March 11, 1941. C. D. TILSON 2,234,536

MARKING MACHINE

Filed July 25, 1939 4 Sheets-Sheet 1

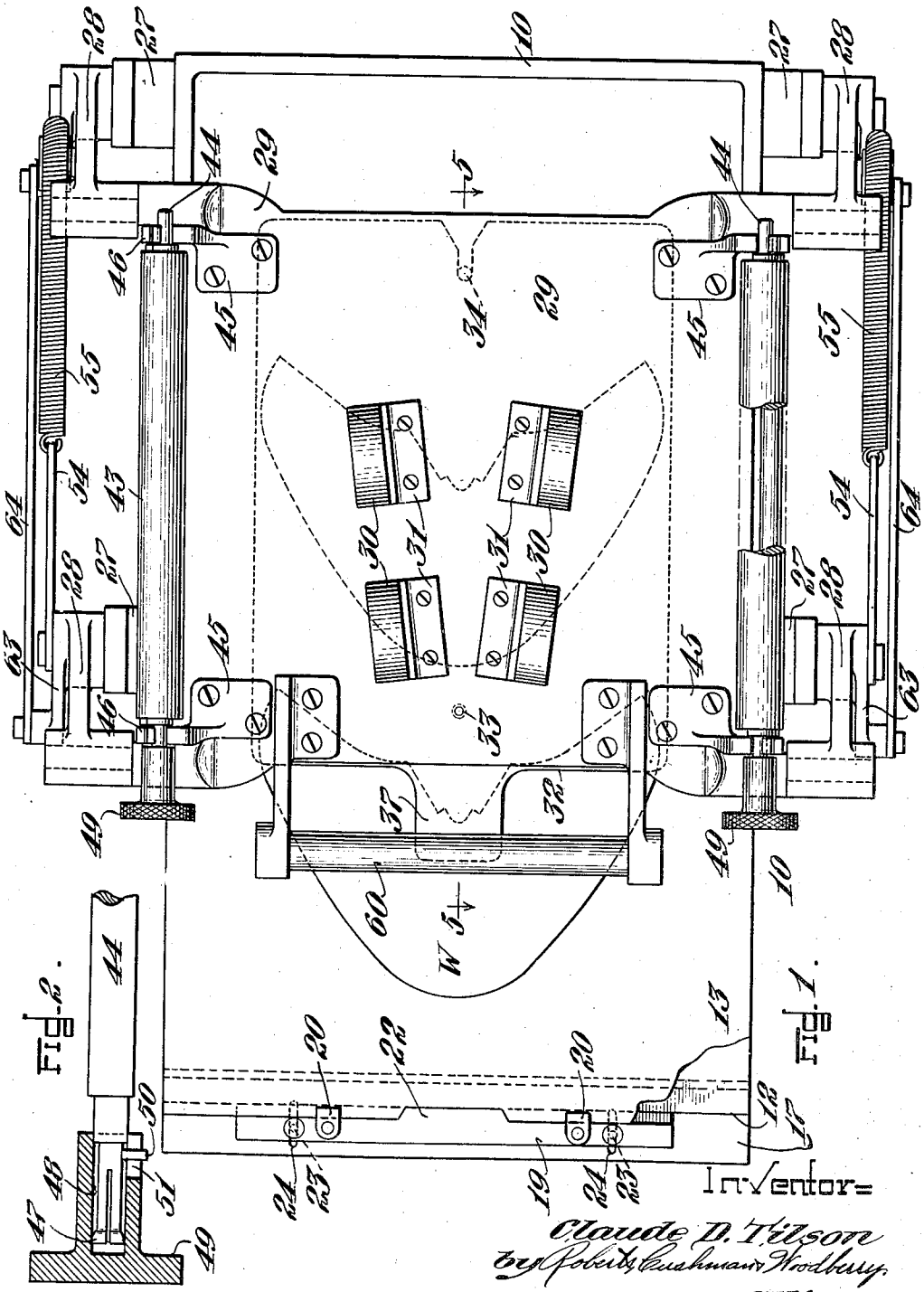


Fig. 1.

Fig. 2.

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MARKING MACHINE

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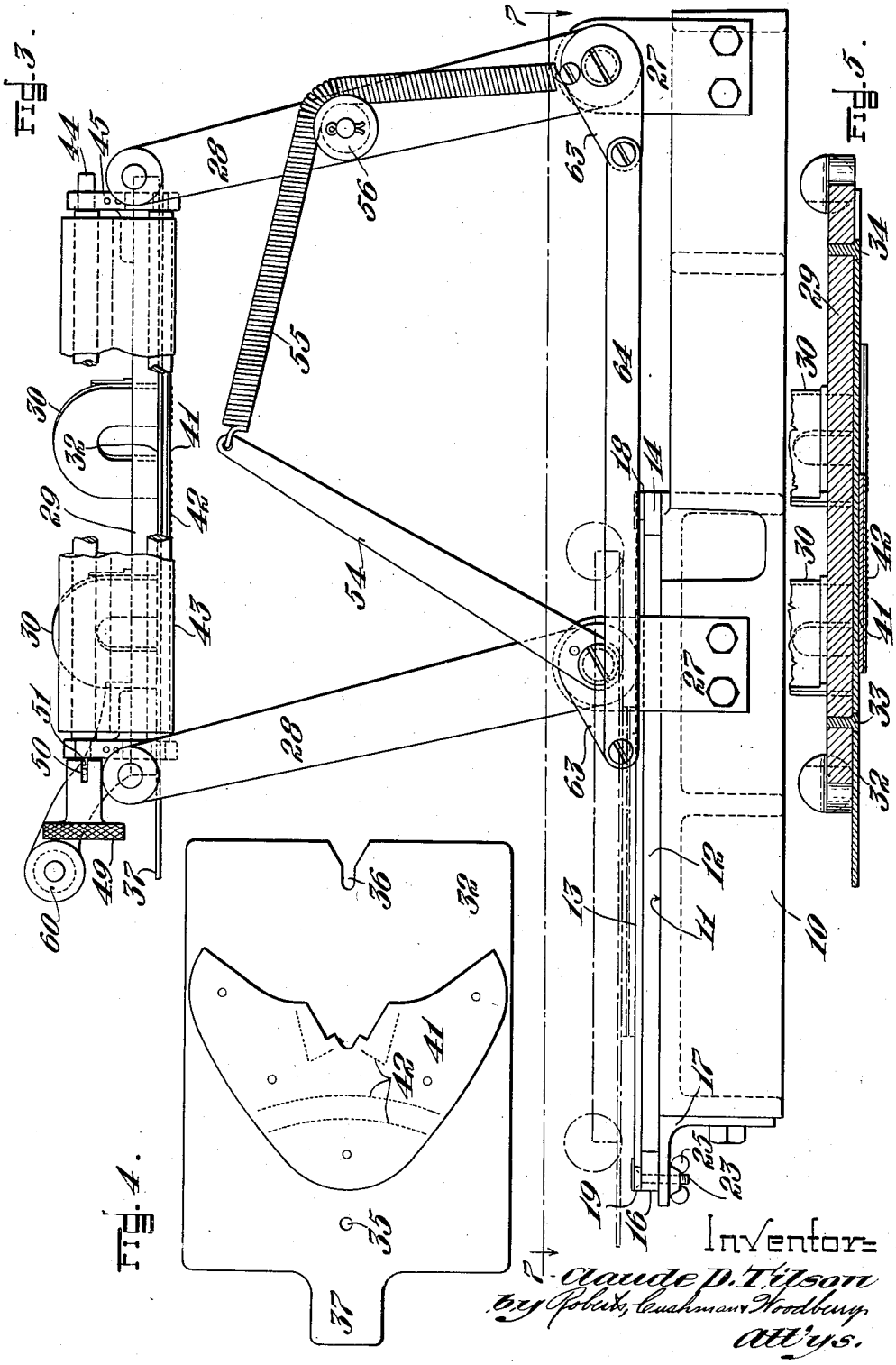


Fig. 3.

Fig. 5.

Fig. 4.

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MARKING MACHINE

Filed July 25, 1939 4 Sheets-Sheet 3

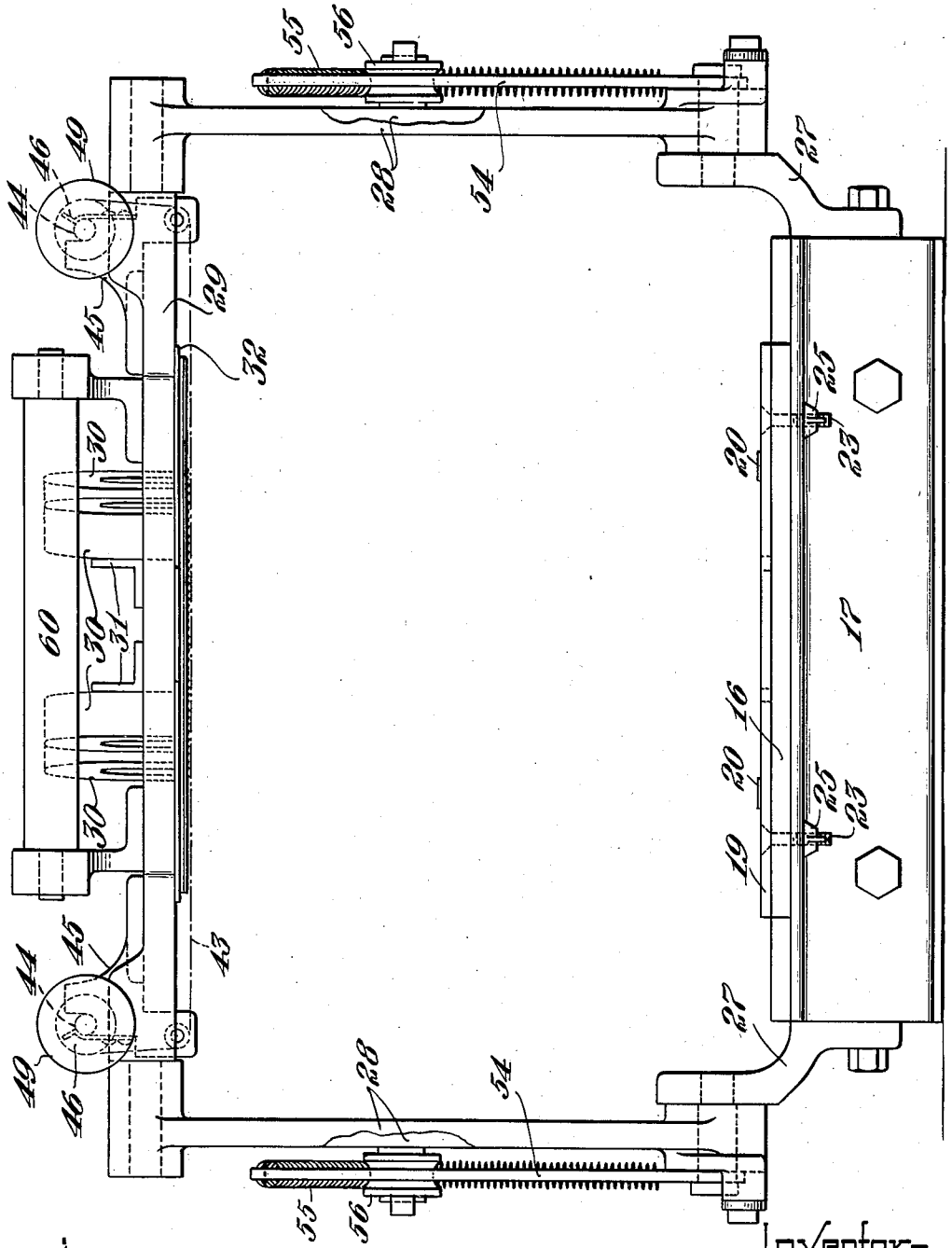


Fig. 6.

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MARKING MACHINE

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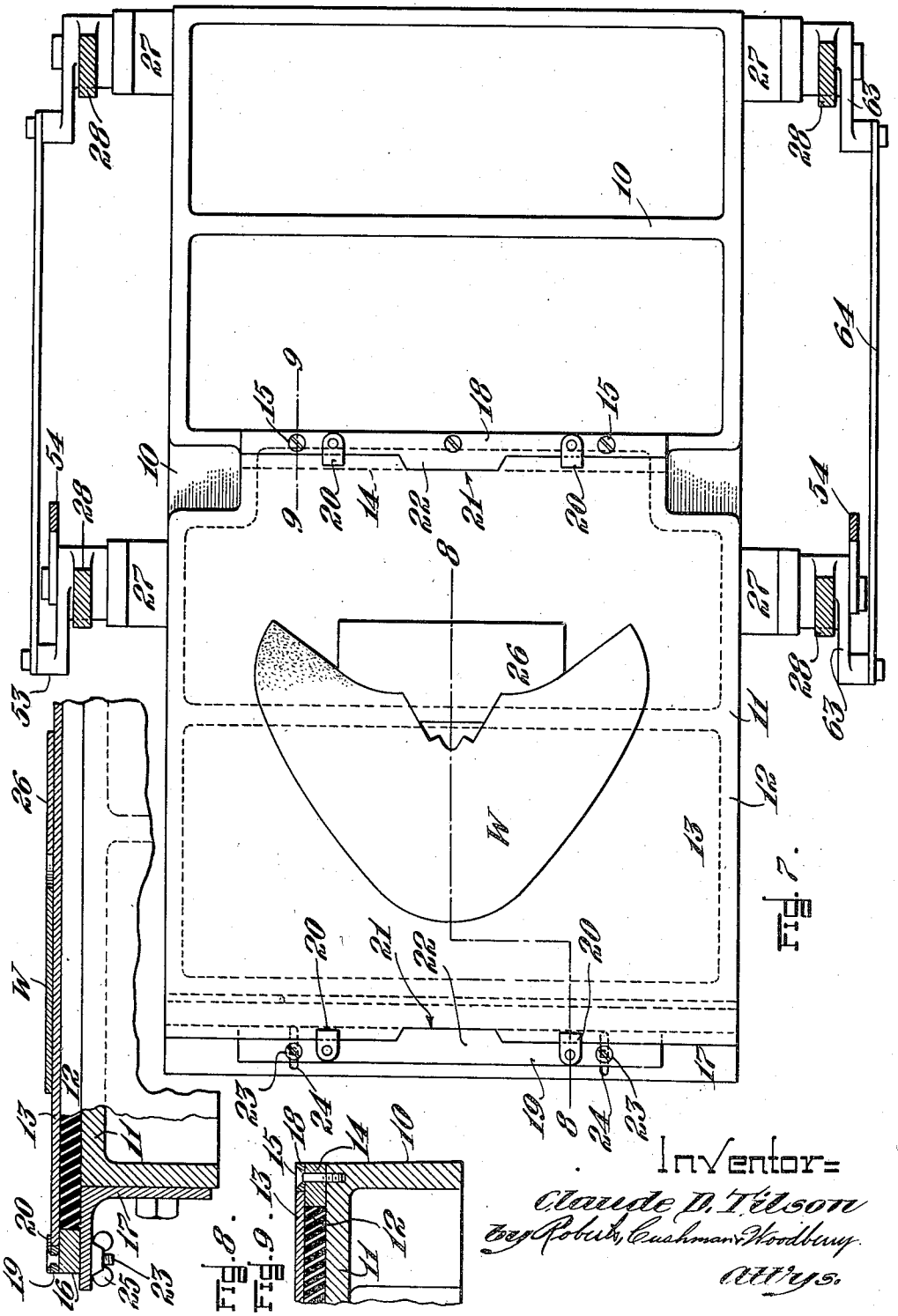


Fig. 7.

Fig. 8.

Fig. 9.

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Patented Mar. 11, 1941

2,234,536

UNITED STATES PATENT OFFICE

2,234,536

MARKING MACHINE

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Application July 25, 1939, Serial No. 286,388

4 Claims. (Cl. 101—301)

This invention relates to machines for marking shoe upper sections or similar pieces of sheet material, the present application being a continuation-in-part of my copending application Serial No. 231,385, filed September 23, 1938.

In the manufacture of shoes, particularly women's shoes, it is customary to apply ornamental designs to the shoe uppers, as by stitching, perforating or embossing. Usually the ornamental designs are applied to the cut-out sections of the uppers before they are assembled in the shoe; and in the case of stitching, the designs are first marked on the shoe uppers and the marked designs are then followed in the stitching. In accordance with the customary practice, the design may be impressed upon the shoe upper section, or similar article of sheet material, by a marking plate on which the desired pattern is formed by bosses formed from the material of the plate and disposed in lines, rows or other arrangements, to delineate the design. The marking plate may then be pressed against a transfer sheet having its pigmented surface disposed against the shoe upper section or other piece of work to be marked, and the design displayed by the bosses will then be printed or impressed on the work. A similar method may be used without the transfer sheet for merely embossing a piece of leather, in which case the marking plate will be embossed in accordance with the desired design, or for perforating the work, in which case the marking plate will be made with bosses in the form of cutting punches of such shape and arrangement as to cut holes or perforations in the work, shaped and arranged according to the desired design.

Printing or marking, perforating and embossing, whether used separately or in various combinations at the same time, are all included in the expression "marking" as herein used; and the term "marking plate" is used to designate the plate for applying the design to the work whether the plate is constructed for printing from a transfer sheet, or for perforating, or for embossing, or for any combination of these operations.

The principal objects of the present invention are to provide a marking machine for carrying out the aforementioned operations; to provide a machine constructed so as to ensure a smooth, efficient and reliable operation, avoiding shocks which tend to effect a displacement of the marking instrumentalities; and to provide a marking machine which is of simple design and of strong and durable construction and in which means are provided for using interchangeable marking plates which may be readily and accurately positioned.

Further objects relate to various features of construction and will be apparent from a consideration of the following description and accompanying drawings, wherein:

Fig. 1 is a top plan view, with parts broken away and shown in section, of a marking machine constructed in accordance with the present invention;

Fig. 2 is an enlarged detail of a part of the mechanism for supporting the transfer web;

Fig. 3 is a side elevation, partly broken away, of the machine shown in Fig. 1;

Fig. 4 is a plan view of the marking plate and holder;

Fig. 5 is a section on the line 5—5 of Fig. 1;

Fig. 6 is a front elevation of the machine shown in Fig. 1;

Fig. 7 is a section on the line 7—7 of Fig. 3; and

Figs. 8 and 9 are sections on the lines 8—8 and 9—9, respectively, of Fig. 7.

The particular embodiment herein shown comprises a base frame 10 having a work bed 11, which supports a sponge rubber pad 12 carrying a heavy sheet of fiber board or the like material 13, as shown in Figs. 8 and 9. The rear end of the pad 12 abuts a transverse bar 14 (Figs. 3 and 7 to 9), which is rigidly secured in fixed position on the top of the bed 11 by screws 15 and the front end of the pad abuts a similar transverse bar 16 which is adjustably clamped to one of the flanges of a transversely extending angle iron 17 rigidly secured to the front end of the frame 10.

The rear of the sheet 13 abuts a transverse bar 18 rigidly secured to the top of the bar 14 by means of the screws 15, and its front end abuts a transverse bar 19 adjustably fixed in position upon the top of the bar 16, as shown in Figs. 7 to 9. The two pairs of bars 14, 18 and 16, 19 thus provide a pocket within which the pad 12 and sheet 13 snugly fit, and in order to prevent accidental upward displacement two pairs of retaining lugs 20 are riveted or otherwise secured to the bars 18 and 19 so that their inwardly extending margins overlie the sheet 13.

The sheet 13 is formed at its front and rear ends with marginal recesses 21 which receive projections 22 formed on the inner edge of the bars 18 and 19, as shown in Fig. 7, thereby holding the sheet 13 against transverse displacement, it being noted that the bars 18 and 19 are effective to hold the sheet 13 against longitudinal displacement. The two bars 16 and 19 are formed with registering threaded apertures which receive

screws 23 having their shanks extending downwardly through longitudinal slots 24 (Figs. 1 and 7) formed in the horizontal flange of the angle iron 17. The lower end of the screws are provided with thumb nuts 25 (Figs. 3 and 6) by means of which the two bars 16 and 19 are securely clamped to the angle iron 17, thus permitting ready installation and removal of the sheet 13.

The work W to be marked is placed upon the top of the sheet 13, as shown in Figs. 1 and 7, and in order to ensure accurate positioning thereof, the top face of sheet 13 is provided with an elevated gauge 26 (Fig. 7) which consists of an appropriately shaped piece of fiber board cemented or otherwise secured in position on the sheet 13. The particular work-supporting and positioning sheet 13 here shown is constructed for use in connection with vamps of a given size or shape, and it is to be understood that when the character of the work is changed another sheet 13 appropriate to the new work may be readily substituted.

Pivotally connected at their lower ends to brackets 27 (Figs. 1, 3, 6 and 7) fixed to the base 10 of the machine are two pairs of parallel links 28, the upper ends of which are pivotally connected in pairs to the opposite ends and sides of a platen 29 which is preferably made of aluminum. Adjacent to its central portion the platen 29 is formed with openings through which the poles of a plurality of permanent horseshoe-shaped magnets 30 extend, their ends preferably terminating adjacent to the plane or the bottom surface of the platen 29, as shown in Fig. 5. One side of each of the magnets 30 is brazed or otherwise secured to one of the flanges of an angle iron 31 (Figs. 1 and 6), the other flange of which is fastened by screws in position upon the top of the platen. When thus positioned the magnets 30 are effective to hold a steel marking plate carrier 32 in fixed position against the bottom side of the platen, the carrier being accurately positioned relative to the work W on the bed and held against displacement relative to the platen by two studs or pins 33 and 34 (Figs. 1 and 5) carried by and projecting from the bottom of the platen 29. The pin 33 projects into an aperture 35 (Fig. 4) formed in the die carrier and the pin 34 projects into a longitudinal slot 36 extending inwardly from the rear edge of the carrier plate, the open end of the slot being formed relatively wide and flaring so as to facilitate engagement of the carrier with the pin 34. At its front end the carrier plate 32 is provided with an extension 37 constituting a handle for use in positioning the carrier against the bottom of the platen and in removing the carrier from the machine. When the carrier is properly positioned, the handle 37 projects forwardly beyond the front of the platen so as to be readily accessible.

A marking plate or die 41 is fastened in position against the under side of the carrier 32 by rivets or the like elements, and the operating face of the plate is formed with a series of small projections or bosses 42 delineating the design to be impressed upon the work. When the carrier 32 is in position beneath the platen, the marking plate 41 is disposed just above a transfer web 43 (Fig. 3) coated with a pigment of suitable color. The opposite portions of the web are connected with two spindles 44 disposed at opposite sides of the platen and each of the spindles is rotatably supported adjacent to its ends within socket bearings formed in brackets 45 which are fastened in position on the top of the platen, as shown in Figs. 1, 3 and 6. Leaf springs 46 (Fig. 1) are provided yieldingly and removably to retain the spindles within the sockets, and these springs are also effective frictionally to oppose free rotation of the spindles.

Adjacent to its forward end each spindle is reduced in diameter and split longitudinally, as shown in Fig. 2, the outer end of the split portion terminating in a hemispherical head 47 which has a pressed fit within the bore 48 of the hub of a hand wheel 49. The split end of the spindle thus serves as a clutch which yieldingly opposes withdrawal of the hand wheel from the end of the spindle. A pin 50 projects radially from the spindle into a longitudinal slot 51 formed in the hub of the wheel 49 and ensures rotation of the spindle when the wheel is turned. The slot 51 is open at its inner end so that the wheel may be forcibly removed from the spindle when desired. As the portion of the web underlying the marking plate 41 becomes worn due to use, the operator may rotate one or the other of the wheels 49 so as to adjust the web lengthwise to present a fresh portion to the marking plate 41. It will be noted that with this construction and arrangement the hand wheels 49 may be transferred from one pair of spindles to another when an exhausted web is removed and a fresh one substituted.

The lower hubs of the front links 28 are provided with upwardly and rearwardly extending arms 54 to which the ends of coil springs 55 are connected, these springs extending around rollers 56 carried by the rear links and thence downwardly to the hubs of the rear links to which their opposite ends are fastened. The springs provide elastic cables for yieldingly holding the platen in elevated or retracted position from which it may be swung downwardly and forwardly by means of a handle 60 to cause the web 43 to be brought into operative position against the work W by the projections or bosses of the marking plate, thereby to print or mark the design on the work.

The lower hubs of both the front and rear links 28 are formed with forwardly extending crank arms 63 and the two arms at each side of the machine are connected by links 64, thus providing in effect a four bar linkage at each side of the machine. The links 64 ensure a smooth and more reliable operation of the machine since in their absence the rear pair of links 28 tends to lag behind the front pair at the commencement of the upward movement of the platen and hence interfere with the return movement due to the fact that the elevating force is applied in such a manner that the front of the platen is raised slightly in advance of the rear end, thus tending to lock the two rear links 28 in their lowermost or dead center position.

When the platen is swung to marking position the arms 54 (Fig. 3) move forwardly, relative to the rollers 56, with the result that the springs 55 are stretched and consequently it is merely necessary for the operator to release his grip on the handle 60 when the platen occupies its lowermost position, whereupon the springs 55 act through the arms 54 to retract the platen to elevated position, the extent of the return movement being yieldingly limited by the springs 55 without shock such as would be produced by a positive-acting stop.

While I have shown and described one desirable embodiment of the invention, it should be understood that the present disclosure is for the

purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A marking machine of the class described comprising a base, a work bed on said base for receiving and holding in predetermined fixed position a shoe upper element or the like, a platen, a pair of front and rear parallel links for supporting said platen for movement toward and away from said work bed, means for holding a marking plate in predetermined fixed position against the underside of said platen, and means for effecting a shock-free retraction of said platen when swung to marking position, said means comprising an outstanding part on one of said rear links, and an elongate elastic member having one end fixed to said base and extending over said outstanding part with its opposite end operatively connected to one of said front links.

2. A marking machine of the class described comprising a base, a work bed on said base for receiving and holding in predetermined fixed position a shoe upper element or the like, a platen, a pair of front and rear parallel links for supporting said platen for movement toward and away from said work bed, magnetic means for holding a marking plate in predetermined fixed position against the underside of said platen, means for supporting a sheet of transfer material between a marking plate held by said magnetic means and a shoe upper element on said work bed, and means for effecting a shock-free retraction of said platen when swung to marking position, said means comprising an outstanding part on one of said rear links and an elongate elastic member having one end fixed to said base and extending over said outstanding part with its opposite end operatively connected to one of said front links.

3. A marking machine of the class described comprising a base, a work bed on said base for receiving and holding in predetermined fixed position a shoe upper element or the like, a platen, a pair of front and rear parallel links for supporting said platen for movement toward and away from said work bed, means for holding a marking plate in predetermined fixed position against the underside of said platen, and means for effecting a shock-free retraction of said platen when swung to marking position, said means comprising an outstanding part on one of said rear links, an upstanding arm associated with one of said front links, and an elongate elastic member having one end fixed to said base and extending over said outstanding part with its opposite end secured to said arm.

4. A marking machine of the class described comprising a base, a work bed on said base for receiving and holding in predetermined fixed position a shoe upper element or the like, a platen, a pair of front and rear parallel links for supporting said platen for movement toward and away from said work bed, means for holding a marking plate in predetermined fixed position against the underside of said platen, and means for effecting a shock-free retraction of said platen when swung to marking position, said means comprising a roller mounted on each of said rear links, and a pair of coiled tension springs having one of their ends fixed to said base and extending over said rollers with their opposite ends operatively connected to said front links.

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