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REVERSIBLE HEEL BLOCKS

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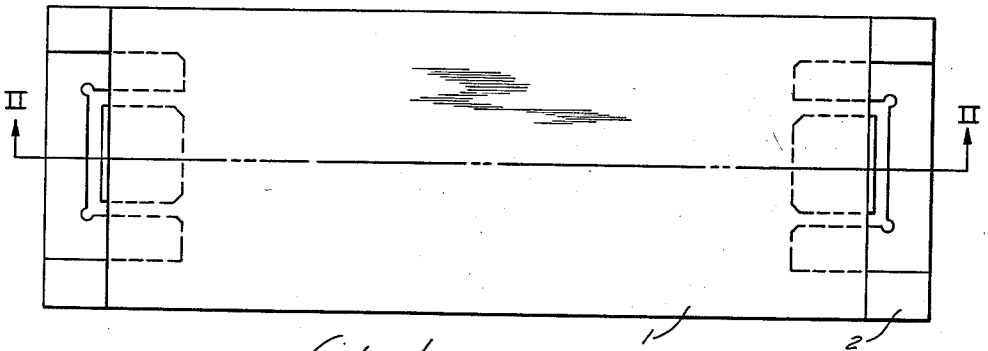


fig. 1

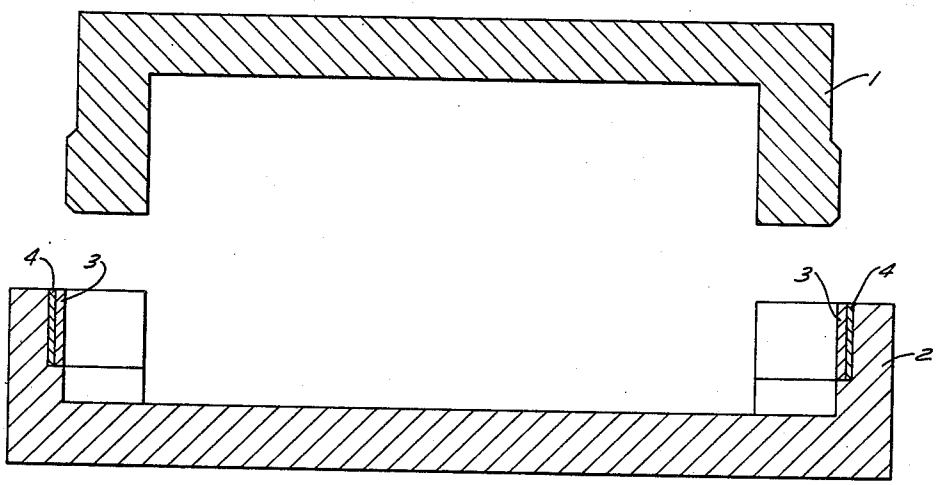


fig. 2

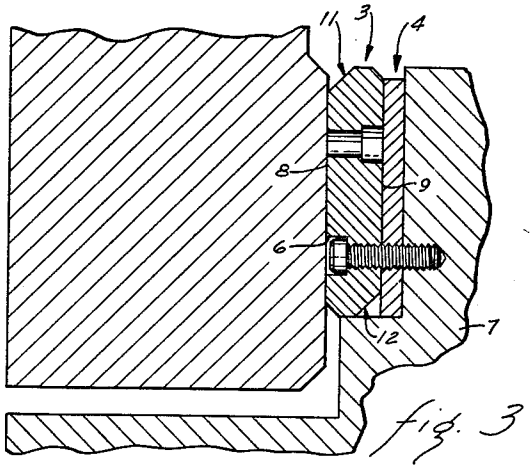


fig. 3

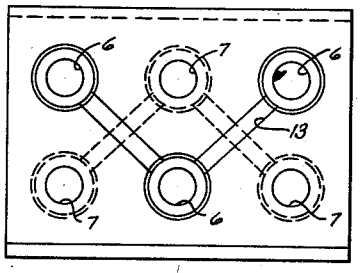


fig. 4

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REVERSIBLE HEEL BLOCKS

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This invention relates to die construction and particularly to the construction of certain guides or wear plates known as "heel blocks" for use therewith.

In conventional construction for certain dies, there are often provided wear plates known as heel blocks between the vertical surfaces of upper and lower die members. These heel blocks are for the purpose of guiding one die with respect to the other and for absorbing the wear which otherwise would occur between the mutually guiding surfaces of said dies. Said heel blocks constitute strips of metal which are placed between the interengaging surfaces of said dies and fastened to one thereof. In conventional practice, however, such strips tend to wear as the result of the rubbing of the other die thereagainst and sometimes need rather frequent replacement.

The space between said dies, though intended to be rectangular, is usually of an actual shape other than strictly rectangular so that said heel blocks must in such cases be machined precisely to fit a given spacing between a pair of dies. The machining of said heel block is frequently a time consuming and consequently expensive process. While this cost might be accepted without too much difficulty as an initial cost, it becomes extremely undesirable when said cost is repeated with the frequency at which heel blocks wear and need replacing.

Accordingly, objects of the invention include the following:

(1) To provide a heel block construction for use with dies having two portions, one thereof being a wear plate and accepting substantially all of the wear occurring as a result of the operation of said dies, and the other thereof being machinable to compensate for non-parallel spacing between upper and lower die shoes.

(2) To provide means, as aforesaid, wherein the part which is machined to effect fitting of said wear plates between said dies is protected from wear and accordingly will last almost indefinitely.

(3) To provide means, as aforesaid, which can be installed and used in the same manner as previously known heel blocks.

(4) To provide a heel block construction, as aforesaid, which will be no more expensive in its initial manufacture than standard heel blocks of presently known design.

(5) To provide standardized, interchangeable wear plates for said heel block construction, which can be reversed when they become heavily scored so as to double their life.

Other objects and purposes of the invention will be known to persons acquainted with devices of this general type upon reading the specification and inspection of the accompanying drawings.

In the drawings:

FIGURE 1 is a top plan view of a typical die construction capable of using the wear plates of the invention.

FIGURE 2 is a section taken on the line II—II of FIGURE 1 and showing a pair of heel blocks in the lower die.

FIGURE 3 is an enlarged segment of FIGURE 2 showing heel block construction of the invention.

FIGURE 4 is a front face view of a standardized wear plate as used in the invention.

Referring to the drawings there is shown in FIGURE 1 a pair of dies, the upper die being represented at 1

and the lower die at 2. Said dies interfit with respect to each other in a conventional manner. Between the sliding faces of said dies, there is located a heel block construction comprised of a standard wear plate 3 (FIGURES 2 and 3) and a machined shim 4. Said standard wear plate is made preferably from any wear resistant material, such as hardened steel, and is of standard shape and size. Said shim is formed from softer material, such as soft steel, which can be readily machined. Said shim and wear plate are stacked together and secured to the desired one of said dies in any convenient manner, such as by the bolts 6.

In installing said heel block constructions, the shaping required for a close fit is provided by suitable shaping or machining of the shims 4. Said shims are then installed on the sliding faces of one of the upper or lower dies, and the wear plates are installed against said shims and between them and the sliding faces of the other die. Thus, normal operation of said die construction will wear only the standard wear plates. These plates, being standard, can be and preferably are made of sufficiently hard material so that wear thereon is minimized. However, when wear does occur to a point which requires replacing of the wear plates, all that is necessary is to replace the standard wear plates whereas the machined shims, which were shaped expressly to meet the circumstances therein present and which would be expensive to replace, are continued in use.

Where the wear consists primarily of scratching or scuffing of the wearing surface 8 and without appreciable thinning of the standard wear plate 3, then same may be reversed so that its previously protected surface 9 (FIGURE 3) becomes the wearing surface. For this purpose, the beveling 11 which is located at the lead-in edge of the wear plate 3 when the surface 8 is the wearing surface, may be provided also at 12 to be at the lead-in edge when the surface 9 is exposed as the wearing surface.

With this arrangement, the only part of the heel block construction which will need replacing according to the present invention is the relatively inexpensive wear plate 3, which can be manufactured and sold as a standard unit and which will not require shaping or machining when it is placed in its operating position.

The reversible wear plate 3 (FIGURE 3), is in this embodiment, provided with a staggered arrangement of six bolt holes (FIGURE 4) wherein three holes 6 are countersunk from one side of the plate and three holes 7, from the reverse side so that a triangular array of three holes is available in either mounting position for securing said wear plate and shim to a die.

Also in this embodiment grooves 13 are provided which assist in holding grease on the face of the wear plate.

It will be recognized that, while the heel block construction is most useful on very large dies and relatively long, usually adjacent, non-parallel sides, it can within the scope of the invention be applied to a wide variety of other die forms and shapes and the hereinafter appending claims will be understood as including such further applications excepting as said claims may by their own terms expressly provide otherwise.

What is claimed is:

1. A die construction, comprising:

a pair of dies having opposed surfaces which are spaced apart and which are slidable relative to each other;

shim means having two oppositely facing surfaces which respectively face said opposed die surfaces, one of said shim surfaces being precisely shaped to closely fit one of said opposed die surfaces and being secured to and disposed in contiguous relationship therewith, the other of said shim surfaces being spaced from the other opposed die surface, said shim

means being formed of a readily machinable material so that said one shim surface can be easily and precisely shaped;

a wear plate formed of a wear resistant material and having two oppositely facing surfaces, one of said wear plate surfaces facing and being of the same shape as said other shim surface and being releasably secured thereto in contiguous relationship therewith, the other surface of said wear plate being parallel with and adapted to slidingly contact the other of the opposed die surfaces; said wear plate having a bevelled edge at one end of said other surface thereof whereby to guide entering movement of the other of the opposed die surfaces.

2. A die construction, comprising:

a pair of dies having opposed surfaces which are spaced apart and which are slidable relative to each other;

shim means having two oppositely facing surfaces which respectively face said opposed die surfaces, one of said shim surfaces being precisely shaped to closely fit one of said opposed die surfaces and being secured to and disposed in contiguous relationship therewith, the other of said shim surface being spaced from the other opposed die surface, said shim means being formed of a readily machinable material so that said one shim surface can be easily and precisely shaped;

a wear plate formed of a wear resistant material and having two oppositely facing surfaces, one of said wear plate surfaces facing and being of the same shape as said other shim surface and being releasably secured thereto in contiguous relationship therewith, the other surface of said wear plate being parallel with and adapted to slidingly contact the other of the opposed die surfaces;

said shim means and said wear plate having aligned openings, fastening means extending through said openings and securing said shim means and said wear plates to one of said dies, and groove means in said other surfaces of said wear plate whereby a lubricant may be retained therein.

3. A die construction, comprising:

a pair of dies having opposed surfaces which are spaced apart and which are slidable relative to each other;

shim means having two oppositely facing surfaces which

respectively face said opposed die surfaces, one of said shim surfaces being precisely shaped to closely fit one of said opposed die surfaces and being secured to and disposed in contiguous relationship therewith, the other of said shim surfaces being spaced from the other opposed die surface, said shim means being formed of a readily machinable material so that said one shim surface can be easily and precisely shaped;

a wear plate formed of a wear resistant material and having two oppositely facing surfaces, one of said wear plate surfaces facing and being of the same shape as said other shim surface and being releasably secured thereto in contiguous relationship therewith, the other surface of said wear plate being parallel with and adapted to slidingly contact the other of the opposed die surfaces;

said die surfaces and said shim surfaces being substantially parallel and the oppositely facing surfaces of said wear plate being parallel with each other and of the same shape so that the position of the wear plate with respect to the shim means can be reversed;

said wear plate having two bevelled edges at the ends of the oppositely facing surfaces thereof, the wear plate having openings therethrough, said openings being aligned with corresponding openings in said shim means when one or the other of said oppositely facing surfaces of said wear plate faces said other shim surface whereby said wear plate can be secured to said shim means with either of the oppositely facing surfaces thereof contacting said other shim surface; and

grooves in both of said oppositely facing surfaces of said wear plate whereby a lubricant can be retained therein.

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