

March 1, 1932.

J. SOSS

1,847,631

DIE

Filed June 16, 1930

Fig. 1.

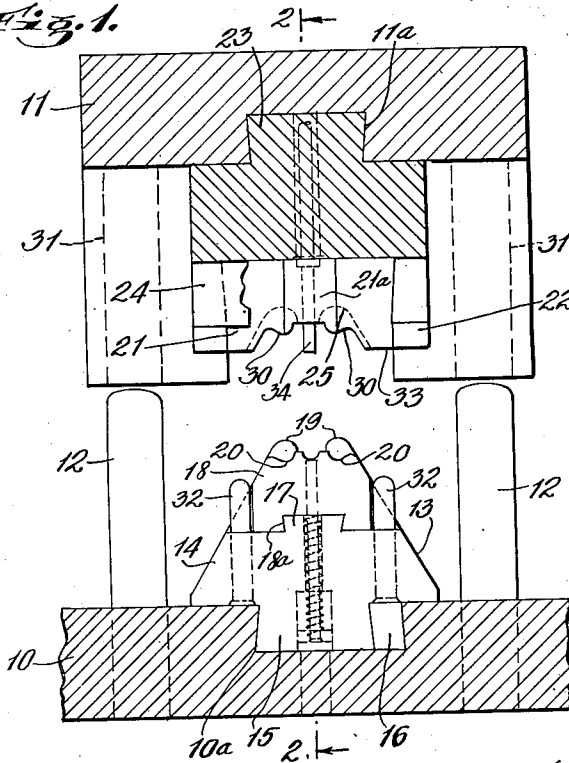


Fig. 2.

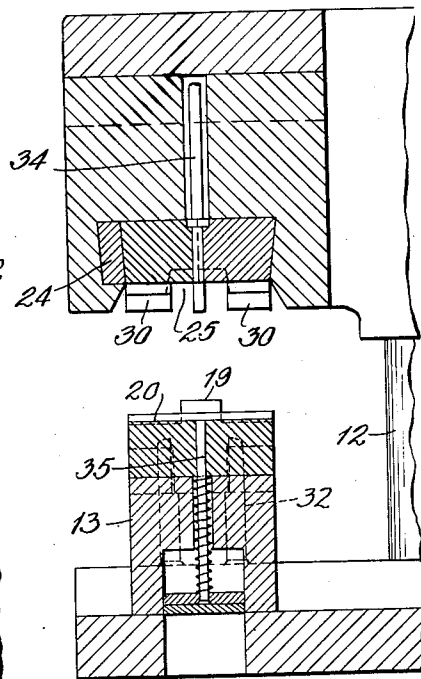


Fig. 3.

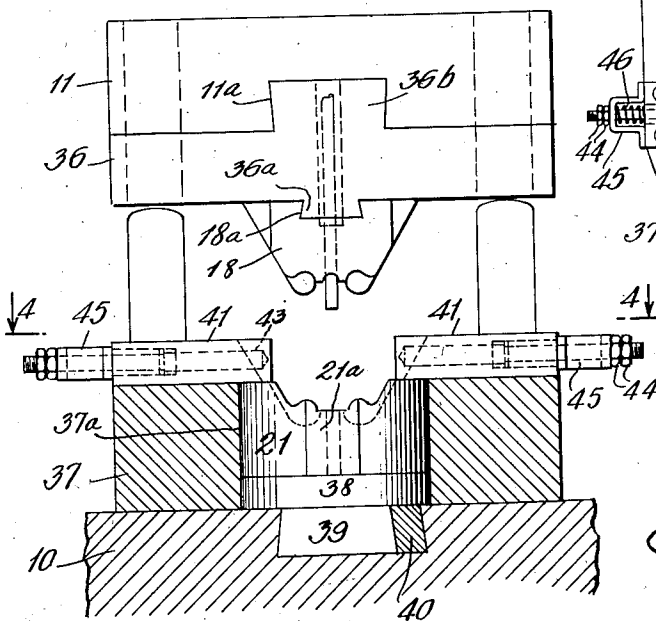


Fig. 4.

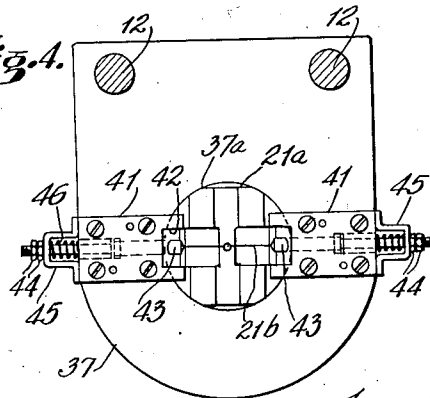
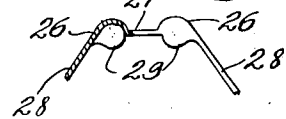


Fig. 5.



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Application filed June 16, 1930. Serial No. 461,318.

This invention relates to dies and particularly to devices of this class wherein the male and female members of the die are so fashioned as to permit the formation of two similar workpieces, thus speeding up the production of such workpieces, and especially in the formation of workpieces, the adjacent or attached ends of which are provided with drawn, hood-like portions; and the object of the invention is to provide a die construction wherein the male and female members of the die may be reversed as to position in a press, so that each member of the die may be mounted in connection with the plunger and in like manner with the bed plate; a further object being to provide a female die member which is preferably composed of separate parts, whereby the formation of the depressions in said die member or the separate parts thereof, is facilitated; a further object being to provide means for guiding and centering the workpiece in position between the dies prior to the formation thereof; a further object being to provide means for removing the workpiece from the separate die members after the formation thereof; a still further object being to provide a die structure wherein the male and female dies have opposed surfaces arranged angularly with respect to the central portion of the die to form a wedge-like structure and in forming the pair of hood members at the base of the wedge where the greatest power is produced, and by arranging the formation of the hood members centrally of the workpiece, the flow of the metal is distributed equally, and creeping or other displacement of the workpiece is thus obviated; and with these and other objects in view, the invention consists in a die structure of the class and for the purpose specified, which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Fig. 1 is a front, sectional view, showing

one arrangement of die members, such as employed in carrying my invention into effect.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 1 but showing a modified arrangement of the die members.

Fig. 4 is a sectional, plan view of the structure shown in Fig. 3, the section being on the line 4—4 of said figure; and,

Fig. 5 is a sectional, detail view of a part of a workpiece, fashioned by the use of my improved die.

In the drawings, 10 represents the bed plate of a press, and 11 the die supporting plate of the plunger, which is movable relatively to the plate 10 and is guided in this movement by two guide rods 12.

In the structures shown in Figs. 1 and 2, the male member 13 of my improved die is arranged upon the bed plate 10 and consists of a base member 14 having a dove-tailed member 15 at its lower face, fitting in a dove-tailed socket 10a in the plate 10 and held in position by a wedge or the like 16. The base member 14 carries on its upper surface, a dove-tailed key member 17 in connection with which the male die 18 is mounted, said die having a dove-tail recess 18a, receiving the key 17. This die has on its upper face, two projecting semi-cylindrical forming members 19, arranged substantially centrally thereof, and at each side of the members 19 are concave recesses 20. At 21, I have shown the female die arranged in a die supporting member 22, keyed to the plate 11 by a dove-tail key 23, arranged in a corresponding recess 11a in said plate, the member 22 being recessed to receive the die 21, which is held in position by wedges 24, disposed at opposite sides thereof and seating on flattened faces 21a, disposed at opposite sides of the die 21.

The die 21 is split centrally as seen at 21b to form two similar die parts, and the purpose of providing the separate parts is to facilitate the formation of the oppositely disposed recesses 25 in the central portion of the die to receive the members 19, to form a pair of curved hood portions on a workpiece placed within and between said dies.

It will also be noted that the walls of the die 21 extending from the recesses 25, as well as the walls extending from the members 19, are angularly disposed to form a substantially wedge-shaped male die, and a corresponding female die, thus providing the greatest possible power in shaping the material of the workpiece into the pair of oppositely disposed hoods, such as shown at 26 and 26a in Fig. 5 of the drawings, one hood being shown in section and the other in full lines. These hoods are joined by a connecting fin 27.

The workpiece as formed and partially shown in Fig. 5, constitutes two similar parts or a pair of similar hinge members, employed in and as parts of what are known as covered joint hinges. It will be apparent that the attaching plate portions 28 of the hinges will be disposed angularly with respect to each other as indicated in said figure by virtue of the wedge formation of the die members. In completing the formation of the separate hinge members, the connecting fin 27 is removed. The side walls 29 of the hood members 26—26a are formed by the recesses 20 which control the contour line of the outer edges of the side walls 29 and by projecting members 30 formed on the die 21 and disposed at opposite sides of each of the recesses 25 as clearly seen in Figs. 1 and 2 of the drawings. The die supporting member 22 has apertures 31 formed in extensions on said member to receive the guide or alignment rods 12.

The base member 14 as shown in Figs. 1 and 2, carries upwardly extending guide rods 32, which are arranged in recesses at the corner portions of the die 8 and project sufficiently above the side walls of said die to guide the placement of the workpiece in proper position on the die 18, it being understood that this workpiece is partially formed to fit upon the die 18, and sufficient clearance will be provided between the lower face of the die 21 and the pins 32 as seen at 33. Suitable knock-out or workpiece ejecting pins 34 and 35 are arranged in the die 21 and the die 18 respectively, to insure the removal of the workpiece from either one or both of the dies.

In Figs. 3 and 4 of the drawings, I have shown a slight modification wherein the male die 18 is mounted in connection with the plunger plate 11 and the female die 21 is mounted in connection with the bed plate 10. The dies 18 and 21 are of identical construction, the only difference being in the specific manner of mounting the dies in their reverse use. A die supporting plate 36 is employed to support the die 18 in connection with the plate 11, the plate 36 having a dove-tail key 36a, seating in the dove-tail recess 18a, and a dove-tail member 36b seating in the recess 11a. The die 21 is reinforced in

its support in connection with the bed plate 10 by a substantially ring-like body 37, encircling the die 21 and having a rear extension through which the guide rods 12 pass, a key plate 38 being employed and having a dove-tail key 39 and removable wedge key 40 for retaining the die 21 against movement with respect to the bed plate.

Supported upon the upper face of the ring 37 are two workpiece guide members 41, each of which is of similar construction and the description of one will apply to the other. The inner end of the guide 41 is yoke-shaped in form as seen at 42, to receive the attaching plate portions 28 of the workpiece when mounted upon the die 21. A spring pressed pin 43 is arranged in the guide 41 and centrally of the yoke-shaped end 42 to apply slight, tensional pressure to the attaching plates of the workpiece to facilitate the proper alignment of the workpiece in the die 21. The position of the pin 43 and the tension thereof is controlled by adjustment nuts 44 arranged on the outer end of said pin where it passes through a yoke-shaped keeper 45 forming a spring seat for the spring 46. With this form of construction, two small wedge members may be inserted in the recesses formed in the bore 37a of the ring 37 where the sides 21a of the die are positioned, and these wedges will serve to hold the separate parts of the die where they are split as shown at 21b, in firm abutting relation with respect to each other; and yet, the ring as well as said wedges will permit a slight yielding of the separate die parts with respect to each other when subjected to undue stress or strain, thus obviating breakage of the female die.

It will be understood that my improved die as disclosed in the accompanying drawings, is designed primarily for use in forming, in one operation of the press, a pair of hinge parts of identical construction which are separated to form independent hinge parts by the removal of the connecting fin, and especially in the formation of hinge members having a curved hood portion disposed at one end thereof. It will be apparent, however, that my invention may be applied to the formation of pairs of articles of merchandise of any kind or class, having hood-like members formed from the central portion of the workpiece. While the resulting product is preferably formed from metal, it will be understood that the die may be utilized in forming materials of different kinds and classes, and various other changes in and modifications of the construction herein shown and described may be made within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what

I claim as new and desire to secure by Letters Patent, is:—

1. A die for forming hinges of the class described consisting of a male and a female member, said male member having converging side walls forming a wedge-shaped die member; the side walls terminating at the contracted end of the die in projecting, cylindrical die parts arranged in juxtaposition and having concave recesses disposed at opposite sides thereof, the female member of said die having side walls conforming with the walls of the male member, and the contracted ends of said walls terminating in arc-shaped recesses arranged in juxtaposition and in alinement with the cylindrical die parts of the male member in the movement of said die parts toward and from each other to form in a workpiece curved hood portions arranged in close proximity to each other.

2. A die for forming hinges of the class described consisting of a male and a female member, said male member having converging side walls forming a wedge-shaped die member, the side walls terminating at the contracted end of the die in projecting, cylindrical die parts arranged in juxtaposition and having concave recesses disposed at opposite sides thereof, the female member of said die having side walls conforming with the walls of the male member, and the contracted ends of said walls terminating in arc-shaped recesses arranged in juxtaposition and in alinement with the cylindrical die parts of the male member in the movement of said die parts toward and from each other to form in a workpiece curved hood portions arranged in close proximity to each other, and the female die having at opposite sides of the recesses therein outwardly projecting portions cooperating with the recesses at the opposite sides of the cylindrical parts of the male member of the die for forming side wall members at each side of the curved hood portions of the workpiece.

3. A die for forming in a single workpiece a pair of curved hood portions, said die consisting of male and female members, the contour of the male member being wedge-shaped and terminating at its contracted end in projecting cylindrical portions arranged in close proximity to each other, the female member of the die being recessed to conform with the general contour of the male member so as to pile the material of a workpiece between the die members by virtue of the wedge contour thereof in forming curved hood portions therein.

4. A die for forming in a single workpiece a pair of curved hood portions, said die consisting of male and female members, the contour of the male member being wedge-shaped and terminating at its contracted end in projecting cylindrical portions ar-

ranged in close proximity to each other, the female member of the die being recessed to conform with the general contour of the male member so as to pile the material of a workpiece between the die members by virtue of the wedge contour thereof in forming curved hood portions therein, and the male die member being recessed at opposite sides of the cylindrical parts and the female member having projecting portions cooperating with the recesses of the male part to form side walls for the hood portions of the workpiece.

5. A die for forming a pair of hinge butts from a single workpiece, each hinge butt having a curved hood portion disposed at one end thereof and said hood portions being formed in close proximity to each other on the workpiece, comprising male and female die members movable relatively to each other, the male member on the die being of wedge-shaped contour, the contracted end thereof having the die elements for forming the curved hood portions in the workpiece, and the female die member having a contracted recess for receiving the wedge-shaped male die whereby in shaping the workpiece by said dies, the metal thereof is compacted under the greatest possible pressure in the formation of the hood portions therein.

6. A die for forming a pair of hinge butts from a single workpiece, each hinge butt having a curved hood portion disposed at one end thereof and said hood portions being formed in close proximity to each other on the workpiece, comprising male and female die members movable relatively to each other, the male member on the die being of wedge-shaped contour, the contracted end thereof having the die elements for forming the curved hood portions in the workpiece, the female die member having a contracted recess for receiving the wedge-shaped male die whereby in shaping the workpiece by said dies, the metal thereof is compacted under the greatest possible pressure in the formation of the hood portions therein, and said male and female die members including elements for forming walls at opposite sides of the hood portions.

7. A die for forming a pair of hinge butts from a single workpiece, each hinge butt having a curved hood portion disposed at one end thereof and said hood portions being formed in close proximity to each other on the workpiece, comprising male and female die members movable relatively to each other, the male member on the die being of wedge-shaped contour, the contracted end thereof having the die elements for forming the curved hood portions in the workpiece, the female die member having a contracted recess for receiving the wedge-shaped male die whereby in shaping the workpiece by

said dies, the metal thereof is compacted under the greatest possible pressure in the formation of the hood portions therein, said male and female die members including elements for forming walls at opposite sides of the hood portions, and said female die member being divided centrally into separate die parts, and means for holding said die parts together.

In testimony that I claim the foregoing as my invention I have signed my name this 6th day of June, 1930.

JOSEPH SOSS.

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