This invention relates to means for adjustably mounting a die holder in a forging machine, header, or other metal working machine.

It is an object of the invention to provide a die holder having means whereby it can be adjusted in one or more directions in a common plane, the adjustment in one direction being effected without disturbing the adjustment in another direction. For example, in a heading machine it is possible to adjust the holder vertically and/or horizontally in order to align the die with the work, each adjustment being capable of accomplishment independently of the other adjustment.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing the preferred forms of the invention have been shown.

In said drawing:

Figure 1 is a front elevation of a portion of a heading slide having the present improvements applied thereto, the clamping screws being in section and the supporting plates being broken away.

Figure 2 is a side elevation of the structure shown in Figure 1, the slide being in section and broken away.

Figure 3 is an enlarged central longitudinal section through one of the adjusting wedges and its head, the supporting pin being shown in elevation.

Figure 4 is a view similar to Figure 3 showing a modified construction.

Figure 5 is a section on line 5—5, Figure 3.

In the foregoing illustrations the invention has been shown applied to the slide 6 of a heading or forging machine but it is to be understood that the improvements could be applied to the bottom surface of a ram or other slide used in forging machines of the vertical type. In fact the improvements can be utilized wherever it is desirable to mount a die for minute adjustment relative to the blank to be acted upon.

In the structure illustrated there is shown a die holder in the form of a base plate 4 carrying a die 5 securely held thereby. The sides of plate 4 are formed with arcuate recesses 3 near the upper and lower ends respectively and along the wall of each of these recesses there is formed a rib 4.

Extending into each end of plate 4 is a pair of bores 5, the bores of each pair diverging into the plate from the adjacent end and being partly intersected by one of the recesses 3. The outer end of each bore is counterbored as at 6.

Sldably mounted in each of the bores 4 is an adjusting wedge 7 formed by cutting away one end portion of a cylindrical member to produce a flat inclined face 8 terminating in a transverse shoulder 9. A pin 10 is seated in the large end of the wedge and can be fastened in place by a transverse pin 11. The supporting pin 10 can be in the form of a screw with an end enlargement or head 12. It constitutes a swivel connection between the wedge and a screw head 13 which is provided with an angular recess 14.

Each screw head engages the threaded wall of one of the counterbores 8 and the several bores 5 are disposed at such angles relative to the flat faces 8 of the wedges that when these wedges are seated in the bores 5 their faces 8 will be parallel with the vertical center line of plate 4.

Suitably anchored in the upper end of plate 1 is a supporting stud 15 having a screw threaded portion 16 extending through slots 17 provided in upper and lower plates 18 and 19. Supporting lugs 20 on the slide 6 project between these plates. Upper and lower adjusting nuts 21 and 22 are mounted on the stud and serve to bind upon plates 19 and 18 and clamp them on the lugs 20.

The plate 1 is held to the heading slide or ram 8 by clamping screws 23 extending within recesses 3 and having nuts 24 adapted to bear upon the ribs 4. Normally the flat faces of the wedges 7 bear outwardly against these screws as shown in Figure 1.

When it is desired to adjust the plate the nuts 24 are loosened and nut 22 can also be loosened. By then unscrewing the heads 13 of the wedges in one side of plate 1, those wedges will be withdrawn from contact with the adjacent screws 23. The other wedges 7 can then be adjusted inwardly by screwing the heads 13 into the counterbores 8.

This will cause said wedges to tighten the plate between the screws and at the same time adjust the plate laterally a distance equal to the space previously provided by the partial withdrawal of two of the wedges. Obviously with this means of adjustment a very minute change of position in a lateral direction can be effected. Thereafter the nuts can be tightened to hold the plate securely.

It will be noted that at all times during the...
lateral adjustment of the plate the faces 8 of the wedges at the two sides of the plate remain parallel. Thus by adjusting the nuts 21 and 22 the plate 1 can be raised or lowered without disturbing the lateral adjustment previously obtained.

Instead of providing the wedges with recessed heads mounted on separate arrester pins as in Figure 3, the modified structure in Figure 4 might be used. In that form of device each wedge 25 has an integral stem 26 projecting from the large end thereof and a screw threaded head 27 with an angular end portion or nut 28 at one end thereof is mounted for rotation on this stem. The end of the stem can be upset or otherwise enlarged as at 29 to hold the parts together. With this form of structure the nut portion 28 can be gripped between the jaws of a wrench while being adjusted instead of requiring the use of a special tool for insertion into socket 14.

Although the adjustable die holder has been shown and described mounted on a movable slide, ram or other backing element, it is to be understood that under some conditions it could be supported by a stationary backing element.

What is claimed is:

1. In a metal working machine a backing element, a die holder thereon, means normally spaced from the holder for fastening it to said element, wedges adjustably mounted within the holder and each having an obliquely disposed surface for contact with one of the fastening means, the obliquely disposed portions of the wedges being constantly parallel with the center line of the holder, and means for adjusting the holder in the direction of said center line.

2. In a metal working machine a die holder having recesses, there being bores extending into the holder along diverging lines and intersecting the recesses, wedges adjustably mounted within the bores and having obliquely disposed faces exposed within the recesses, the faces of the wedges being parallel, and fastening means within the recesses and engaged by the oblique faces of the wedges.

3. In a metal working machine a die holder having opposed recesses, there being bores extending into the holder along diverging lines and intersecting the respective recesses, relatively fixed fastening means within the recesses and normally spaced from the holder, wedges within the respective bores each having an oblique face, the faces of opposed wedges being parallel, and means for adjusting the wedges longitudinally of their bores to position their oblique faces in contact with and between said fastening means.

4. In a metal working machine a die holder having opposed recesses, there being bores extending into the holder along diverging lines and intersecting the respective recesses, relatively fixed fastening means within the recesses and normally spaced from the holder, wedges within the respective bores each having an oblique face, the faces of opposed wedges being parallel, means for adjusting the wedges longitudinally of their bores to position their oblique faces in contact with and between said fastening means, and means for adjusting the holder along lines parallel with said oblique faces.

5. In a metal working machine a backing element, a die holder thereon having opposed recesses, there being bores extending into the holder along diverging lines and intersecting the respective recesses, generally spaced means for adjusting the wedges longitudinally of the recesses and normally spaced from the holder, diverging wedges within the respective bores each having an oblique face, the faces of opposed wedges being parallel, means for adjusting the wedges longitudinally of their bores to position their oblique faces in contact with and between said fastening means, and means for adjusting the holder along lines parallel with said oblique faces.

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