May 4, 1954 H. C. GLITSCH 2,677,426

MULTIPLE PIECE TEMPLATE FOR PUNCH PRESSES

Filed Oct. 13, 1949 2 Sheets-Sheet 1

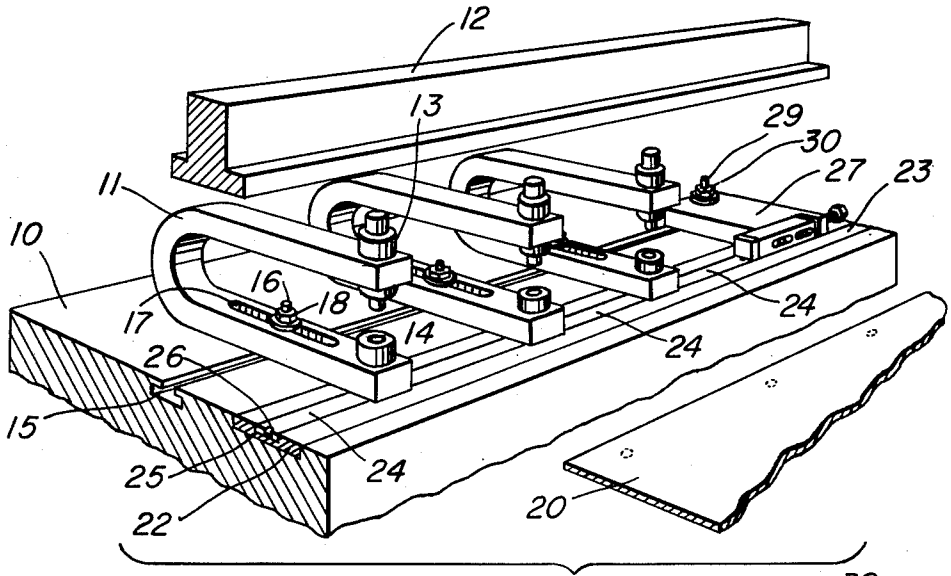


Fig. 1

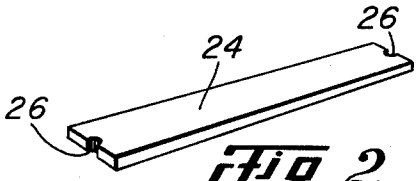


Fig. 2

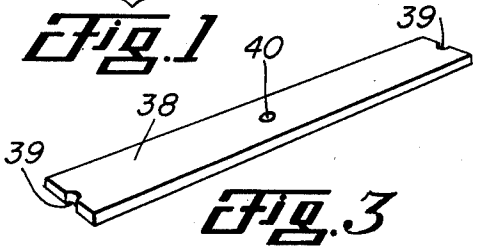


Fig. 3

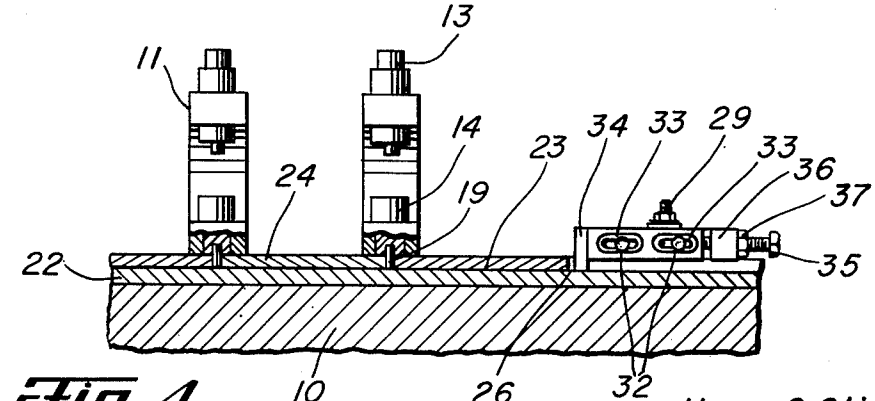


Fig. 4

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MULTIPLE PIECE TEMPLATE FOR PUNCH PRESSES

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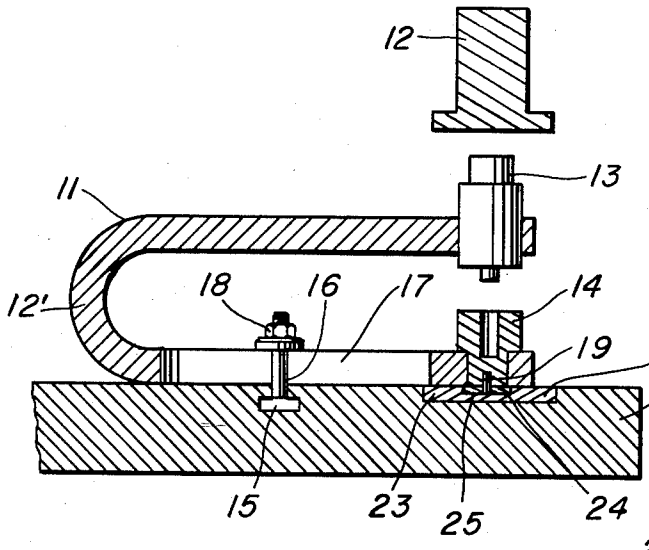


Fig. 5

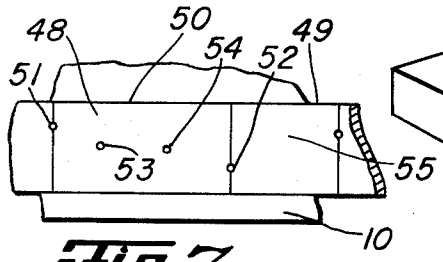


Fig. 7

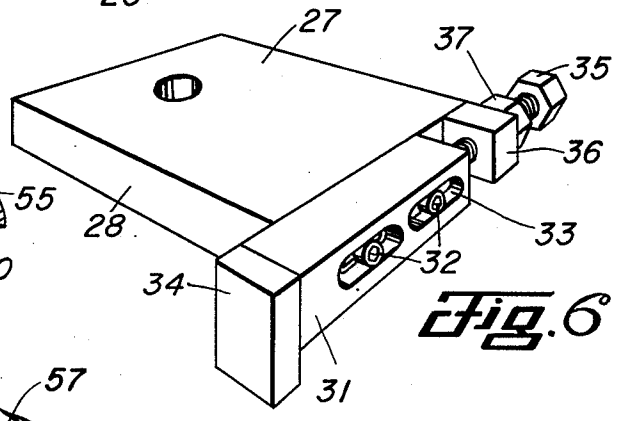


Fig. 6

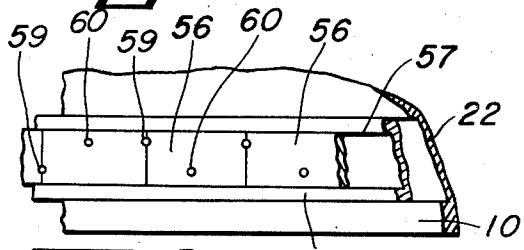


Fig. 8



Fig. 9

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MULTIPLE PIECE TEMPLATE FOR PUNCH PRESSES

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5 Claims. (Cl. 164—90)

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This invention relates to new and useful improvements in multiple piece template for punch presses.

One object of the invention is to provide improved means for mounting and accurately positioning the individual punches of a multiple punch press at predetermined intervals with a minimum expenditure of effort and time.

Another object of the invention is to provide an improved mounting for the individual punches of a multiple punch press which includes a plurality of templates or guide members having fixed means for connection with said punches so as to position the latter in predetermined relation to one another.

A further object of the invention is to provide an improved mounting, of the character described, wherein the templates have openings for receiving the locating means of individual punches with certain of the openings formed in the margins of adjacent templates whereby the spacing of the punches may be varied by employing templates of different sizes.

Still another object of the invention is to provide an improved mounting, of the character described, wherein each template has recesses in its ends for coacting with the complementary recessed ends of adjacent templates to form openings for receiving the locating means of individual punches, the openings being alined or offset as desired and being formed intermediate the ends of the templates as well as at said ends when there is some regularity of spacing.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, wherein examples of the invention are shown, and wherein:

Fig. 1 is a perspective view of a portion of a multiple press with the individual punches positioned in a predetermined relation by a mounting constructed in accordance with the invention.

Fig. 2 is a perspective view of one of the templates of the mounting.

Fig. 3 is a perspective view of another template,

Fig. 4 is a longitudinal, vertical, sectional view, showing the relation of the punches, templates and the bed of the press,

Fig. 5 is a transverse, vertical sectional view, showing one of the punches connected to the press bed,

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Fig. 6 is a perspective view of one of the clamps used for holding the templates in position,

Figs. 7 and 8 are plan views showing modified forms of templates, and

Fig. 9 is a plan view showing a mounting in the press bed and having a plurality of different templates.

In the drawings, the numeral 10 designates the bed or base of a multiple punch press having a plurality of individual punches 11 adapted to be actuated by a press bar or ram 12 which is reciprocal vertically relative to the bed. Each individual punch 11 includes a U-shaped head or bracket 12 with its legs extending horizontally in vertical alinement and directed forwardly toward and at a right angle to the forward edge of the press bed. A male die 13 is carried by the upper leg of each bracket and is adapted to coact with a vertically-alined female die 14 mounted in the lower leg of the bracket. For adjustably connecting the brackets to the bed, an inverted, T-shaped keyway or groove 15 extends longitudinally of said bed for receiving the heads of bolts 16 which project through longitudinal openings or slots 17 formed in said brackets and which are fastened thereto by suitable nuts 18. Due to the keyway 15 and the slots 17, the brackets are movable longitudinally transversely of the press bed and may be clamped in fixed positions by the coaction of the bolts 16 and nuts 18. It is customary to position the punches 11 by suitable locating means, such as a cylindrical element or pin 19 carried by and depending from each female die 14 (Figs. 4 and 5). It is pointed out that the punches and their dies have not been described in detail because the same may take any form suitable for the making of a plurality of holes in a metallic member or plate, such as indicated by the numeral 20 which has holes or openings 21 formed along its margin. Also, the invention is applicable to other hole forming devices, such as multiple drill presses.

In order to position the punches at predetermined intervals, a longitudinal groove or recess 22 is formed in the press bed forwardly of the keyway 15. A flat, relatively thick bar or strip 23 snugly engages within the groove 22 so as to underlie the forward end of each punch and its female die. Although openings may and have been formed in the bar 23 for receiving the depending pins 19 so as to position the punches, said bar is relatively long and heavy so as to be difficult to handle. Manifestly, a different bar would have to be substituted whenever it is desired to change the spacing between the punches.

Therefore, it is necessary for the user or the operator of the press to keep a large number of bars having different spaced openings on hand in order to take care of the normal demand. This difficulty is accentuated in certain industries, such as tank manufacture, wherein the spacing of the openings varies in accordance with the construction and use of the tank.

In order to eliminate the necessity for a multiplicity of long bars, an improved mounting has been provided and includes a plurality of small templates or guide members 24 which may be mounted in a longitudinal groove or recess 25 formed in the upper surface of the bar 23. As clearly shown in Fig. 2, each template 24 includes a rectangular, flat bar or strip which is relatively thin. A recess 26 is formed in each end of the template and may be of any desired shape, being shown as semi-circular since the pins 19 are cylindrical. When the ends of a pair of templates are abutted, the recesses 26 coact to provide an opening for receiving the locating means or pins of the punches and the length of each template determines the distance between the openings formed by its recesses. Due to the small size of the templates, the same may be easily formed and accurately machined. The templates have a snug fit in the groove 25 and are adapted to be clamped in abutting, end-to-end relation by a clamping member or device 27 mounted at each end of the bed.

The clamping device 27 includes a flat plate 28 secured by a bolt 29 and nut 30 to the keyway 15 and extending forwardly of the bed. As shown in Fig. 6, a locking element or bar 31 is adjustably connected to the forward margin of the plate 28 by suitable set screws 32. It is noted that the bar 31 slidably engages the forward margin of the plate and overlies the groove 25 so as to be adjustable longitudinally of said groove. Elongate, shouldered openings or slots 33 extend longitudinally of the bar for permitting this adjustment. For engaging the endmost template, a lug or abutment 34 is secured to the inner end of the bar 31 and depends therebelow into the groove 25. Adjustment of the bar is accomplished by means of a bolt 35 bearing against the end of said bar opposite the abutment 34 and threaded through an ear 36 projecting forwardly from the plate 28. If desired, a lock nut 37, may be carried by the bolt 35. After adjustment of the bolt so as to clamp the templates in abutting relation, the screws 32 may be tightened to prevent displacement of the bar 31 and its abutment 34.

Manifestly, when the templates are confined within the groove 25 between a pair of the clamping members 27 and the locating pins of the punches are engaged within the openings formed by the recesses 26, said punches are held in spaced, predetermined relation and the spacing between adjacent punches may be varied by merely substituting a single template of different length. Of course, the engagement of the bolts 16 with the keyway 15 actually maintain the punches in position and their nuts 18 are tightened after engagement of the locating means with the openings formed by the templates. It is pointed out that the punches are readily positioned and changed from one position to another. In order to move the punches, it is only necessary to loosen the nuts 18 and lift said punches so as to disengage the locating pins from the template openings. Upon this disengagement, the punches may be moved rearwardly due to the slots 17 or longitudinally of the press bed due to the keyway. The templates may be quickly inserted and removed due to the construction of the clamping members and templates of different lengths may be substituted therefor so as to vary the spacing of the punches and the holes to be punched thereby.

It is sometimes desirable to provide one or more openings in certain of the templates when there is some regularity of spacing between the openings to be punched. A template 38, similar to the template 24 and having similar recesses 39 in its ends is shown in Fig. 3. An opening 40 is formed intermediate the ends of the template 38 and may be evenly or unevenly spaced relative to the recesses 39. In other words, the opening 40 may be formed midway between the recesses or may be offset from the center of the template so as to be closer to one of its ends. Irrespective of the exact position of the opening, the template 38 is adapted to be employed in the place of two or more templates of less length. The use of a number of different lengths of templates is shown in Fig. 9 as indicated by the numerals 41, 42, 43, 44, 45, and 46. It is noted that each of these templates has recessed ends coacting with adjacent templates to provide positioning openings. As shown by the numeral 47, one or more of the templates may have one or more openings intermediate its ends. Also, certain of the templates may be substantially identical or of the same length as are the templates 41 and 44.

Although it is advantageous to form the templates from narrow, relatively-thin stock and to mount the same in the groove 25 of a large bar 23, it is pointed out that the templates may be mounted directly in a groove formed in the press bed. The templates may be of the same width and thickness or may be of greater width as shown in Fig. 7. Templates 48 and 49 are shown as being mounted directly in a groove 50, similar to the groove 22, formed in the press bed and the ends of the templates are provided with coacting recesses 51 and 52, respectively. It is noted that the recesses 51 and 52 are offset laterally or transversely of the longitudinal axes of the templates as well as relative to each other. Thus, the punches positioned by the openings formed by the coacting recesses would be offset relative to each other for forming offset holes in plates. If desired, additional positioning openings 53, 54, and 55 may be provided intermediate the end of the templates. In order to reduce the weight and cost of the templates 48 and 49, their thickness and the depth of the groove 50 may be the same as the depth of the groove 25 and the thickness of the templates mounted therein.

In Fig. 8, a plurality of modified templates 56 are shown mounted in a groove 57 formed in a bar 58 similar to the bar 23 so as to be capable of being received by the groove 22. The groove 57 is of greater width than the groove 25 so as to accommodate the templates 56 which are of increased width. Recesses 59 are formed in the ends of the templates and the same are preferably offset from the center line of the templates so as to provide offset openings and punch holes. One or more openings 60 may be provided intermediate the ends of each template and these openings may be alined or offset relative to the end recesses and adjacent openings.

From the foregoing, it is believed to be readily apparent that a novel mounting for the individual punches of a multiple punch press has been pro-

vided. The templates may be readily inserted and removed to quickly and positively position the punches in predetermined spaced relation. The templates are of chief benefit when it is necessary to frequently change the spacing of the punches. Even when all of the punches are evenly spaced, a different template or guide is necessary to vary this spacing. Irregular or uneven spacing of the punches multiplies the number of templates required. Although the present invention requires the use of a considerable number of small templates, the same may be accessibly stored and easily handled due to their small size and weight. Also, the number of small templates required is reduced by the fact that two or more templates may be used to make up a longer template as well as by the use of a template having one or more openings intermediate its ends in place of several short templates. Furthermore, when unusual spacings are required, additional templates may be made at little cost and in a short period of time.

The foregoing description of the invention is explanatory thereof and various changes in the size, shape and materials, as well as in the details of the illustrated construction may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent is:

1. A mounting for the individual punches of a multiple punch press having a base for supporting the punches and means for operating said punches, each punch having a locating pin, including, a plurality of guide members mounted on the base below the locating pins of the punches, the members having certain of their margins in intimate contact, each member having recesses formed in their contacting margins registering and coacting with recesses formed in the margins of adjacent members to provide openings evenly divided between the contacting margins of the members for receiving the locating pins to accurately position the punches in predetermined relation.

2. A mounting as set forth in claim 1 wherein certain of the templates have openings intermediate their ends for receiving the locating pins of the punches.

3. A mounting for the individual tools of a multiple tool machine having a base for supporting the tools and means for operating said tools, each tool having a locating element, including, a plurality of templates, the base having a groove for receiving the templates in end-to-end abutting relation, clamping means fastened to said base and engaging the endmost templates for

confining said templates in the groove, said templates having recesses in their ends registering and coacting with the recesses in the ends of abutting adjacent templates to provide openings evenly divided between the abutting ends of the templates for receiving the locating elements to accurately position the tools in predetermined relation.

4. A template for sheet-perforating tools adapted to perforate a sheet of material at a plurality of spaced locations, said tools having beds with a plurality of adjustable perforating means having individual locating pins and a mounting for such perforating means, including, a plurality of guide members adapted to be secured upon the tool beds in end-to-end longitudinally abutting relationship to constitute an elongate perforating template, the guide members having perforating-means-positioning recesses formed at each end thereof as an integral part thereof and divided at the abutting ends of said members evenly between said members, the recesses being constructed and arranged to receive the locating pins, whereby the abutting members coact to define the recesses, and the center point of said perforating means coincides with the plane of abutment of the members.

5. A template for multiple punch presses having a bed with a plurality of independently adjustable punches having individual locating pins and a mounting for the punches, including, a plurality of guide members adapted to be secured upon the press bed in end-to-end longitudinally abutting relationship to constitute an elongate punching template, the guide members having punch positioning recesses formed at each end thereof as an integral part thereof and divided at the abutting ends of said members evenly between said members, the positioning recesses being constructed and arranged to receive the locating pins, whereby the abutting members coact to define the punch positioning recesses, and the center point of said punch coincides with the plane of abutment of the members.

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