

**No. 698,214.**

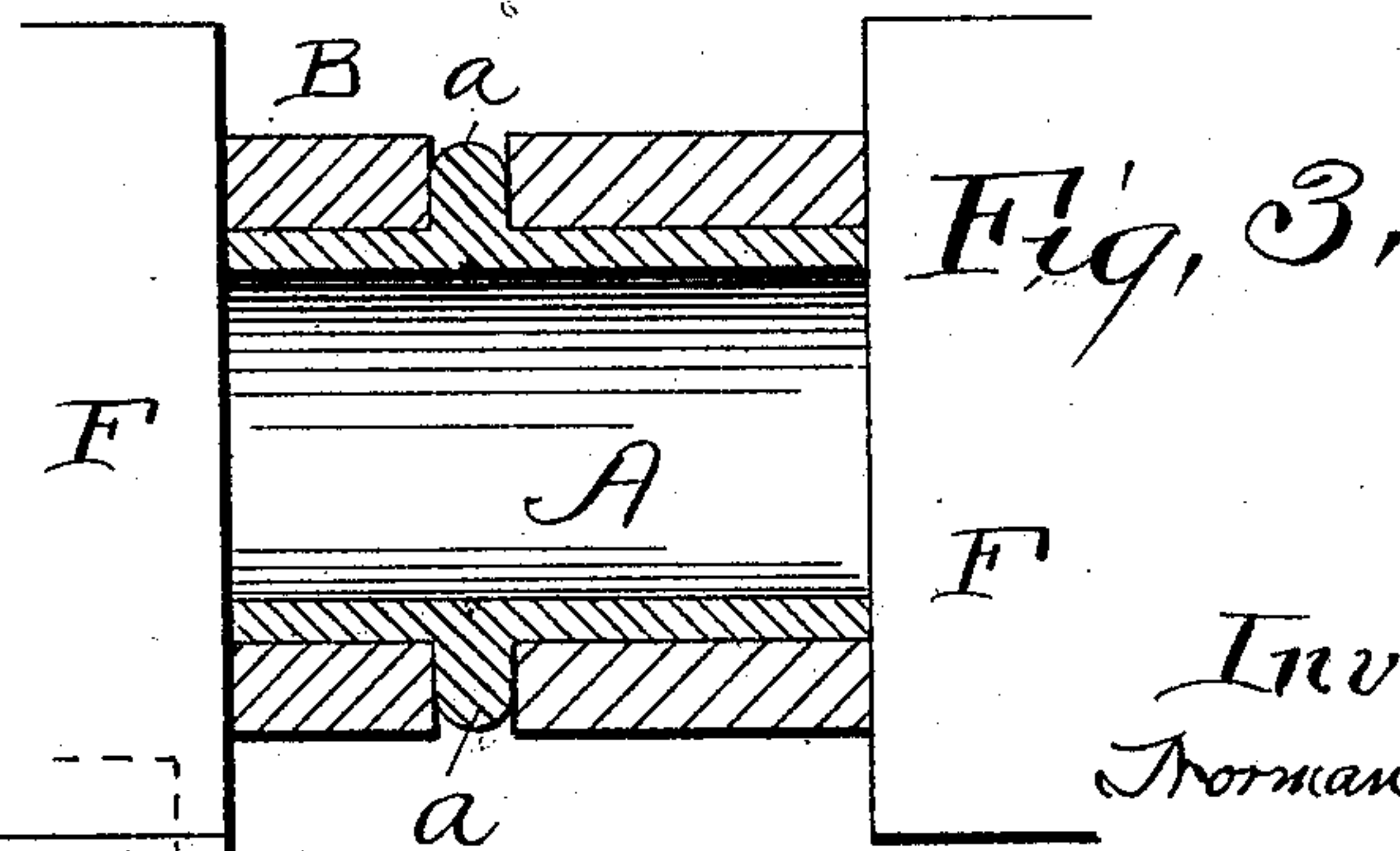
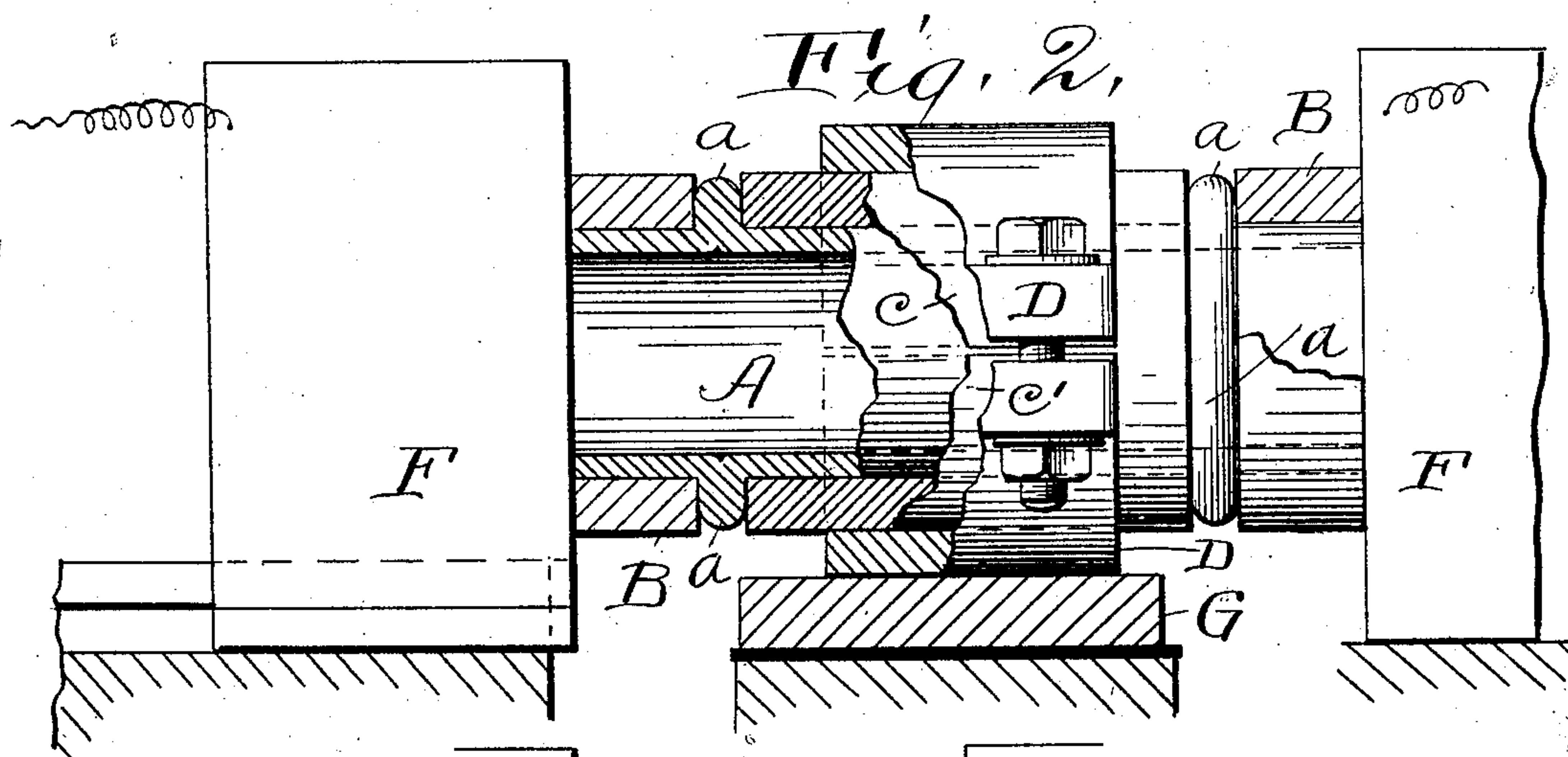
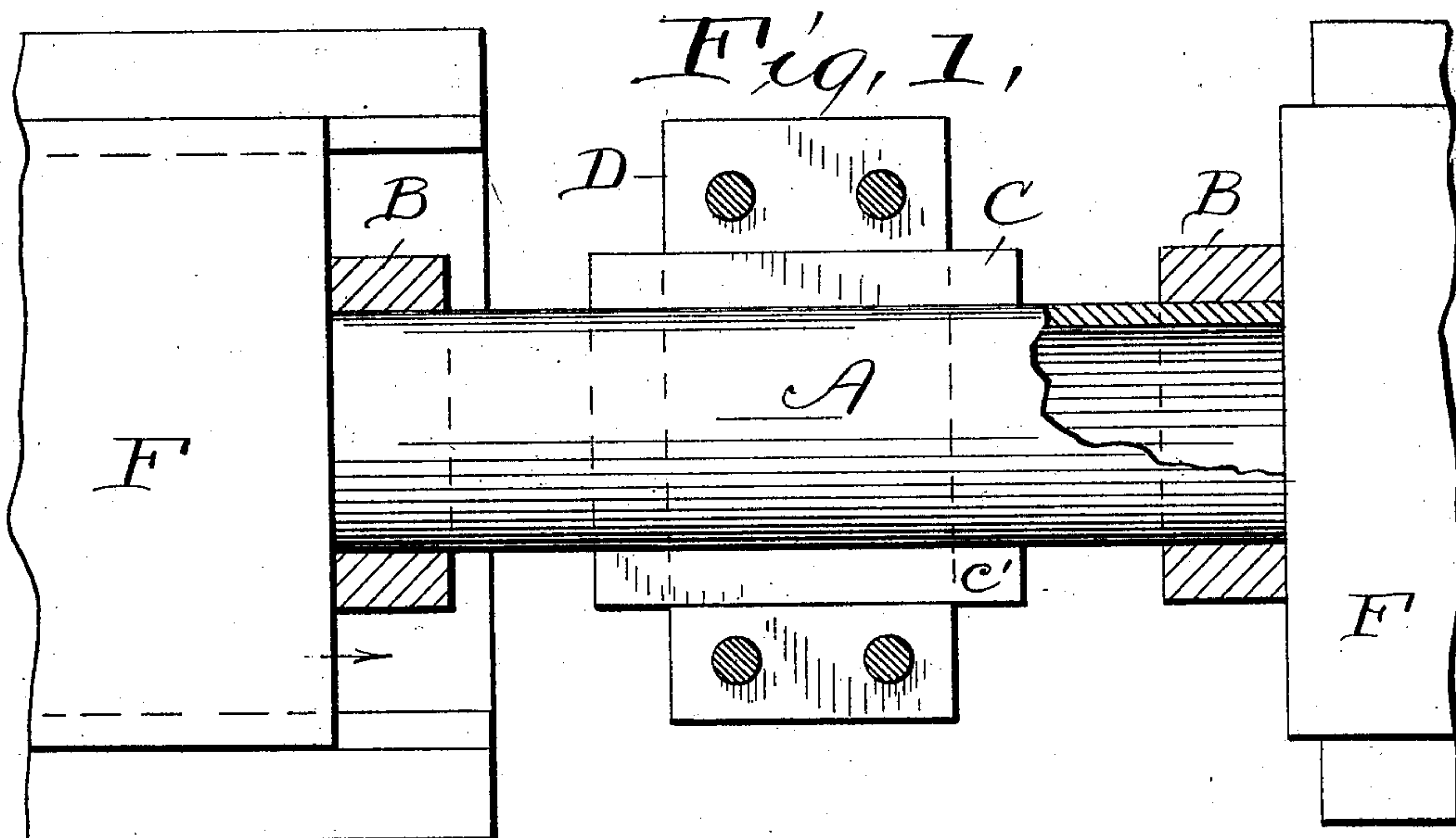
**Patented Apr. 22, 1902.**

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## PROCESS OF FLANGING METALLIC TUBES.

(Application filed July 11, 1901.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## PROCESS OF FLANGING METALLIC TUBES.

SPECIFICATION forming part of Letters Patent No. 698,214, dated April 22, 1902.

Application filed July 11, 1901. Serial No. 67,850. (No specimens.)

*To all whom it may concern:*

Be it known that I, NORMAN McKECHNIE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Processes of Flanging Metallic Tubes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of the invention is to quickly and economically form one or more external circumferential flanges on metallic tubes. Such flanged tubes are mainly useful for wheel-hubs, but may of course be used for any other purpose.

The invention consists in fitting upon a metallic tube two or more collars which embrace all of the tube except the part or parts to be thrown outward to form the flange or flanges, in passing an electric current endwise through said tube, and finally in applying endwise pressure upon said tube, all of which will be hereinafter described.

In the drawings, Figure 1 is a plan view of a tube before it is flanged and of the mechanism employed in the flanging operation, the collars B B being sectioned, a portion of the tube being broken away, and the upper half of the intermediate collar C and its clamp D being absent. Fig. 2 is a side elevation, partly in section, of the same mechanism and of the tube after it has been flanged. Fig. 3 is a side view, partly in section, of a tube upon which one flange has been formed and of the mechanism used in so flanging it.

Referring to the parts by letters, A represents the cylindrical metallic tube which is to be operated upon.

B B represent two metallic collars which are fitted upon the ends of said tube. They need not fit tightly, but should be a fairly good sliding fit. If only one flange is desired, enough of the tube to form the flange is left uncovered between these collars, as shown in Fig. 3. If two flanges are wanted, a third metallic collar C is secured upon the tube between the collars B B, as shown in Figs. 1 and 2. Enough of the tube to form said

flanges is left uncovered between the ends of the collar C and the proximate ends of the tubes B B. The collar C must be made of at least two separable parts in order to permit its removal after the flanges *a a* are formed on the tube. These two collar-sections *c c'* are secured in place by a clamp D, which may be of any suitable construction.

Now having put on the metallic collars, as described, the tube A, the ends of which are cut off squarely in planes at right angles to its axis, is clamped endwise between two electrodes F F, having parallel proximate faces. The two slides commonly found in electrical welding-machines may serve as the electrodes necessarily employed in the practice of this process. The tube having been clamped, as described, between said electrodes an electric current is turned on, said current being capable of heating the tube to a welding heat.

It will be found that the parts of the tube left uncovered between the collars will be heated to a welding heat, while the other parts of the tube which are embraced by the collars will not be heated to anything like the same temperature. When the tube has been heated as described, it is subjected to endwise pressure, preferably by the movement of one or both of said electrodes. The result will be that the uncovered parts of the tube will be bulged out evenly all around the tube, and as the endwise pressure is continued the inner faces of the portions so bulged out will be forced into contact and pressed and welded together between the ends of said collars B B and C.

Unless the tube is quite short it may be necessary to support the middle part thereof to prevent it bending down out of line when the uncovered parts thereof have been so heated. In such event any suitable support—as, for example, an insulated plate G—may be placed beneath the clamp D.

I claim—

The described process of flanging metallic tubes, which consists in fitting upon the tube two or more collars, leaving uncovered be-

tween them enough of the tube to form the  
flange or flanges; in passing an electric cur-  
rent through said tube endwise whereby the  
uncovered parts of said tube are heated to a  
5 welding heat, and in applying endwise pres-  
sure upon said tube and end collars whereby  
the uncovered parts of the tube are thrown  
outward and the flange is pressed into shape

and the meeting faces of the metal welded to-  
gether between said collars. 10

In testimony whereof I hereunto affix my  
signature in the presence of two witnesses.

NORMAN McKECHNIE.

Witnesses:

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