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2,216,208

ADJUSTING DEVICE FOR PUNCH-RETAINING BLOCKS

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Fig. 1.

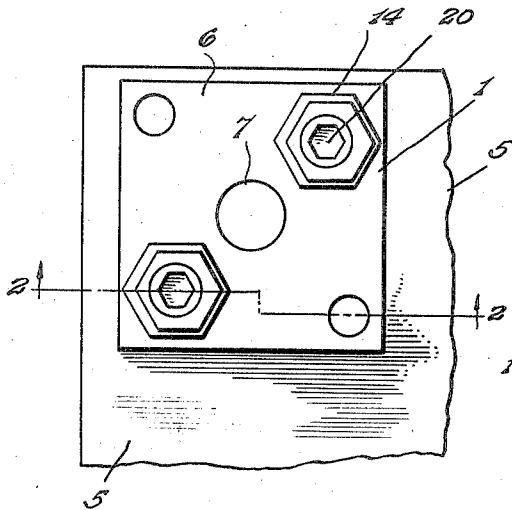


Fig. 2.

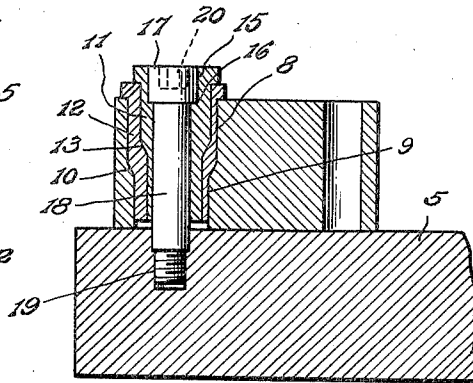


Fig. 3.

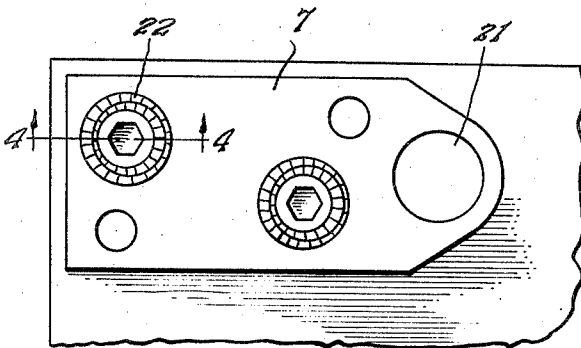


Fig. 4.

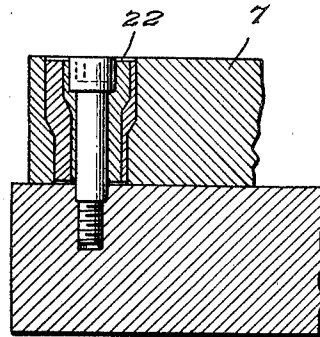
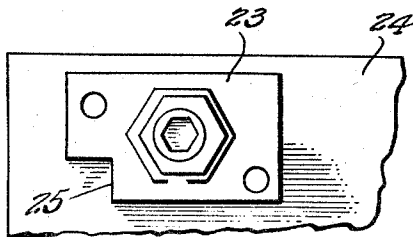


Fig. 5.



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UNITED STATES PATENT OFFICE

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ADJUSTING DEVICE FOR PUNCH-
RETAINING BLOCKS

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5 Claims. (Cl. 164—118)

This invention relates to sheet metal trimming and punching machines and more particularly to means for adjusting the punch-retaining block with respect to the die shoes.

5 The object of the invention is to provide novel means whereby the punch-retaining block may be adjusted laterally on the die shoe to permit alignment of the punch elements with the work without the necessity of redoweling or forming extra
10 openings in either the retaining block or die shoe, said means also serving to securely hold the punch-carrying block in different set positions of adjustment.

15 A further object of the invention is to provide an adjusting device including inner and outer eccentric sleeves adapted to fit within an opening in the punch-retaining block and provided with interengaging tapered portions, the inner sleeve being adapted to receive a clamping screw threaded
20 in the die shoe so that after lateral adjustment of the retaining block has been effected, rotation of the screw will securely hold said block in a set position.

25 A further object is to provide the retaining block with a punch-receiving opening at one end thereof so as to permit adjustment of the punch to either an edge or corner of the work, the adjusting means being so constructed as to permit the use thereof on gage plates and the like.

30 A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

35 In the accompanying drawing forming a part of this specification and in which similar numerals of reference indicate corresponding parts in all the figures of the drawing:

Figure 1 is a top plan view of a punch-retaining block provided with the improved adjusting mechanism,

40 Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1,

Figure 3 is a top plan view of a punch block especially designed for use when punching or piercing an edge or corner of the work,

45 Figure 4 is a transverse sectional view taken on the line 4—4 of Figure 3, and

Figure 5 is a top plan view showing the adjusting device applied to a gage plate.

50 The improved adjusting means forming the subject-matter of the present invention may be used in connection with any style or type of metal working machine, and in Figure 1 there is illustrated a portion of a conventional machine in which 5 designates the die shoe and 6 the retaining block having an opening 7 formed there-

in for the reception of a piercing punch. The block 6 shown in Figure 1 of the drawing is substantially rectangular in shape and formed in the diagonal corners of said block are openings 8, the lower ends of which are reduced at 9 to form tapered shoulders 10. Fitted within the openings 8 are telescopic inner and outer eccentric sleeves 11 and 12 each having its lower end reduced to form inner and outer tapered shoulders 13, the outer shoulders 13 of the outer sleeve 12 being adapted to engage the tapered shoulder 10 in the block 6 and the outer shoulder 13 of the inner sleeve 11 being adapted to bear against the inner tapered shoulder of the outer sleeve, as best shown in Figure 2 of the drawing. The upper ends of the sleeves 11 and 12 are formed with angular faces 14 so as to permit said sleeves to be engaged with a wrench or other suitable tool for the purpose of rotating or partially rotating the eccentric sleeves to effect lateral adjustment of the punch-retaining block 6. The upper or open end of the inner eccentric sleeve 11 is provided with a recess 15 defining a stop shoulder 16 and seated in said recess is the head 17 of a clamping screw or dowel, indicated at 18. The lower end of the clamping screw 18 is threaded at 19 in the die shoe 5 while the upper end of said screw is provided with an angular socket 20 adapted to receive a correspondingly shaped wrench for the purpose of rotating the screw 18 to clamp the parts in adjusted position.

In operation, the inner and outer sleeves are assembled in telescopic relation and then introduced within the openings 8 in the retaining block 6, after which the adjusting screw or dowel 18 is inserted within the bore of the inner sleeve 11 and the lower end thereof threaded into the opening 19 in the die shoe. If it is desired to adjust the retaining block 6 laterally to cause the punch elements to aline with each other or with the work, it is merely necessary to grasp the angular heads of the eccentric sleeves and turn said sleeves either to the right or left as the case may be, and inasmuch as the lower end of the adjusting screw or dowel is threaded in the die shoe, the retaining block 6 will be moved laterally on the die shoe to the desired position of adjustment. After the retaining block has been adjusted to the desired position on the die shoe, the threaded dowel or screw 18 is tightened which causes the inclined or tapered shoulders to interengage and thus firmly secure the punch-retaining block in a set position of adjustment. Any desired position of adjustment of the retaining block may be effected at any time by merely loos-

ening the adjusting screw 18 and after rotating the eccentric sleeves to the desired position again tightening the screw which will hold the parts securely in adjusted position.

5 In Figure 3 of the drawing, there is illustrated a modified form of punch-retaining block in which the forward end of the adjustable block 7 is tapered and provided with a punch-receiving opening 21, this form of the device being particularly adapted to permit adjustment of the block and punch carried thereby to an edge or corner of the work being operated upon. In this embodiment of the invention instead of providing the upper ends of the eccentric sleeves with angular wrench-engaging faces, said upper ends are formed with notches or indentations 22 for engagement with a pointed instrument for the purpose of rotating the sleeves to effect adjustment of the block 7. These indentations or notches 22 may be graduated to a fixed scale so that the operator will know the exact extent of turning movement to be imparted to the adjusting sleeves. The adjusting device may also be used with good results for holding a gage plate in a set position of adjustment, and in Figure 5 of the drawing, there is illustrated a gage plate 23 adjustably mounted on a die shoe 24 and having one end thereof cut away to form a notch or recess 25 adapted to receive a corner of a metal plate or other work and prevent accidental displacement thereof when punching, trimming or otherwise operating on said work. The device is exceedingly simple in construction and the use thereof obviates the necessity of redoweling or forming extra openings in either the punch-retaining block or die shoe when adjusting said block.

While the device is particularly adapted for imparting lateral adjustment to a punch-retaining block, it will, of course, be understood that said device may be used wherever the same may be found necessary or desirable without departing from the spirit of the invention.

Having thus described the invention, what is claimed as new is:

1. The combination with a support, of a punch-retaining block slidably mounted thereon and provided with an opening, inner and outer eccentric sleeves mounted for rotation within said opening and each provided with a reduced extension defining a tapered shoulder, the inner sleeve being provided with a smooth bore the upper end of which is enlarged to form a seating recess, and a dowel pin threaded in the support and having a smooth portion extending within the bore of the inner sleeve and provided with an enlarged head seated in said recess and

formed with a terminal wrench-engaging socket.

2. The combination with a support, of a punch-retaining block slidably mounted for lateral movement thereon and provided with an opening, inner and outer eccentric sleeves rotatably mounted within the opening and each provided with an exterior angular wrench-engaging surface, the inner sleeve being provided with a smooth bore the upper end of which is enlarged to form a recess defining a stop shoulder, and a clamping screw threaded in the support and having a smooth portion fitted within the bore of the inner sleeve and terminating in an enlarged head adapted to bear against said stop shoulder.

3. The combination with a support, of a punch-retaining block slidably mounted for lateral movement thereon and provided with an opening having its lower portion constricted to form a tapered shoulder, inner and outer eccentric sleeves mounted for rotation within said opening, the inner sleeve being provided with a smooth bore and both sleeves being provided with inter-engaging tapered portions, the outer sleeve being provided with an inclined shoulder adapted to bear against the inclined shoulder of said opening, and a clamping screw having a smooth portion seated within the bore of the inner sleeve and having its lower end threaded in the support.

4. The combination with a support, of a punch-retaining block slidably mounted for lateral movement thereon and having one end thereof tapered and provided with an opening for the reception of a piercing punch, there being auxiliary diagonally disposed openings formed in said block at the rear of the punch receiving opening, inner and outer eccentric sleeves mounted for rotation within the auxiliary openings and each provided with a reduced extension defining a tapered portion, the inner sleeves being provided with smooth central bores and a clamping screw seated within the bore of each inner sleeve and having its lower end threaded in the support and its upper end provided with a tool-receiving socket.

5. An adjusting device comprising inner and outer eccentric sleeves adapted to fit within an opening in a movable member to be rotated therein and provided with interengaging offset portions, and a clamping screw loosely mounted for rotation within the inner sleeve and having its lower end threaded for engagement with a fixed support said screw when rotated clamping the offset portions of the sleeves and holding said sleeves in adjusted position.

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