

July 21, 1931.

J. LAMOND

1,815,107

APPARATUS FOR MAKING PIPE COUPLINGS

Filed Sept. 12, 1929

2 Sheets-Sheet 1

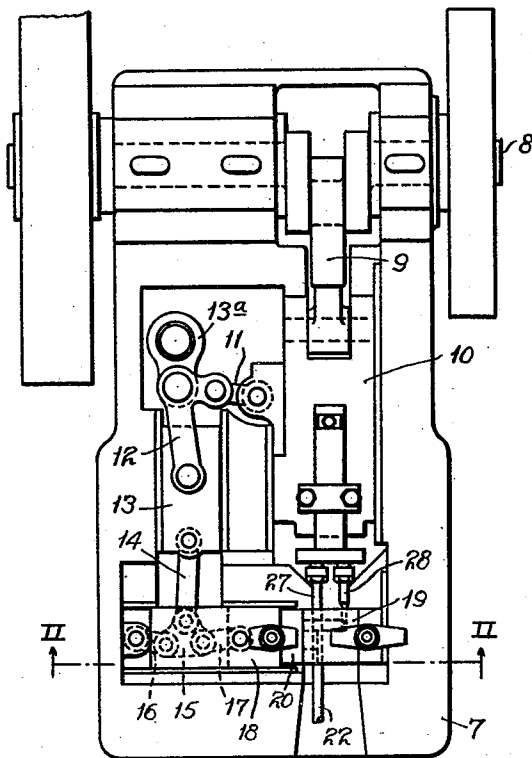


Fig. 1.

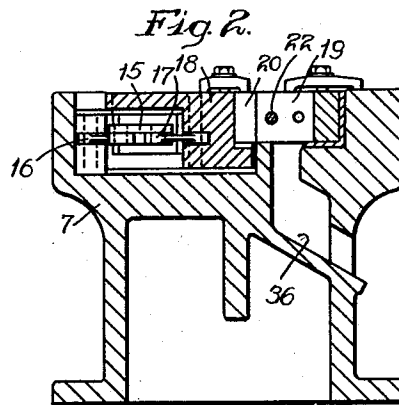


Fig. 2.

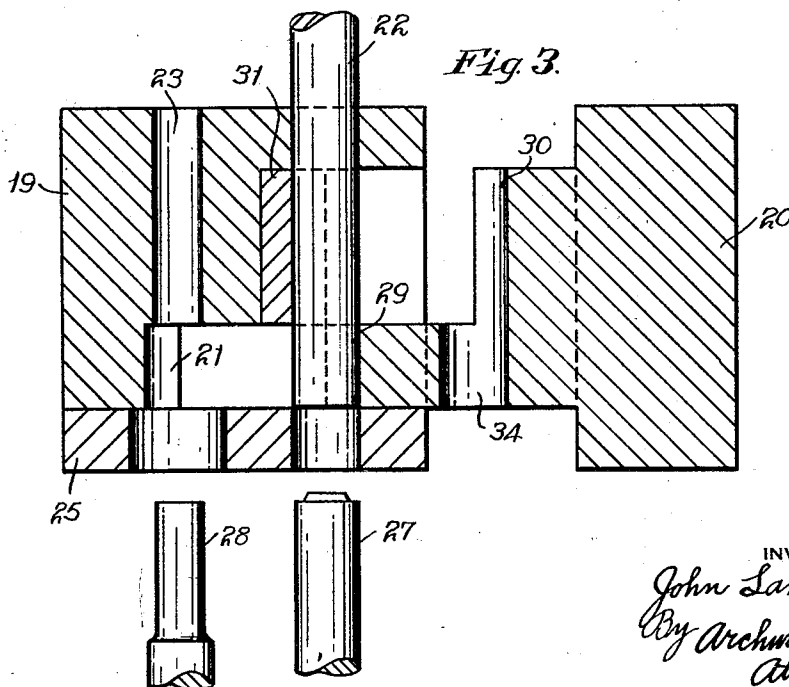


Fig. 3.

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Fig. 4.

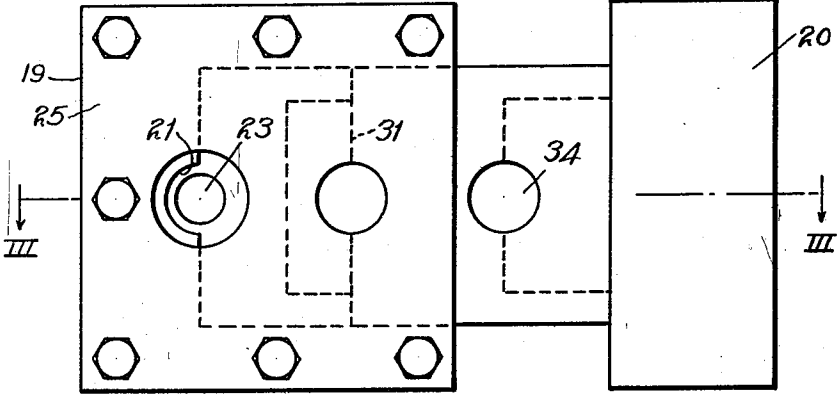


Fig. 5.

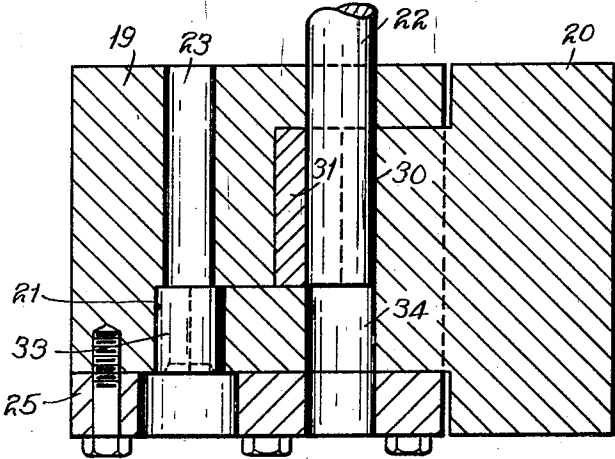
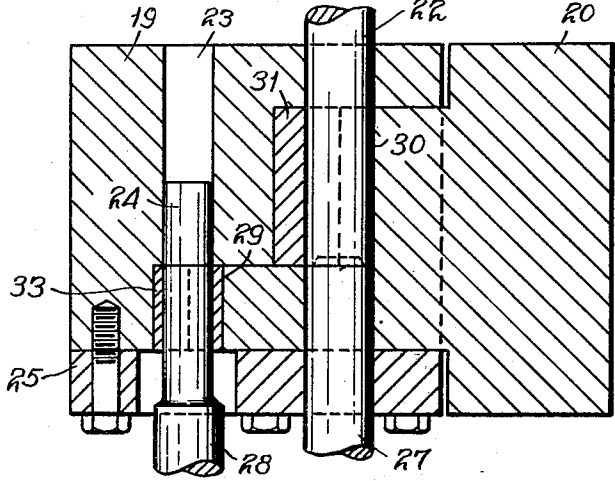


Fig. 6.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR MAKING PIPE COUPLINGS

Application filed September 12, 1929. Serial No. 392,096.

My invention relates more particularly to apparatus for making pipe couplings, although it is capable of use in various other relations such as the making of nut blanks and other forgings or stampings in those cases where the blanks from which the articles are to be formed are sheared from the end of bar stock previous to shaping of the blanks.

One object of my invention is to provide means for making forgings from bar stock, whereby the bar may be fed to a given point and need not be shifted from one die to another during the various steps of forming articles therefrom.

Another object of my invention is to provide means for forming an article requiring a plurality of operations at a single blow of the forging machine by which the article is formed.

Still another object of my invention is to simplify and improve generally the art of making pipe couplings and the like.

One form of apparatus for practising my invention is shown in the accompanying drawings wherein Figure 1 is a plan view of a forging machine and dies for forming pipe couplings; Fig. 2 is a view taken on the line II—II of Fig. 1; Fig. 3 is a sectional plan view of the dies, on an enlarged scale, taken on the line III—III of Fig. 4; Fig. 4 is a front elevational view of the dies in open position; Fig. 5 is a view showing the dies in closed position with the plungers withdrawn, and Fig. 6 is a similar view showing the plungers advanced to operative position.

My invention primarily resides in the dies. As shown in the drawings, they are embodied in a forging machine which has a base or body portion 7 wherein is journaled a drive shaft 8 carrying a pitman 9. The pitman 9 is employed to impart reciprocatory movements to a tool-carrying slide 10. A link 11 is connected at one of its ends to the slide 10 and at its other end has connection with a crank 12 which is pivotally connected to a supporting link 13a. The forward end of the crank 12 is connected to a toggle slide 13 that has connection through a link 14 with a toggle link 15. The toggle link 15 is connected at one side through a link 16 to the framework

of the machine, while at its other side it is connected through a link 17 to a die block slide 18.

It will be seen that as the shaft 8 is driven the slide 10 will be directly reciprocated by means of the pitman 9, while the slides 13 and 18 will be reciprocated through the link and toggle mechanisms just described. These parts may be of various standard forms and hence in themselves do not constitute a feature of my invention.

The die structure comprises a stationary die block 19 that is suitably secured to the frame of the machine and a movable die block 20 that is carried by the die block slide 18. The stationary die is provided with a semi-circular recess 21 that serves as a seat for blanks that are sheared from the end of bar stock 22, and with a passageway 23 through which punchings 24 from said blanks may be ejected. A face plate 25 is secured to the front side of the die 19. The face plate is provided with perforations through which an end-shaping plunger die 27 and a punching die 28 may have access to the material being operated upon.

The movable die 20 has a shearing die portion 29 and a gripping die portion 30, the portion 30 cooperating with a gripping die 31 within the die 19 to grip the bar stock 22 when the dies are closed as in Figs. 5 and 6. The die 31 serves also as a shearing die, cooperating with the die portion 29.

In the operation of the device, the bar 22 is advanced until the forward end thereof reaches the face plate 25. Upon movement of the die 20 from the position shown in Fig. 3 to that shown in Figs. 5 and 6, the projecting end of the bar 22 will be sheared off by the die portion 29 and carried to the seat 21. The member 29 has a seating surface which cooperates with the surface 21 to hold the blank 23, as shown in Fig. 6. Movement of the plunger dies 27 and 28 to the positions shown in Fig. 6, within the dies, will result in the plunger 28 punching the central portion 24 from the blank, leaving a sleeve-like blank 33 that may be reamed and threaded in the usual manner to form a pipe coupling. Simultaneously, the shaping plunger 27 will

pass through opening 34 in the die 20 and engage the end of the bar 22 to shape the same and remove the irregularities produced by the shear 29, it being understood that the gripping die portions 30 and 31 rigidly hold the bar against movement under the impact of the plunger 27.

The plungers 27 and 28 are both secured to the tool slide 10 and hence moved in unison. Continued operation of the machine will result in retraction of the slide 10 and withdrawal of the die 20 to the position shown in Figs. 3 and 4, thus releasing the blank 21 and permitting it to fall to a discharge slide 36. The bar 22 will then be advanced until the sheared and shaped end has reached the face plate 25, whereupon the operations just described will be repeated.

The feature of shaping the end of the bar 22 by the plunger die 27 is important, since the shearing of blanks therefrom leave irregularities on the bar end that would produce an imperfect pipe coupling.

Heretofore, it has been common practice to introduce the end of the bar 22 into a die to give it the desired shape and to thereafter shift the bar to a blank-forming die. By the method just described, this shifting of the bar is avoided and a pipe coupling blank is formed upon each blow of the tool head slide 10, instead of requiring two or more blows thereof.

I claim as my invention:—

1. Apparatus for forming blanks from bar stock, comprising a pair of die blocks mounted for relative movement in directions laterally of a rod or bar being operated upon, co-operating bar gripping surfaces on said blocks, a tool positioned for movement against the forward extremity of a bar gripped by said surfaces, cooperating shearing die portions on the blocks located forwardly of the said gripping surfaces, a seating surface on one of said blocks located forwardly of and laterally offset from the said gripping surfaces, the said seating surface being in position to receive a blank sheared from the end of bar stock which has been advanced from between the gripping surfaces, and a tool for operating on a blank which is held on said seating surface.

2. Apparatus for forming blanks from bar stock, comprising a pair of die blocks, co-operating bar-gripping surfaces on said blocks, a shearing member on one of the blocks located forwardly of the said gripping surfaces and having a blank-seating surface, a seating surface on the other one of said blocks located forwardly of and laterally offset from the said gripping surfaces, the first-named seating surface being in position to receive a blank sheared from the end of bar stock which has been advanced from between the gripping surfaces, means for moving one of said die blocks

relative to the other, an end-shaping die, a punching die, and means for moving the last-named dies into position to respectively shape the forward extremity of the bar stock and to punch a sheared blank while the blank is engaged by said seating surfaces following a shearing operation, an opening being provided in one of the blocks for access of the heading die to the end of bar stock held by the gripping surfaces.

3. Apparatus for forming blanks from bar stock, comprising a pair of die blocks, co-operating bar-gripping surfaces on said blocks, co-operating blank-engaging surfaces on said blocks normally offset laterally of and disposed forwardly of the first-named surfaces, the die blocks being relatively movable in a lateral direction, and an edge of one blank-engaging surface being positioned to cooperate with an edge of one of the bar gripping surfaces to shear a blank from the forward end of said bar when the blocks are being moved to grip the bar and to bring the blank-engaging surfaces into co-operative relation, means for shaping the forward extremity of the bar while it is held by said gripping surfaces, and means for operating on the blank while it is held between said seating surfaces.

4. Apparatus for forming blanks from bar stock, comprising a pair of die blocks having co-operating bar-gripping surfaces on said blocks and co-operating blank-engaging surfaces, the said gripping surfaces and the blank-engaging surfaces being positioned to simultaneously grip a bar and a blank respectively, when the die blocks are closed, and an edge of one blank-engaging surface being positioned to cooperate with an edge of one of the bar-gripping surfaces, to shear a blank from the forward end of said bar when the blocks are being moved to grip the bar and to bring the blank-engaging surfaces into cooperative relation, and tools movable in directions longitudinally of the bar for operating upon the bar and the blank when held by said surfaces.

In testimony whereof I, the said JOHN LAMOND, have hereunto set my hand.

JOHN LAMOND.