

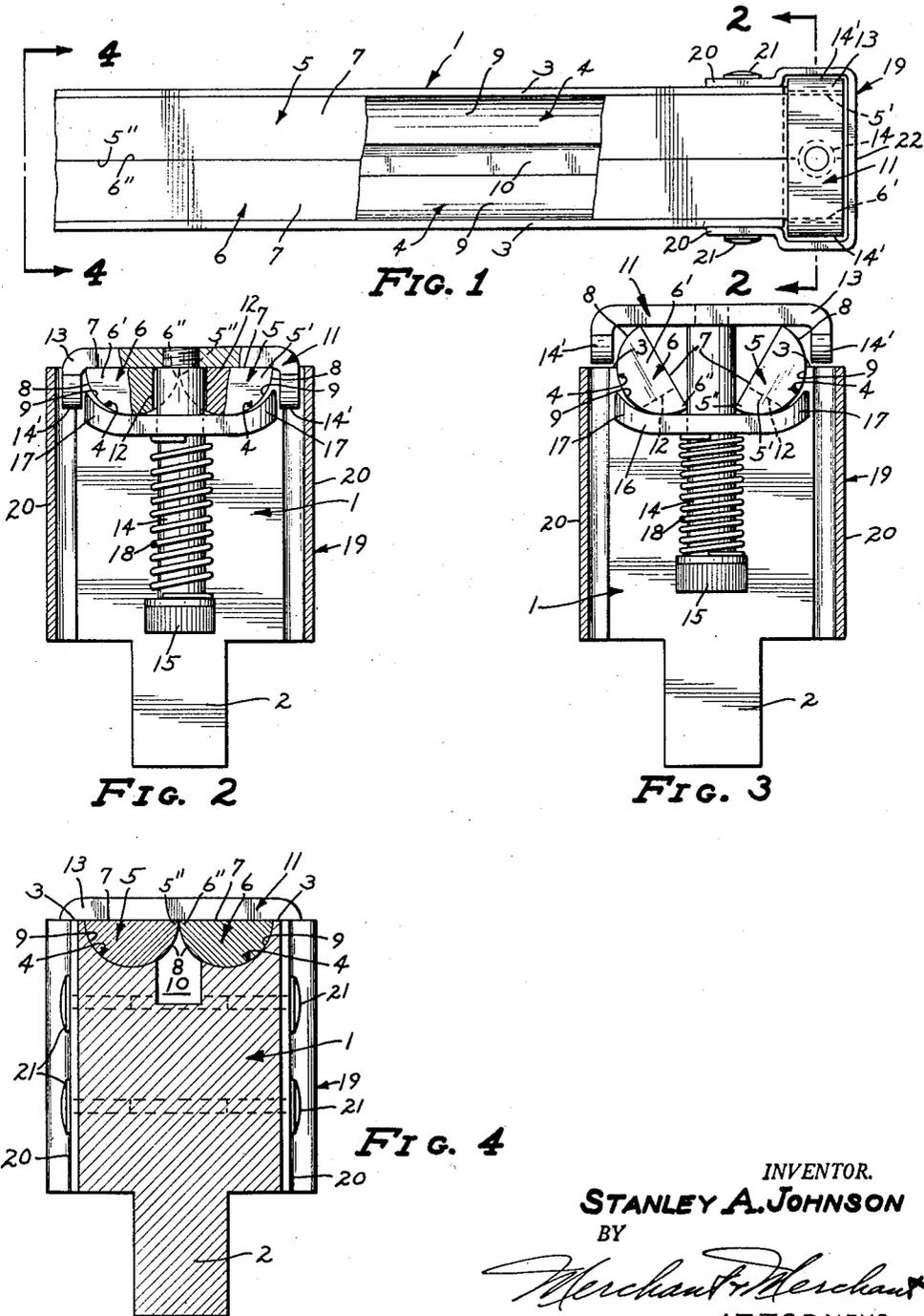
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S. A. JOHNSON

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DIE FOR USE IN BENDING FLAT METAL STOCK AND THE LIKE

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INVENTOR.

STANLEY A. JOHNSON

BY

Merchant & Merchant
ATTORNEYS

1

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DIE FOR USE IN BENDING FLAT METAL STOCK AND THE LIKE

Stanley A. Johnson, Minneapolis, Minn., assignor of one-sixth to Carl Parten and one-sixth to Gerald Parten, both of Minneapolis, Minn.

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2 Claims. (Cl. 153—21)

This invention relates to apparatus for use in bending flat metal stock, such as sheet metal and the like, and more particularly relates to a die for use in conjunction with a bending punch in the ram of a power brake or the like for bending such flat stock; and is in the nature of an improvement upon the structure of my co-pending application Serial No. 713,707, filed February 6, 1958, now U. S. Patent No. 2,882,952, granted April 21, 1959, and entitled "Die for Use in Bending Flat Metal Stock and the Like."

More specifically, my invention relates to novel and improved mounting brackets for the opposite end portions of the rolling die bars of said pending application; and has for its primary object the provision of novel and highly efficient means whereby the rolling die bars may be positively locked against longitudinal movements with respect to each other and with respect to the body member in which they are mounted, during rolling action.

A further object of my invention is the provision of a device of the class immediately above described including novel means for imparting yielding bias to the rolling die bars for urging said bars to their inoperative positions wherein their flat upper surfaces lie in a common plane.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings wherein like characters indicate like parts throughout the several views:

Fig. 1 is a view in top plan of my invention, some parts being broken away;

Fig. 2 is an enlarged sectional view taken on the line 2—2 of Fig. 1, some parts being broken away and some parts shown in section;

Fig. 3 is a view corresponding to Fig. 2, but showing a different position of some of the parts thereof; and

Fig. 4 is an enlarged view in vertical section taken on the line 4—4 of Fig. 1.

Referring with greater particularity to the drawings, the numeral 1 indicates an elongated body formed from suitable steel or other metal to provide at its lower end a depending rib or tongue 2 for reception into the groove or recess, not shown, on the bolster of a conventional power brake. The body member 1 has a flat and horizontally oriented upper surface 3 which is broken up to provide laterally spaced cradles 4 which extend throughout the entire length of the body 1. As shown, the cradles 4 are cross-sectionally arcuate for the rolling reception of die bars 5, 6. As shown, the die bars 5, 6, are semi-spherical in cross-sectional configuration and have opposite end portions 5', 6' respectively which project axially outwardly from opposite ends of the body 1. The lateral spacing of the cradles 4 is such that the adjacent edges 5'', 6'', of the rolling die bars 5, 6, are in side by side contiguous relationship when the flat upper surfaces 7 of the die bars 5, 6 lie in the same horizontal plane. In this position, it will be noted that the flat upper surfaces 7 are also in a common horizontal plane

2

with the flat upper surface 3 of the body 1, for the reception of flat sheet metal prior to the bending thereof. The hemispherical undersurfaces of the die bars 5, 6, are identified by the numeral 8, whereas the mating arcuate surfaces of the cradles 4 are identified by the numeral 9.

To permit a punch, not shown, to move downwardly between the bars 5, 6, a groove 10 is formed in the body 1 throughout the length thereof between the cradles 4. The important function of the groove 10 forms no part of the instant invention and hence will not be explained in detail here.

For the purpose of retaining the die bars 5, 6 in their respective cradles 4 in the body 1 during their rolling, metal bending movements, I provide, preferably on opposite ends of the body 1, mounting brackets, only one of which is shown and identified in its entirety by the numeral 11. Axially outwardly of the body 1, the contiguous edges 5'', 6'' of the die bars 5, 6, are provided with opposed segmental notches 12 which cooperate to define a substantially circular opening when the die bars are in their metal receiving positions with the flat upper surfaces 7 thereof in a common horizontal plane. A transverse metal strap 13, preferably and as shown having downturned opposite end portions 14', overlies the opposite end portions 5', 6' of the die bars 5, 6 and has rigidly secured to its intermediate portion a guide rod 14. The guide rod 14, as shown, extends slidably through the aperture defined by the notches 12 and is provided at its lower end with an enlarged head 15. Slidably mounted on the guide rod 14, immediately below the die bars 5, 6, is a transversely extended strap-like saddle member 16, preferably and as shown having upturned arcuate opposite end portions 17 which engage the hemispherical undersurfaces 8 of the die bars 5, 6, under yielding bias of a coil compression spring 18 interposed between the head 15 and the undersurface of the saddle member 16. Obviously, the depending lower end portions 14' of the straps 13 and the upturned arcuate opposite end portions 17 of the saddle member 16 tend to restrain the die bars 5, 6 against lateral shifting movements during rolling oscillation thereof.

Cooperating with the guide rods 14 to positively limit axial movements of the die bars 5, 6, is a U-shaped cap 19, the opposite sides 20 of which are secured to the adjacent end of the body 1 by any suitable means, such as rivets 21. The transverse intermediate portion 22 of the cap 19 is in the nature of a skirt, the upper end thereof being in closely spaced relation to the adjacent ends 5', 6' of the die bars 5, 6.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects, and while I have shown a preferred embodiment thereof, I wish it to be understood that same may be capable of modification without departure from the scope and spirit of the appended claims.

What I claim is:

1. A die for use in conjunction with an elongate punch on the ram of a power brake or the like for bending flat metal stock, comprising a body member to be mounted below the punch and on the bolster of the power brake, a pair of side-by-side and contiguous die bars oriented below the punch and on opposite sides thereof, the die bars having flat upper surfaces upon which the metal stock is laid, the body member and bars having cooperating means rotatably supporting the bars on the body member for rotary oscillation about parallel axes extending longitudinally of the bars and on opposite sides of the punch, a rigid strap extending across the bars in engagement with the upper surfaces thereof, means securing the strap on the bars and permitting upward movement of the strap when the bars are rotated and

3

including spring means continuously urging the strap downwardly toward the upper surfaces of the bars whereby to continuously urge the bars to a position such that the upper surfaces thereof are in substantially level position, the contiguous edges of said bars longitudinally outwardly of said body being provided with opposed segmental notches defining a generally circular opening, said means securing said strap to said bars comprising a guide rod rigidly secured to the intermediate portion of said strap and projecting angularly therefrom through said opening, a transversely extended saddle immediately underlying said bars and having a central aperture therein for slidable reception of said guide rod, a head on the

4

projected end of said guide rod, and a coil compression spring interposed between said saddle and said head and biasing said saddle toward engagement with the undersurfaces of said rods.

2. The structure defined in claim 1 in further combination with U-shaped caps secured to and carried by opposite end portions of said body and positively limiting longitudinal movements of said bars in said body during rocking movements thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

2,882,952 Johnson ----- Apr. 21, 1959