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H. F. MacMILLIN ET AL
CONSTRUCTION OF GIB GUIDES

2,491,384

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2 Sheets-Sheet 1

Fig. 1

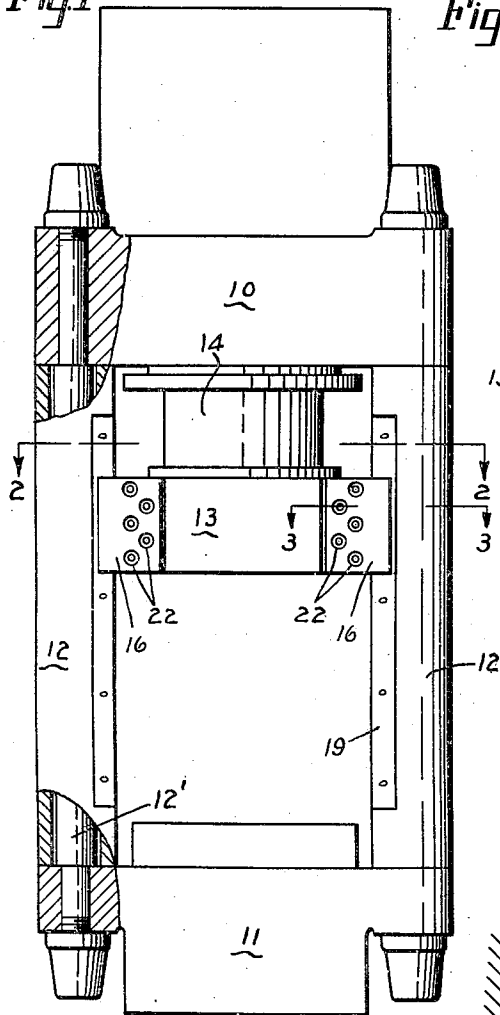


Fig. 3

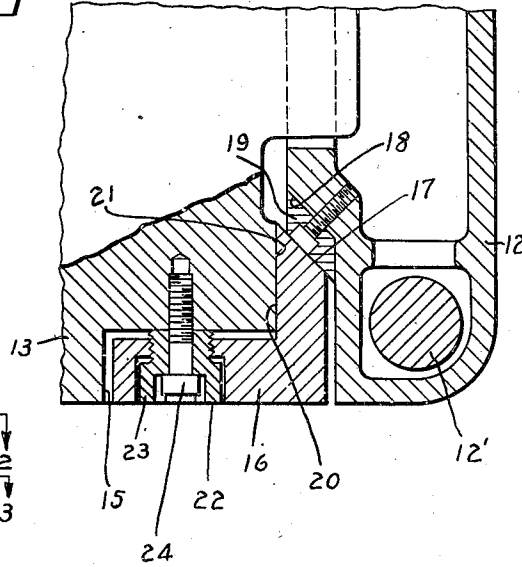


Fig. 4

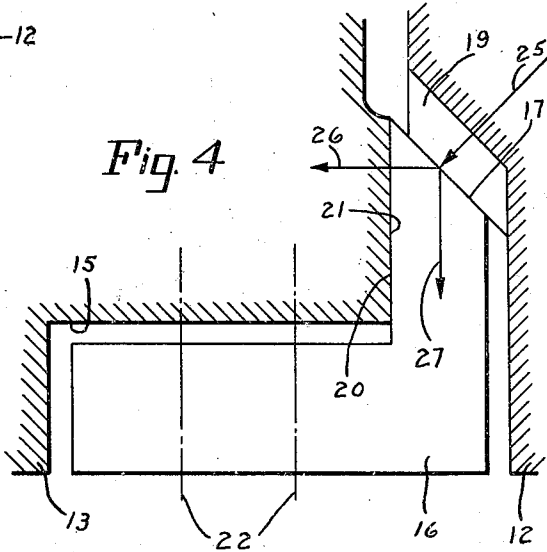
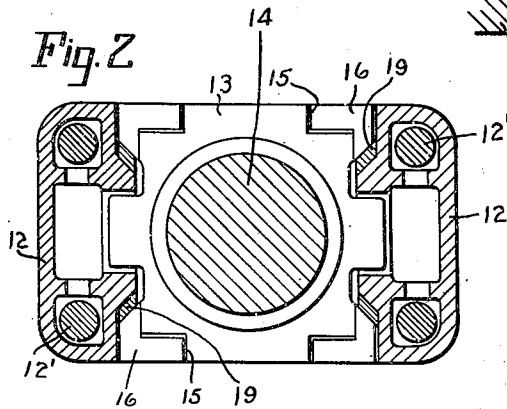


Fig. 2



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Fig. 5

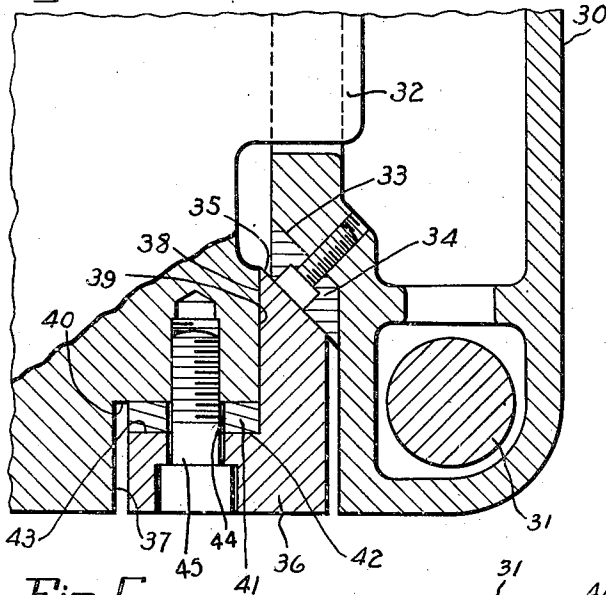


Fig. 6

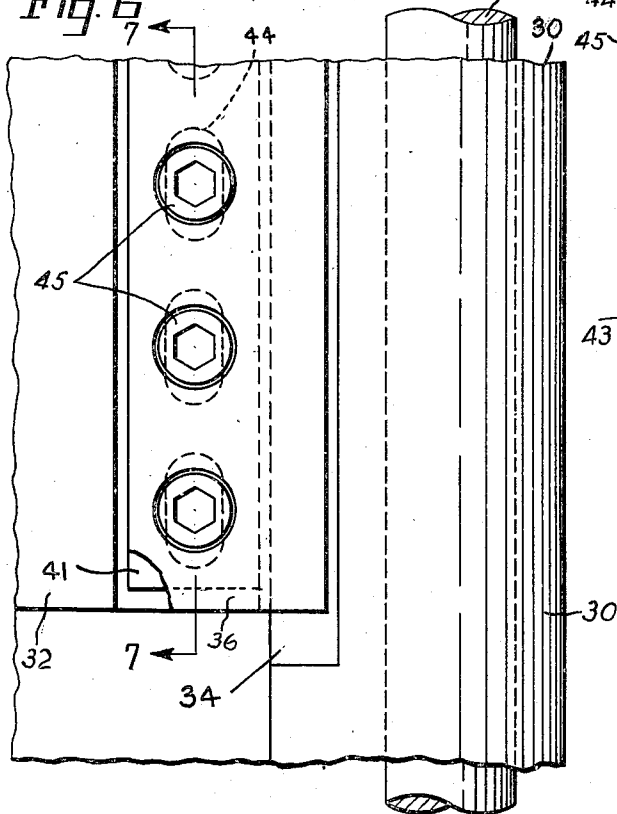
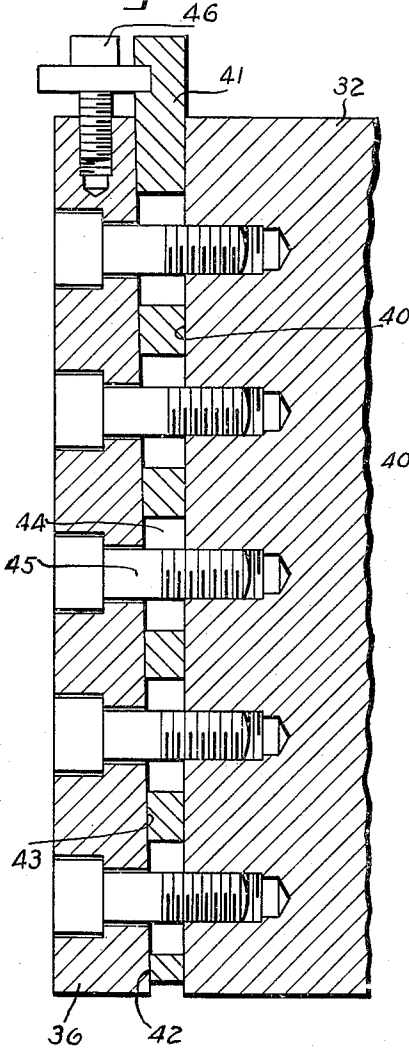


Fig. 7



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CONSTRUCTION OF GIB GUIDES

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2 Claims. (Cl. 308—3)

1 This invention relates to press structures and, particularly, to an improved guiding means for guiding the platen of a press during its travel.

In the operation of presses, particularly in hydraulic presses, it is important that the platen thereof be firmly and accurately guided during its travel to and from the work. In many types of work the platen is subjected to unbalanced loads or side thrusts or torques due to the nature of the workpiece being operated. Accordingly, it is important that the guiding means for press platens be of sufficient strength and rigidity adequately to oppose the aforementioned unbalanced thrusts or torques so that the platen may accurately approach and recede from the work.

It is the primary object of this invention to provide an improved guiding means for a press platen or the like wherein the guiding means is rigid and readily adjusted.

It is another object of this invention to provide a platen guiding means for a hydraulic press platen or the like including a gib arranged in rigid association with the platen and a guiding surface on a stationary member in association with the gib.

These and other objects will become more apparent upon reference to the following description taken in connection with the accompanying drawings, in which:

Figure 1 is an elevational view of a hydraulic press the platen of which is fitted with the guiding means of this invention;

Figure 2 is a plan section over the platen of the press of Figure 1 and is indicated by the line 2—2 on Figure 1;

Figure 3 is an enlarged section through the corner of the platen showing the gib and stationary member of the press which the gib engages and is indicated by the line 3—3 on Figure 1;

Figure 4 is a line diagram illustrating the distribution of the forces exerted on the gib;

Figure 5 is a view similar to Figure 3 showing a modified method of adjusting the gib;

Figure 6 is a front view of a portion of a platen fitted with the gib structure of Figure 5; and

Figure 7 is a vertical section through the gib structure of Figures 5 and 6 and is indicated by the line 7—7 on Figure 6.

Referring more particularly to the drawings, Figure 1 indicates a press structure comprising a head 10, bed 11, and side members 12. The head 10, and the bed 11 are joined by strain rods 12' which pass through the side members 12. Mounted in the head 10 is a suitable power unit

2 for actuating the platen 13. The power unit may comprise any suitable actuating means but is shown in Figure 1 to comprise a hydraulically actuated ram 14 suitably affixed to the platen 13.

The platen 13 is notched at its four corners as is indicated at 15 in Figures 2 and 3. Arranged within the notches 15 are angular gib members 16 which have a beveled surface thereon as at 17 adjacent the side members 12. The side members 12 are provided with surfaces 18 thereon which are substantially parallel to the surface 17 of the gibs 16. Preferably, a hardened wear plate 19 is attached to the surface 18 and engages the gib surfaces 17.

The gib 16 has opposite the surface 17 a finished surface 20 which is in engagement with a similarly finished surface 21 on the platen. The outer portion of the gib is adapted to fit within the notch 15 so as to have a clearance therearound. The gib 16 is located within the notch 15 by a plurality of locking and adjusting means 22 which may be arranged according to a staggered pattern as indicated in Fig. 1. The adjusting and locking means comprise a hollow screw 23 which threadedly engages the gib and abuts the bottom of the recess 15, and a screw 24 which passes through the hollow screw 23 and into a threaded hole in the platen 13. The head of the screw 24 engages the hollow screw 23 and firmly locks the latter in any predetermined position of adjustment.

Referring to Figure 4, the action of the gib structure of Figures 1 to 3 is illustrated. In Figure 4 the platen 13 may be assumed to have a side thrust or a torque thereon such that the gib 16 is forced against the wear plate 19. The counter thrust of the wear plate 19 on the gib 16 is indicated by the arrow 25 which is normal to the surface 17 of the gib. In accordance with well known physical laws the thrust indicated by the arrow 25 may be divided into the thrusts indicated by the arrow 26 and the arrow 27. The thrust indicated at 26 is transmitted to the platen 13 through the surfaces 20 and 21 while the thrust 27 is carried by the adjusting and locking means 22, the center lines of which are indicated by dot-dash lines.

It will be apparent that the gib 16 is supported extremely rigidly by the surfaces 20 and 21 and the staggered locking and adjusting means 22. It will also be apparent that the locking and adjusting means 22 provide for means whereby the gib 16 may be precisely and accurately adjusted relative to the guiding surface of the side member 12.

It will, likewise, be noted that the provision of the mating surfaces 20 and 21 substantially eliminate torsional or bending effects on the locking screws 24. Therefore, the locking screws, together with the screws 23, may be made appreciably lighter than was heretofore possible. While the locking and spacing means 22 have been shown as staggered across the length and the breadth of the gib 16, they could as well be arranged in alignment if so desired.

Referring now to Figures 5, 6 and 7, a gib structure substantially identical with the structure shown in Figures 1 to 3, inclusive, is illustrated. The gib structure illustrated in Figures 5 to 7, inclusive, differs from the first modification in that the adjusting means for the gib comprises a tapered or wedge shaped member arranged between the gib and the platen.

Referring to Figure 5, the side member of the press is indicated at 30, the strain rod at 31 and the platen at 32. The side member 30 is provided with a bevel at 33 to which is attached the hardened wear plate 34 which is adapted to engage the surface 35 of the gib 36.

The gib 36 fits within a notch 35 in the corner of the platen 32 and has a machined surface 38 thereon which engages and is contiguous with a similarly machined surface 39 on the platen 32.

Disposed between the gib 36 and the surface 40 of the recess 37 is a tapered member 41 which, upon reference to Figure 7, will be seen to have an inclined surface 42 thereon which engages with a similarly inclined surface 43 on the gib 36. The member 40 is provided with a plurality of slots 44 through which the screws 45 pass into threaded engagement with the platen 32. The heads of the screws 45 engage shouldered bores in the gib 36 and thereby retain the latter in position. The member 40 may also be provided with an adjusting screw 46 which threadedly engages either the gib 36 or the platen 32 and is adjustable longitudinally to shift the member 40 so as precisely to adjust the gib 36 relative to the side member 30.

It will be apparent that the structure illustrated in Figures 5 to 7, inclusive, provides for a rigid support of the gib 36 by the platen 32 while permitting the former to be accurately and readily adjusted. Also, this structure provides, as in the case of the structure of Figures 1 to 3, inclusive, supporting means for the gib such that substantially all bending stresses in the screws 45 are eliminated.

While the present invention has been illustrated and described in connection with the platen of a hydraulic press, it will be understood that the invention is equally applicable to the platen of a press powered by any other means or to any other reciprocating member which it is desired accurately to guide. Also, the sliding surfaces of the gib and side members may be pro-

vided with any adequate lubricating system in order to promote the free reciprocation of the platen.

Accordingly, it will be understood that we desire to comprehend such modifications of arrangement and structure and substitution of equivalents as may be considered to come within the scope of the appended claims and the invention.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In combination, the platen of a press and a guiding gib therefore with a beveled surface adapted to engage a correspondingly shaped guiding surface on the press, a notch in said platen for receiving said gib, a surface on said gib adapted to abut the side of said notch opposite said beveled surface, a tapered wedge member disposed between said gib and the other surface of said notch for adjustably spacing said gib therefrom, and means for locking said wedge and said gib to said platen in any particular position of adjustment.

2. In combination, the platen of a press and the guiding gib therefor with a beveled surface adapted to engage a correspondingly shaped guiding surface on the press, a first flat surface on said gib adjacent said beveled surface and a flat surface on said platen parallel thereto adapted to abut said first flat surface on said gib for absorbing thrusts normal thereto, a second flat surface on said gib substantially at right angles to said first flat surface and arranged opposite a surface on said platen, means for spacing said last mentioned surfaces a predetermined amount to permit adjustment of said gib relative to the guiding surface on said press, and a plurality of screws spaced along the length and breadth of said gib and passing through said second flat surface into engagement with said platen for retaining said gib in any particular position of adjustment, the arrangement of the said screws being such that they are subjected to tensional stress only.

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