

(No Model.)

2 Sheets—Sheet 1.

G. VAN WAGENEN & J. GRAVES.
MACHINE FOR MANUFACTURING WROUGHT METAL FLANGES FOR
PIPE COUPLINGS.

No. 412,311.

Patented Oct. 8, 1889.

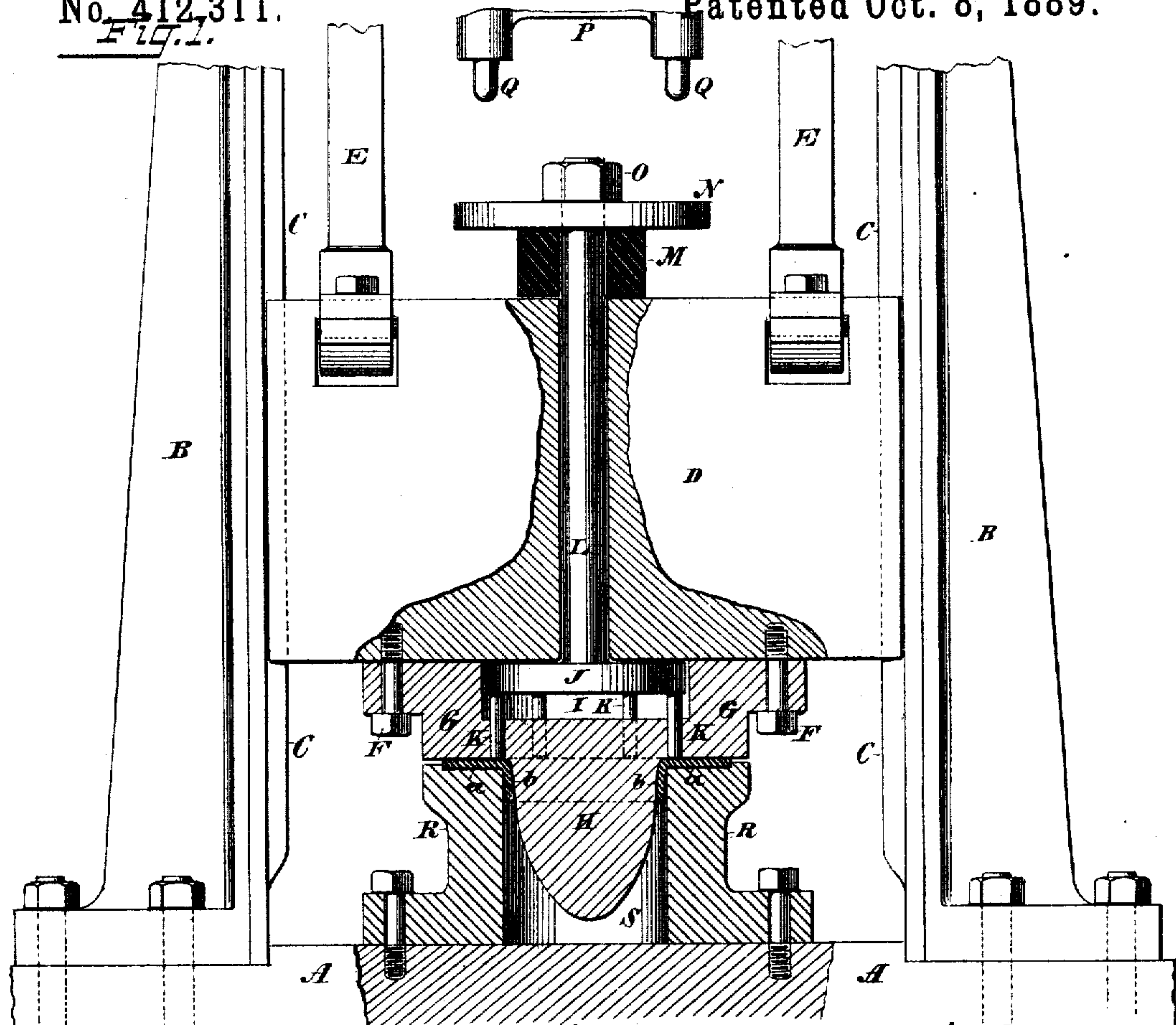
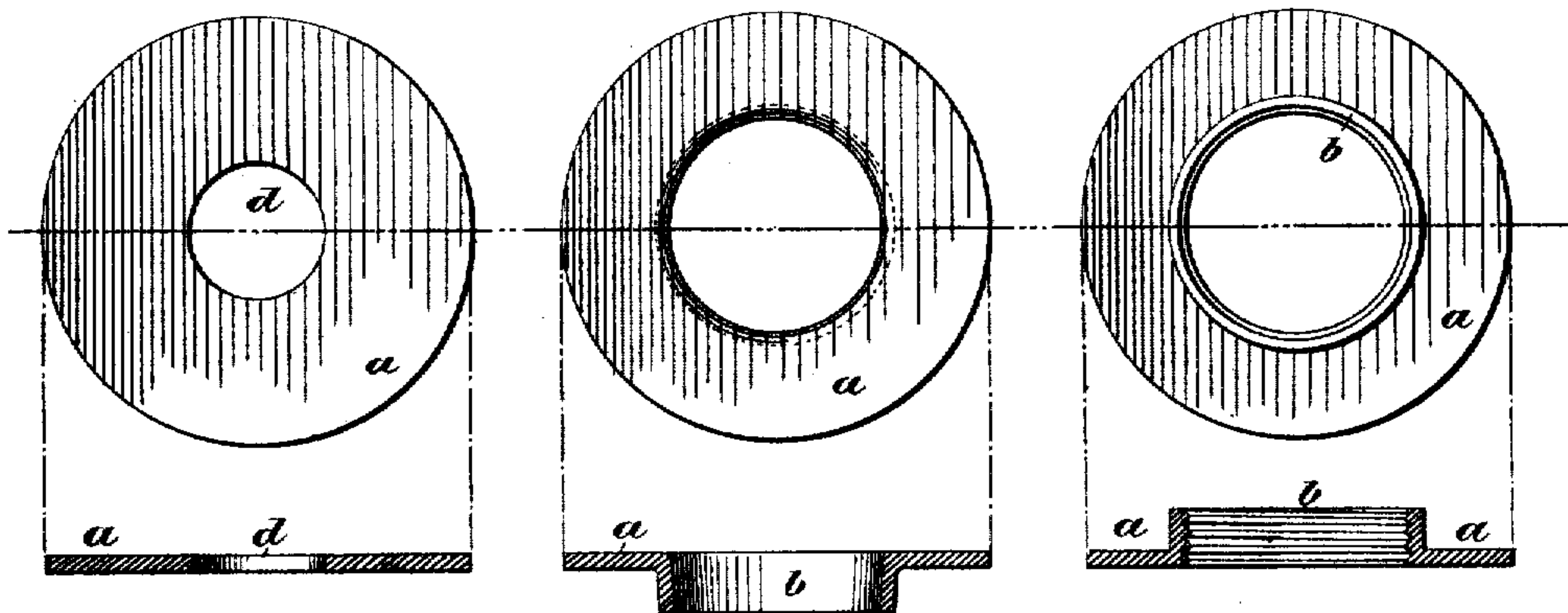


Fig. 5.

Fig. 6.

Fig. 7.



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2 Sheets—Sheet 2.

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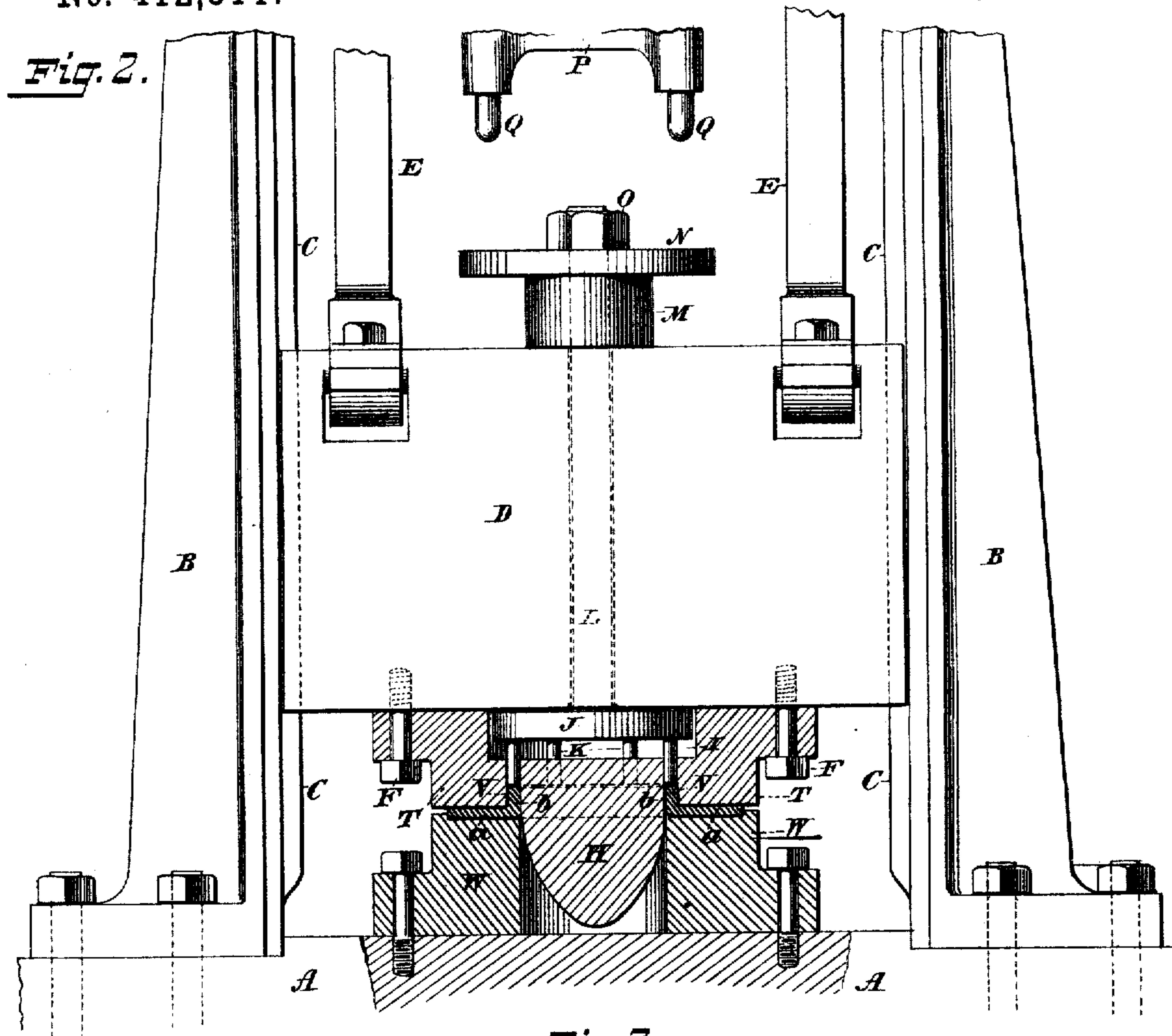


Fig. 3.

Fig. 8.

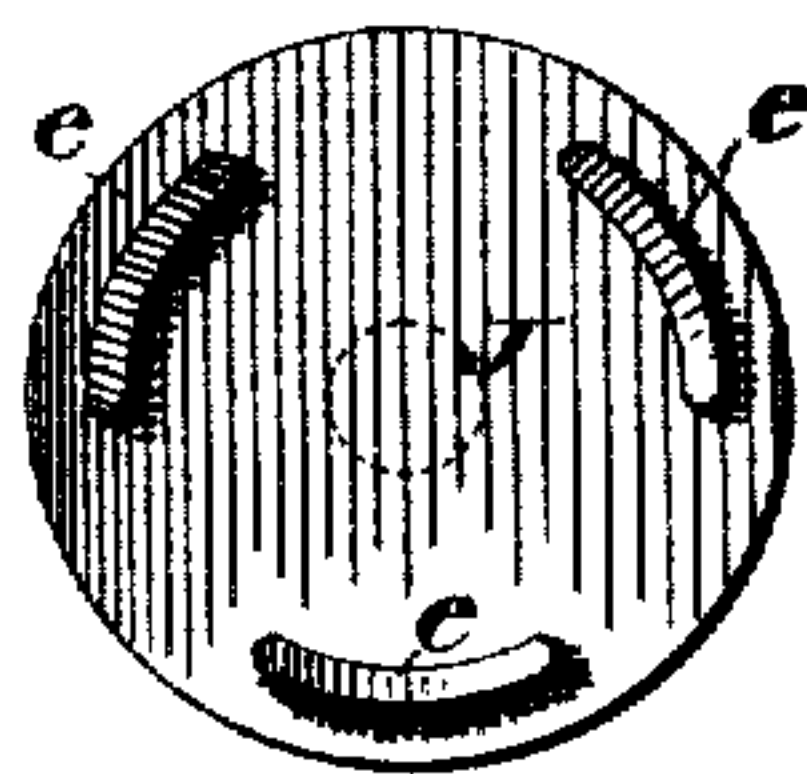


Fig. 9.

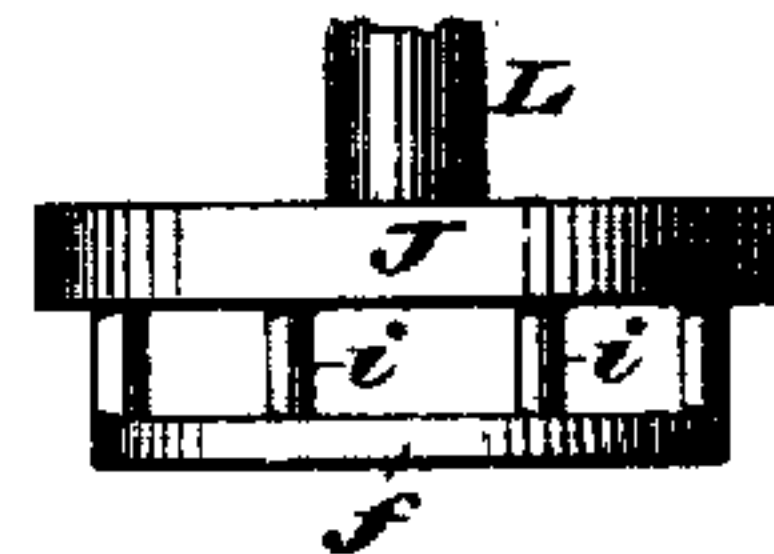
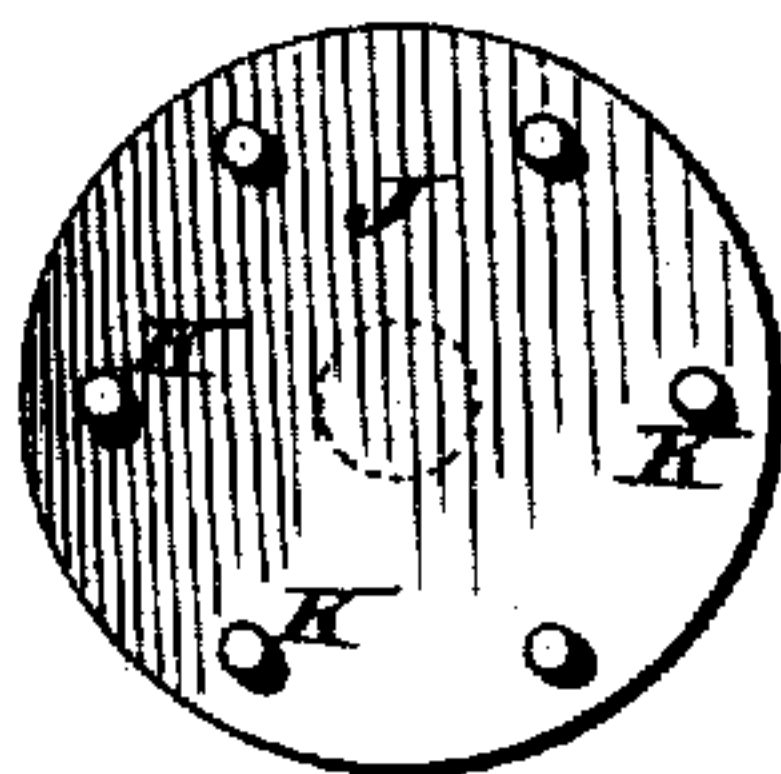


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE VAN WAGENEN AND JOHN GRAVES, OF NEW YORK, N. Y.

MACHINE FOR MANUFACTURING WROUGHT-METAL FLANGES FOR PIPE-COUPPLINGS.

SPECIFICATION forming part of Letters Patent No. 412,311, dated October 8, 1889.

Application filed July 27, 1889. Serial No. 318,816. (No model.)

To all whom it may concern:

Be it known that we, GEORGE VAN WAGENEN and JOHN GRAVES, citizens of the United States, and residents of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Manufacturing Wrought-Metal Flanges for Pipe-Couplings and other Purposes, of which the following is a specification.

The invention relates to improvements in machines for manufacturing sheet-metal flanges for pipe-couplings and other purposes; and it consists in certain mechanism, hereinafter described, embracing male and female dies, by which the circular centrally-apertured blanks of sheet-metal first have their central portions turned downward to form the hubs of the flanges, and then said hubs are thickened or upset preparatory to being internally threaded.

By means of the invention we are enabled to rapidly and successfully manufacture wrought-metal flanges which possess the requisite strength and durability for all the purposes to which coupling-flanges are usually applied.

Referring to the accompanying drawings, Figure 1 is a front elevation, partly in section, of a machine embodying the elements of the invention and designed to accomplish the first step in the formation of the flange. Fig. 2 is a like view of same, illustrating the dies formed to complete the second step in the process of forming the flange. Fig. 3 is a bottom plan view of the male die; Fig. 4, a like view of the ejector for stripping the flange from the male die; Fig. 5, a plan view and central section of the sheet-metal blank from which the flanges are made; Fig. 6, a plan view and central section of the blank after having been subjected to the first step in the formation of the flange; Fig. 7, a plan view and section of the finished flange; Fig. 8, a bottom view of a modified form of ejector for stripping the flanges from the male die, and Fig. 9 a side elevation of a further modified form of ejector.

In the drawings, A designates the base of the machine, and B B the side standards, carrying guides C, on which the drop-carrier D

is arranged to have a sliding movement. The carrier D is connected by levers E with an eccentric-shaft of ordinary construction, (not shown,) by which the carrier may be elevated and allowed to drop during the use of the machine.

The present invention is not limited to any special mechanism for imparting movement to the drop-carrier D, since various forms of mechanical devices for accomplishing this purpose are well known and form no part of the present invention.

Upon the lower edge of the carrier D is secured by screws F the main die G, which is circular in outline and provided at its center with the inverted conical spreader H. In the upper surface of the die G is formed the recess I, in which is arranged the ejector J, the latter consisting of a circular disk provided with downwardly-extending pins K, and being supported upon the lower end of the vertical spindle L, which extends upward through the center of the drop-carrier D, and is retained in position by means of the elastic cushion M, the disk N, and nut O, the cushion being between the disk N and the upper edge of the carrier D, and the whole being secured in position by the nut O, which engages a thread upon the upper end of the spindle L. Directly above the disk N is provided the stationary frame P, having downwardly-extending projections Q, which are in position to come into contact with the disk N when the drop-carrier D is elevated, the purpose of this portion of the structure being explained hereinafter. The pins K, connected with the ejector J, when in their normal position extend downward through apertures in the die G to a point on a level with the lower horizontal surface of said die, from which surface the conical spreader H extends downward, as illustrated in Fig. 1.

Below the male die G there is secured upon the base A the female die R, whose upper surface is on the same plane as the lower surface of the male die G, and receives the blank which is to be formed into the flange. The female die R is provided with a central opening S, having substantially vertical walls, against which the central portions of the sheet-metal blank may be spread to form the

hub of the flange. In the drawings the sheet-metal blank is lettered *a* and the hub portion of the flange *b*.

In the use of the machine illustrated in Fig. 1, the drop-carrier being in an elevated position, the sheet-metal blank *a* is placed centrally upon the female die R, and the carrier D then allowed to drop, the effect being that the spreader H will enter the central opening *d* in the blank *a* and cause the adjacent portions of the blank to be turned downward against the inner walls of the die S, thereby forming the hub *b* of the flange, as illustrated in Figs. 1 and 6. The natural spring in the sheet metal will cause the hub portion of the flange to adhere to the spreader H, and hence the next step in the operation of the machine will be to strip the flange from the male die, and this may be accomplished by means of the ejector J. The drop-carrier D, being now caused to ascend the disk N prior to the carrier D, completing its upward movement, comes into contact with the projections Q Q, and arrests the movement of the spindle L and pins K, the cushion M allowing the carrier to complete its movement, the effect being to carry the lower surface of the die G upward on the pins K, the disk J and lower surface of the recess I then coming together and the pins K forcing the flange downward on the spreader H, which, being conical or tapered, permits the same to escape. The cushion M may be either of rubber or a coiled spring, either answering the same purpose, the only object of the same being to permit by its compression the carrier to have a slight upward movement after the ejector has been stopped by the projections Q Q. The machine illustrated in Fig. 1 thus forms the central portion of the blank *a* into the hub *b* for the flange, and in the subsequent steps in the manufacture it is desirable that the hub *b* be thickened or upset and then internally threaded.

The machine for thickening or upsetting the hub portion of the flange is illustrated in Fig. 2, and is similar in all respects to the machine illustrated in Fig. 1, with the exception that the male die is provided on its under surface with an annular groove to receive the upturned hub of the flange, and hence like letters of reference indicate like parts in said figures.

The male die in Fig. 2 is, for convenience, lettered T, and it is secured to the lower edge of the drop-carrier D by screws, as shown. In the under surface of the die T is formed the annular groove V, (shown more clearly in Fig. 3,) to receive the hub *b* of the flange.

After the blank has left the machine illustrated in Fig. 1 it is placed upon the female die W of Fig. 2, with its hub portion *b* turned upward, and then the drop-carrier D is allowed to descend, when the spreader H will pass through the opening in the flange and guide the upper edges of the hub *b* into the annular groove V, which is of the proper depth

to upset said hub, the hub being compressed between the upper surface of said groove V and the female die W.

The operation of stripping the flange from the spreader H of Fig. 2 is the same as that of stripping said flange from the spreader H of Fig. 1, this step being accomplished by arresting the movement of the ejector J prior to the completion of the upward movement of the drop-carrier D, and causing thereby the pins K to force the flange from the sides of the spreader.

After the flange has left the machine illustrated in Fig. 2 it is subjected to an ordinary threading-machine and threaded, as illustrated in Fig. 7.

The ejector J, in lieu of being provided with pins K, may be furnished with the segmental projections *e*, (illustrated in Fig. 8,) which, extending through slots in the male die, would accomplish the same purpose exactly as the pins K; or, in lieu of both the pins and the segments, the ejector may have a ring *f*, connected with the disk by pins *i*, as illustrated in Fig. 9, for the purpose of stripping the flanges from the spreader H.

In the use of the ejector illustrated in Fig. 9 the ring *f* would be seated in an annular groove formed in the under surface of the male die, and the pins *i* would move in apertures in said die, such as those illustrated in Figs. 1, 2, and 3.

It will be observed that by means of the invention flanges from sheet metal may be rapidly and successfully manufactured without waste of metal.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. For the manufacture of flanges from sheet metal, the male and female dies hereinbefore described, the male dies having the spreader, one pair of said dies being adapted to form the hub portion of the flanges and the other pair to upset said hub preparatory to the same being threaded, substantially as and for the purposes set forth.

2. For the manufacture of flanges from sheet metal, the male and female dies adapted to form the hub on the centrally-apertured blank, the male die having the spreader, combined with the ejector for stripping the flange from the spreader after the hub has been formed, substantially as set forth.

3. For the manufacture of flanges from sheet metal, the male and female dies for forming the hub of the flange and the male and female dies for upsetting said hub, combined with ejectors for stripping the flanges from said male dies, substantially as set forth.

4. The male and female dies for forming the hub, the former having the spreader and the latter the central opening, combined with the male and female dies for upsetting the hub, the former having the annular groove and spreader and the latter the central opening, substantially as and for the purposes set forth.

5. The male and female dies for forming the hub of the flange and upsetting said hub, the male dies being secured to a drop-carrier arranged between guides, combined with
5 ejectors for stripping the flanges from the male dies, said ejectors being connected with the drop-carrier and having a more limited movement than the same, substantially as and for the purposes set forth.
- 10 6. The male die having the spreader and secured to the drop-carrier and the female die having the central opening, combined with the ejector secured to the spindle passing upward

through said carrier, the cushion and disk on the upper end of said spindle, and the frame 15 for arresting the ejector while the carrier continues its upward movement, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 24th day of 20 July, A. D. 1889.

GEO. VAN WAGENEN.
JOHN GRAVES.

Witnesses:

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