

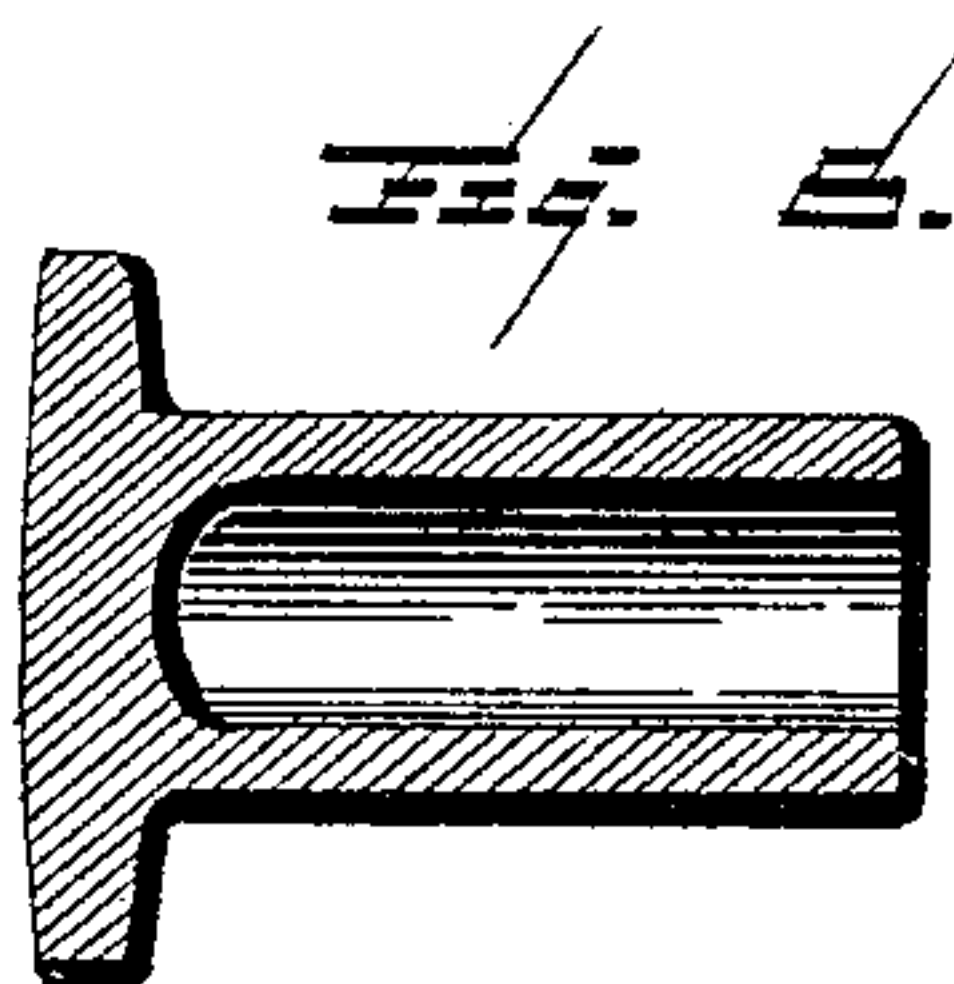
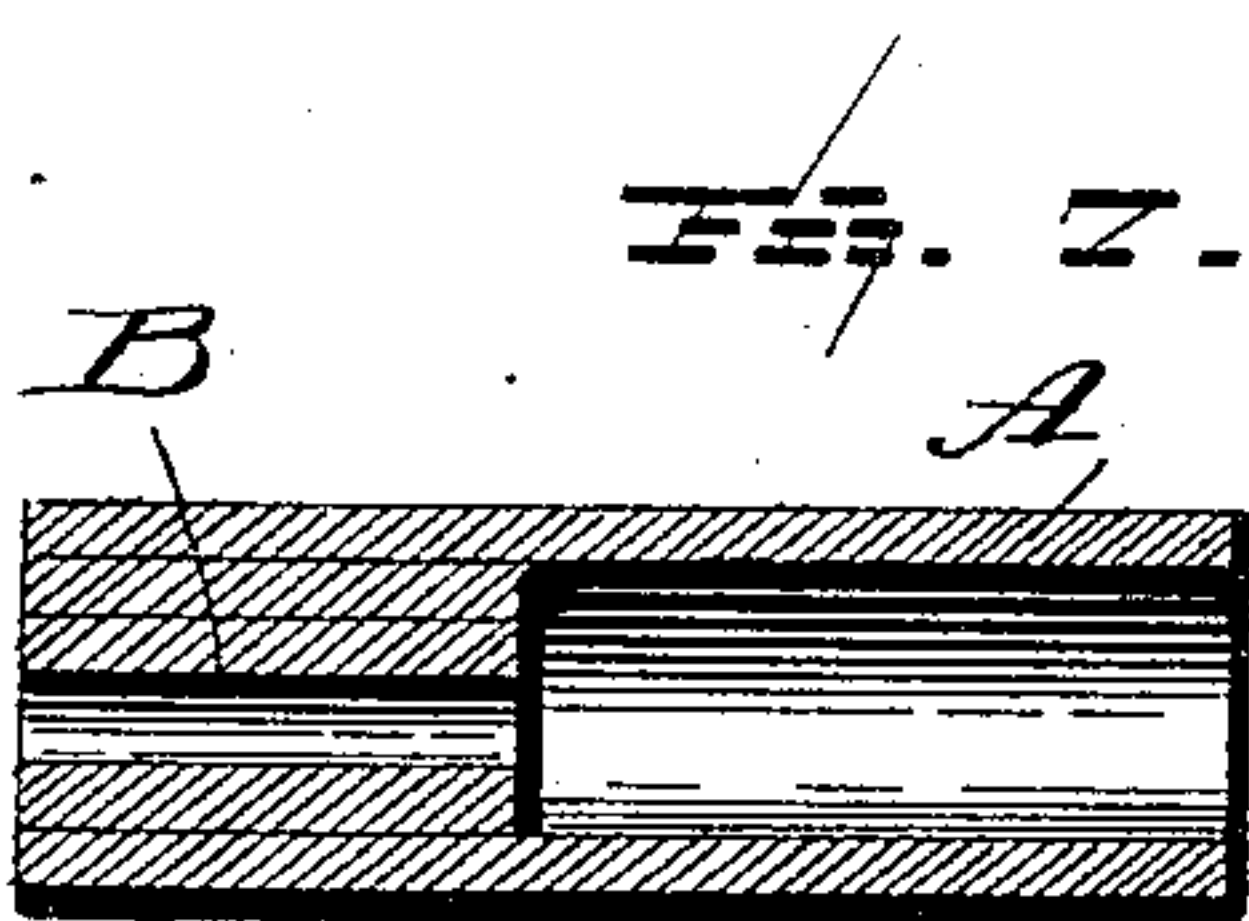
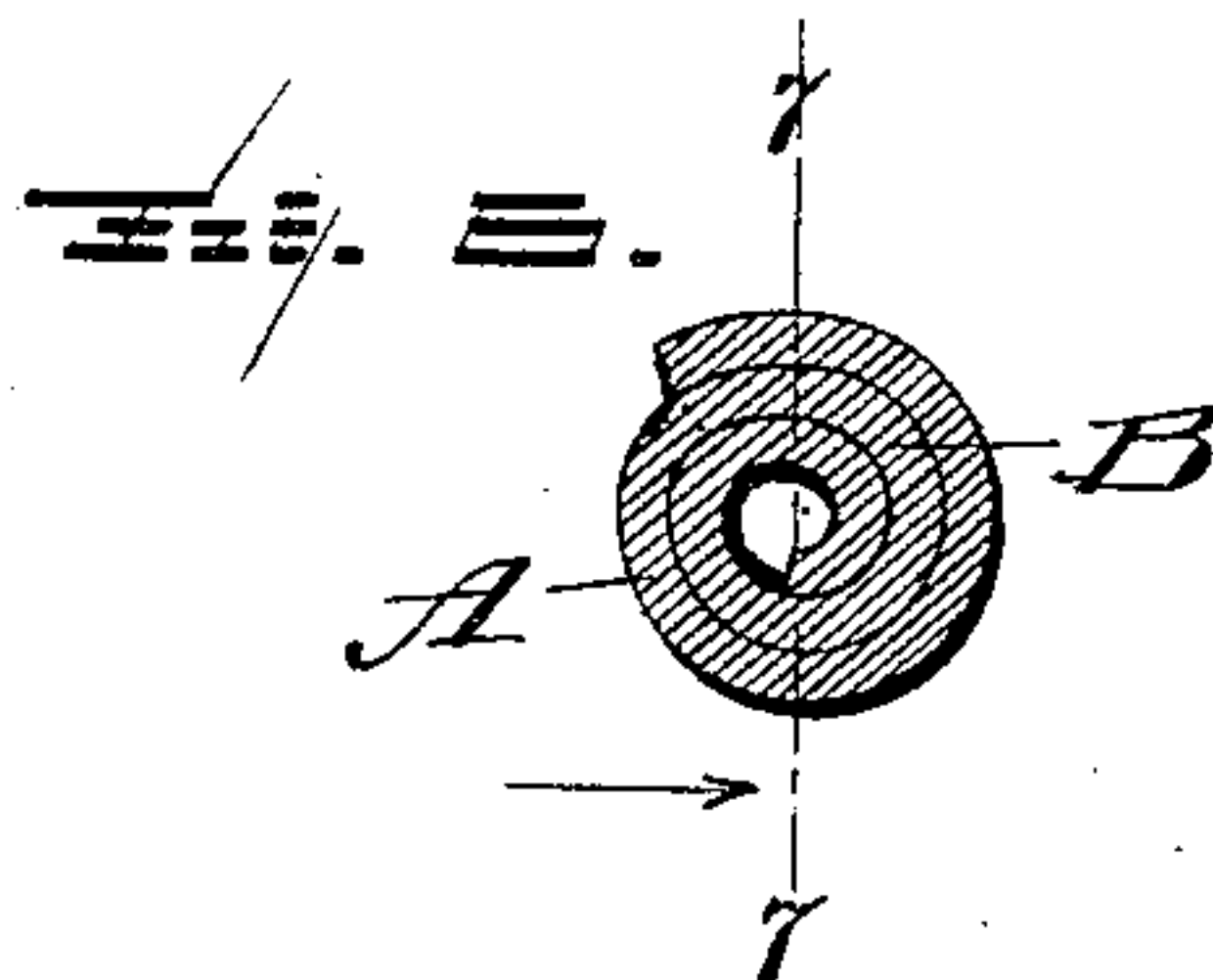
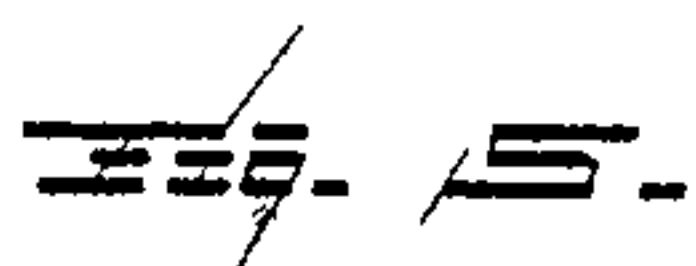
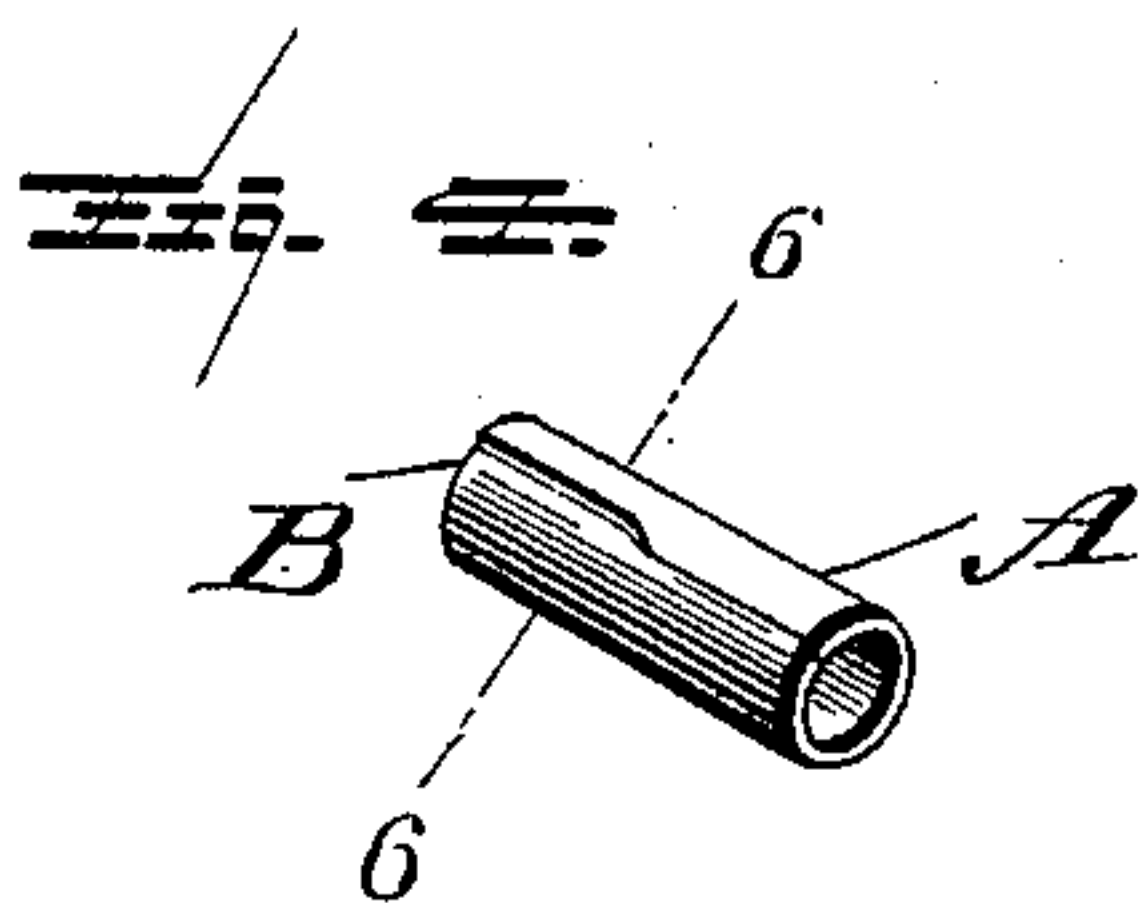
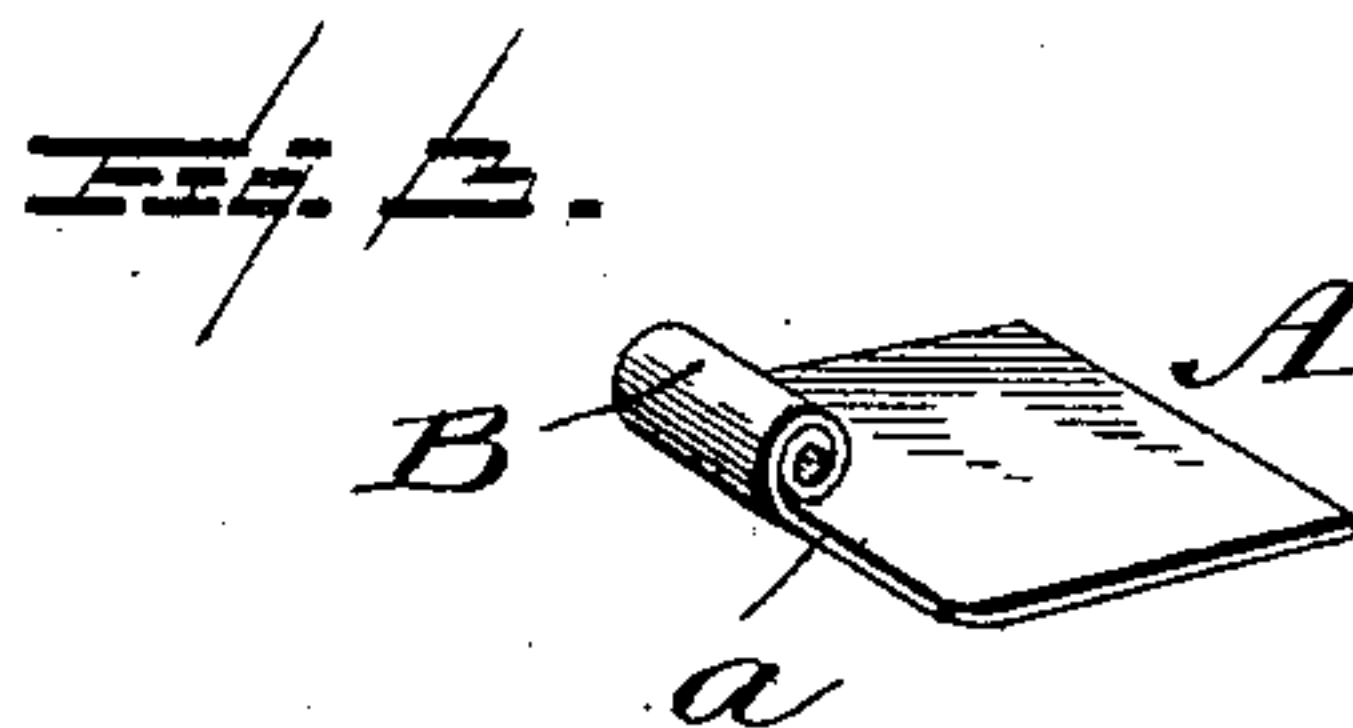
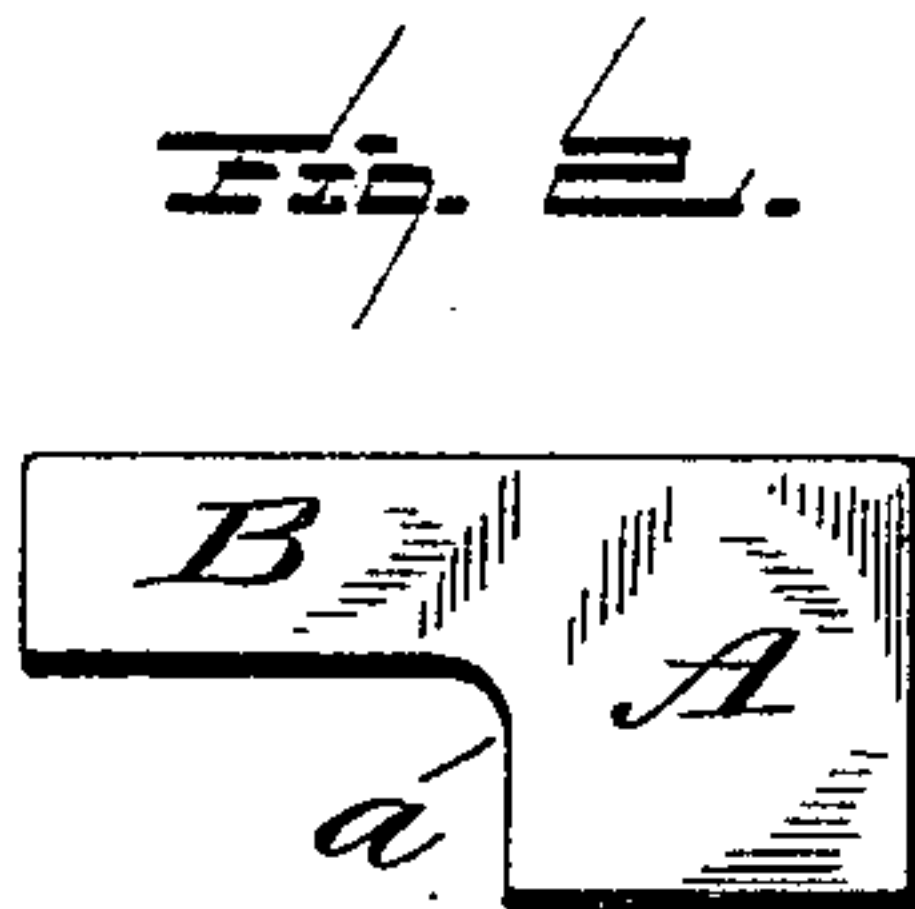
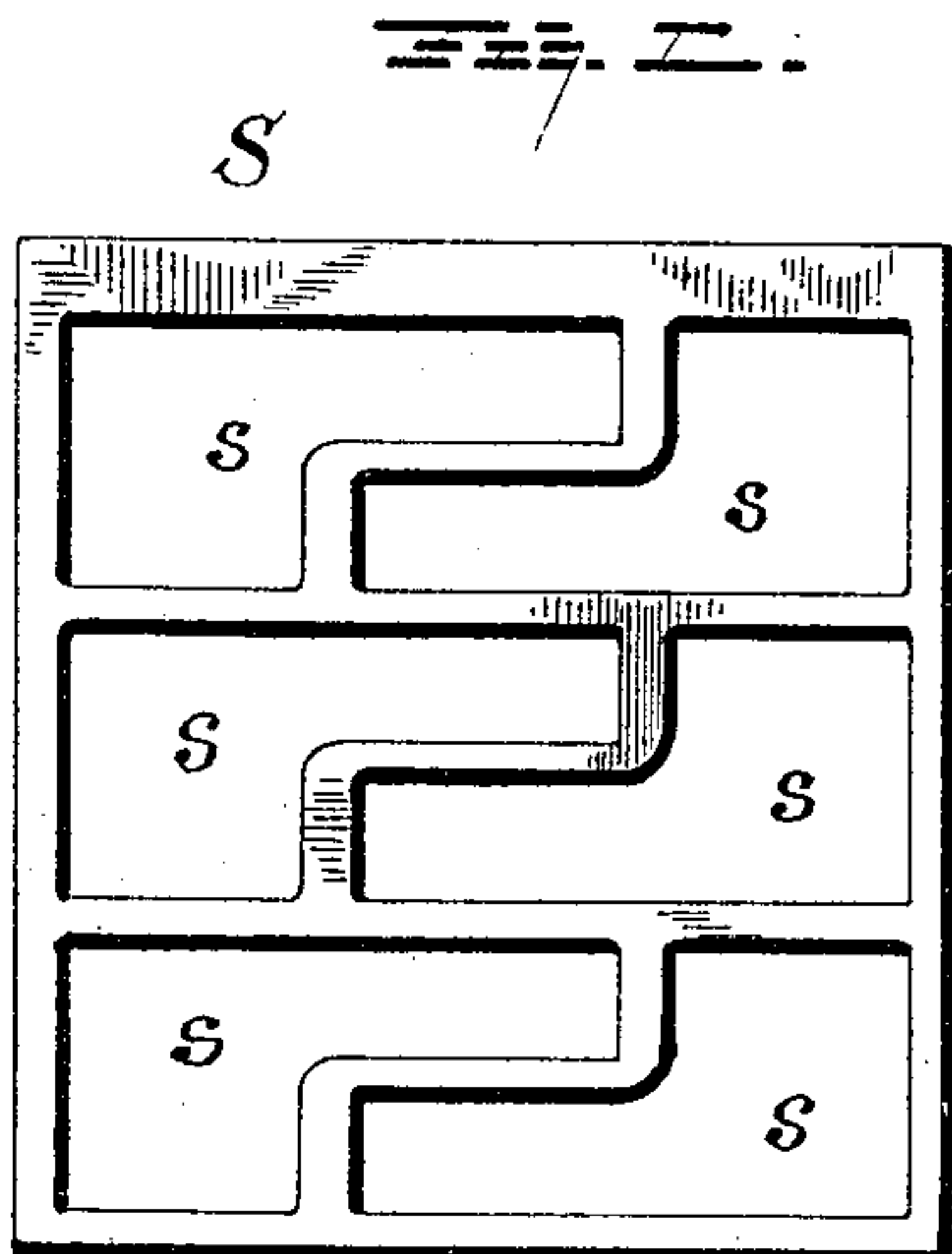
(No Model.)

H. S. REYNOLDS.

TUBULAR RIVET AND METHOD OF MAKING THE SAME.

No. 459,650.

Patented Sept. 15, 1891.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY S. REYNOLDS, OF BROOKLYN, NEW YORK.

TUBULAR RIVET AND METHOD OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 459,650, dated September 15, 1891.

Application filed June 8, 1891. Serial No. 395,444. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. REYNOLDS, of Brooklyn, Kings county, State of New York, have invented a new and Improved Tubular Rivet and Method of Making the Same, of which the following is a specification.

To a better understanding of my invention, which relates to the production of that type of rivet known as "solid-headed tubular rivet," I premise my description of the same with a brief statement of what, so far as I am informed, is the prior state of the art in this general line of invention. Solid-headed tubular rivets are of course old. In some instances the rivet has been made from a piece of wire or wire rod drilled out for a portion of its length to provide a tubular shank and having its undrilled or solid portion upset or swaged into a solid head. In other instances it has been made from a piece of metal by a combined drawing and upsetting process. It has also been essayed to make the rivet of sheet metal, and for this purpose it has been proposed to work the sheet metal in various ways, principally by striking up a previously-prepared sheet-metal blank and then shaping the head and at times capping it. The rivet thus produced sometimes has had only one longitudinal seam in its tubular shank and sometimes it has had two or more seams, which have divided the shank up into sections. It has also been proposed to make a tubular rivet by coiling the strip of metal onto itself. I have more particular reference in this instance to Wooten's expired patent, granted in the year 1867 and reissued September 9, 1873, No. 5,567; but in the case of this patented device, while the whole strip of blank was coiled, yet the head of the rivet was not solid, but was annular, the rivet being in effect a tube of uniform diameter throughout open at both ends and having upon its periphery at one end an annular projection or flange which formed the head. In the only other instance of which I have knowledge in which the sheet metal could be said to be coiled or bent upon itself to form a tube (I have reference now to Bray's patent, No. 256,117, of April 11, 1882) the coiling or bending for this purpose was confined to that portion of the blank which formed the tubular shank of

the rivet, and that portion of the blank which formed the head was not thus coiled or bent, but after the formation of the shank was bent over and secured as a cap to the flanged or flared end of the tube, being united thereto by a lap-joint.

The tubular solid-headed rivet in which my invention is comprised is a sheet-metal rivet, in which the solid head is integral with the tubular shank. It is made by coiling the sheet metal onto itself throughout its length, both that portion intended for the head and that portion intended for the shank, and to this extent it resembles the Wooten patented rivet; but, unlike the latter, the head is not annular and open, but is solid and closed, just as it is in the most approved form of tubular rivet made from solid wire rod by the drilling and upsetting operation first above referred to.

My rivet is formed from a sheet-metal blank having on that edge of the head portion thereof which is first bent or coiled a tongue or extension. When the coiling operation takes place, the tongue is first coiled onto itself, so that by the time the main body of the blank commences to be coiled there will be formed by the strip or tongue a practically solid cylinder, which forms a filling for and in fact fills that portion of the coiled blank which forms the head; the blank in this condition resembling a cylinder which is tubular for that portion of its length intended for the shank and filled or plugged for that portion of its length intended for the head. Then by swaging the head portion of the coiled blank I obtain a solid swaged head for the rivet which is integral with the tubular shank.

To enable others to understand and use my invention, I now proceed to more particularly describe it by reference to the accompanying drawings, in which I have illustrated the complete rivet and the several steps of the method by which it is produced.

In the drawings, Figure 1 is a plan of a portion of the sheet-metal strip from which the blanks are cut. It is represented in the condition in which it is after the blanks are cut and removed therefrom. Fig. 2 is a plan of the blank. Fig. 3 is a view of the blank partly coiled. Fig. 4 is a view of the blank completely coiled. Fig. 5 is a view of the

completed rivet. Fig. 6 is an enlarged section on line 6 6, Fig. 4. Fig. 7 is a like section on line 7 7 of Fig. 6. Fig. 8 is an enlarged axial section of the rivet, Fig. 5.

5 The sheet-metal blank from which the rivet is made is represented in Fig. 2.

A is the body of the blank, which is of a length suitable to afford a tubular shank of the desired length, as well as a head of the proper size, and is of a width such that when 10 coiled or bent into cylindrical form with its longitudinal edges brought together it will form a tube of the diameter required for the tubular shank of the rivet. On the edge a 15 of the blank which is first rolled and for that portion of its length devoted to the head of the rivet is the extension or tongue B, hereinbefore referred to, which is integral with the body of the blank. The blanks can be 20 conveniently and economically cut from a strip of sheet metal S of indefinite length after the fashion indicated in Fig. 1, the spaces s being those left by the cutting of the blanks.

In making the rivet the first step after producing the blank is to coil the blank from that 25 edge on which the tongue B is situated. In this operation the tongue is first coiled tightly onto itself, so that by the time the body of the blank commences to be coiled the tongue will 30 have been made into a tight coil, forming in effect a plug or filler of a diameter to fill what would otherwise be the tubular head portion of the coiled blank. The blank at this stage of the operation is represented in Fig. 3. The 35 coiling then proceeds until the body portion of the blank is bent into tubular form with its longitudinal edges meeting, as seen in perspective in Fig. 4 and in longitudinal axial section in Fig. 7. By this operation the blank 40 has been brought to the shape of a cylinder of uniform diameter, which for that portion of its length intended for the tubular shank of the rivet is hollow and for that portion of its length intended for the solid rivet-head is 45 filled by a plug composed of the coiled tongue B.

The next operation is to swage the filled head portion of the blank shown in Figs. 4,

6, and 7 into the form of the head, which operation is readily accomplished by means of suitable dies and plungers, by which this portion is by powerful pressure compressed into 50 a solid head, which is integral with the tubular shank. This operation practically completes the rivet, which as thus completed is shown in Fig. 5. The rivet can then, if desired, be dipped to give it a surface coating 55 of tin, copper, or the like, or can be japanned or otherwise treated in the way customary, in order to give it the preferred finish.

With respect to the material from which 60 the blanks are cut in the first instance, I would say that I am not limited to a strip or sheet of any particular shape. I may use, for example, scrap-tin or other sheet-metal scrap.

Having described my invention, what I 65 claim herein as new and of my own invention is—

1. The described method of making tubular solid-headed rivets, consisting, essentially, in forming from sheet metal a blank having on 70 its body portion a filling tongue or strip, then coiling this blank into cylindrical form, the tongue being first coiled so as to form a filling for the head part of the subsequently-coiled body portion, and finally swaging the 75 filled portion of the coiled blank into a solid head, substantially as hereinbefore set forth.

2. The sheet-metal blank for the production of tubular solid-headed rivets, consisting of the body portion A and the filling 80 tongue or strip B, integral therewith, substantially as hereinbefore set forth.

3. The coiled sheet-metal rivet having a tubular shank and a solid swaged head integral with the shank, substantially as herein- 85 before set forth.

Signed at New York, in the county of New York and State of New York, this 21st day of May, A. D. 1891.

HENRY S. REYNOLDS.

Witnesses:

E. R. KNOWLES,
C. R. FERRELL.