

(No Model.)

S. R. WILMOT.  
METHOD OF MAKING FLATTENED TUBES.

No. 408,059.

Patented July 30, 1889.

Fig. 1.

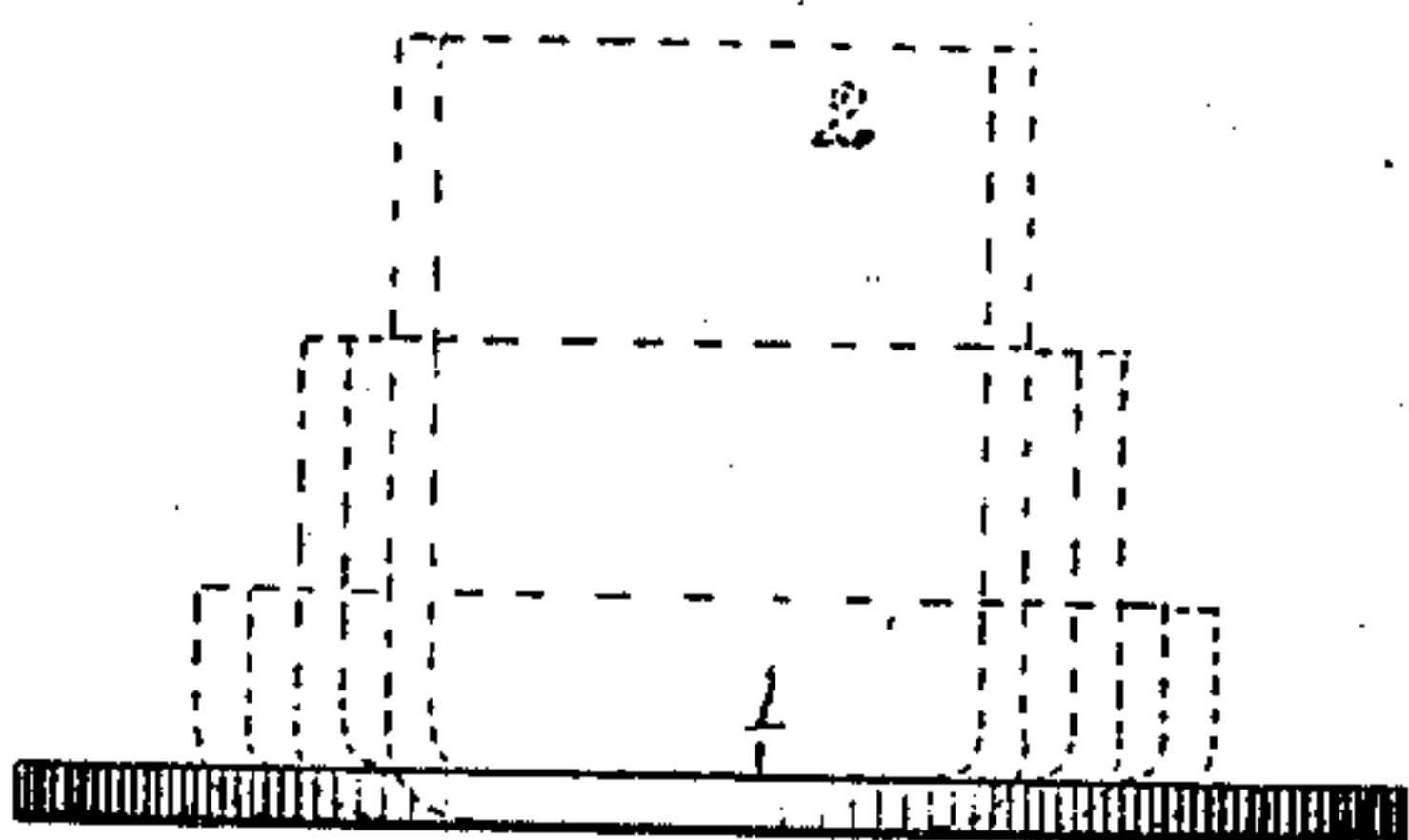


Fig. 2.

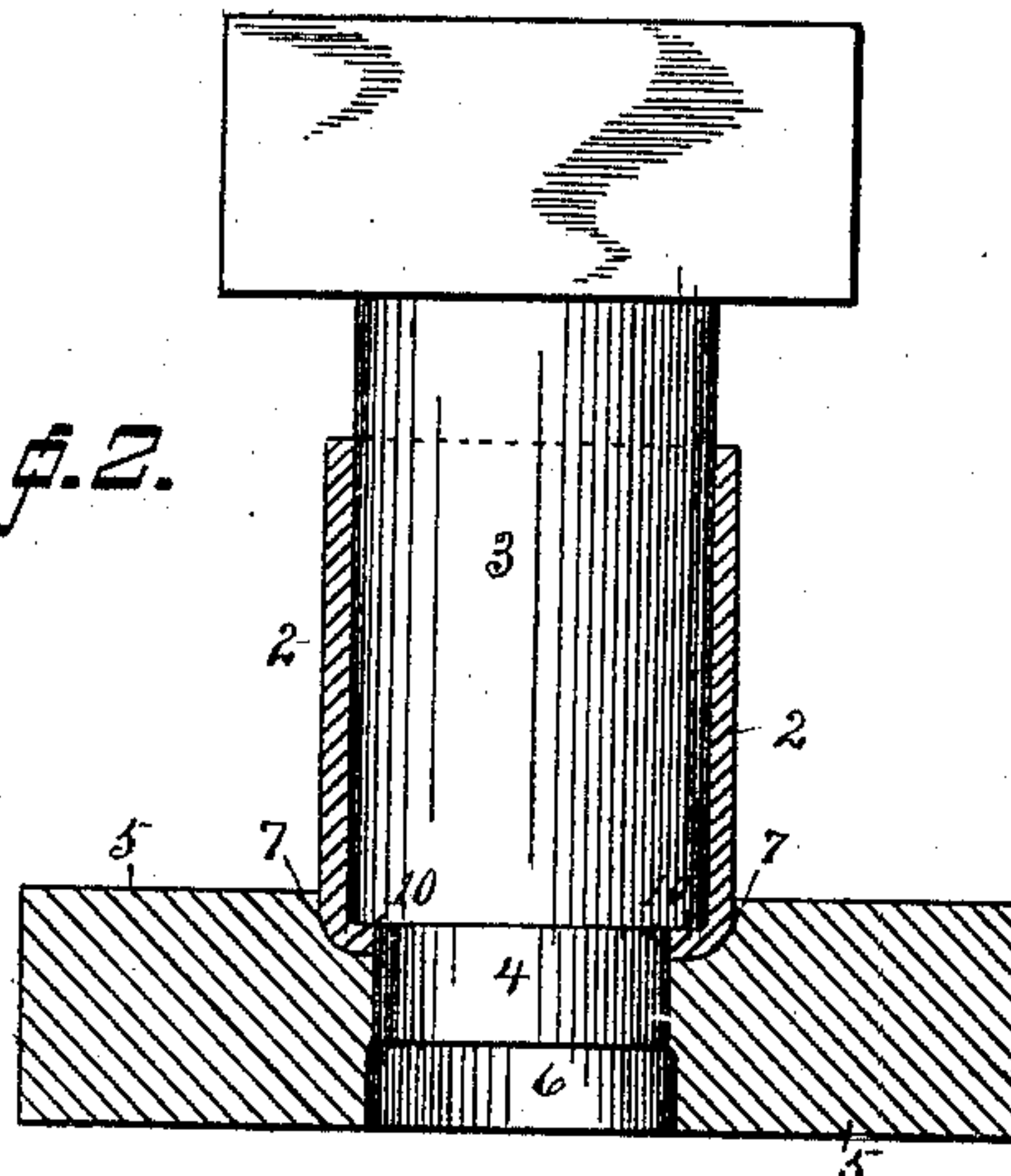


Fig. 3.

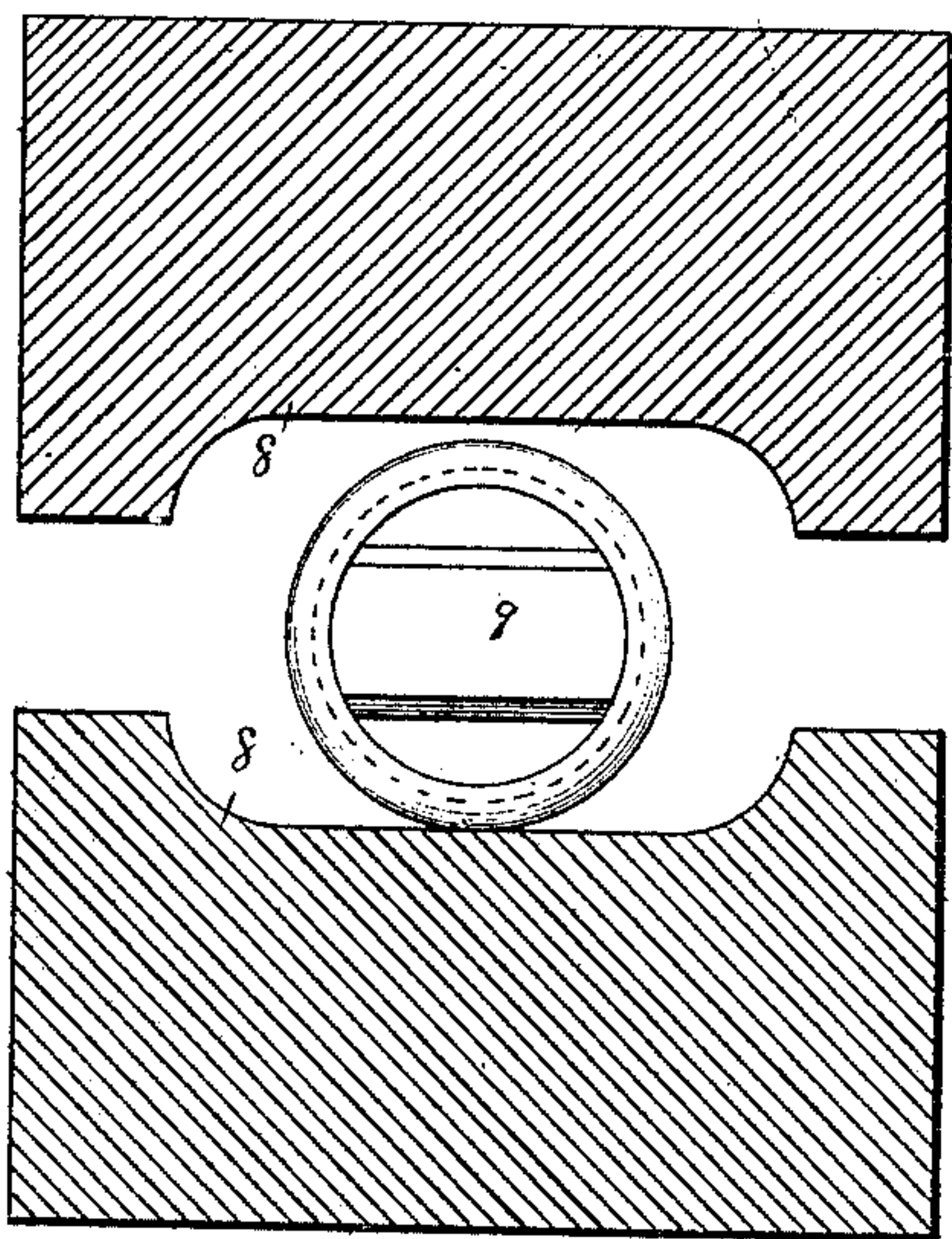


Fig. 4.

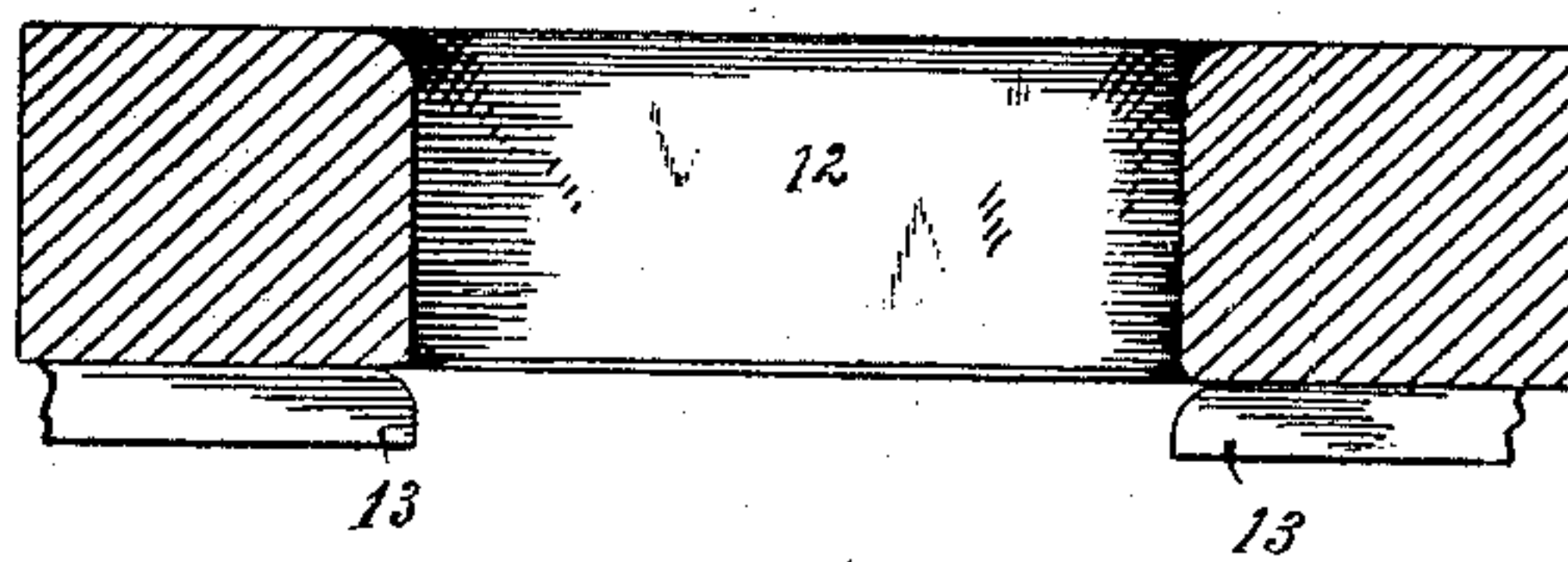
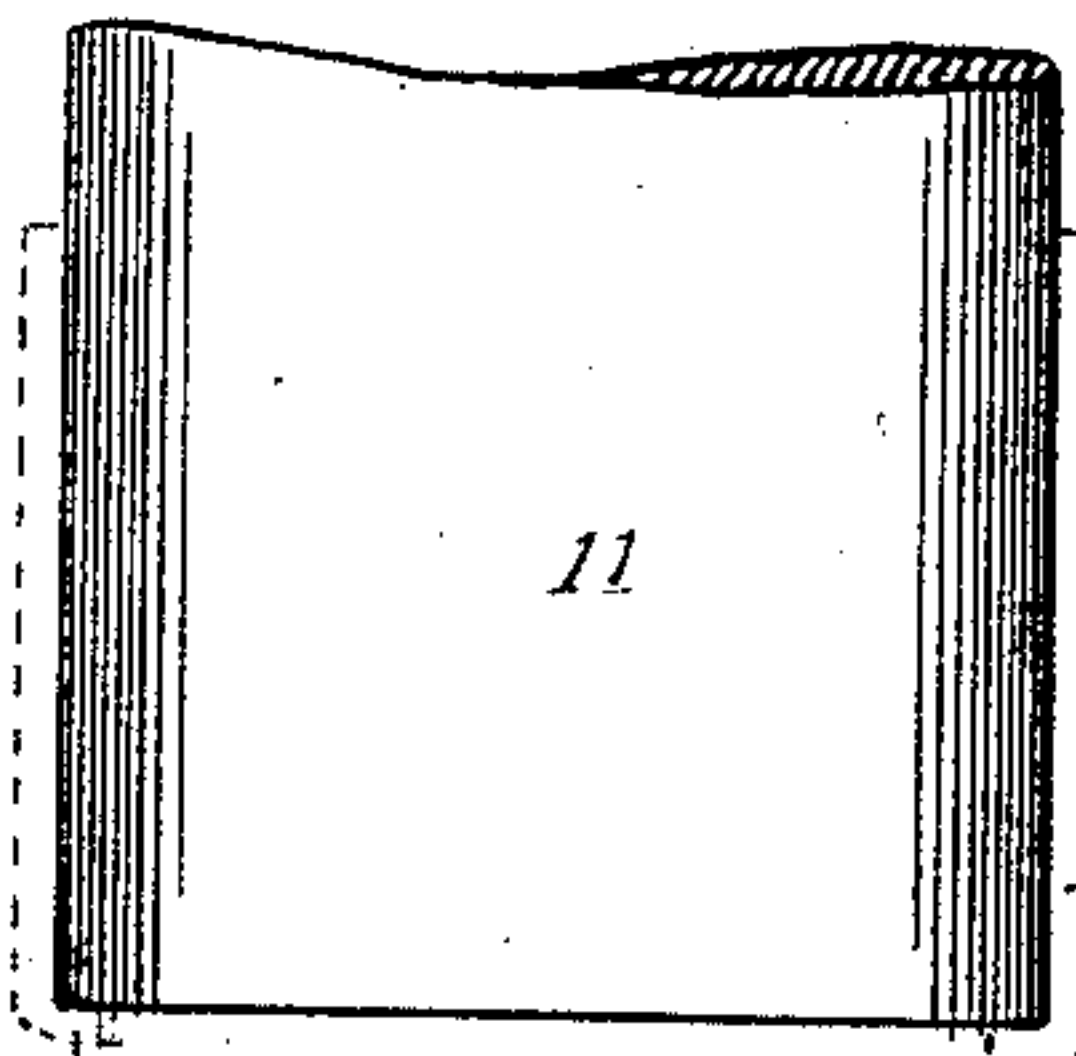
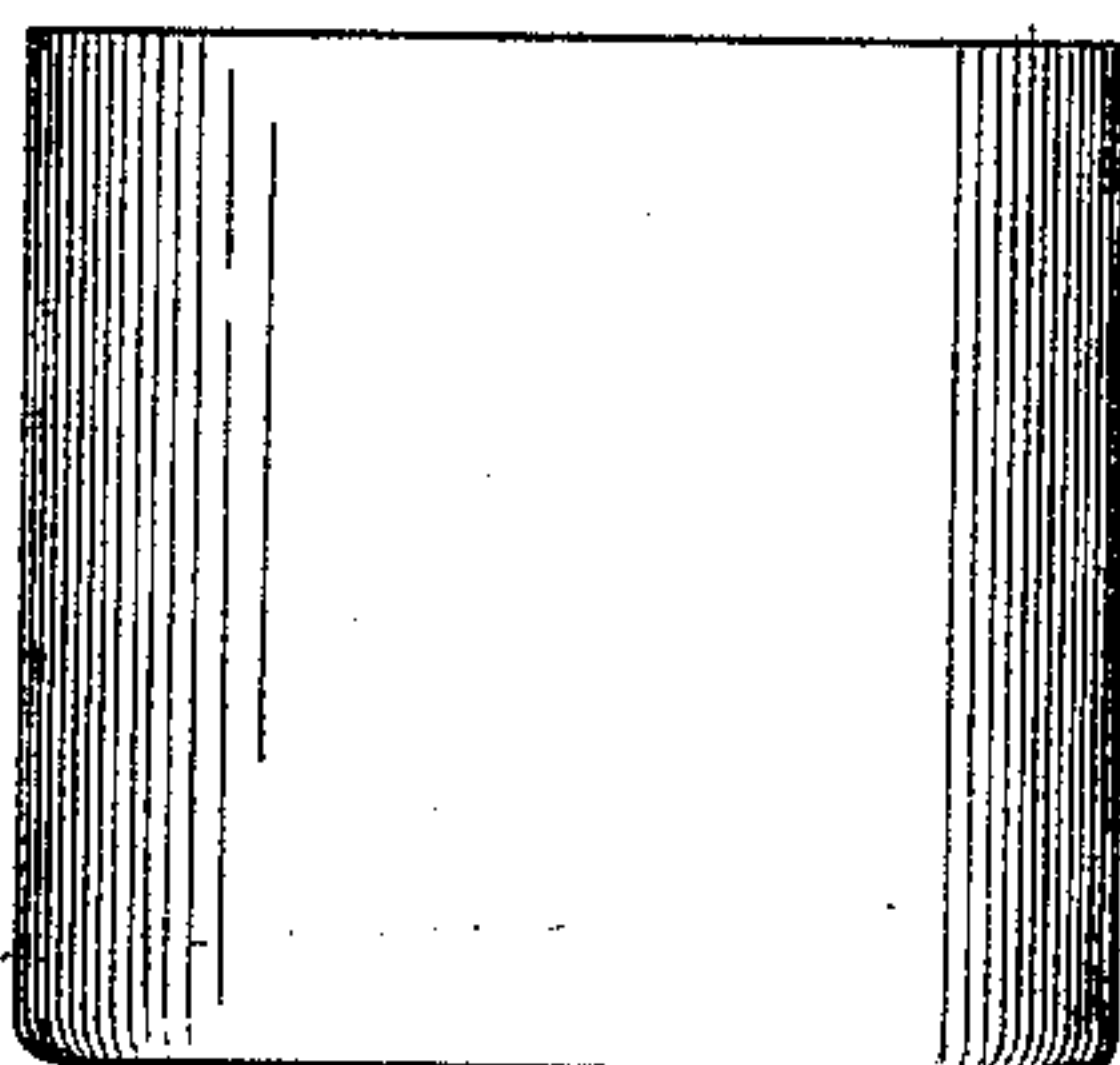


Fig. 5.



**WITNESSES**

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# UNITED STATES PATENT OFFICE.

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## METHOD OF MAKING FLATTENED TUBES.

SPECIFICATION forming part of Letters Patent No. 408,059, dated July 30, 1889.

Application filed January 28, 1889. Serial No. 297,759. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL R. WILMOT, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented an Improved Method of Forming Flattened Tubes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to devise a novel method of forming flattened tubes. It is frequently and for many purposes required in the arts to use flattened tubes of steel—as, for example, in the manufacture of a certain class of padlock-cases where the greatest attainable accuracy is required. It is furthermore desirable that these cases should be drawn rather than cast or forged, drawn work of this class being superior in every respect and very much cheaper to produce. It has, however, up to the time of my present invention been an utter impossibility to draw flattened tubes of steel that could be used in fine work. Attempts without number have been made to produce flattened tubes having rounded ends by the operation of drawing from a disk. It has never been accomplished, however, satisfactorily, in steel. It follows, inevitably, that the greatest portion of the drawing operation must take place at the rounded ends of the tubes, and even if a disk of sufficient size were taken to give the right height at the side and allow for the necessary waste at the ends, it was found impossible to produce perfect tubes, as the tubes invariably cracked on the surface at the points where the ends of the curves joined the flat portions at the sides of the tubes. These objections I am enabled to obviate entirely by my novel method and to produce perfect drawn flattened tubes from steel at very slight expense.

In order that others may understand my novel method, I will proceed to describe the same, referring by numbers to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an edge view of a disk of metal, indicating in dotted lines the results of three

drawings in producing a tube closed at one end. Fig. 2 is an elevation, partly in section, of the die and punch which punch out the bottom of the drawn tube; Fig. 3, a section of the dies which flatten the drawn tube; Fig. 4, an elevation of the punch and section of the die, which act together to draw the flattened tube; and Fig. 5, an elevation of a completed drawn flattened tube.

1 denotes a disk of metal. In the present instance I have illustrated my invention as applied to the drawing of flattened padlock-cases, the disk for this purpose being a disk of what is known as "mild steel." This disk is drawn into a round tube in precisely the same manner that cartridge-shells are drawn, the results of three drawings being indicated by dotted lines in Fig. 1.

In Fig. 2, 2 denotes the drawn tube, which is shown in section; 3, a punch the body of which just passes within the tube, and which is provided with a reduced central portion 4 which punches out the bottom of the drawn tube.

5 denotes a die having a central opening 6, which receives the central portion 4 of punch 3, said opening being enlarged slightly at the bottom to permit the punched-out portion to drop away freely, said die also having a countersink in its upper side to receive the lower end of the tube and the body of the punch, while the reduced central portion punches out the bottom, thereby leaving a flange 10 at the lower end of the tube.

In Fig. 3, 8 represents upper and lower flattening-dies, which are exactly alike. The next operation, after punching out the bottom of the round-drawn tube, is to place a core 9 within the tube. The ends of this core are rounded to correspond with the curvature of the tube, and its upper and lower sides are flattened, as shown in Fig. 3. The thickness of this core is practically the same as the required diameter of the completed article. The core is placed in the tube, as shown in Fig. 3, its bottom resting against the flange 10, which is left at the outer edge of the bottom of the tube when the central portion of the bottom is punched out by the reduced portion of the die, as already described. Having placed the round tube, with the core with-



in it, between the flattened dies 8, as shown in Fig. 3, said dies are closed together and act to flatten out the tube to correspond with the dimensions of said dies. This operation  
 5 leaves the tube in substantially the shape required, although an additional drawing operation is required to give to the flattened tube the accuracy and perfection of finish required in the special use referred to, it being  
 10 essential that the thickness of the tube and the dimensions thereof be uniform at all parts.

11 denotes a flattened punch which is now passed within the flattened tube, the bottom  
 15 resting upon flange 10.

12 is a drawing-die corresponding substantially with punch 11. The flattened tube, after being removed from dies 8, and the core, is placed upon punch 11, and is then forced  
 20 down through drawing-die 12, which acts to give it the final drawing operation, and leaves the flattened tube perfectly smooth and finished and wholly free from cracks in the surface.

25 13 denotes strippers under die 12, which act to remove the drawn flattened tube from

punch 11. This operation completes the formation of the flattened tube with the exception of trimming the ends, it being understood of course that the removal of the drawn  
 30 tube from punch 11 and the trimming of the ends of the completed tube have nothing to do with my present invention.

I claim—

The method of forming flattened tubes, 35 which consists in drawing a round tube from a disk of metal in the usual manner, then punching the bottom from said tube, leaving an inwardly-turned flange, then flattening said rounded tube to substantially the shape  
 40 required, and finally placing the flattened tube upon a correspondingly-flattened punch, the end of said punch resting against said flange, and then forcing said tube through a correspondingly-shaped drawing-die, sub- 45  
 stantially as described.

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

SAMUEL R. WILMOT.

Witnesses:

A. M. WOOSTER,  
 ETTA F. PETTIT.