G. CHRISTENSON.

PISTON PACKING EXPANDER.

APPLICATION FILED NOV. 21, 1910.

984,888. Patented Feb. 21, 1911

Fig. 1.

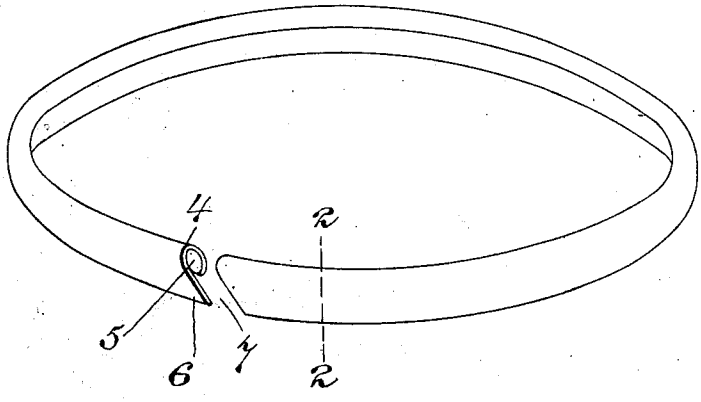
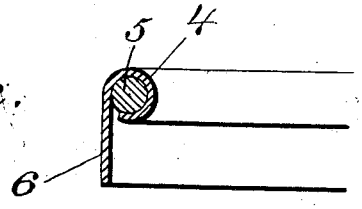


Fig. 2.



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PISTON-PACKING EXPANDER.

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To all whom it may concern:

Be it known that I, GEORGE CHRISTENSON, a citizen of the United States of America, residing at Nevada, county of Vernon, State of Missouri, have invented certain new and useful Improvements in Piston-Packing Expanders, of which the following is a specification.

My invention relates to packing expanders for pistons, and is particularly adapted for use on pistons in the cylinders of air brakes.

My present invention is an improvement on the constructions shown in my Patent No. 862,540, dated Aug. 6, 1907, and that shown in patent to John Emory Meek, No. 924,087, dated June 8, 1909. In a packing expander for air brake pistons of the general character shown in my said patent it is desirable, both for economy of material, and for reasons of adaptability to existing structures, to make the flange portion as thin as possible, as set out in the patent to Meek above noted. But in order to secure the highest degree of elasticity and resiliency in the completed structure, it is necessary to use a highly tempered steel, and such highly tempered steel can not conveniently be drawn down to the thin flange desired, when the structure is made integral by the process of drawing through a die, which is the most economical method of manufacture. To avoid the difficulties arising from these conflicting conditions I have invented a composite structure in which the resiliency is furnished by a ring of spring steel of preferably circular cross section while the flange is formed of a thin strip of sheet steel which may be of low temper and less resiliency.

The best form of apparatus at present known to me embodying my invention is illustrated in the accompanying sheet of drawing in which:

Figure 1 is a perspective view of the expander ring, and Fig. 2 is a cross section on line 2—2 of Fig. 1.

Through the drawings like reference characters indicate like parts.

5 is the ring of highly tempered steel, preferably of circular cross section, which may be formed by cutting the required length from a steel rod of the proper size and bending to form a circle. 6 is a strip of thin sheet metal, or mild steel, cut from an ordinary sheet of such material. This thin strip of metal may be attached to the ring 5 in any convenient way, as by welding, but preferably I fasten it by bending a portion 4 of one edge of the strip about the ring 5, as shown in the drawings. Preferably the abutting ends of the circular structure so formed are cut diagonally, as indicated at 7 in Fig. 1.

The advantages of my invention include the production at low cost of a packing expander having the highest resiliency and the thinnest possible flange. The flange being formed of metal of low temper will bend without breaking, so that the possibilities of destruction in use and handling are decreased, as well as those in manufacture.

Various changes in shape and proportions of parts could be made in practice without departing from the principle of my invention. In some cases the ring 5 might be omitted if the bent strip of metal 6 had sufficient elasticity and resiliency, but preferably I employ the ring 5, as it can be given the necessary temper to produce exactly the graduated degree of resiliency desired for different sizes of cylinder and different degrees of air pressure, while it would be practically difficult if not impossible to give a very high temper to the thin strip 6 and then bend or draw it into the shape required.

Having, therefore, described my invention, I claim:

1. A piston packing expander having in combination a ring of elastic metal and a thin strip of sheet material fastened to the ring and forming a flange thereon, extending at right angles to the plane of the ring.

2. A piston packing expander having in combination a ring of elastic metal and a thin strip of sheet material wrapped around the ring and projecting at right angles to the plane of the ring to form a flange thereon.

3. A composite piston packing expander formed of a ring of spring steel of circular cross section, and a strip of sheet steel bent around the ring and projecting at right angles to the plane of the ring to form a flange from the outer side of the ring.

4. A composite piston expander formed of a ring of steel of high temper, and a strip of sheet metal of low temper and high duc-

tility fastened to the ring and forming a flange thereon, extending at right angles to the plane of the ring.

5. A composite piston expander formed of a ring of steel of high temper, and a strip of sheet metal of low temper and high ductility bent around the ring and projecting at right angles to the plane of the ring to form a flange from the outer side of the ring.

6. A piston ring packing expander comprising a [illegible] narrow strip of sheet metal having one edge curved back upon itself and the strip so formed bent into a circle with disconnected, but abutting ends, the short bent edge of the strip being on the inside of the ring so formed, and the long uncurved edge extending at right angles to the plane of said ring.

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