

(No Model.)

W. R. FOX.
RIVET.

No. 559,276.

Patented Apr. 28, 1896.

Fig. 1.

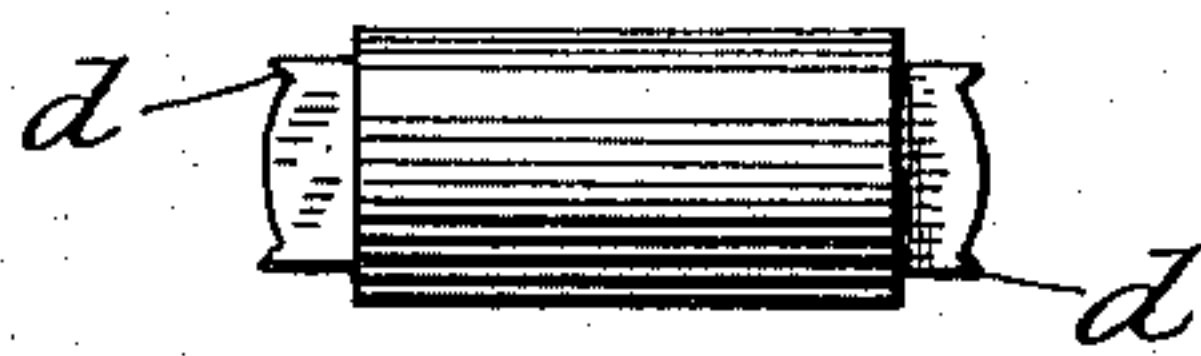


Fig. 2.

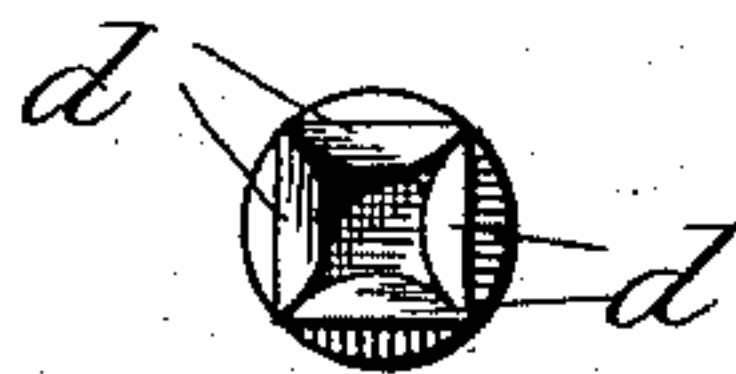


Fig. 3.

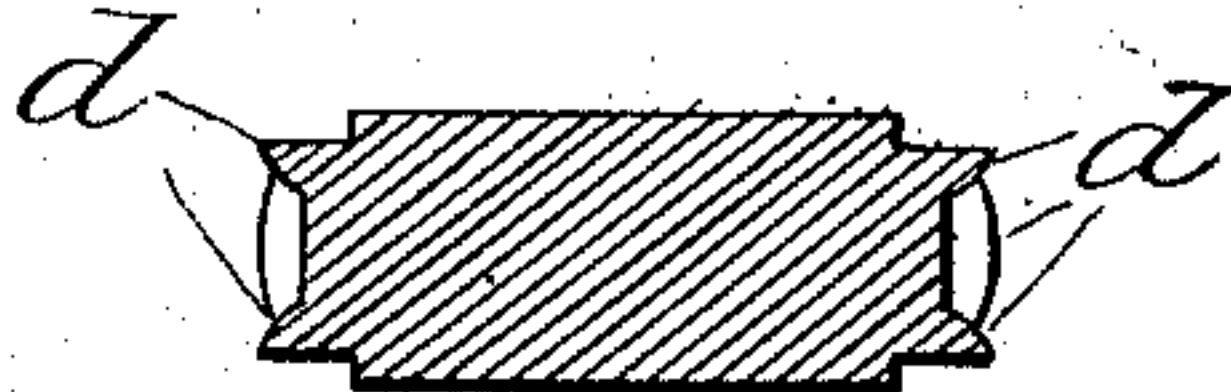
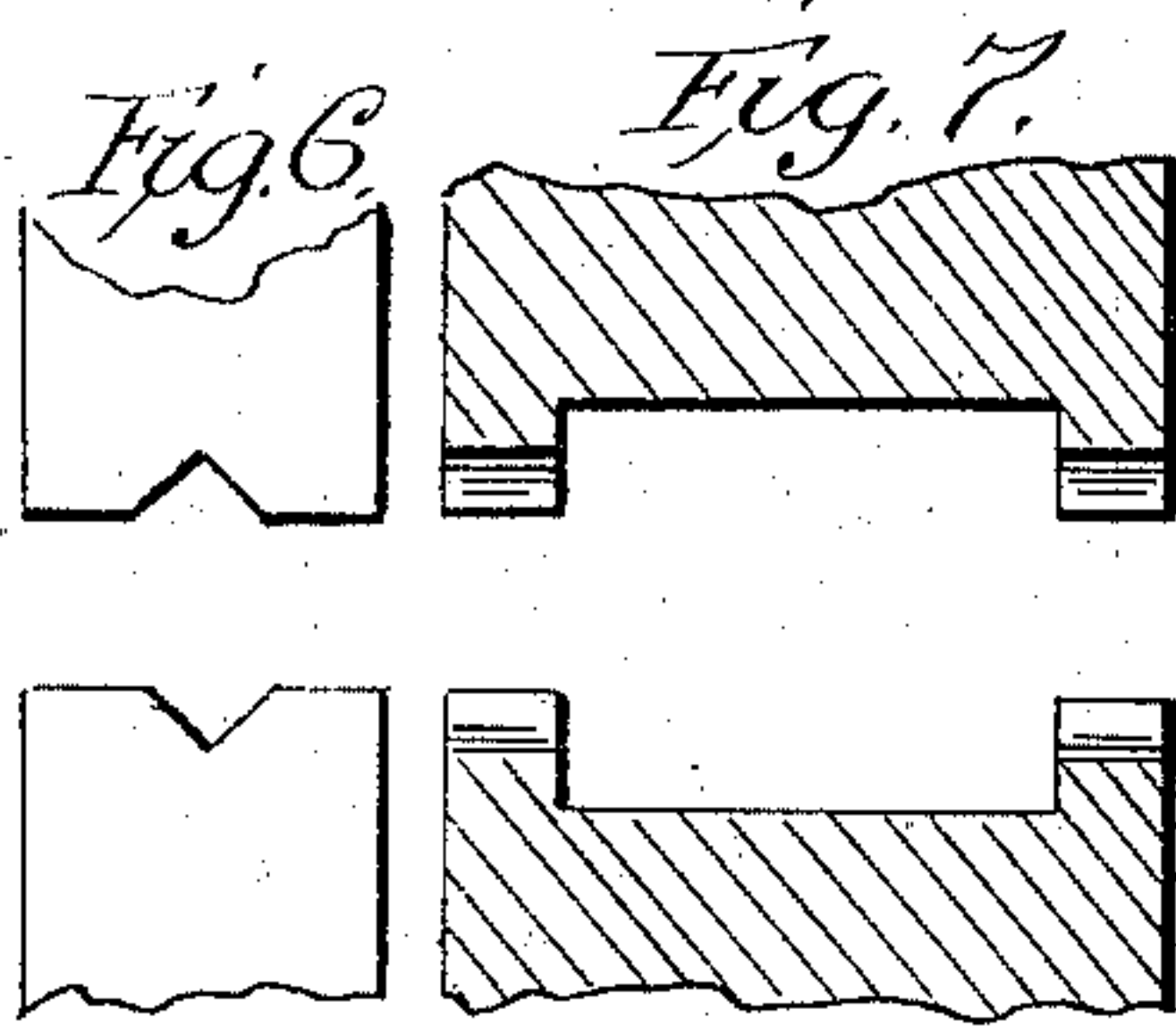
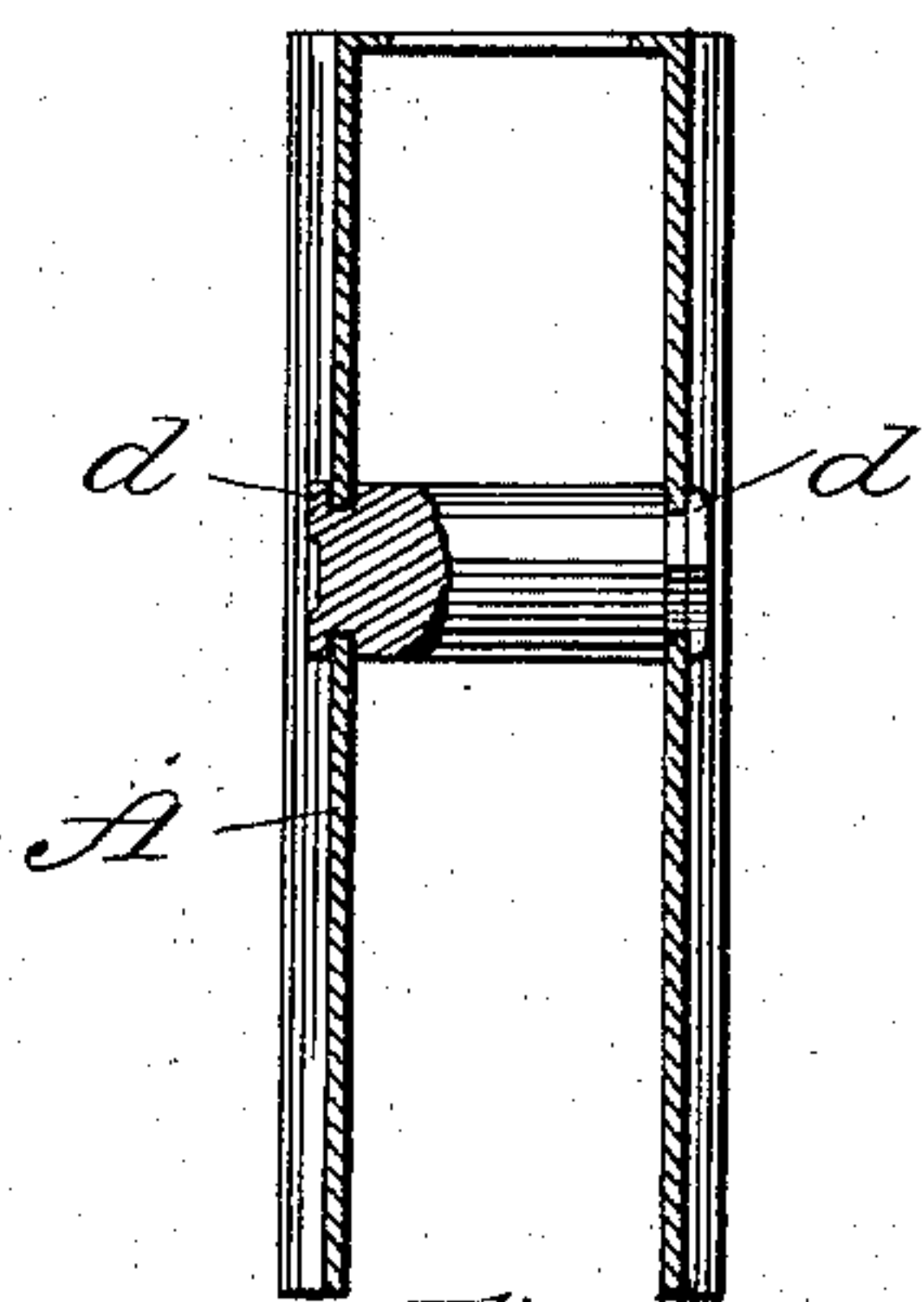
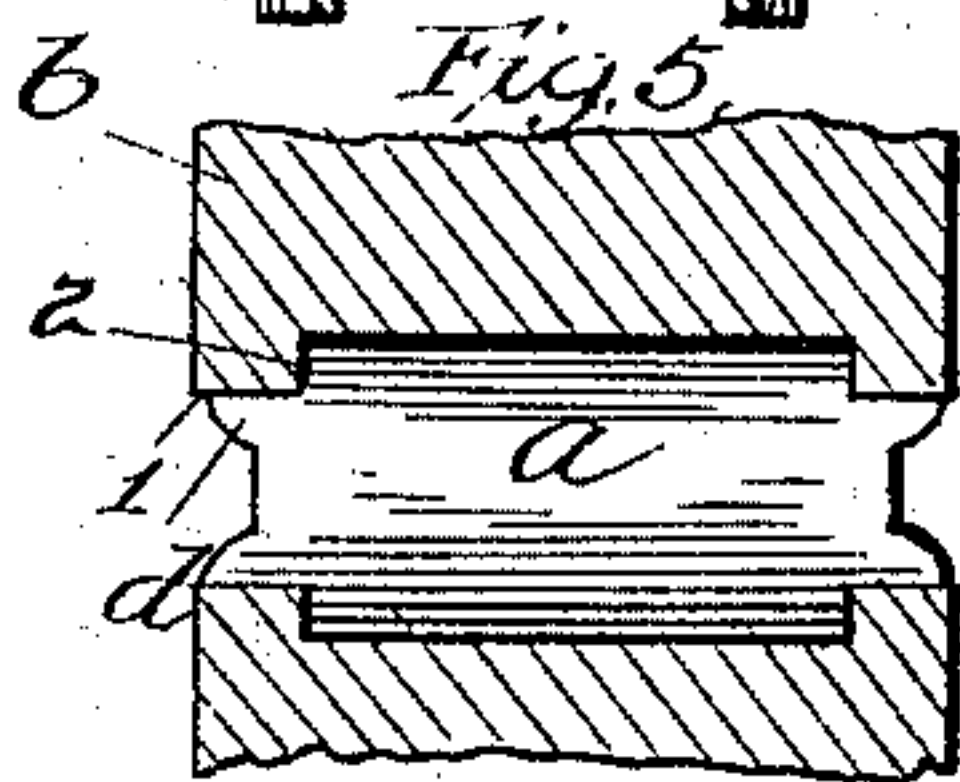


Fig. 4.



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UNITED STATES PATENT OFFICE.

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RIVET.

SPECIFICATION forming part of Letters Patent No. 559,276, dated April 28, 1896.

Application filed February 3, 1894. Serial No. 498,978. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. FOX, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Rivets, of which the following is a specification.

My invention is a rivet designed more particularly for use in connection with the sheaves of sash-pulleys, but it is not confined to such use.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows the rivet in side elevation. Fig. 2 is an end view of the same. Fig. 3 shows a central longitudinal section. Fig. 4 shows the rivet in connection with the shell of a sash-pulley, the figure being a partial transverse section of the shell taken centrally through the rivet. Fig. 5 is a diagram illustrating the method of manufacturing the rivet. Fig. 6 is an end view, and Fig. 7 a longitudinal section, of the dies ordinarily used.

In the manufacture of sash-pulleys of the class illustrated in the accompanying drawings it is desirable that there should be a shoulder upon the rivet which connects the walls of the sheaves, and serves also as a spindle on which the wheels turn, in order to prevent the walls from being pressed together when the rivet is headed. It is also desirable that the ends of the rivets should be square or of some polygonal shape, in order to prevent the rivet from turning with the wheels, which would in a short time render the pulleys useless. A round rivet having square or polygonal ends is also desirable or necessary in other connections. I have therefore adopted a round rivet, for the purpose above specified and for analogous purposes, having a polygonal end and a shoulder.

In the manufacture of shouldered rivets by the methods heretofore used there is a waste of material, which in short rivets amounts to about ten per cent. of the stock. These are usually made by milling the rod, by means of which a portion of it is cut down or reduced in diameter, forming two shoulders, and the reduced part is severed by means of another tool, removing a part of the center and leaving two reduced ends. The waste is equal, of course, to the thickness of

the severing-tool. Further, the milling-tool, which cuts the shoulders, wears rapidly, and as it becomes dull at the corners it leaves the shoulders rounded about the base of the rivet, and at the same time changes the bearing-surface and shortens the reduced end of the rivet, which in work of the class above indicated is so materially defective that it is necessary to sharpen the tool several times during the course of a day's work.

In order to head over an ordinary rivet having a plain end as formed by the ordinary cutting-tool, it is necessary to strike the end a number of blows in order to force the stock of the rivet over the top of the material on which it is to be clamped.

The rivet is formed out of a round rod, which is first preferably cut up into pieces of the proper length for the required rivet, and this may be done by a shearing action, which will not waste any of the material. The pieces are then placed in any suitable holder or in suitable beds adapted to hold them in proper position, and then by means of a suitable tool—such, for example, as that shown in the diagram, Fig. 5, or in Figs. 6 and 7, having a plain face or faces and a plain side or sides at right angles to the face—a part of the shoulder and one face of the rivet end are formed either by a blow or pressure upon the tool. This method is illustrated in the diagram of Fig. 5, in which *a* indicates the section of the rod forming the blank for the rivet, and *b* the tool. The plain face of the tool is shown at 1 and the plain side at 2. The tool being thus struck or forced down flattens the rounded side of the end of the rivet-blank, leaving a shoulder, and forms a plain face. As the metal yields at the point of least resistance, it is forced over at the extreme end by the pressure of the tool and forms a lip *d*. The other sides are formed in the same manner, or may be formed better all at once by the dies shown in Figs. 6 and 7. It is better to form four sides, although in some cases one side and shoulder only may be sufficient. In the practical manufacture of these rivets I strike up the four sides simultaneously, and thus form four segmental shoulders, four plain faces on the sides of the rivet end, and four lips *d*, projecting axially and consisting of the surplus metal thus forced over the

plain end of the blank. When the rivet is thus completed, (and both ends may be at the same operation,) the extreme ends are hollow, and the lips project axially on all the sides, with the metal highest at the edges or in the same plane with the sides.

In applying this rivet (for example) to the shell A, which is punched with square holes in its walls, the rivet is inserted with its ends in its holes, and it is then necessary only to place it under an ordinary punching-press with formers suitably shaped to come into contact with the end faces or top and bottom of the rivet. As the metal again yields in the direction of least resistance, the pressure forces the lips outward over the face of the walls, thus locking the rivet securely in place. In this only one operation is necessary, whereas in riveting with a hammer it is necessary to let the hammer operate on both sides of the rivet. With this form of rivet the metal which is in the lips forms an elongation of the rivet and is returned in the upsetting process to form the lock, and this also constitutes a saving in the stock. The shoulders when the rod is round will be segmental in form, and the ends of these segments will connect with

the contiguous segmental faces, thus forming, practically, a continuous face all around the rivet. When the rivet is formed of a blank cut in the proper length and the lips above described are formed by forcing the metal over the ends, the rivet is practically elongated.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A rivet consisting of a round body having shoulders and a polygonal end consisting of lips with plain front faces constituted of metal forced from the body of the blank, substantially as described.

2. A rivet consisting of a round body having shoulders and a polygonal end, each side of which is a lip having a front face and a curved rear face of less depth than the front face and constituted of metal forced from the body of the blank, substantially as described.

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

WILLIAM R. FOX.

Witnesses:

JNO. DUFFY,
EARL STOKOE.