

United States Patent

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[54] **WORK-SUPPORTING MEANS AND TYPE-BAR-
SETTING MECHANISM IN HOT-STAMPING
MACHINES**
8 Claims, 15 Drawing Figs.

[52] U.S. Cl. **101/21,**
101/11, 101/407, 101/109
[51] Int. Cl. **B44b 5/00,**
B41f 1/02
[50] Field of Search 101/9, 11,
21, 27, 18, 19, 20, 109, 110, 99, 101, 106, 108,
407

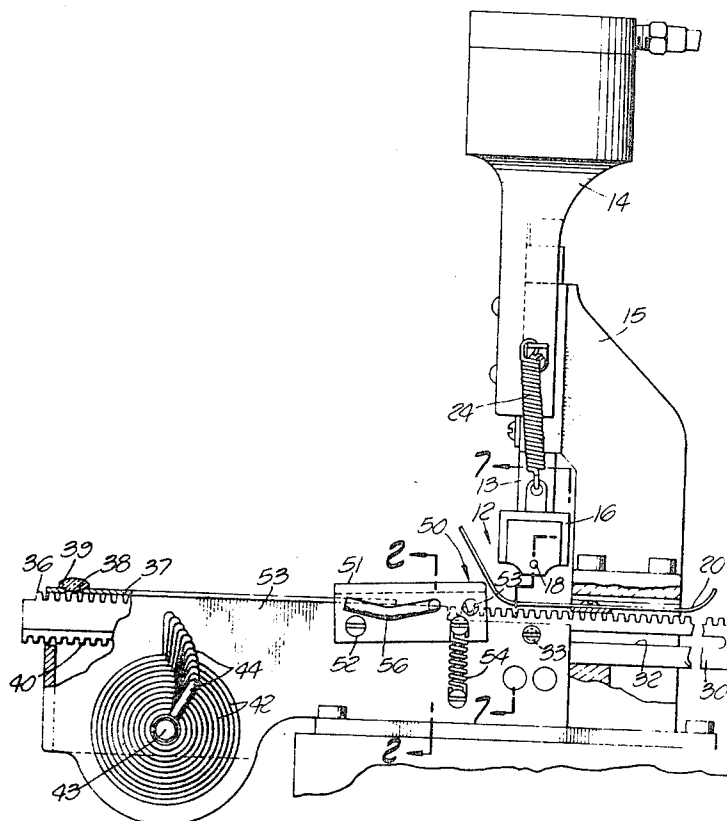
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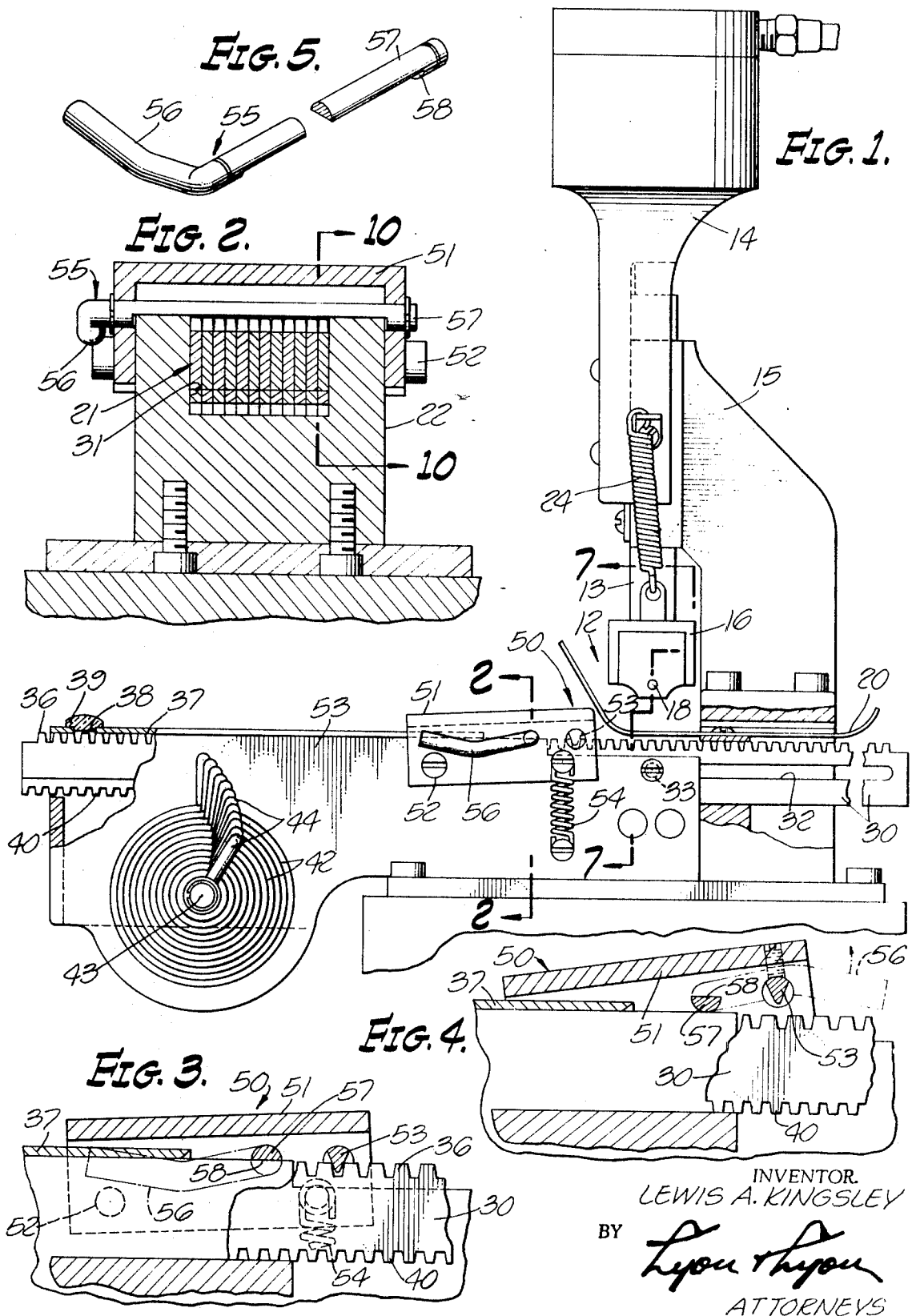
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ABSTRACT: A type-setting mechanism for a hot-stamping machine or the like in which the type is permanently formed on elongated bars which are moved to locate the desired symbols into the printing position. Each elongated bar contains each symbol to be used and sufficient bars are provided to permit the printing of a word or words having the desired number of characters. Each of the bars is additionally provided with another complete set of symbols which are used to indicate the symbol located in the printing position.

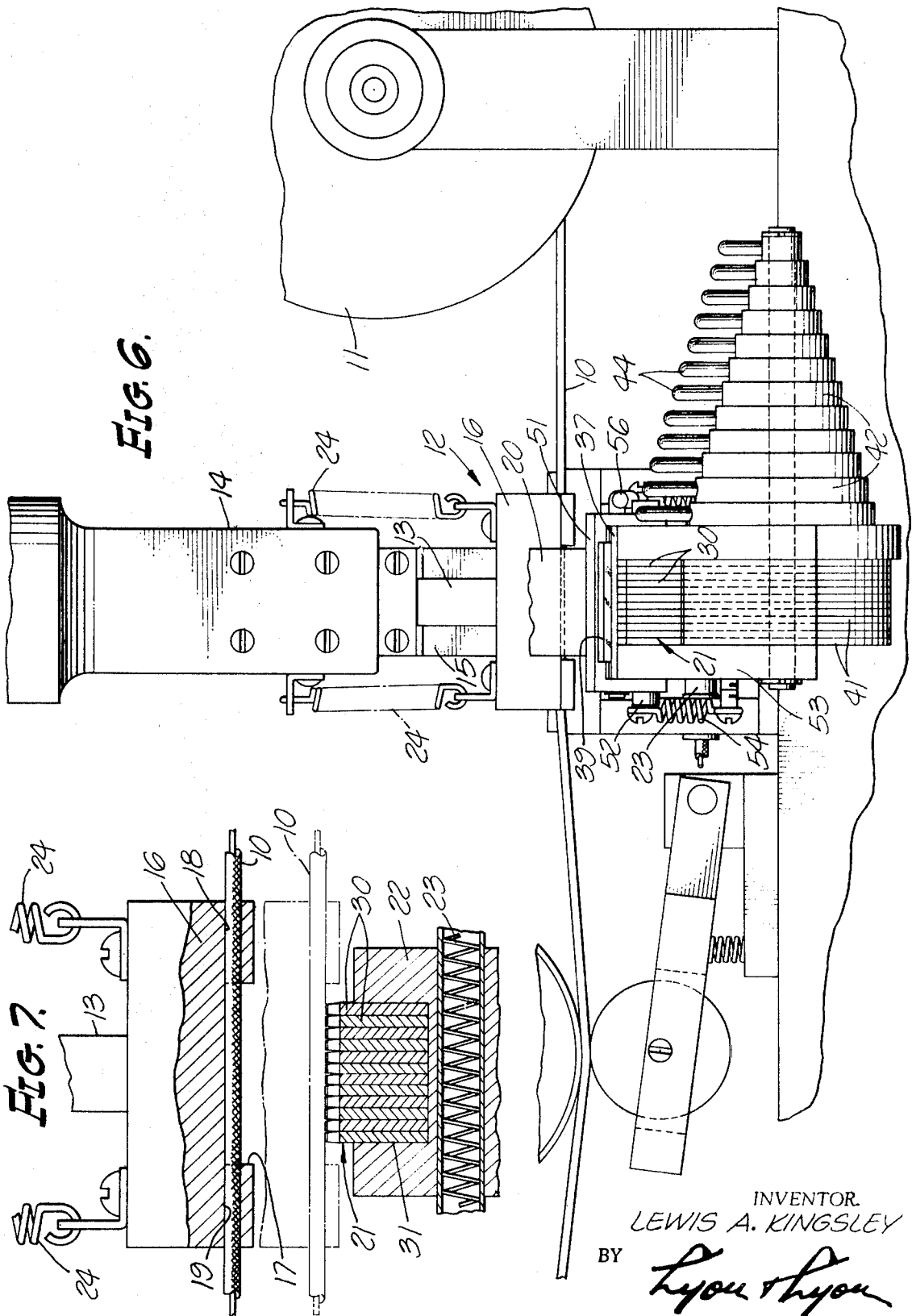
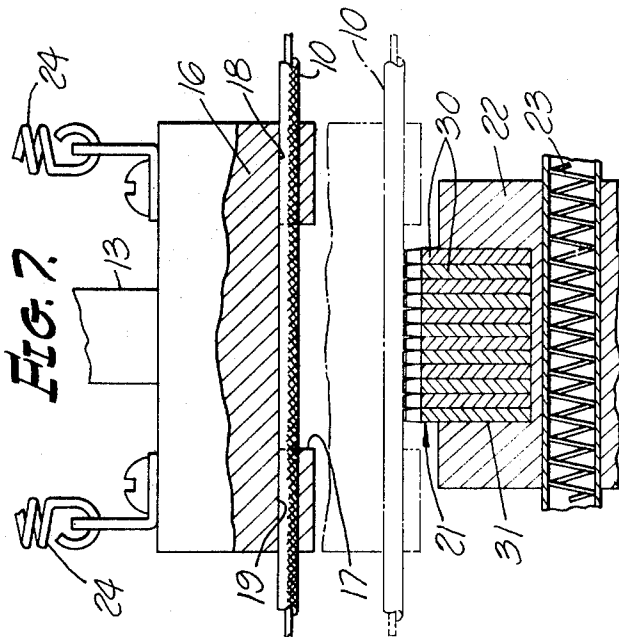




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FIG. 8.

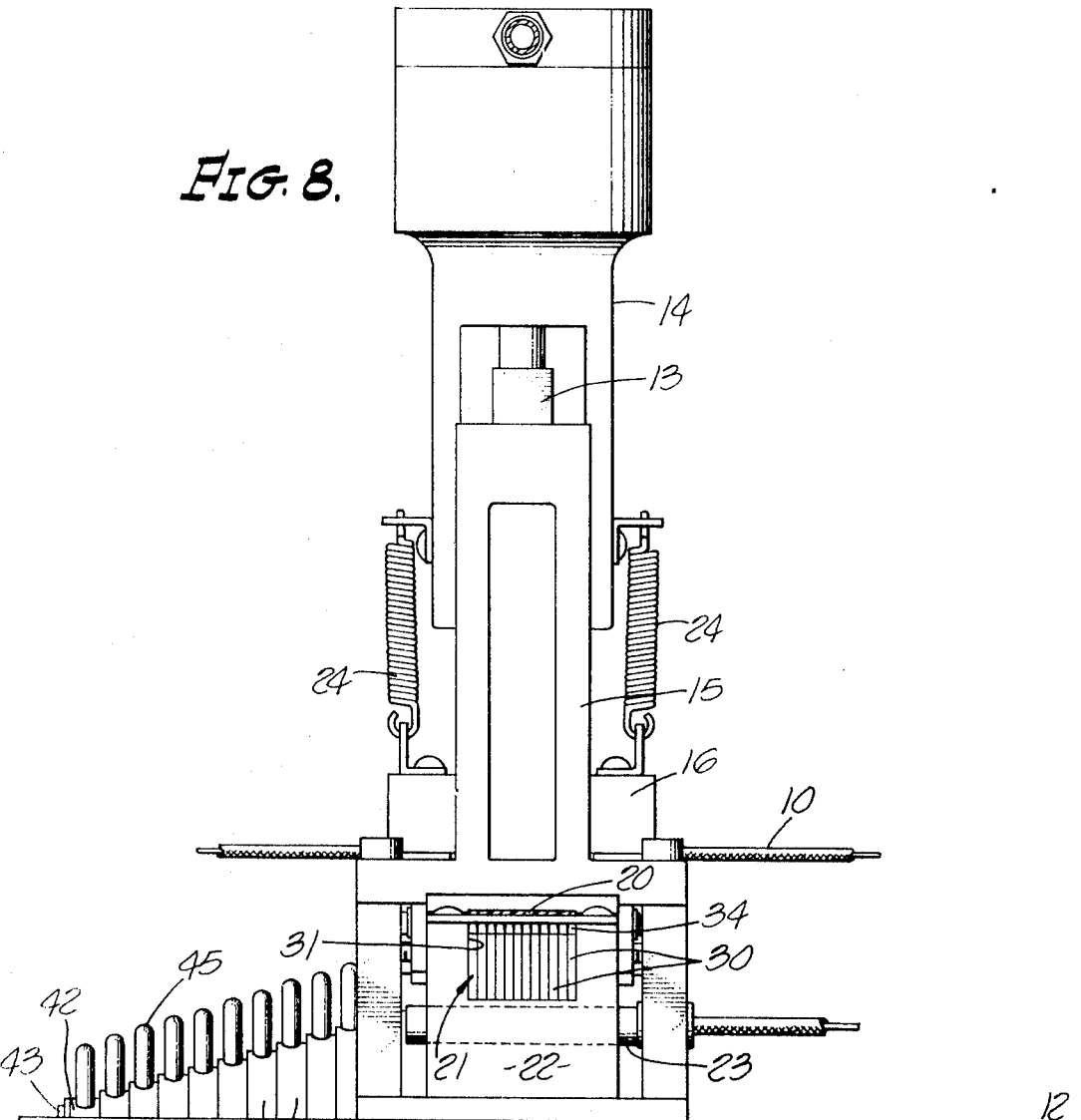
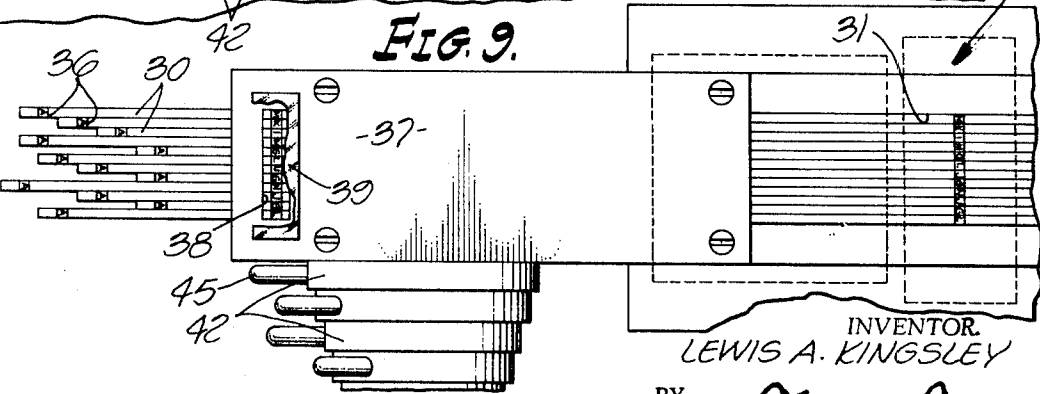
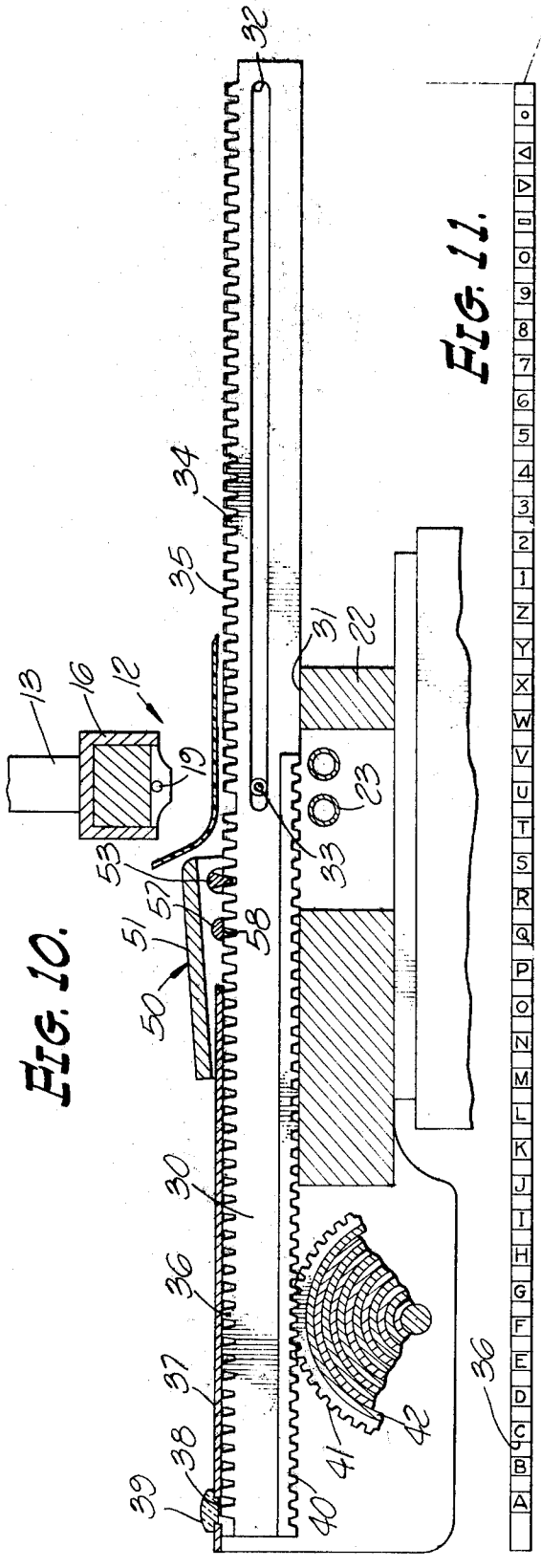
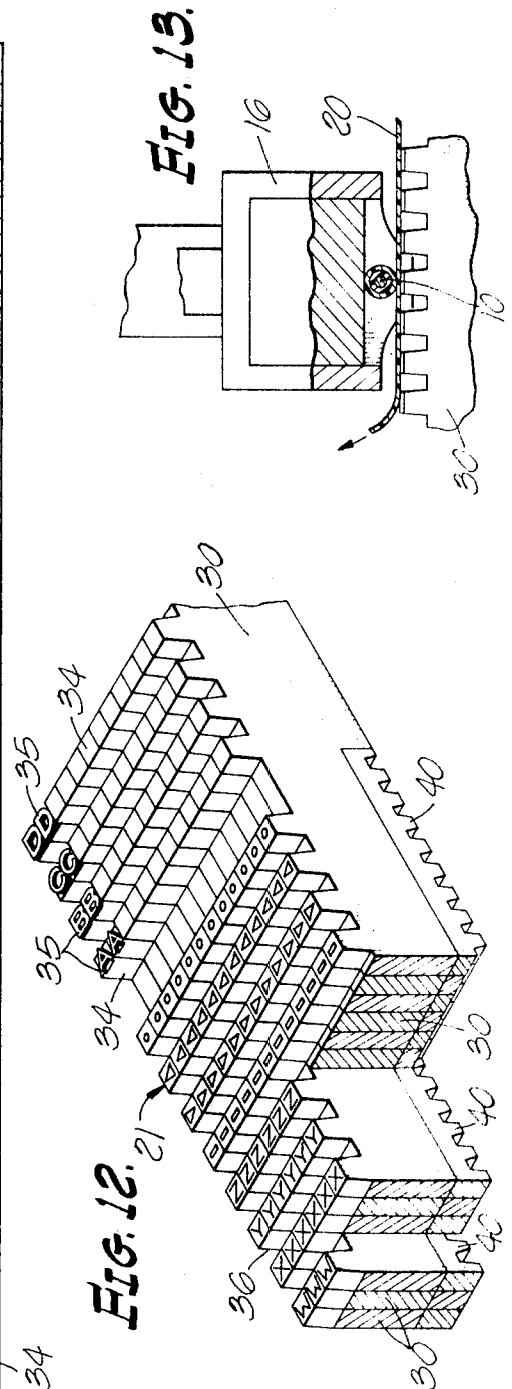


FIG. 9.



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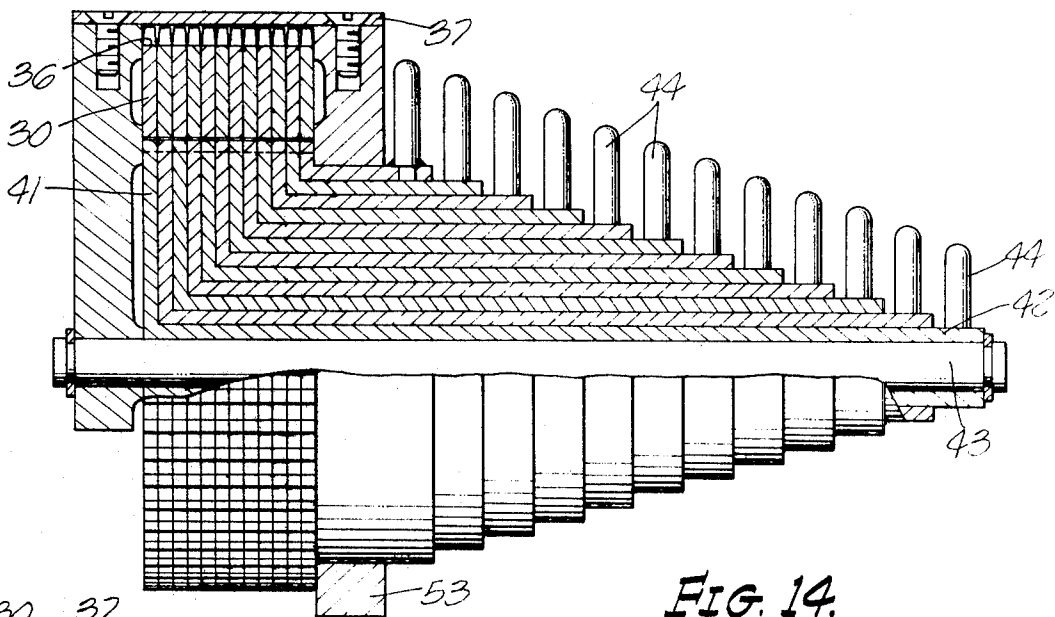


FIG. 14.

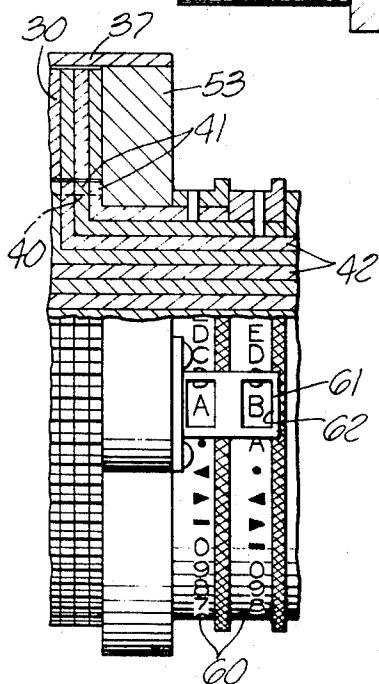


FIG. 15.

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WORK-SUPPORTING MEANS AND TYPE-BAR-SETTING MECHANISM IN HOT-STAMPING MACHINES

BACKGROUND OF THE INVENTION

Numerous machines have in the past been provided for hot-stamping tape, tubing, wires and the like. As example of such a machine can be found in Kingsley U.S. Pat. No. 3,008,866, the disclosure of which is incorporated by reference herein. In such machines, the article to be stamped is brought into position between a heated typeholder and a printing bed, and a foil-carrying ink or another printing substance is passed between the article to be stamped and the typeholder. The typeholder and printing bed are relatively movable so that the type head can be moved into contact with the foil to engage it with the article to be printed. The type being heated melts the material on the foil and deposits the same on the tape thereby stamping on the tape the desired symbols.

In such machines the typeholder is designed to remove individual type bodies carrying a single symbol so that different groups of symbols, whether letters or numbers, can be formed for different situations. While such a construction is satisfactory in operation, the time necessary to change the type when a new legend is desired is appreciable and results in the disabling of the machine, thus increasing its cost of operation.

SUMMARY OF THE INVENTION

According to the present invention, a hot-stamping machine is provided having a type-setting mechanism which permits the rapid changing of the legend at the printing position with the result that the machine is not off line for any appreciable period. This is accomplished by providing a plurality of elongated bars associated with the bed of the machine, the bars each carrying every symbol that will be used in printing. Means are provided for moving these bars relative to the printing position so that the desired symbol can be located in the printing position. A number of bars equal to the number of symbols to be present in the desired legend to be printed are provided. Each bar is also preferably provided with a second series of symbols which cooperate with a viewing slot to indicate the letter of the bar that is present in the printing position, the viewing slot thus illustrating the legend being printed on the tape, tubing, wire or the like. The type is heated in the conventional manner but instead of the type moving relative to the printing bed, a block which serves as an anvil moves the article to be stamped and the foil into engagement with the type.

It is therefore an object of the present invention to provide an improved type-setting mechanism for a hot-stamping machine or the like.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the present invention will become more apparent upon reference to the accompanying description and drawings in which:

FIG. 1 is a side elevation view of the apparatus of the present invention;

FIG. 2 is a cross-sectional view taken along lines 2-2 of FIG. 1;

FIG. 3 is a sectional detail view of a type-locking mechanism in the locked position;

FIG. 4 is a sectional detail of a type-locking mechanism in the unlocked position;

FIG. 5 is a perspective view of the lock mechanism actuating handle;

FIG. 6 is a front elevation view of the apparatus of the present invention;

FIG. 7 is an enlarged detail view, partly in section, of the printing mechanism and taken along lines 7-7 of FIG. 1;

FIG. 8 is a partial rear elevation of the apparatus of the present invention;

FIG. 9 is a top plan view of a portion of the apparatus of the present invention;

FIG. 10 is a cross-sectional view taken along lines 10-10 of FIG. 2;

FIG. 11 is a top plan view of a single-type bar according to the present invention;

FIG. 12 is a partial perspective view of the type bars of the present invention;

FIG. 13 is a detail view, partly in section, of the printing mechanism during printing;

FIG. 14 is a view, partly in section, of the type bar advance mechanism of the present invention; and

FIG. 15 is a detail view, partly in section, of a modification of the type bar advance mechanism according to the present invention.

DESCRIPTION OF THE INVENTION

The material to be printed or stamped, shown to be a wire 10, is stored on a roll 11 and intermittently advanced through a printing station, generally indicated at 12, in the conventional manner. At the printing station 12, the piston 13 of a pneumatic cylinder 14 mounted on a frame 15 carries a printing block 16 having a central notch 17 and holders 18 and 19 through which the wire 10 passes. The piston 13 and cylinder 14 act to drive the block 16 and hence the wire 10 into engagement with the printing foil 20 and the type, generally indicated at 21. The type 21 is positioned within a block 22 which is provided with an electrical heater 23 which heats the block 22 and the type 21 so that an impression is formed on the wire 10. As can be seen, the type 21 enters into the notch 17 of the block 16 to engage the wire 10 through the foil 20. Upon deactuation of the cylinder 14 springs 24 return the piston 13 and block 16 to their initial position.

The manner in which the type 21 is set in the printing station 12 will now be described. A plurality of elongated bars 30 are slidably mounted in side-by-side relation in a slot 31 provided in the block 22 for that purpose. Each of the bars 30 is provided with a slot 32 which receives a pin 33 which guides the bars in their movement and restrains their longitudinal travel. Each of the bars 30 have a plurality of type bodies 34 formed along one portion of the length thereof and separated by recesses. Each of the bodies 34 has a typeface 35 which acts to form the impression on the material being stamped. As can be seen in FIG. 11, each bar 30 is provided with sufficient type bodies to carry all of the letters of the alphabet, all numbers and any other symbols that may be desired. The upper surface of each of the bars 30 is also provided with a plurality of teeth 36 on the rearward end of the bars 30, there being one tooth for each of the type bodies 34. Each tooth carries an indicia on its surface corresponding to the typeface of its respective type body. The bars 30 are positioned under a plate 37 which is provided with a slot 38 having a lens 39 and the slot 38 is so positioned with relation to the printing station that when a type body bearing a desired symbol is in position in the printing station, the tooth corresponding to that type body will appear under the lens 39.

Each of the bars 30 is provided on its undersurface with a rack gear 40 which cooperates with one of a series of pinions 41 which are affixed to or integral with a plurality of telescoping sleeves 42 mounted for rotational movement on a shaft 43. Each succeeding sleeve 42 is shorter than its predecessor so that access is provided to each of the sleeves. The sleeves, and consequently their associated pinions 41, can be rotated in any desirable fashion, for example by providing a handle 44 for each of the sleeves. Each of the sleeves 42 is movable independently of the other sleeves so that each individual bar 30 can be located at a desired position relative to the printing station 12.

In order to prevent undesired movement of the bars 30, a locking mechanism 50 is provided. As best shown in FIGS. 1, 3 and 4, the locking mechanism comprises a U-shaped plate 51 which spans the plate 37 and extends beyond the end of it. The plate 51 is pivotally mounted on a pin 52 which is mounted in the sidewall 53 of the frame of the machine. Another similar pin is provided on the other side of the

machine. The plate 51 carries at its forward end a triangular-shaped bar 53 which has a configuration suitable for entering between the teeth 36 of the bars 30. The bar 53 is normally maintained in the recesses between the teeth by the action of a spring 54 which is pinned to the frame 53 and the plate 51. In order to free the bars 34 movement, a lever 55 is provided which has a handle 56 and a shaft 57. The shaft 57 is provided with a notch 58 so that it has a flat surface which normally rests on the sides of the block 22 adjacent the slot 31 in the block. When the handle 56 is rotated in the counterclockwise direction, the rounded portion of the shaft 57 engages the block 22 with the result that the plate 51 is moved upwardly and the member 53 is moved out of the recesses between the teeth 36 of the bars 30 so that the bars can be moved by rotating the sleeves 42. When the member 53 is reinserted into the recesses, it will cam any of the teeth, and hence any of the type bodies which are not properly aligned into proper position so that all of the type bodies to be used in printing are in alignment.

FIG. 15 shows a modification of the mechanism used to move the bars 30. In this Figure, the sleeves 42 are provided with dials 60 which bear indicia identical to that present on the type bodies of the corresponding bar 30. A viewer 61 having an opening 62 is provided over the dials 60 and the arrangement is such that when the dials are rotated to show a symbol through the opening 62 of the viewer 61, the corresponding type body is in the printing position. In all other respects, this embodiment is similar to that already described.

While various mechanisms have been described for moving the printing bars into position, it will be obvious to those skilled in the art that numerous alternatives are available for this purpose. For example, the bars could be driven by electric motors actuated by keys on a keyboard or the like, the particular key pushed determining the time of energization of the motor driving a particular bar and hence the amount of movement of the bar.

The invention may be embodied in other specific forms not departing from the spirit or central characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What I claim is:

1. A type-setting mechanism for a stamping machine or the like, comprising: a framework, a plurality of elongated bars mounted for longitudinal movement on said framework, each of said bars having a rack gear and a plurality of impression surfaces spaced along at least a portion of the length thereof; means associated with said bars for moving said bars to position a selected one of said impression surfaces of each bar at a printing position of said framework, said means for moving said bars comprising individual pinions operatively coupled with the rack gear of each bar; telescoping sleeves coupled to

each of said pinions, said sleeves being individually rotatable and being at different lengths whereby access is provided to each sleeve; indicating means coupled to said bars to indicate the impression surface selected; and means for moving the work to be printed into impression transfer relationship with said impression surfaces of said bars, said means for moving the work comprising a piston and a block mounted on said piston, said block having at least one opening therein for passing said work through said block, movement of said piston causing said block to carry said work into impression transfer relationship with said impression surfaces of said bars.

2. The apparatus of claim 1 wherein means are provided for heating said selected impression surfaces.

3. The apparatus of claim 2 wherein a printing foil is interposed between said work and said impression surfaces.

4. The apparatus of claim 1 wherein said indicating means comprise indicia-bearing surfaces spaced along another portion of the length of said bar, and further comprising means for viewing only a single indicia-bearing surface of each bar, the indicia borne by each surface corresponding to the impression borne by a respective impression surface.

5. The apparatus of claim 1 wherein said indicating means comprise a dial positioned on each sleeve, said dials having indicia-bearing surfaces spaced around the circumference thereof, and further comprising means for viewing only a single indicia-bearing surface of each dial, the indicia borne by each surface corresponding to the impression borne by a respective impression surface.

6. In a stamping machine of the type having a framework which includes a reciprocating stamping head, wherein the improvement comprises: a type-setting mechanism having a plurality of elongated bars mounted for longitudinal movement on said framework, each of said bars having a plurality of impression surfaces spaced along at least a portion of the length thereof; means associated with said bars for moving said bars to position a selected one of said impression surfaces of each bar at a stamping position opposite the stamping head; and means for moving the work to be stamped into impression transfer relationship with said selected impression surfaces of said bars for stamping, said moving means carrying the work to be stamped in a position between an anvil member on the stamping head and said selected impression surfaces, the reciprocating stamping head including a pneumatic cylinder and a piston, a block mounted on said piston defining the anvil member and said means for moving the work comprising said piston and said block, said block having at least one opening therein for passing said work through said block whereby the movement of said piston causes said block to carry said work into impression transfer relationship with said selected impression surfaces.

7. The apparatus of claim 6 wherein means are provided for heating said selected impression surfaces.

8. The apparatus of claim 7 wherein a printing foil is interposed between said work and said impression surfaces.