

March 22, 1938.

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2,111,556

MARKING MACHINE

Filed Oct. 30, 1936

2 Sheets-Sheet 1

Fig. 1.

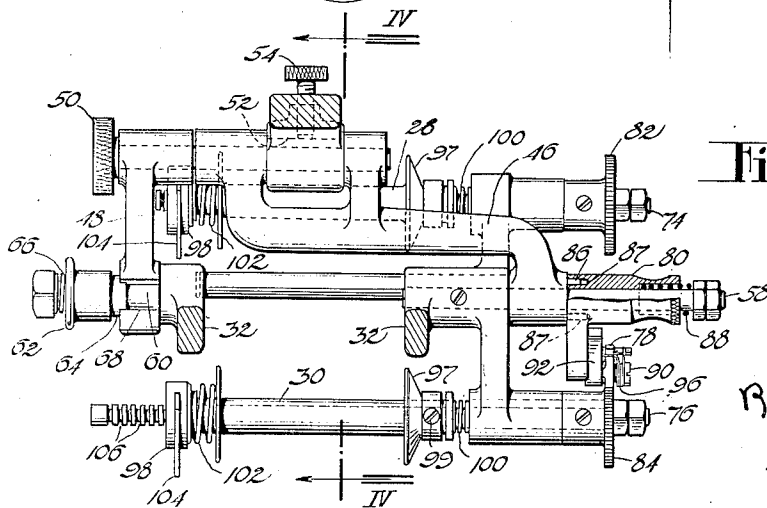
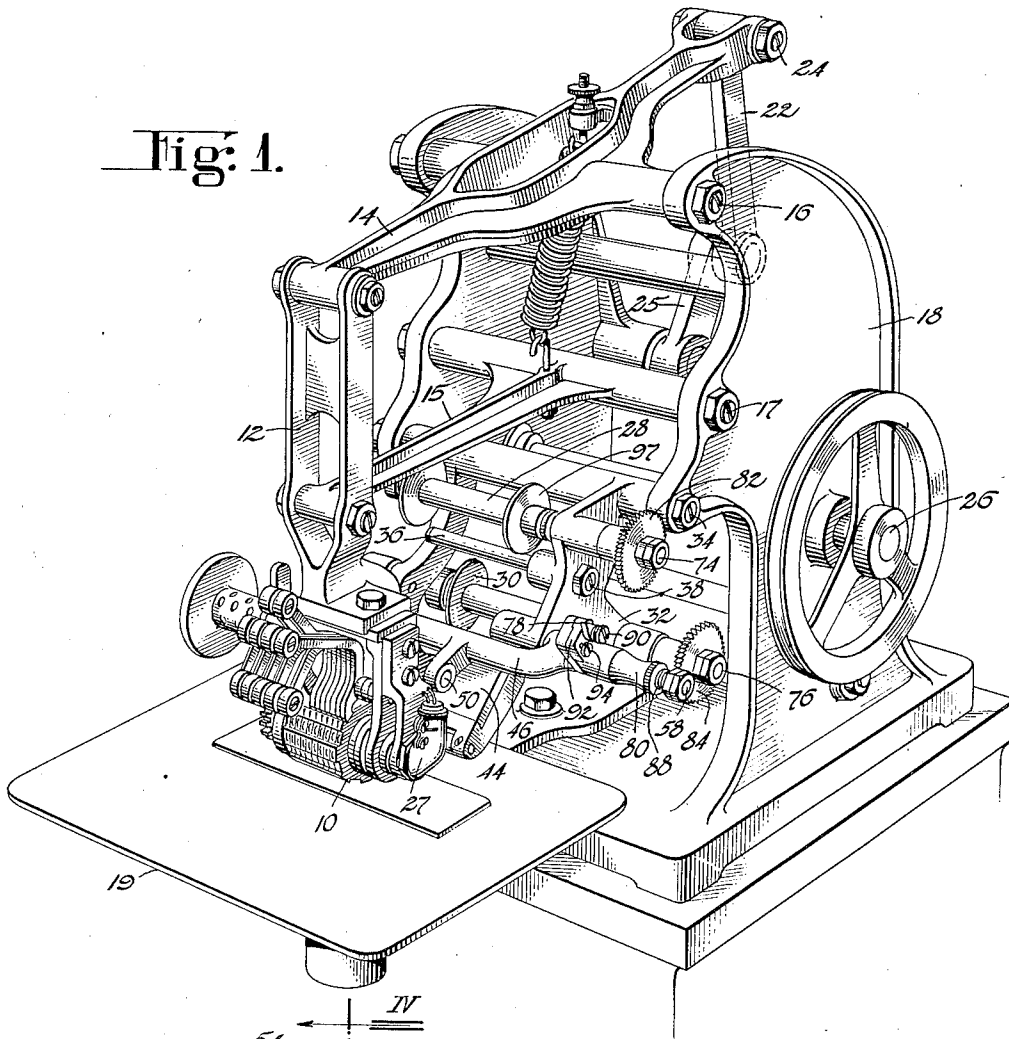


Fig. 3.

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Fig. 2.

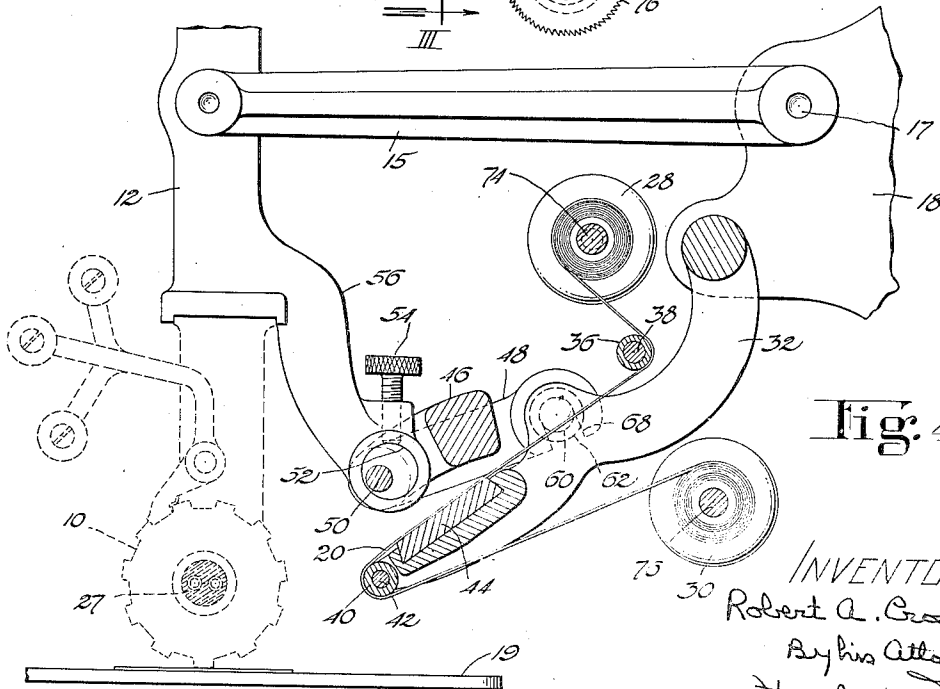
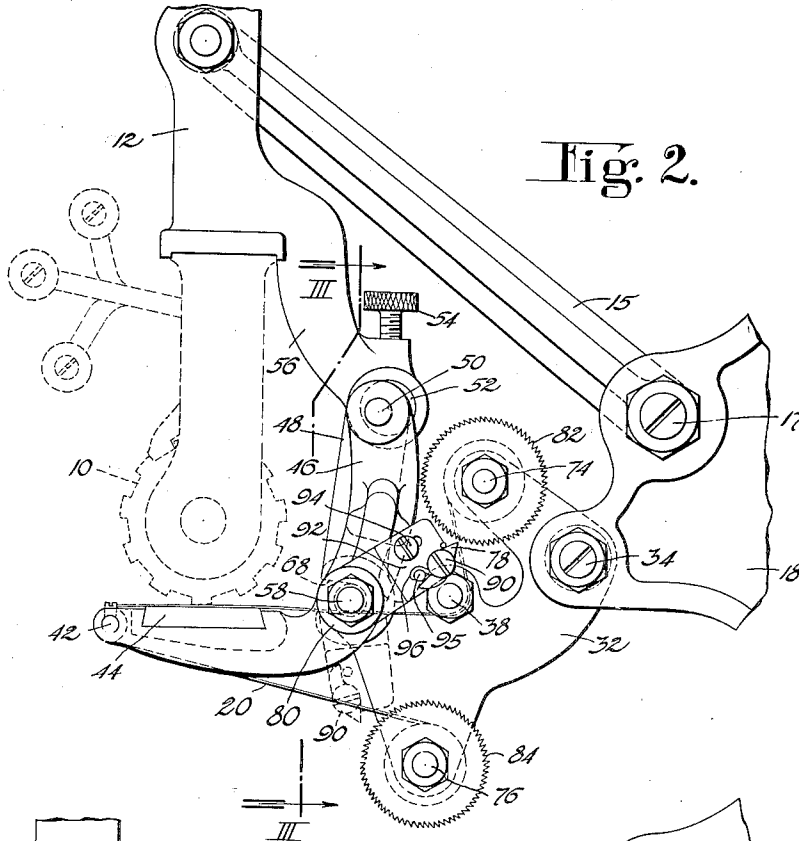


Fig. 4.

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UNITED STATES PATENT OFFICE

2,111,556

MARKING MACHINE

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3 Claims. (Cl. 191—324)

This invention relates to marking machines and is herein illustrated as embodied in a machine of the type disclosed in United States Letters Patent No. 960,029 granted May 31, 1910, on an application of F. W. Merrick.

In order to insure uniformity and clarity in the work of marking machines of the type referred to above, it has long been recognized that it is important that precisely the correct amount of marking medium be used in the making of each mark.

In the operation of one well-known type of marking machine, as illustrated in the above-mentioned Merrick patent for example, the marking die or head is moved alternately into engagement with a soft yielding pad in the form of a traveling web impregnated with marking medium and then into engagement with a work-piece to be marked. The marking head, upon engaging this type of pad, sinks into it appreciably and not only squeezes the medium away from the portion of the pad directly opposite to the type faces, but also causes the marking medium to accumulate at and to be applied to the edges and sides of the type characters of the head, which results in a waste of medium and seriously impairs the definition of the mark.

These objections are overcome to some extent by the use of another type of machine having a head which presses a thin ribbon carrying a marking medium directly against the work to be marked. However, the use of this type of machine is not practicable in connection with the manufacture of articles of apparel such as shoes for example because, in the operation of this type of machine, it is likely that the ribbon will be pressed against the work at points other than those intended to be marked thus making a blurred mark.

In view of the foregoing, it is an object of this invention to provide a marking machine adapted to produce a sharp and clear mark on the work-piece without in any way defacing the work-piece, and which will reduce to a minimum the consumption of marking medium and the care required on the part of the operator in keeping the marking head and marking medium carrier in good order. This object is attained in the illustrated machine by successively applying to the type faces only of the marking head the exact amount of marking medium which is necessary for making each mark by the use of a thin web carrying a relatively small quantity of medium.

In accordance with features of the invention and as illustrated, the ink-carrying web or ribbon

is wound on supply and take-up reels which are carried on a bracket pivoted on the frame to the rear of the head, with the web moving from back to front of the machine and passing over a supporting table on the bracket by means of which table the web is pressed against the type faces while the head is raised. The swinging of this bracket is effected by a link connecting the bracket to the head and, in the illustrated machine, provision is made for mounting a pawl on this link for engagement with a ratchet on one or the other of the reels thereby to move the ribbon intermittently at each operation of the machine.

These and other features of the invention, including various novel details of construction and combinations of parts, will now be more particularly described by reference to the accompanying drawings and pointed out in the claims.

In the drawings,

Fig. 1 is a view in perspective of an illustrative machine embodying the invention;

Fig. 2 is a side elevation of a portion of the machine shown in Fig. 1 and illustrating the application of marking medium to the marking head;

Fig. 3 is a sectional front elevation of the means for holding the web which carries the marking medium, the section being taken along the line III—III in Fig. 2; and

Fig. 4 is a sectional elevation illustrating the relation of the machine parts shown in Fig. 2 when the marking head is moved into engagement with a work piece to mark it, the section being taken along the line IV—IV in Fig. 3.

The illustrated machine comprises a marking head 10 attached to a carrier 12 which is mounted on parallel arms 14, 15 pivoted at 16, 17, respectively, between side members of a frame 18 for movement toward and away from a work support 19 to mark a work piece placed on the support. As is common in the art of marking and will be more fully described later, the marking head 10 receives an application of marking medium before each marking operation from a marking medium carrier, herein illustrated as in the form of a web 20 (Figs. 2 and 4).

The marking head 10 is operated towards and away from the support 19 by connections comprising a link 22 the upper end of which is pivoted at 24 to the rear end of the arm 14, the lower end of the link being pivoted to a crank 25 which is driven from a drive shaft 26 through speed-reducing gearing and a one-revolution clutch (not shown).

For a more complete description of the construction and mounting of the parts of the illustrated machine referred to above reference may be made to the above-mentioned Merrick patent which fully discloses mechanism of the type referred to.

The illustrated mechanism for applying marking medium to the marking head 10 comprises the web 20, herein illustrated as a thin ribbon carrying a marking medium of any suitable type such, for example, as a fluid or moist ink or a heat-responsive medium both of which are well known to those skilled in the art of marking. The marking head is heated by an electric resistance unit 27 fixed to the head 10 and to which power may be supplied through any suitable connections (not shown). The web 20 is wound upon itself in superimposed convolutions on reels 28, 30 rotatably mounted in a bracket 32 which is pivoted at 34 between the side members of the frame 18. The portion of the web 20 extending between the reels 28, 30 is led over a tubular guide 36 rotatably mounted on a stud 38 fixed to the bracket 32. The guide 36 and a similar guide 40 rotatably mounted on a rod 42 fixed in the front end of the bracket 32 are arranged to direct the web 20 substantially in the plane of the upper surface of a table 44 dovetailed into the bracket 32. The bracket 32 and the head 10 are moved relatively toward each other to cause the part of the web 20 on the table 44 and the marking characters on the head 10 to be brought into engagement with each other by connections comprising links 46, 48 carried at one end by a stud 50 having an eccentric hub 52 arranged to be clamped by a set screw 54 in the end of an arm 56 extending downwardly and rearwardly from the carrier 12. The other end of the link 46 is pivoted on a shaft 58 fixed in the bracket 32 and the link 48 is similarly pivoted to the opposite side of the bracket 32 by connections including a stud 60 fixed to the bracket 32 in alignment with the shaft 58 and a sleeve 62 arranged to slide axially on the stud 60 and having a reduced portion 64 arranged to be received within an annular groove in the link 48. The sleeve 62 is normally held in assembled relation with the link 48 by a spring 66, which, however, allows the sleeve 62 to be retracted from the link 48 if it is desired to disconnect the link from the bracket 32 for convenience in changing the web 20, this being permitted by a bifurcation 68 in the end of the link.

The marking head of the illustrated machine receives an application of marking medium before each marking operation and toward or at the upper end of the stroke of the marking head 10. That is, as the marking head 10 rises from the work support 16 the links 46, 48 lift the bracket 32, swinging it upwardly about its pivot 34 until, as illustrated in Fig. 2, the web 20 and the marking head 10 engage each other. The desired degree of pressure between the marking head 10 and the web 20 may be controlled by adjustment of the eccentric stud 50 referred to above. The application of marking medium to the head 10 in exactly the amount necessary for one marking operation is insured in the illustrated construction by the use, with the illustrated web 20 which is relatively thin and which carries a relatively small amount of medium, of the table 44 which has a substantially non-deformable web-engaging surface arranged to hold the web, when in engagement with the marking head, in substantially the same plane as that of the marking char-

acters to be "inked", thereby avoiding any tendency for marking medium to be applied to the sides of the marking characters, which is likely to occur in the use of prior machines of this type and which results in the mark being blurred and indefinite. When the stud 50 is properly adjusted the pressure of the marking head 10 against the web 20 causes no appreciable displacement of the web into the table 44 the web engaging surface of which is relatively firm and yields under the pressure of the marking head only enough to obviate any tendency of the web 20 to be cut or mutilated by the marking head. The table may be made of any suitable material such as relatively hard rubber or may have an upper section (not shown) of fiber or similar firm material and a lower yielding section of yielding material such as rubber, for example.

The reels 28, 30 are mounted on shafts 74, 76 rotatably mounted in the bracket 32 and arranged to be selectively rotated between each marking operation in order that a different portion of the web 20 may be presented to the marking head 10 each time that they are brought into contact. To this end, a pawl 78 mounted on a pawl holder 80 (Figs. 2 and 3) adapted to slide axially of the shaft 58, is secured to the link 46 so that oscillations of the bracket 32 bring this pawl into engagement with either of two ratchet wheels 82, 84 fixed to the reel-carrying shafts 74, 76 respectively. A pin 86 fixed to the link 46 is arranged to enter any of three holes 87 in the pawl holder 80 whereby the latter may be positioned so as to engage either of the ratchet wheels 82, 84 or may be held in an inoperative position away from either of them. A spring 88 normally holds the pawl holder 80 in assembled relation with the pin 86 but permits the pawl holder to be moved axially of the shaft 58 out of engagement with the pin 86 whenever it is desired to shift the position of the pawl 78 and hence to reverse the movement of the web 20. The pawl 78 is pivoted by means of a screw 90 to a block 92 adapted to be adjusted radially of the pawl holder 80 thereby to control the relation between the pawl 78 and either of the ratchet wheels 82, 84. The block 92 is clamped in adjusted position by a screw 94. A pin 95 fixed to the block 92 acts as an abutment for the tail of the pawl 78 and also for a spring 96 which normally holds the pawl against the pin 96.

Each of the reels 28, 30 is mounted for adjustment axially of the shafts 74, 76, respectively, between collars 97, 98. The collars 97 are arranged to be clamped to the shafts 74, 76 by set screws 99 in such a position that the reels 28, 30 are laterally aligned with each other and the web 20 is positioned centrally with respect to the table 44. Springs 100 interposed between the collars 97 and the bracket 32 yieldingly hold the hubs of the ratchet wheels 82, 84 against the bracket 32. Frictional driving engagement or drag between the reels 28, 30 and shafts 74, 76 respectively is provided by springs 102 which bear against the collars 98 and the left-hand ends of the reels, thereby yieldingly holding the right-hand ends of the reels against the collars 97.

In order to control the frictional driving force or drag imparted to the reels 28, 30, the tension of the springs 102 is adjusted by moving the collars 98 axially of the shafts 74, 76 to which the collars are then locked by latches 104 pivoted within slots in the collars and arranged to swing into any one of a number of grooves 106 formed in the left-hand ends of the shafts 74, 76.

The operation of the illustrated machine will now be briefly summarized.

5 The web 20, having a suitable marking medium and having its opposite ends wound on the reels 28, 30, is first installed in the machine by being led under the guide 36 and over the table 44, the reels 28, 30 being placed axially of the shafts 74, 76 respectively by adjustment of the collars 97, 99 so that the web is directed centrally across the table 44. The marking head 10 having been set to produce the desired mark, and having been brought to the proper temperature if a marking medium requiring heat is used, the pawl holder 80 is then moved to bring the pawl 78 into operative relation to that one of the ratchet wheels 82, 84, which is to be driven to wind up the web 20. The collar 98 associated with that reel from which the web 20 is to be drawn is so positioned on its shaft as to set up sufficient drag against the reel to hold the web taut. The marking head 10 and table 44 are then adjusted relatively to each other by means of the stud 50 while the head is near or at the uppermost portion of its stroke. It will be understood that as the head 10 moves upwardly the links 46, 48 swing the bracket 32 upwardly until the web 20 and the characters on the head 10 in marking position are brought into engagement with each other (Fig. 2). The pressure between the marking head 10 and the web 20, when they are in engagement with each other, is adjusted and controlled by turning the stud 50 which may then be clamped in adjusted position by the set-screw 54. This adjustment, when carried out in accordance with the present invention, is so made that the planes of the characters of the marking head in operative position and the web-supporting surface of the table 24 are substantially coincident. Accordingly, the web 20 is not pressed into the table 44 to any substantial extent, and it is evident that the upper surface of the table 44 is substantially undeformed by the pressure of the marking head 10 against the web. Such a pressure relation between the marking head 10 and the web 20, coupled with the firmness of the web-supporting surface of the table 44, insures against any tendency of the web to be pressed against any portion of the marking head except its work-engaging surfaces in the operative position.

50 The above-mentioned preparations having been made, the machine is ready to be operated in the customary manner as described in the above-mentioned Merrick patent, the arrangement being such that the head, in its stop position, does not lie in contact with the web 20.

55 Between successive periods when the marking head 10 is moved to its position illustrated in Fig. 4, the web 20 is moved to a slight extent across the table 44 so that different portions of the web 20 are presented to the marking head each time it receives an application of medium. If the web 20 is to be wound upon the reel 28 and unwound from the reel 30, the movement of the web occurs during the movement of the marking head toward the work support. Similarly, if it is desired to reverse the movement of

the web, as when it has been wound for the most part upon the reel 28, the pawl holder 80 is swung to bring the pawl 78 into operative relation to the ratchet 84 which is operated by the pawl each time the marking head 10 moves toward its uppermost position.

Uniformity in the amount of marking medium applied to the marking head 10 before each marking operation is furthered not only by the movement of the web 20 between successive marking operations but also by the ability of those portions of the web from which an application of medium has been made to the marking head to absorb medium from the adjacent portions of the web and from opposite portions of adjacent convolutions of the web rolled upon the reel. It is apparent, moreover, that since the greater part of the web 20 is wound upon the reels 28, 30 it is inaccessible to the atmosphere, thereby insuring against excessive driving of the medium, the condition of which is freshened upon passing the table 44 by being tightly wound up upon the reels 28, 30.

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

1. In a marking machine, a frame, a work support thereon, a marking head having type faces and mounted on said frame for oscillation toward and away from the work support to mark a piece of work thereon, a bracket swingably mounted on said frame and provided with a table adapted to be swung into and out of operative relation to the type faces on said marking head, and inking means supported on said bracket including supply and take-up reels carrying an inking ribbon led over said table so that the ribbon may be pressed against the type faces while the head is away from the work support.

2. In a marking machine, a frame having a work support, a marking head having type faces and mounted on the frame for oscillation toward and away from the work support, and an inking mechanism for said type faces comprising a bracket pivotally mounted on the frame back of the marking head, said bracket having an ink-ribbon-supporting table and also carrying ribbon supply and take-up reels, and a link connecting said head with said bracket to bring the ribbon on the table into contact with the type faces on the head, said link being provided with means for moving the ribbon intermittently by rotating one of said reels.

3. In a marking machine, a frame carrying a work support, a marking head having type faces and mounted on said frame for oscillation toward and away from the work support, a bracket pivoted on said frame provided with take-up and supply reels for an ink ribbon, a link connecting said head with said bracket, ratchets associated with said reels, a pawl to move one of said ratchets, and a pawl carrier detachably secured to said link and arranged so that the pawl may be brought into operative relation to either one of the ratchets.

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