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2,415,526

MARKING AND PUNCHING TOOL

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2 Sheets-Sheet 1

Fig. 1

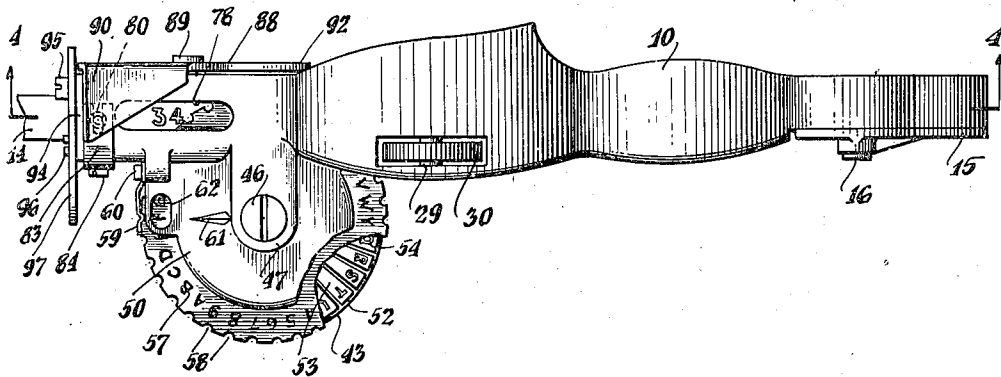


Fig. 2

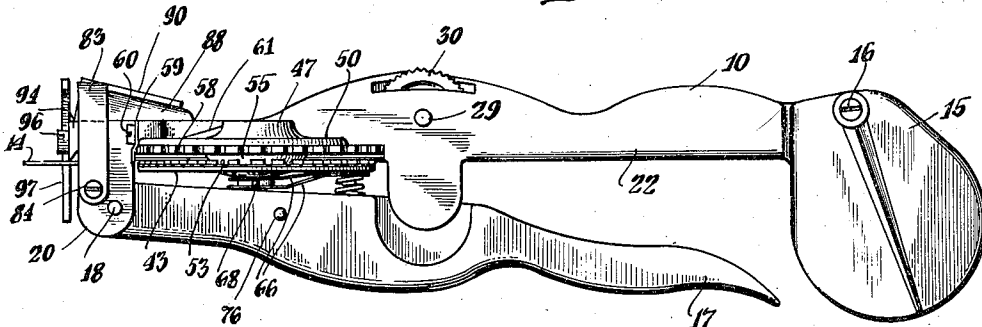
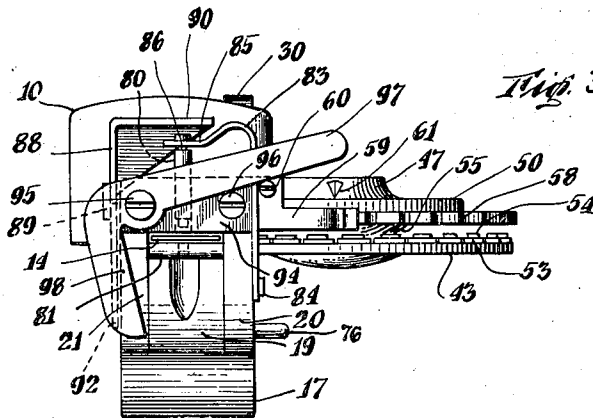


Fig. 3



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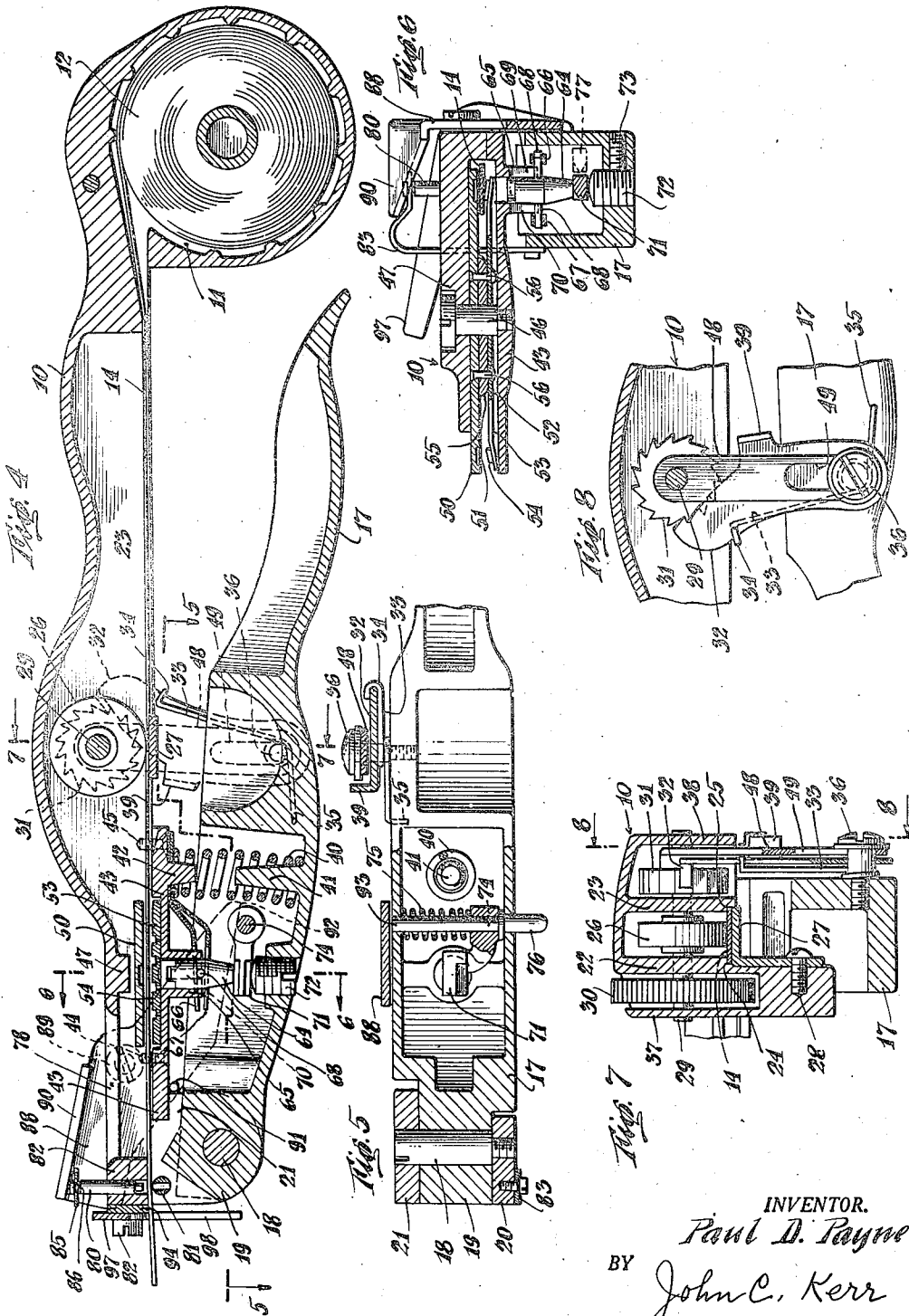
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2 Sheets-Sheet 2



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MARKING AND PUNCHING TOOL

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6 Claims. (Cl. 197—6.7)

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This invention relates to marking tools. Among the objects of the invention is to provide a tool for marking upon a strip and for punching holes in the strip without removing the strip from the tool.

Another object of the invention is to provide a hand-operable instrument having pivoted handles and marking and punching devices which are operable through force derived by the movement of the handles and wherein means are provided for selectively marking or punching a hole in a strip by eliminating either the marking device or the punching device from functional co-operation with the handles so that either a marking or punching operation may be performed when the handles of the instrument are moved with respect to each other.

In its commercial application, the invention is concerned with supplementing the marking tool described in United States Patent 2,275,670 to extend the usefulness of that tool. In the tool of the patent means are provided for feeding a metallic strip step by step as characters are successively embossed on the strip. The marked strip obtained by the use of the tool is commonly employed for identification purposes, but when it is necessary to provide holes in the strip to enable its attachment to an object, it is necessary to use a separate tool for punching the holes. The present invention provides punching mechanism in combination with the marking device of the tool whereby holes may be punched in the strip of metal, as desired.

Other features and advantages of the present invention will be described in the accompanying specification and claims with reference to the drawings in which a machine embodying the principle of my invention is illustrated.

In the drawings,

Fig. 1 is a plan of the tool showing my improvement;

Fig. 2 is a side view of the tool shown in Fig. 1;

Fig. 3 is an end view of the tool shown in Figs. 1 and 2;

Fig. 4 is a longitudinal section on line 4—4 of Fig. 1;

Fig. 5 is a horizontal section on line 5—5 of Fig. 4;

Fig. 6 is a vertical section on line 6—6 of Fig. 4;

Fig. 7 is a vertical section on line 7—7 of Fig. 4;

Fig. 8 is a partial sectional and side view on line 8—8 of Fig. 7.

The tool includes a main body member 10 which constitutes one arm or handle and also carries a magazine 11 as an integral part thereof. The magazine is shaped to contain a roll 12 of a metallic strip or tape 14. The magazine is closed by a cover 15 which is pivotally attached to the body member by a screw 16. An operating handle 17 is pivotally connected to the body member 10

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by means of a pivot pin 18 which extends through a narrowed portion 19 of handle 17 and through lugs 20 and 21 which are integral portions of body member 10.

The portion of the body member 10 facing handle 17 is hollowed between flanges 22 and 23 which extend the greater length of member 10. The flanges are grooved at 24 and 25, Fig. 7, for guiding the strip 14 as it is advanced from the magazine to the front end of the tool.

The strip of metal 14 is fed forwardly between a resilient roll 26 and a bracket 27 which is attached to the body member 10 by means of a screw 28. Roll 26 is tightly mounted on a shaft 29 which carries a thumb wheel 30 and a ratchet wheel 31. Ratchet wheel 31 is normally engaged by a pawl 32 which is resiliently pressed into contact with the ratchet wheel by means of a torsion spring 33 having one end 34 engaging the back edge of the pawl and its other end 35 anchored in handle 17. The torsion spring is coiled about a pin 36 which is threaded at its end and engaged in handle 17. The construction and arrangement is such that when handle 17 is advanced towards body member 10 as the handle pivots about pin 18, pawl 32 will slip idly over a tooth of ratchet wheel 31. Upon release of the handle 17, pawl 32 will actuate ratchet wheel 31 and feed roll 26 one step and cause advancement of strip 14 towards the front end of the tool. The ends of shaft 29 are journaled in outside flanges 37 and 38 of member 10.

Pawl 32 is provided with an ear 39 by which the pawl may be held retracted and away from engagement with the ratchet wheel. When the pawl is disengaged from the ratchet wheel by finger pressure on ear 39, the strip 14 may be moved forwardly and rearwardly along the tool by operating thumb wheel 30. The advantage of this control over the position of the strip will appear hereinafter.

A spring 40, Fig. 4, normally holds handle 17 away from body member 10. This spring is located over a projection 41 on handle 17 and over a projection 42 which extends downwardly from a shelf-like plate 43. Plate 43 is fixedly attached to body member 10 by screws 44 and 45, Fig. 4, and by a central pivot screw 46, Fig. 6. Screws 44 and 45 are engaged in flange 23 of body member 10 and pivot screw 46 is supported from a ledge 47 which is integral with and extends laterally from the body member.

The maximum distance of separation of handle 17 and body member 10 is attained through a link 48. This link is pivotally supported on shaft 29 and has an elongated opening 49 at its lower end which is engaged by the shank of screw 36 carried by handle 17.

The ledge 47 and plate 43 serve as a rigid support for the turntable embossing unit. As

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shown in Fig. 6, this unit includes a top plate 50 with a series of intaglio dies 51 arranged circularly at its under surface and a flexible disk 52 having radial slots whereby flexible teeth 53 are provided which can be bent independently of each other. These teeth have raised die portions 54 at their free ends which selectively cooperate with the intaglio dies during an embossing operation. A spacing plate 55 separates the upper and lower die plates and is joined thereto by rivets 56, Fig. 6, so as to form a single unit rotatable about screw 46. The upper die plate 50 has on its upper surface a series of characters 57, Fig. 1, for aid in selecting any pair of character dies. The edge of the upper die plate has notches 58 equal in number to the number of characters. The various embossing positions of the embossing unit are determined by a detent spring 59 which is adapted to serially engage the notches as the unit is rotated for selection of a marking character. This detent spring is fastened to the body member 10 by means of a screw 60 and serves to locate the embossing unit in any selected position. Ledge 47 is provided with an index 61, Fig. 1, pointing towards an opening 62 through which may be viewed the character of the embossing unit which is in position for embossing the strip 14.

The embossing operation is performed by the forceful application of a plunger 64 to the under die 54 of the pair of dies which is in embossing position, Fig. 6. The top of the plunger has a tapered anvil which engages the under side of a die 54. This plunger is mounted for reciprocation in a sleeve 65 depending from plate 43.

Plunger 64 is resiliently held in retracted position by a forked spring 66, which engages opposite ends of a pin 68 extending through the plunger. The pin is guided in slots 69 and 70 at either side of the sleeve. When the operating parts of the tool are arranged to perform a punching operation, the plunger is supported in its sleeve by a second forked spring 67. Forked springs 66 and 67 are bent upwardly and have holes at their supported ends which are engaged by projection 42 at the lower side of plate 43. The supported ends of the springs are held against plate 43 by spring 40. The forked ends of the springs overlie and underlie pin 68 so that the lower spring supports the plunger and the upper spring restores the plunger to its normal position, Figs. 4 and 6, following an embossing operation.

A displaceable element 71 underlies the lower end of plunger 64 whereby the movement of the handle 17 towards the body member is transmitted to the plunger during an embossing operation. Whereas an integral projection from handle 17 may be used to engage the lower surface of the displaceable element 71, I prefer to employ an adjustable screw 72 mounted in a threaded bore in the handle. This screw serves as a projection from handle 17. The screw is fixed by a locking screw 73 after its position has been determined.

Displaceable element 71 is fixedly mounted upon a rod 74 which is slidable through openings in the side walls of handle 17. The position of the rod controls and determines whether an embossing or punching operation will occur when the handles are pivoted with respect to each other. A spring 75, Fig. 5, normally holds the rod in such a position as to locate the displaceable element between screw 72 and the lower end of plunger 64. So long as the displaceable

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element is held in this position, plunger 64 will be actuated to cause an embossing operation each time the handles of the instrument are squeezed together. By displacing rod 74 axially of itself, element 71 is moved from its normal position to a location 77, Fig. 6, so that if the instrument handles are operated with the element so displaced, there will be no pressure brought to bear upon the lower end of the plunger 64 and no embossing operation will take place. The displaceable element 71 has a rounded nose or wedge so that it will readily enter between the plunger and screw 72 when it returns to its normal position under the action of spring 75 when pressure upon rod 74 is released.

Upon each operation of the handles towards each other, with wedge 71 underlying the plunger, selected characters will be embossed upon the strip and successive embossings will be applied to the strip in spaced relation along the strip. As previously explained, the strip is advanced on each release of the handle 17.

The forward end of the strip may be observed through windows 78, Figs. 1 and 4. The strip may be punched anywhere along its length by locating the place on the strip for perforation between punch 80 and die 81 which are located at the front end of the body member 10.

The punch is mounted in a vertical bore in the nose 82 of body member 10 immediately above the steel rod 81 in which the die hole is drilled. This steel rod extends between lugs 20 and 21 which depend from body member 10. The punch is normally held in an elevated position by a spring 83 having its lower end fastened to the member 10 by a screw 84. The upper end 85 of the spring is forked for engaging a groove 86 at the upper end of the punch.

The punch is operated through a lever 88 which is pivotally connected by a screw 89 to the body member 10 and has a lateral projection 90 overlying the upper end of the punch. This lever has extending laterally therefrom a pin 91, Fig. 4, which abuts lug 21 for limiting the clockwise movement of the lever about pivot screw 89, Fig. 4. The rear arm 92 of the lever is shaped to extend just above the hole in the wall of handle 17 in which rod 74 is supported, so that the end of the rod may be projected outwardly from the wall whenever the handles are in open position, as shown in Fig. 4, but not after movement of the handles has commenced.

Lever 88 may be swung in a counterclockwise direction, Fig. 4, only when rod 74 is moved axially of itself and its end 93 projects beyond the side wall of handle 17, but when the rod is retracted and the handles are squeezed together, the lever will not be moved. It follows, therefore, that during embossing operations, the punch will not be operated, and that when it is desired to punch a hole, rod 74 must be displaced axially by pressure upon its end 76 whereby the other end 93 of the rod is disposed beneath the lower edge of lever 88 so that upon movement of handle 17, force will be transmitted to the lever through the rod and a punching operation will occur. Spring 83 serves to elevate the punch to its normal position and rotate lever 88 clockwise, Fig. 4, as the handles are separated following a punching operation.

The strip will not be advanced during the punching of a hole, but will be advanced one step following the punching operation when handle 17 moves away from body member 10 and the feed roll is actuated by pawl 32 and ratchet wheel

31. However, any desired location of a hole in the strip 14 may be had by moving the strip in either direction under the control of the thumb wheel 30, but when retracting the strip into the tool it is necessary to release pawl 32 from engagement with ratchet wheel 31. It likewise is possible to sever the strip at any desired point by similarly controlling the position of the strip with respect to the tool.

The shearing means includes a fixed shear plate 94, which is fastened to the nose 82 of the body member by means of screws 95 and 96, and a lever 97 bearing a knife 98 which is pivotally mounted upon screw 95 and may be brought to bear against the lower side of the strip 14 for shearing the strip between the blade and the shear plate. Normally the blade is disposed away from the shear plate, as shown in Fig. 3, so as to permit the free passage of strip 14 from the end of the tool.

What is claimed is:

1. In a machine of the character described, the combination comprising a pair of pivotally connected hand-operable members, dies carried by one of said members, a punch carried by said first-named member, means for actuating a pair of said dies when said members are pivoted, means for actuating said punch when said members are pivoted, and means carried by the other of said pivoted members for selectively transmitting force therefrom to said punch-actuating means and to said die-actuating means, said last-named means being positionable for causing one or the other of the actuating operations depending on its position relative to said die-actuating and punch-actuating means when said hand-operable members are pivoted.

2. In a machine of the character described, the combination comprising a pair of pivotally connected hand-operable members, dies and die-actuating means carried by one of said members, a punch carried by said first-named member, a lever pivotally supported upon said first-named member for operating said punch, spring means for holding said punch and lever in non-operating positions, control means mounted on the other of said hand-operable members, said control means normally being out of engaging relationship with said lever, but displaceable for engaging said lever to operate said lever and said punch when said members are pivoted, an element mounted on said control means and adapted to transmit force from said last-named member to said die-actuating means for actuating a pair of dies, and means whereby said control means may be displaced for removing said element from co-operating relationship with said die-actuating means and for positioning said control means to engage said punch-operating lever upon pivotal movement of said hand-operable members.

3. In a machine of the character described, the combination comprising a pair of pivotally connected hand-operable members, dies and die-actuating means carried by one of said members, a punch carried by said first-named member, a lever pivotally supported upon said first-named member for operating said punch, spring means for returning said punch and lever to non-operating positions, a rod mounted on the other of said hand-operable members, said rod normally being out of engaging relationship with said lever, but displaceable for engaging said lever to operate said lever and said punch when said

members are pivoted, and means engageable at will with said die-actuating means and said other of said hand-operable members to actuate said dies by the pivoting of said hand-operable members with respect to each other.

4. In a machine of the character described, the combination comprising a pair of pivotally connected hand-operable members, dies carried by one of said members, means carried by said first-named member for actuating a pair of said dies when said members are pivoted towards each other, a punch and punch-operating means carried by said first-named member, and means carried by the other of said hand-operable members for transmitting force therefrom to said first-named means for actuating a pair of dies and displaceable for transmitting force from said second-named member for actuating said punch-operating means during different pivotal movements of said hand-operable members.

5. In a machine of the character described, the combination comprising a pair of pivotally connected hand-operable members, dies carried by one of said members, a plunger for operating upon said dies, and means carried by the other of said members for actuating said plunger, said means including an element adapted to actuate said plunger during a pivotal operation of said members, said element being mounted upon a rod carried by said second-named member, said rod being slidable relative to said second-named member in a direction lateral to the axis of said plunger and having manually operable means whereby said rod and element may be displaced in said direction for removing said element from operable relationship with said plunger so that, when said rod is displaced, said plunger will be inoperative to act upon said dies when said hand-operable members are pivoted with respect to each other.

6. In a machine of the character described, the combination comprising a pair of pivotally connected hand-operable members, dies carried by one of said members, a plunger mounted for reciprocation in a sleeve carried by said first-named member for operating a pair of said dies, spring means normally supporting said plunger in retracted position with respect to said dies, means carried by the other of said pivoted members for causing displacement of said plunger for actuating a pair of dies during pivotal movement of said members, said means including a displaceable wedge-shaped element adapted to underlie said plunger and contact a portion of said second-named member, and spring-pressed means for holding said element in a position to contact said plunger so that said plunger will be actuated by said element upon pivotal movement of said members during a die-impressing operation.

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