an adjustable strap box, a strap feeding mechanism, a strap punching and die cutting mechanism, a skiving mechanism, an ejecting mechanism and suitable supports for said mechanisms; all of which are hereinafter described.

Legs 1, secured together by the three tie rods 2, support two yokes, 3 and 3', secured thereon by bolts 3"; said yokes are secured together by tie rods 4 and 5 and tie bar 6. Said tie bar is L shaped and has slots 6' through the front portion thereof, through which pass screws 7, screwed into throat plate 8, for adjustably securing said plate to said tie bar. Strap box 9 is secured at each of the two ends thereof, to blocks 10, provided with slots 10', through which pass, cap screws 10'', screwed into table 11, for securing said strap box in slidably adjustment on said table. Strap box 9 is provided with extension 12, slidably secured thereto, by having the turned edges of said extension, slidably in the return bent edges 9' of said strap box. Said extension is provided with strap gage 13, adjusted to various lengths of straps 14, by passing pin 15, downward through an aperture in strap box 9 and through the desired one of apertures 12' formed through the upper turned edge of extension 12, seen in Fig. 14.

The space or throat between throat plate 8 and table 11 is secondarily adjustable by raising and lowering said plate, adjustably secured to said tie bar 6, as described, and is primarily adjusted by raising and lowering table 11, secured on brackets 16, provided with slots 16', through which loosely pass the cap screws 16'', the heads of which, slidably retain said brackets in place, supported on adjusting screws 17, screwed through projections 18, formed on

the lower corners of yokes 3 and 3'. Screws 17 are provided with hand wheels 19, having notches 19' formed in their peripheries, engaged by springs 20, secured to the two front legs 1.

Carrier bars 21, slidable in channels 21', in table 11, are secured to drive plate 22, (see Figs. 1 and 11,) by screws 22' and 22'', the latter of which also secure drive arm 23, (having slot 23' formed therethrough,) to the center of said drive plate.

Drive plate 22 is provided with upward extensions 22^a, (see Fig. 11,) which extend upward through slots 24, formed through table 11, from the bottoms of channels 21'. Said carrier bars 21 are reciprocally moved in said channels, as hereinafter described, and carry thereon, four ejector bars 25 and the centrally situated push bar 26, and said bars carry thereon, the feed plate 27, provided with slots 27', see Fig. 6. Through slots 27' and apertures in said push bar and ejector bars, pass the thumb screws 28, screwed into carrier bars 21, for providing securing means, whereby said bars are secured together and adjustable securing means, whereby said feed plate is adjustably secured on said bars.

Loosely projecting through slot 23' in drive arm 23 is the drive stud 29, secured in the upper end of drive rod 30, which carries friction rolls 31, intermittently driven by cam 32, secured on drive shaft 33, rotatably mounted in yokes 3 and 3' and having drive pulley 33' secured on the outer end thereof, adapted to be driven by a belt, not shown.

Drive rod 30 is slidably mounted on shaft 33 and tie rod 4, (see Figs. 3 and 5,) which pass through slots 30' and 30'', respectively, formed in said drive rod, retained in position, on shaft 33 between cam 32 and collar 34, secured on said shaft. It will be seen that cam 32 is of such form, that in one revolution of shaft 33, from the position seen in Figs. 1 and 3, said cam intermittently moves feed plate 27, in the following manner. During the first fourth of said revolution, said feed plate is held in the position seen; during the second fourth, said plate is moved from said position, to the position seen in Fig. 5 thereby pushing or feeding the bottom strap 14' of straps 14, to the position seen at 14'', in Fig. 5, from the position seen in Fig. 3; and there holds said feed plate, during the third fourth of said revolution. During the last fourth, said plate is moved from the position seen in Fig. 5, back to the point seen in Fig. 3, thereby providing intermittent reciprocating means, whereby feed plate 27 is intermittently reciprocated in channels 21' in table 11.

Referring to Fig. 7, strap supports 35, provided with slots 36 are adjustably secured to table 11, by screws 37, passed through said slots and screwed into threaded

apertures 38, in said table. Said supports have cut-outs or apertures 39, therethrough of various sizes and shapes to conform with cutting dies 40, which are cutting punches and cutting dies of various sizes and shapes, such as are well known to the strap workers art. One of the other various forms of said strap supports is seen in Fig. 8, which form is one, adapted to support a strap, while die cutting the same.

Dies 40, see Fig. 6, are used singly or in groups, as the nature of the work may require; and since said dies, except as to size and shape, are exactly alike in their construction and operation, a detailed description of one is sufficient. Die 40 is rigidly secured in die base 41, the lower portion of which is detachably secured at any desired point in channel 42', of die carrier 42, by screws 43. Referring to Figs. 4 and 10, said die carrier is provided with two legs 44; and since said legs are exactly alike in their construction and operation, a detailed description of one is sufficient.

The ends of die carrier 42 are guided in slots 42'' formed in yokes 3 and 3', while the leg 44 thereof is guided by shaft 33, which passes through slot 44' formed in said leg, which is supported by its rotatably secured friction roll 45, riding on cam 46, secured on shaft 33. Said leg carries friction roll 47, contacting the lower surface of said cam; thereby providing intermittent moving means, whereby said die carrier and the dies 40, are intermittently moved upward and downward. It will be seen that cam 46 is of such form and is secured on shaft 33, in such time with the movements of cam 32 and feed plate 27, as hereinbefore described, that during said first fourth of the described revolution of shaft 33, die 40 is moved downward from the position seen in Fig. 1, to the position seen in Fig. 5, and there held by cam 46 during the second fourth; then from this position, through the third fourth, said die is moved upward to the position seen in Figs. 1 and 3, through strap 14'' and against die block 48, thereby die cutting said strap. Die block 48 may be of any suitable material, such as Babbitt metal, wood, etc., and is detachably secured by screws 48', in die block holder 48'', secured to tie bar 6 by screws 48^a. During the last fourth of said revolution of shaft 33, die 40 is held in the position seen in Fig. 3, and acts as holding means, whereby strap 14'', is held, during the hereinafter described skiving operation.

It will be seen and understood that ejector bars 25, provided with spring ejectors 25', (see Fig. 12,) depressible into mortises 25'', formed in said bars, and push bar 26, (see Fig. 5,) travel with feed plate 27, in its previously described movements. In the movement of ejector bars toward the left, the die cut straps 14'', are pushed or ejected

to the position seen at 14^a in Fig. 5, by spring ejectors 25', carried on bars 25, from whence said strap gravitates to the position seen at 14^b, on rack 49, when said bars are moved toward the right, at which time, the succeeding strap 14'', deflects ejectors into mortises 25'', (see Fig. 12,) as said ejectors pass said strap, back to the position seen in Fig. 3. Push bar 26 in its movement toward the left pushes the edge 50' of strap stop 50 and rotates said stop from the position seen in Fig. 3 to the position seen in Fig. 5. The ends of said strap stop are rotatably mounted in bearing brackets 51, secured to and carried by table brackets 16, see Fig. 1. The return rotation of said strap stop, is caused by the gravity thereof, after push bar 26 has moved to the right from beneath said stop.

Referring to Figs. 13 and 6, strap stop 50 has mortises 50'' formed therein, to permit passage therethrough of ejector bars 25. The face of said stop, which stops straps 14'', and the inner edge of feed plate 27 have clearance notches 50^a and 27^a, respectively formed therein, to permit free passage of the edges of such dies 40 as project past the edges of straps 14'', seen in Fig. 13.

Referring to Fig. 1, on drive shaft 33 is secured the bevel gear 53, engaging bevel gear 54, formed with notched hub 54', loosely mounted on splined shaft 55, rotatably mounted in bearing brackets 56' and secured on yoke 3'. The notch of said hub is disengageably engaged by projection 58', formed on collar 58, slidably splined on shaft 55, and provided with annular channel 58'', engaged by fork 59' of lever 59, pivotally secured to yoke 3'. The free end of said lever is laterally elastic and is adapted to be raised from the position seen and sprung into notch 56'' in bracket 56; thereby providing disengageable engaging means, whereby drive shaft 33 is disengaged from its engagement with the hereinafter described skiver. On the rear end of shaft 55 is secured the gear 60, engaging gear 61, secured on the rear end of skiver shaft 62, rotatably mounted in brackets 63, secured on yoke 3'.

Referring to Fig. 9, on shaft 62 is secured the skiver body 64 carrying skiver blade 65, secured thereon by screw 65'. Spring actuated keeper 66, (adapted to keep that part of strap 14'' in front of said skiver blade, firmly pressed against skiver block 67,) is secured to said skiver body by screws 66'. The inner end of skiver block 67 is pivotally secured at 67' to skiver bracket 68, provided with slots 68', through which pass screws 69, screwed into yoke 3', for adjustably securing said bracket to said yoke. The outer end of said skiver block is provided with adjusting screw 70, the lower end of which is pivotally secured at 70' to said block, and the upper screw threaded portion is adjustably secured in a loose aper-

ture through the end of arm 68'' of bracket 68, by lock nut 71 and thumb nut 72; thereby providing adjusting means, whereby said skiver block is thoroughly adjustable to said skiver blade.

The described skiver is so timed with the previously described movements of feed plate 27 and die 40, that during the described revolution of shaft 33, the cutting edge of blade 65 travels in continuous rotation, from point A to B, B to C, C to D, and D back to point A, in consecutive order during the described fractions of one revolution of shaft 33; from which it will be seen and understood that said cutting edge passes from point B to point C, while a strap is being moved as described to the position seen at 14'', unobstructed by the described skiver; which is disengaged from shaft 33, and stands still in this position, while straps 14'' are punched or die cut without skiving.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is;—

1. In a strap working machine, having a table and a strap box adapted to removably hold a pile of straps on said table; a plurality of carrier bars, slidably mounted in said table; a plurality of ejector bars, mounted, one on each of said carrier bars, a feed plate, adapted to feed said straps, one at a time in succession from said strap box, adjustable securing means for said feed plate, whereby said feed plate is adjustably secured on said ejector bars, said securing means also acting as securing means whereby said ejector bars are secured on said carrier bars, and reciprocative driving means, whereby said feed plate is reciprocated beneath said strap box.

2. In a strap working machine, the combination with die cutting means, provided with cutting dies, adapted to die cut a strap, of a rotatable skiver, having a skiver body, provided with a skiver blade secured thereon, adapted to skive an end portion of said strap; rotating means, rotating said skiver, and intermittent moving means, whereby said cutting dies are moved, for die cutting said strap, and held in said strap, and act as holding means for holding said strap, while said skiver is doing said skiving.

3. In a strap working machine, a skiver, comprising a skiver body, secured on a rotatably mounted shaft, said body being provided with a skiver blade, secured thereon, adapted to skive an end portion of a strap; a skiver block; supporting means, whereby said block is supported adjacent to said blade; adjusting means, for said block, whereby the space between said block and said skiver blade is adjusted; a spring actuated keeper, secured on said body, said keeper being adapted to keep said strap firmly pressed against said skiver block, in

advance of said skiver blade, and rotating means, whereby said skiver is rotated.

4. In a strap working machine, having a frame for supporting the parts thereof and provided with a table adapted to support a pile of straps thereon; a strap box, adapted to removably hold said pile of straps on said table, said strap box being provided with securing means for slidably securing the same to said table; a strap box extension, slidably secured to said strap box, said extension being provided with a strap gage on the extended end thereof, and securing means, whereby said extension is secured to said strap box at various extensions therefrom.

5. In a strap working machine, a rotatably supported strap stop; rotating means, adapted to contact and rotate said strap stop into position to abut an edge of said strap and stop the same in said machine; said strap

stop being adapted to be rotated by gravity thereof, to a position below the level of said strap upon removal of said strap stop rotating means from contact with said strap stop, and driving means, whereby said stop rotating means is reciprocatively driven into and from contact with said strap stop.

6. In a strap working machine, a plurality of ejector bars, each of which is provided with a mortise formed therein, a spring ejector, secured on said ejector bar, said ejector being depressible into said mortise, and supporting, guiding and reciprocative driving means, whereby said ejector bars are supported, guided and reciprocatively driven.

In testimony whereof I affix my signature in the presence of two witnesses.

JAMES THORNTON.

Witnesses:

VICTOR SCHWIEN,
BERT G. MARTEL.