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No. 817,085. PATENTED APR. 3, 1906.

J. W. MOSHIER.

MACHINE FOR MAKING METAL BARS OR RODS.

APPLICATION FILED JULY 15, 1905.

2 SHEETS—SHEET 1.

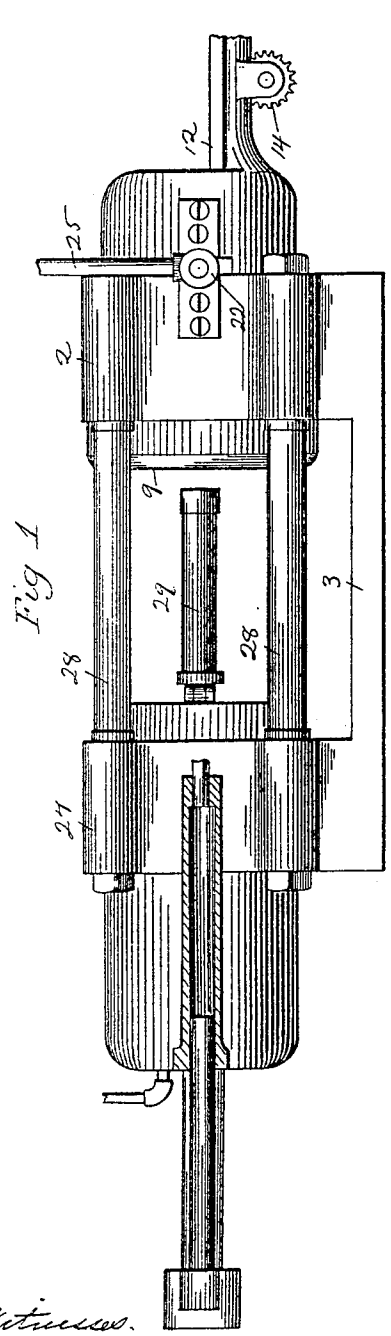


Fig 1

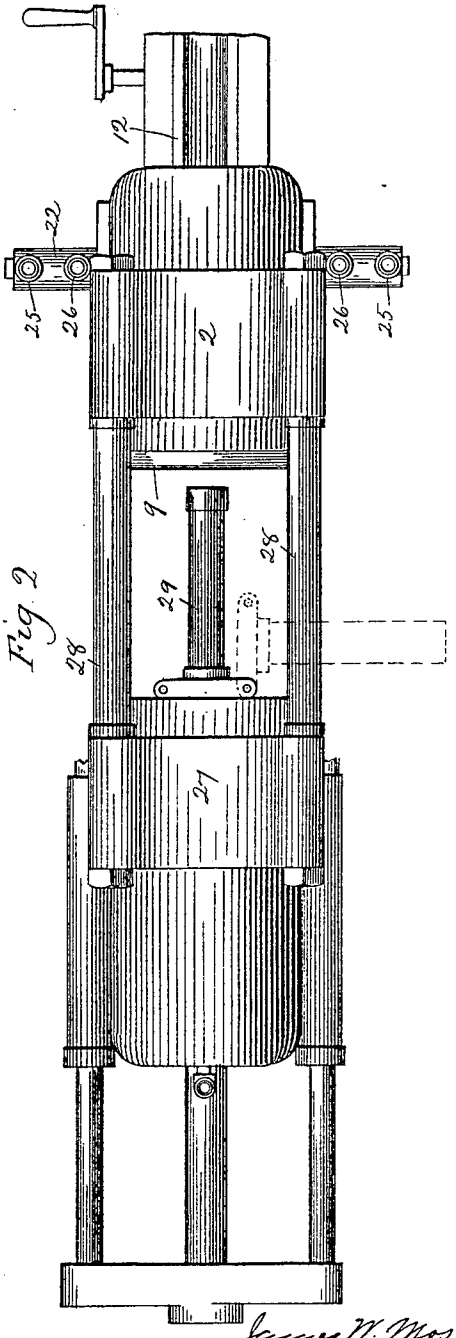


Fig 2

Witnesses.
J. H. Shumway
Clara L. Reed.

James W. Moshier.
Inventor.
Bates Seymour & Earle
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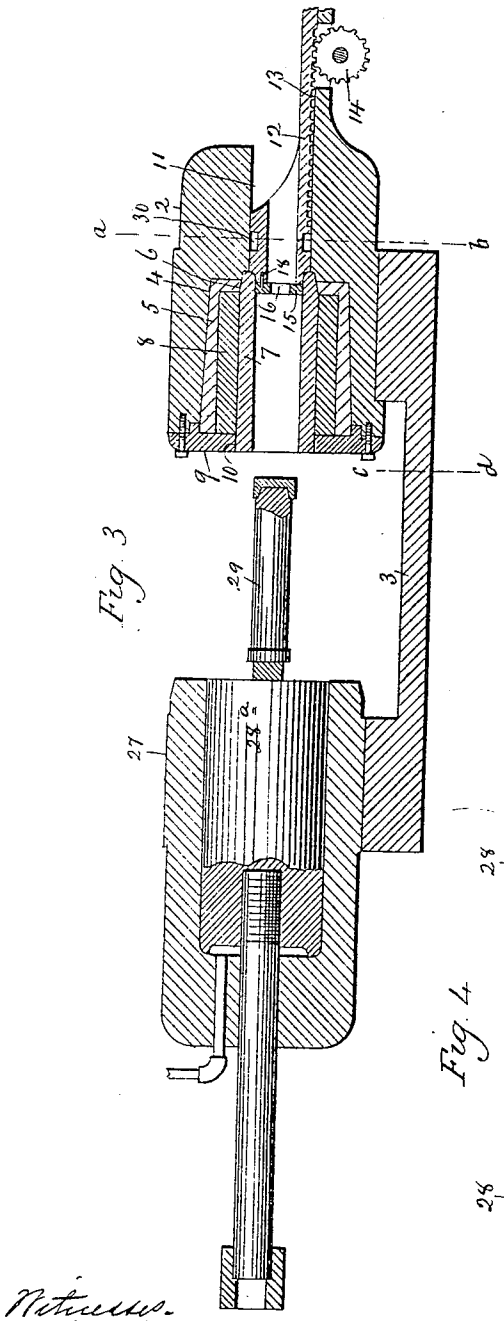


Fig. 3

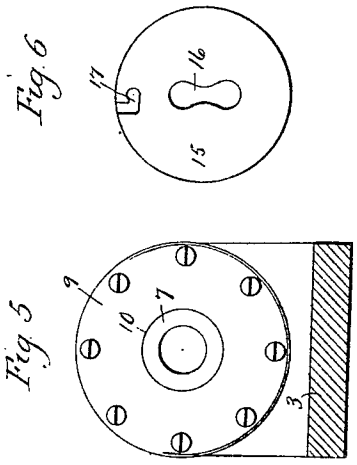


Fig. 5

Fig. 6

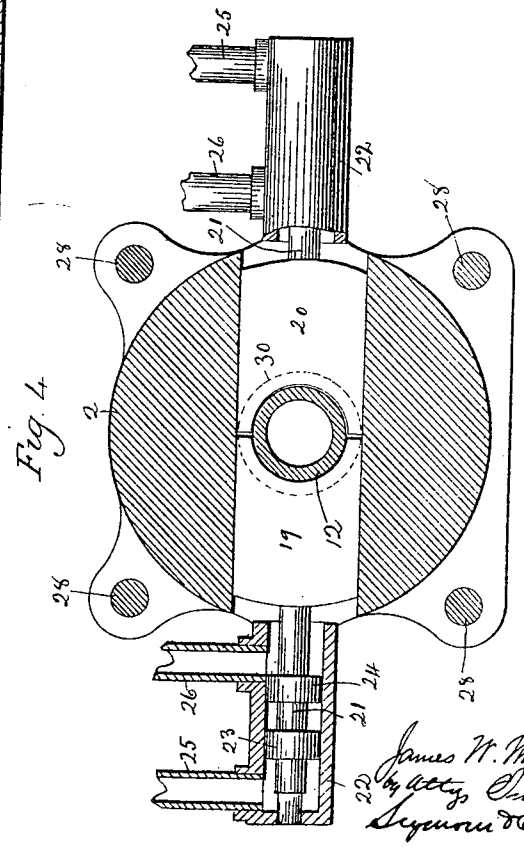


Fig. 4

Witnesses.
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Clara L. Reed.

James W. Moshier
by Attys Dewitt
Seymour & Earle

UNITED STATES PATENT OFFICE.

JAMES W. MOSHIER, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE CHASE ROLLING MILL CO., OF WATERBURY, CONNECTICUT, A CORPORATION.

MACHINE FOR MAKING METAL BARS OR RODS.

No. 817,085. Specification of Letters Patent. Patented April 3, 1906.

Application filed July 15, 1905. Serial No. 269,802.

To all whom it may concern:

Be it known that I, JAMES W. MOSHIER, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Machines for Making Metal Bars or Rods; and I do hereby declare the following, when taken in connection with the accompanying drawings and the numerals of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification and represent, in—

Figure 1, a side view of a machine for making metal bars or rods constructed in accordance with my invention, a portion of the hydraulic ram being shown in section; Fig. 2, a top or plan view of the same; Fig. 3, a longitudinal central sectional view; Fig. 4, a sectional view on the line *a b* of Fig. 3; Fig. 5, a sectional view on line *c d* of Fig. 3 looking toward the rear end of the cross-head; Fig. 6, a plan or face view of the die, Figs. 4 and 6 being on an enlarged scale.

This invention relates to an improvement in machines for making metal rods or bars, and particularly to machines in which the rod or bar is formed from a heated billet placed within the machine and forced through a die by haudraulic pressure, the shape of the rod corresponding to the form of the die and may be of any desired design in cross-section.

The object of the invention is a simple and convenient arrangement of parts whereby a billet may be readily placed within the machine and forced through it; and the invention consists in the details of construction and arrangement of parts, as will be hereinafter described, and particularly recited in the claims.

In carrying out my invention I employ a cross head or block 2, mounted upon a suitable base 3. In the forward end of the cross-head is a recess or chamber 4, slightly smaller in diameter at its inner end than its outer end. Into this recess is placed a hard-metal cup-shaped pocket 5, the external walls of which taper, corresponding to the wall of the chamber 4, so as to closely fit therein, while the inner walls are preferably straight. In the bottom of the pocket is a circular hole 6, through which extends the inner end of a steel sleeve 7, the sleeve being considerably smaller in diameter than the diameter of the pocket and of a length adapted to extend through the opening in the inner wall of the pocket and rearward beyond the outer edge thereof. Between the sleeve and the inner wall of the pocket is a circular ring or packing 8, of insulating material or non-conductor of heat. Secured to the face of the cross-head is a cap-plate 9, which is formed with a central opening 10 to permit it to pass over the projecting end of the sleeve 7. This cap-plate not only centers the outer end of the steel sleeve, but also holds the pocket 5 and non-conducting material 8 in place. Extending through the cross-head from the inner end of the pocket 5 is a tubular passage 11 in line with the sleeve 7, and entered into this passage is a die-carrier 12, formed with teeth 13 in its under face, which mesh with a pinion 14, by which the carrier may be moved back and forth. To the forward end of this carrier a die 15 is secured, the die having a central opening 16, corresponding to the shape of the rod to be formed. This die 15 is secured to the end of the carrier by providing it with a bayonet-slot 17, which engages with a pin 18, projecting from the forward end of the carrier. The die enters and closely fits the inner end of the sleeve 7 and when in its proper position is locked by means of slides 19 and 20, the inner ends of which enter an annular groove 30, formed in the exterior of the carrier, and, if desired, the slides may be moved back and forth by hydraulic pressure. Thus, as shown in Fig. 4 of the drawings, the slides 19 and 20 are provided with suitable spindles 21, mounted in cylinders 22, arranged on opposite sides of the cross-head, the spindles carrying pistons 23 and 24, arranged between pipes 25 and 26, through either of which water may be admitted, so as to operate upon one piston or the other, accordingly as it is desired to move the slides back or forth. Also mounted upon the base 3 is a cylinder 27 of a hydraulic ram, the cylinder 27 being connected with the cross-head 2 by four stay-rods 28, so that they are held stationary with relation to each other. Hinged to the forward end of the piston 28^a, within the cylinder 27, is a plunger 29, the hinge being arranged at one side, so that the plunger can swing laterally, as indicated by broken lines in Fig. 2. This plunger corre-

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sponds in external diameter to the internal diameter of the sleeve 7, which it very closely fits.

In operation the steel sleeve 7 is heated to the required degree and then a billet of metal suitably heated is placed therein, the plunger 29 being swung to one side to facilitate the convenient entrance of the billet into the sleeve. The plunger is then turned back into line with the sleeve and the piston 28^a of the hydraulic ram moved forward to force the plunger 29 into the sleeve 7 against the billet therein, the billet being forced through the die 15 and through the carrier 12 thereof, from which it may be received by any suitable carriage or other convenient means. By thus arranging the sleeve, which forms a chamber for the heated billet, within a pocket they may be arranged with proper relation to each other and entered together into the cross-head, the removal of the cap 9 permitting the removal of the sleeve, non-conducting material, and pocket. To remove the die for interchanging, the slides 19 and 20 will be moved to release the same, when by operation of the pinion 14 the carrier may be withdrawn. When the die is forced into the end of the sleeve, it cannot be disengaged from the carrier, owing to the bayonet-joint engagement therewith.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for making metal bars or rods, the combination of a cross-head, a recess formed in the rear end thereof, a pocket located in said recess, a sleeve extending through said pocket, a ring of non-heat-conducting material arranged between said sleeve and pocket, a die at the forward end of said sleeve, a plunger, and means adapted to force the same into said sleeve, substantially as described.

2. In a machine for making metal bars or rods, the combination with a cross-head formed with a recess in its rear end, the walls of which taper from the outer end inward, a pocket located in said recess and closely fitting the same, said pocket having a centrally-arranged opening at its inner end, a sleeve passing through said pocket and through the opening in the end thereof, a ring of non-conducting material between said sleeve and pocket, and a cap secured to the rear end of the said cross-head and surrounding the outer end of the sleeve, substantially as described.

3. In a machine for making metal bars or rods, the combination with a cross-head, a recess formed in the rear end thereof, a pocket located in said recess, a sleeve extending through said pocket, non-conducting material between said sleeve and pocket, a passage extending through said cross-head from the inner end of the pocket, a die-carrier arranged in said opening, a die secured to the inner end of said carrier, and slides mounted in the opposite sides of said cross-head and adapted to engage with said carrier whereby it is locked in its closed position, substantially as described.

4. In a machine for making metal bars or rods, the combination with a cross-head formed at its rear end with a chamber, a pocket located in said chamber, a sleeve passing through said pocket, a ring of non-heat-conducting material between said sleeve and pocket, a hydraulic ram arranged in line with said cross-head and connected therewith, a plunger hinged to the piston of said ram and adapted to enter said sleeve in the cross-head which sleeve it closely fits, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

J. W. MOSHIER.

Witnesses:
IRENE KNOTT,
ARTHUR G. EVANS.