

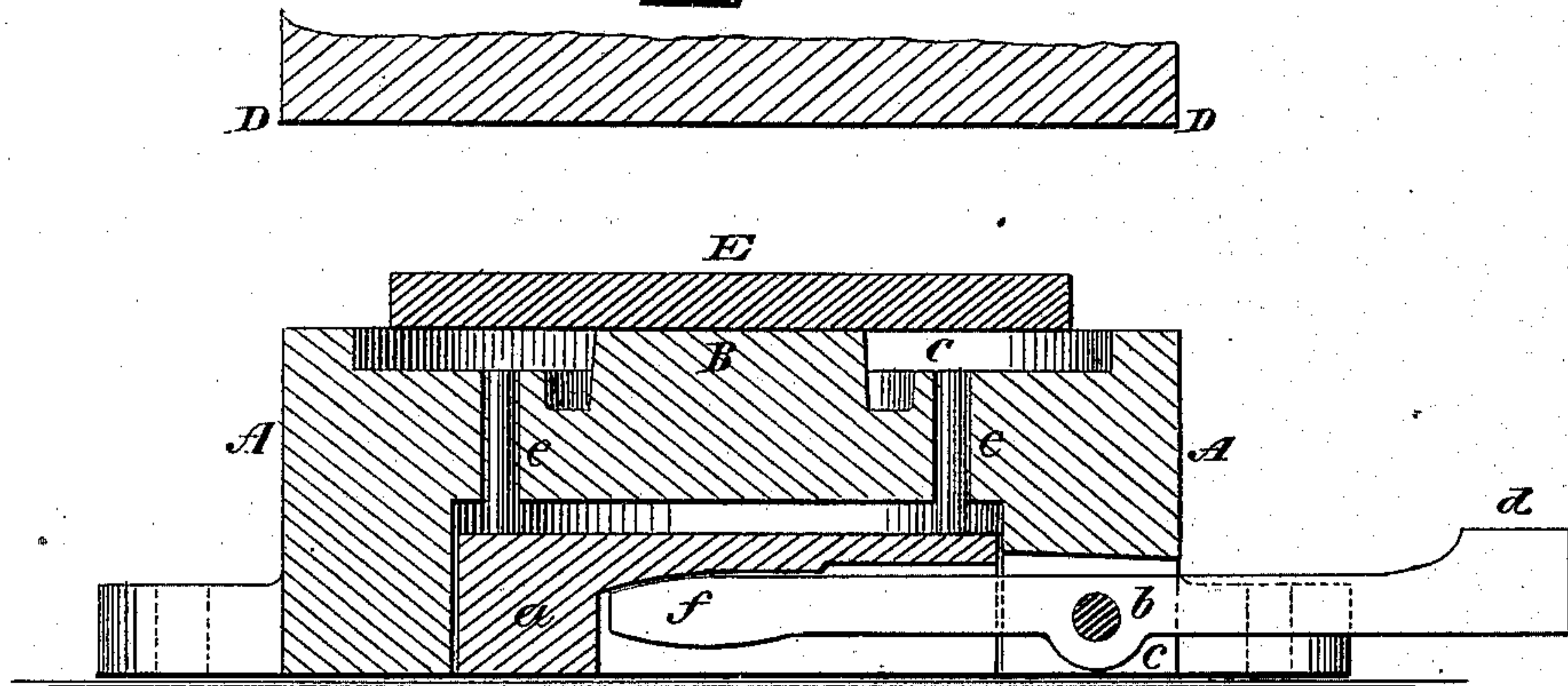
(No Model.)

G. VAN WAGENEN & J. GRAVES.  
PROCESS OF MAKING PIPE COUPLING FLANGES.

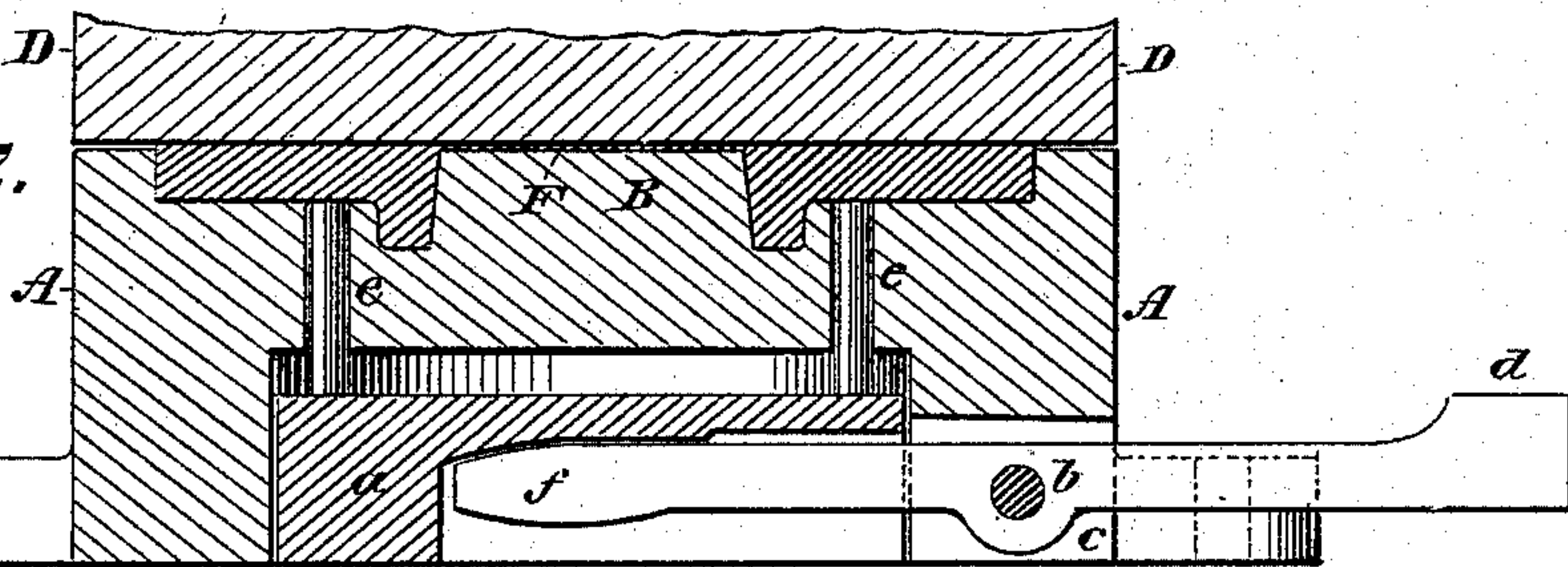
No. 416,815.

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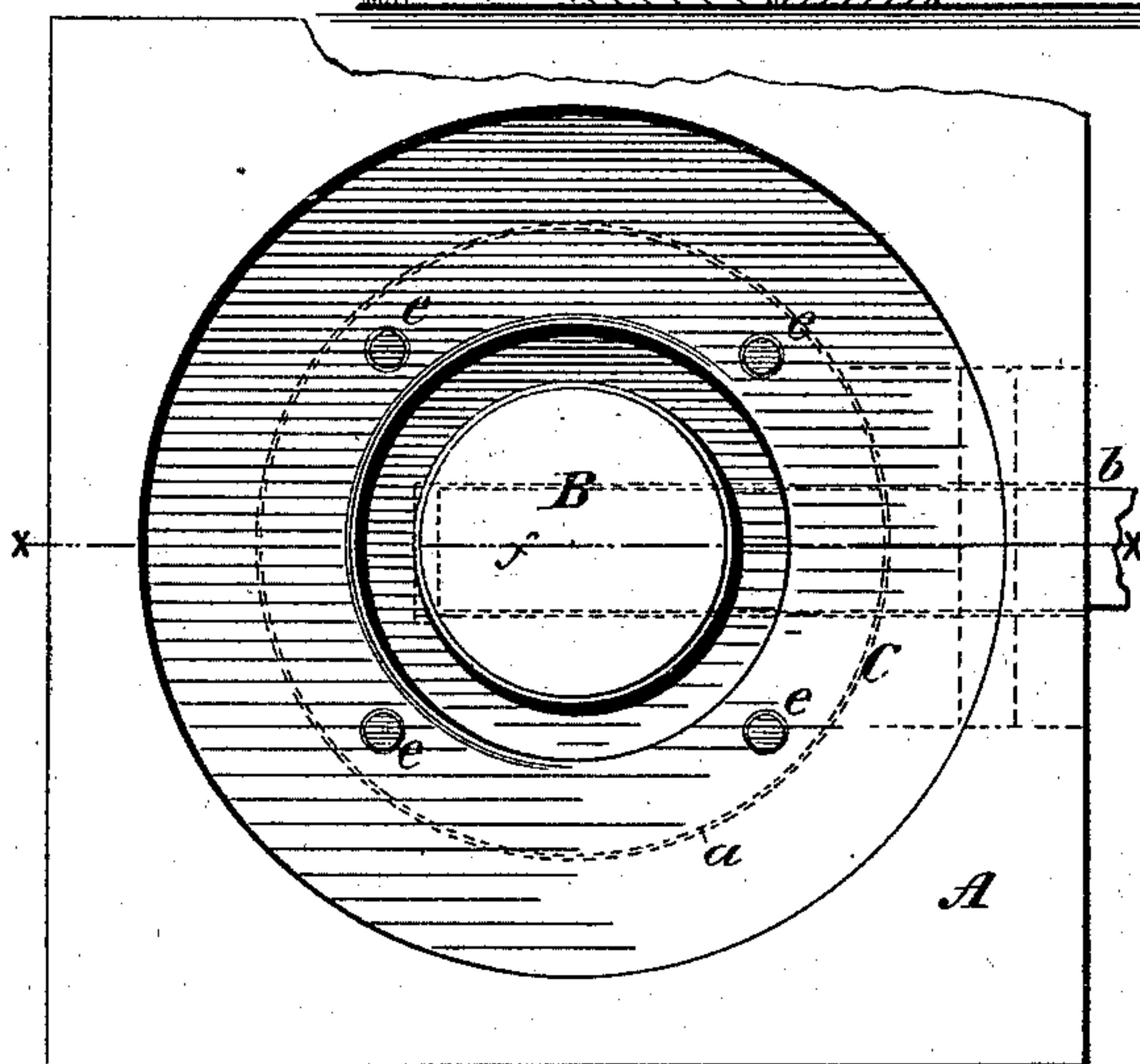
*Fig. 1.*



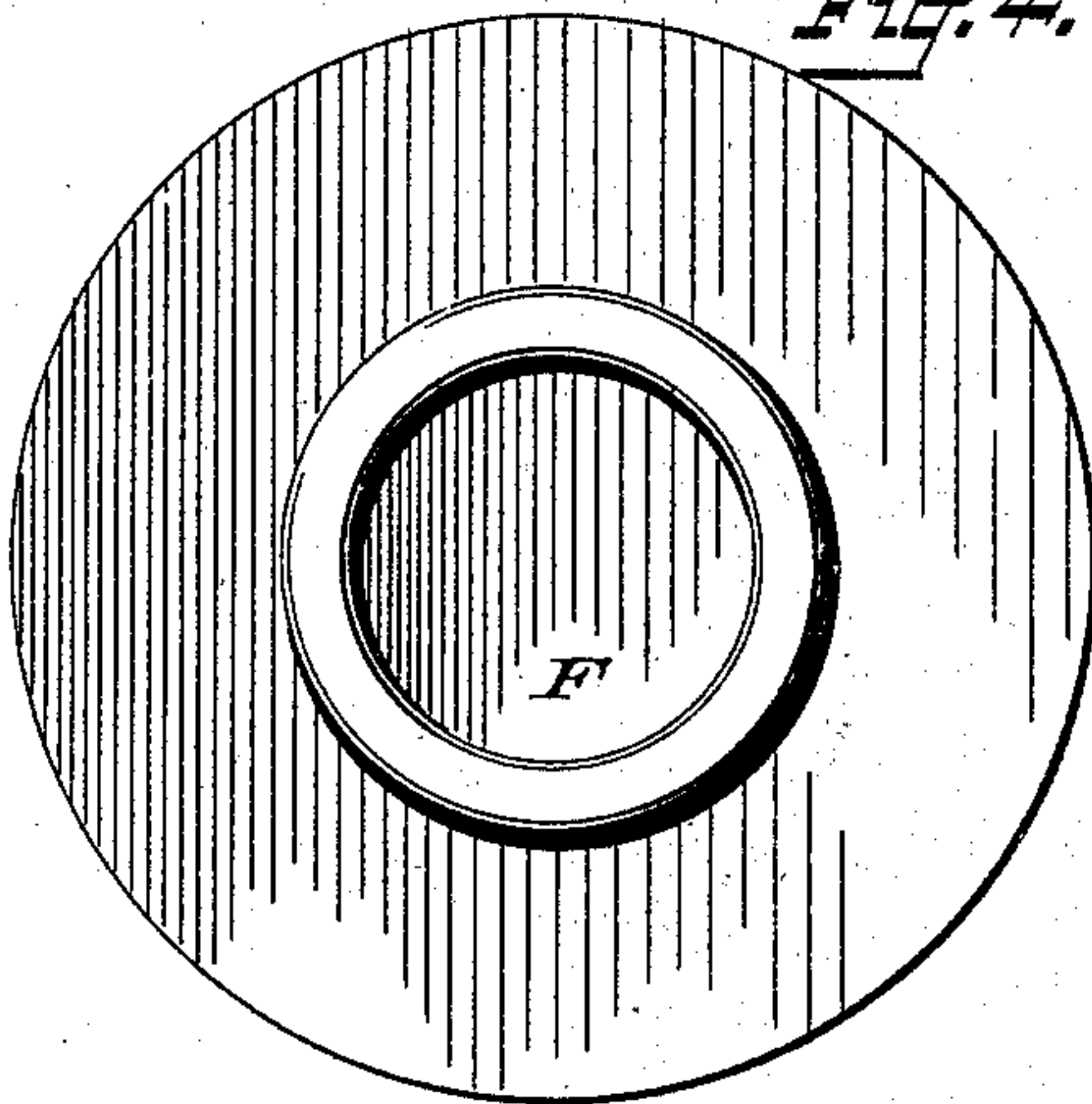
*Fig. 2.*



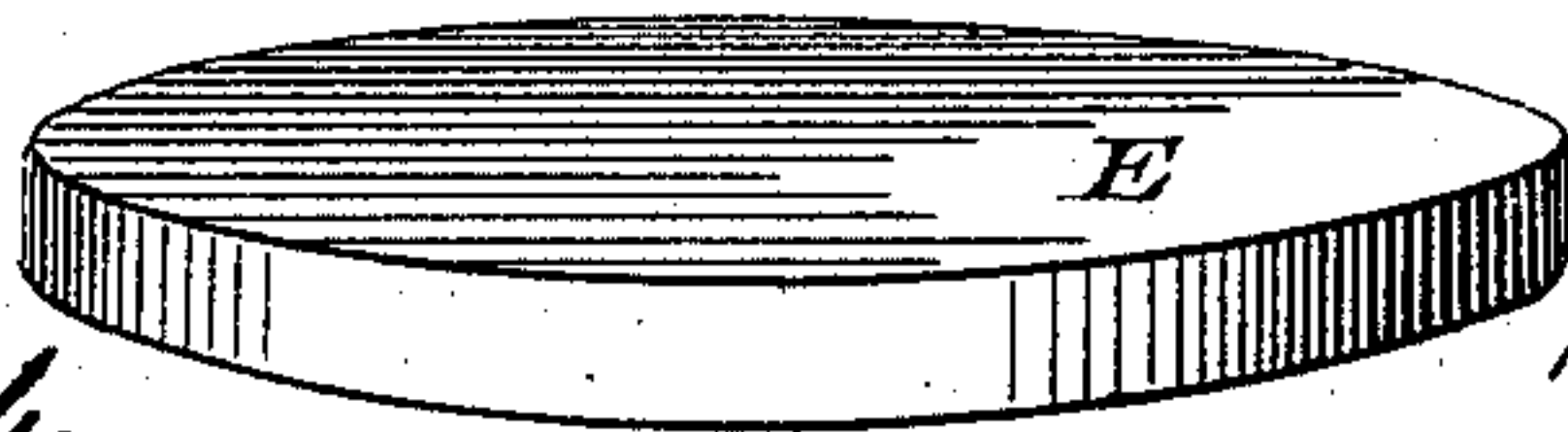
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

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

## PROCESS OF MAKING PIPE-COUPLING FLANGES.

SPECIFICATION forming part of Letters Patent No. 416,815, dated December 10, 1889.

Application filed August 14, 1889. Serial No. 320,715. (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 Processes of and Apparatus for Manufacturing Flanges of Wrought Metal, of which the following is a specification.

The invention relates to an improved process of and apparatus for the manufacture of flanges for pipe-couplings and other purposes from wrought metal.

The apparatus consists, essentially, of a die containing a matrix in the outline of the flange to be produced and a central portion or anvil upon which the disk of wrought metal is placed prior to its formation into the flange by means of pressure.

The process, which is carried out by means of the die and the application of pressure, consists, essentially, in placing the disk or blank of wrought metal upon the central or anvil portion of the die and then by means of pressure displacing the metal laterally from said anvil into the matrix, the metal completely filling the latter, leaving simply a thin film over the surface of the anvil, which film, upon the flange being removed from the die, may be readily broken away.

The process and apparatus will be more fully understood from the description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 represents a central vertical longitudinal section through the die, the disk of wrought metal placed thereon, and the means of applying pressure, and illustrating the first step in the process of the manufacture; Fig. 2, a like view of same, showing the condition of the metal after pressure has been applied and the flange formed; Fig. 3, a plan view of the die; Fig. 4, a view of the flange as taken from the die illustrated in Fig. 2 prior to breaking off the thin film which covered the anvil portion of the die, the figure showing the lower side of the metal flange; and Fig. 5, a perspective view of the disk of wrought metal which is transformed into the flange by means of the process and apparatus illustrated in the foregoing figures of the drawings.

A designates the die, having the central an-

vil portion B and the matrix C, which encircles the anvil portion B and is in the outline of the flange to be produced. The anvil portion B extends centrally upward from the lower portion of the matrix C, and its upper surface is on a level with the upper edges of the die.

The means for applying pressure is designated by the letter D, and in the present instance consists of a block of metal having a plain lower surface, as illustrated in the drawings.

The flanges are formed from disks E, of wrought metal, and in the use of the die the disk or blank E, of wrought metal, is placed centrally upon the anvil portion B of the die A and pressure applied thereon, the effect being that the wrought metal will be displaced laterally over the circular edges of the anvil B and completely fill the matrix C, being thereby transformed from the disk into a flange, the hub portion of the flange being formed by the vertical walls of the anvil B. After the disk E has been formed into the flange by means of pressure forcing the metal into the matrix C, the pressure will be relieved and the flange removed from the matrix, after which the thin film (lettered F) of metal connecting the walls of the hub portion of the flange will be removed and the flange then subjected to the usual threading-machine.

The removal of the flanges from the die A may be effected by the ejector-pins *e*, secured to the disk *a* and extending upward through apertures in the die to the lower surface of the matrix C. The disk *a* is placed within a recess formed in the die A, as shown, and said disk is slotted to loosely receive the inner end of the lever *f*, which is pivoted at *b* in the slot *c* and has a head *d* at its outer end. After the flange has been formed and the hammer or upper section of the die D elevated, a light blow on the head *d* will cause the inner end of the lever *f* to force the disk *a* and pins *e* upward and eject the flange from the matrix.

The application of pressure to the disk E has the effect of forcing all of the metal from the anvil B into the matrix C, with the exception of the thin film, which upon the completion of the manufacture will cover the upper end of the anvil B, as illustrated in Fig. 2.

It will be noted upon observing Fig. 1 that



the disk of wrought metal E is less in diameter than the matrix C, and that the quantity of metal in the disk E is sufficient upon being displaced from the anvil B to completely fill the matrix.

The apparatus and process which have been made the subject of this application will be readily understood without a further detailed explanation, and so far as is known they are applied by us to the manufacture of what we consider to be a new commercial product—namely, wrought-metal flanges for use as pipe-couplings and other purposes.

We believe it to be impossible at the present date to purchase wrought-metal flanges in the market overt, and it is our purpose to create by means of the present invention a new field of industry.

Wrought-metal flanges possess many advantages both to the manufacturer and user. They may by reason of the present invention be manufactured more cheaply than cast-metal flanges, and when manufactured possess greater strength and durability than cast flanges.

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

1. The die A for the manufacture of wrought-metal flanges, said die having the central anvil portion B and the encircling matrix C in the contour of the flange, the matrix being open above and surrounded by an inclosing-wall and recessed to form the hub of the flange around the base of the upwardly-projecting

anvil portion B, combined with means, substantially as described, for applying pressure, substantially as set forth.

2. The method hereinbefore described of manufacturing flanges, consisting in forming a disk or blank of wrought metal, placing said disk or blank centrally upon an anvil located at the center of a matrix of proper shape to form the flange and having an annular depression surrounding said anvil to form the flange proper, and then applying pressure upon said disk or blank to force it into said matrix, and the depression thereof effecting the displacement of the metal over the edges of the anvil and completely filling the matrix and its annular depression, substantially as set forth.

3. The die A for the manufacture of wrought-metal flanges, said die having the matrix C in the contour of the flange and the central upwardly-projecting solid portion B, the sides of which form walls for the hub of the flange, combined with means, substantially as described, for applying pressure to force the metal into said matrix and for ejecting the flange therefrom, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 12th day of August, A. D. 1889.

GEORGE VAN WAGENEN.  
JOHN GRAVES.

Witnesses:

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