Feb. 21, 1939. F. W. GAINES, 3D 2,147,888

HOLDER FOR WIRE DRAWING DIES

Filed March 23, 1937 2 Sheets-Sheet 1

FIG. 1

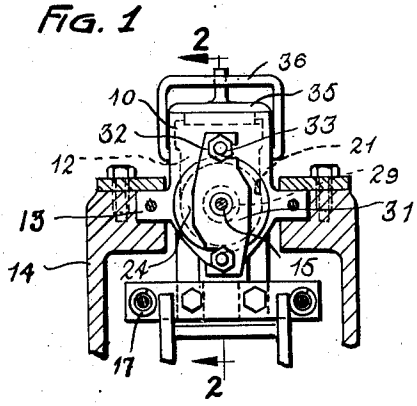


FIG. 2

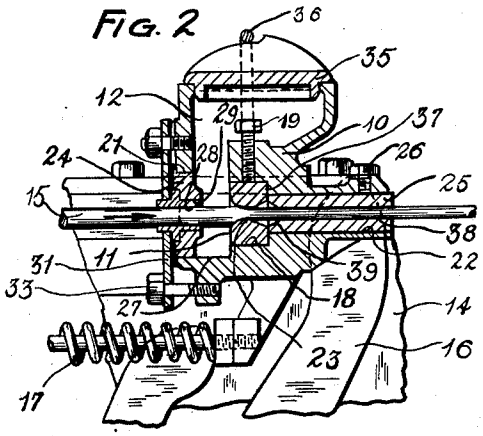


FIG. 3

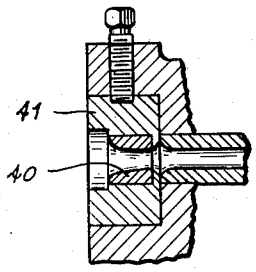


FIG. 4

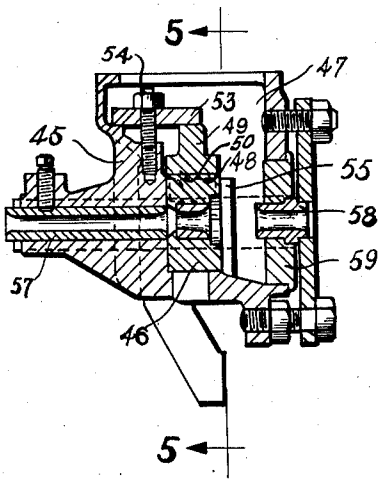
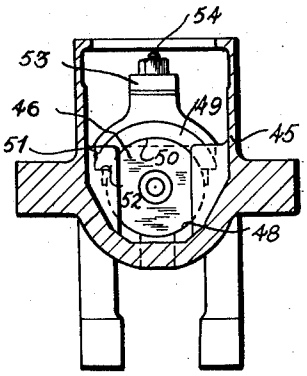


FIG. 5



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Filed March 23, 1937 2 Sheets-Sheet 2

FIG. 6

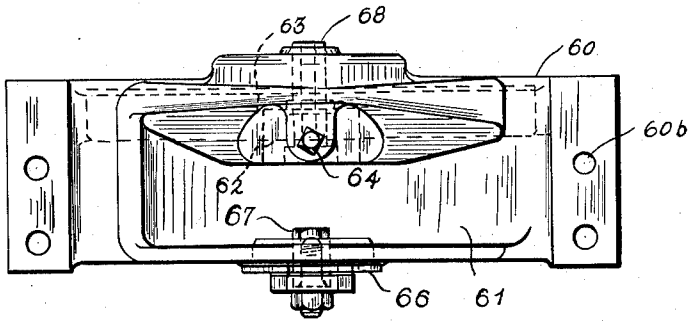


FIG. 7

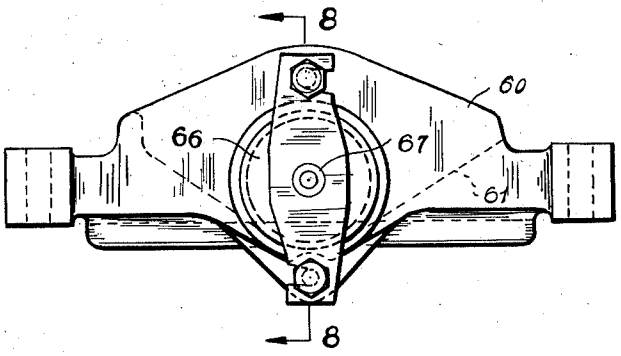
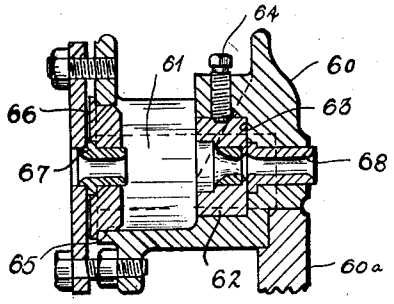


FIG. 8



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UNITED STATES PATENT OFFICE

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HOLDER FOR WIRE-DRAWING DIES

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Application March 23, 1937, Serial No. 132,535

4 Claims. (Cl. 205—25)

This invention has to do with the dies of wire-drawing machines and as its principal object aims to provide novel die supporting means in which a supply of lubricating compound is retained adjacent the die and in which dies of different sizes can be readily substituted.

Another object of my invention is to provide improved mounting means for a wire drawing die in which the mount has a recess for drawing compound and a quick-detachable cover affording access to the recess for cleaning or replacing the die.

A further object of my invention is to provide an improved support for a wire drawing die in which the die is permitted to rotate or float during the drawing operation.

My invention may be further briefly summarized as consisting in certain novel combinations and arrangements of parts hereinafter described and particularly set out in the appended claims.

This application is in part a continuation of my original application, Serial No. 80,973, filed May 21, 1936.

In the accompanying sheets of drawings—

Fig. 1 is a partial cross section of a wire drawing machine showing, in end elevation, a die mount embodying my invention,

Fig. 2 is a longitudinal sectional view taken through the mount as indicated by line 2—2 of Fig. 1,

Fig. 3 is a partial longitudinal sectional view similar to that of Fig. 2 but showing a die of different form,

Fig. 4 is a longitudinal sectional view taken through another die mount embodying my invention and in which the die is permitted to float or rotate,

Fig. 5 is a transverse sectional view taken through the mount as indicated by line 5—5 of Fig. 4,

Fig. 6 is a plan view showing another die mount embodying my invention,

Fig. 7 is an end view thereof, and

Fig. 8 is a transverse sectional view taken through the mount as indicated by line 8—8 of Fig. 7.

In the accompanying drawings to which more detailed reference will presently be made, I have shown improved mounts for wire drawing dies or the like, and although these mounts are hereinafter referred to as forming a part of a reciprocating wire drawing machine, it should be understood that the invention may be embodied in various other machines and constructions.

In Figs. 1 and 2 of the drawings I show a body 10 which provides a mount for a wire drawing die 11 and which has a recess or pocket 12 extending thereinto and forming a container for retaining a supply of lubricant or metal working compound in front of the die. Such compound may be in the form of a lubricating powder or may be any other appropriate substance. The body 10 may be formed of cast metal or any other suitable material and is here shown in the form of a slide having lateral projections 13 which slidably engage in guideways provided on the frame 14 of a wire drawing machine. The slide is adapted to be reciprocated in the guideways of the frame for alternately forcing the die 11 over a section of the wire or stock 15 while the latter is being held and returning the die to its starting position while the stock is being advanced in the direction indicated by the arrow. The slide may be moved toward the left as seen in Fig. 2 for a working stroke by levers or arms 16 having rocking engagement with the slide, and is adapted to be returned by movement toward the right by the action of compression springs 17.

The mount or slide 10 is formed with a hollow seat or recess 18 therein in which the die 11 is adapted to be inserted and retained by the set screw 19. The pocket or recess 12 of the slide is preferably formed to extend into the slide from the top thereof with an extension of the recess extending down in front of the die 11. At opposite sides of the die-receiving recess 18 the slide 10 is provided with openings 21 and 22 which are substantially coaxial with the orifice 23 of the die. The opening 21 communicates with the pocket 12 of the slide and is adapted to be closed by a movable cover 24 engaging therein. The opening 22 may be a relatively elongated opening which communicates with the die-receiving recess 18 and in which an elongated guide bushing 25 may be disposed and retained by a set screw 26.

The opening 21 is preferably located with the lower edge thereof below or substantially flush with the bottom wall 27 of the compound container so that when the cover 24 has been removed the compound which remains in the pocket of the slide can be readily discharged through this opening. The opening 21 is also formed of a size such that the die 11, or any other die of different size which is to be substituted therefor, can be readily inserted or removed through this opening.

As shown in Fig. 2 the cover 24 is provided with a central opening 28 which is aligned substantially with the orifice of the die when the cover is in place. A bushing 29 engages in the

opening of the cover and serves as a guide for the wire or stock 15 and also to prevent loss of compound through the cover opening. This bushing is readily removable from the cover opening and is adapted to be replaced by a bushing of different size to correspond with the diameter of the stock and the size of the drawing die desired to be used.

To provide for quick removal and replacement of the cover 24 I employ a quick detachable retaining member or locking bar 31 which extends across the cover and has releasable connection with the slide 10. In this instance the retaining member 31 has oppositely extending slotted arms 32 which engage studs 33 of the slide in the manner of a bayonet-type lock. The retaining member 31 preferably bears against the bushing 29 and may have an opening into which the outer end of this bushing extends. In arranging the retaining member to bear against the bushing 29 it will be seen that this member can be utilized to hold the bushing in place in the cover as well as to hold the cover in place in the opening 21.

If desired the opening formed into the top of the slide can be closed by a suitable cover 35 to thereby prevent the accidental loss of compound. The cover may be conveniently retained in place on the slide by means of a bail-type latch 36.

With the die arrangement and mount as just described it will be seen that a supply of compound placed in the recess 12 of the slide will be retained in front of the die 11 and will contact the wire before it enters the die orifice, and that as the compound is used up the reserve supply will automatically travel downwardly to a position in front of the die. It will also be seen that by releasing the quick detachable bayonet-type retaining member 31, the cover 24 can be withdrawn from the opening 21 to thereby permit the ejection of used compound and the cleaning or replacement of the drawing die 11.

Although a die of any suitable form may be used in the mount, I show the die 11 as having an orifice or passage which increases in size from the throat of the die toward the exit side 37 thereof. I also show the bushing 25 as having a passage 38, which, at the inner end of the bushing, has a bell mouth or tapering enlargement 39 decreasing in size in the direction in which the stock travels. When a new section of stock is started through the die, its leading end tends to curl on emerging from the die orifice, but by providing the inner end of the bushing 25 with the bell mouth 39, the stock is readily guided into the passage 38 of this bushing.

Instead of having the drawing orifice formed directly in the die 11, it may be formed in a bushing or insert 40 which is, in turn, seated in an opening of a die 41 as shown in Fig. 3 of the drawings. This construction may be desirable for purposes of economy, as where an expensive alloy is to be employed or where provision is to be made for renewal of the part of the die which is subjected to wear.

In Figs. 4 and 5 of the drawings I have shown another die mount 45 which is generally similar to the mount of Figs. 1 and 2 but in which the drawing die 46 is permitted to float or rotate during the drawing operation. The mount 45 may also be in the form of a slide adapted for reciprocating movement and has a pocket or recess 47 extending thereinto from the top and forming a container for drawing compound. The mount is provided with an arcuate seat or recess 48 in which the die 46 engages and is retained by a cap 49. This cap is formed with an arcuate recess 50 which is complemental to the recess 48 of the slide. A pair of shoulders 51 provided on the slide prevent lateral displacement of the cap and a second pair of shoulders 52 prevent the cap from gripping the die when the cap is clamped in place as by means of a clamping member 53 and the stud 54. Axial shifting of the die in one direction may be prevented by ribs 55 formed on the slide and in the opposite direction by the exit face of the die engaging the wall of the slide. In permitting the die to rotate or float in the recess of the mount it will be seen that the die will be self-adjusting or self-aligning during the drawing operation.

The mount 45 is also provided with bushings 57 and 58 generally similar to the bushings 25 and 28 of Fig. 2, and with a quick detachable cover 59 in which the bushing 58 is mounted.

In Figs. 6, 7, and 8 I show another die mount 60 which is generally similar to the two mounts 10 and 45 already described but which is preferably in the form of a box adapted to be secured to a stationary frame member 60*a* as by means of bolts extending through the holes 60*b*. The mount 60 has a recess or pocket 61 extending thereinto from the top and which provides a container for retaining a supply of compound in front of the drawing die 62. A die receiving recess 63 is formed in the mount and is adapted to have the drawing die 62 retained therein by the set screw 64. An opening 65 formed in the mount substantially opposite the die 62, and communicating with the pocket 61, is adapted to be closed by a quick-removable cover 66. Bushings 67 and 68, carried respectively by the cover 66 and the slide 60, align substantially with the orifice of the die. The bushing 68 may be relatively short as compared with the bushings 25 and 57 of Figs. 2 and 4, and if desired may be of substantially the same length or only slightly longer than the bushing 67. During use of a die and mount of the type illustrated in this instance the stock is pushed or pulled through the orifice of the die 62 and the thrust of the drawing operation is taken by the stationary frame member 60*a*.

While I have illustrated and described my improved die mount in a somewhat detailed manner, it should be understood that I do not wish to be limited to the precise details and arrangements herein disclosed but regard my invention as including such changes and modifications as do not constitute a departure from the spirit and scope of the appended claims.

Having thus described my invention, I claim:

1. In apparatus of the character described a body having a chamber extending thereinto from the top thereof and substantially aligned openings communicating with the chamber and extending through opposite walls thereof, means for mounting a die in the chamber adjacent the opening of one wall of the body, and a cover for the opening of the other wall, said cover having an opening for the passage of stock to the die and being slidable along the stock away from said body to permit cleaning of said die and chamber through the opening of said body.

2. In apparatus of the character described a body having a chamber extending thereinto from the top thereof and substantially aligned openings communicating with the chamber and extending through opposite walls thereof, a die, means for mounting said die in the chamber adjacent the opening of one wall of the body, the opening of the other wall being of a size to permit passage of

said die therethrough, and a removable cover for the latter opening.

3. In apparatus of the character described the combination of a wire-drawing die, a support for the die having a recess extending thereinto for retaining compound in front of the die and an opening at the side thereof of a size to permit insertion or removal of the die, a cover for said opening and itself having an opening which aligns substantially with the orifice of the die when the cover is in place, a bushing releasably engaging in the cover opening, and retaining means having detachable connection with said support and adapted to releasably hold said cover in place and to retain said bushing in the cover opening.

4. In apparatus of the character described, a die mount comprising a body having a chamber extending thereinto from the top thereof and substantially aligned openings communicating with the chamber adjacent the bottom thereof and extending through opposite side walls, an arcuate seat on said body adjacent the opening of one of said walls and spaced from the other wall, projections formed integral with said body and extending into the chamber thereof so as to form a pair of opposed die retaining shoulders spaced from said one wall, a cap complemental to said arcuate seat and extending part way into the space between said opposed shoulders and said one wall, and a die retained in said seat and cap and having limited floating therein, said chamber providing a pocket for retaining metal-working compound adjacent the die.

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