

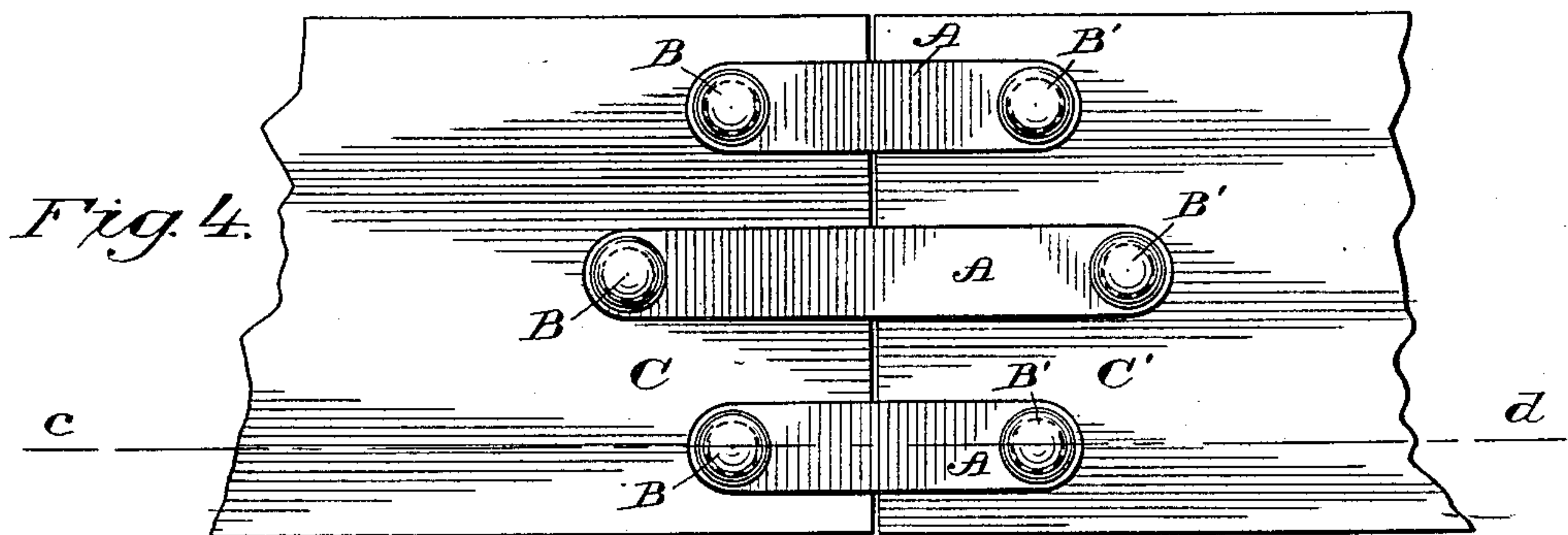
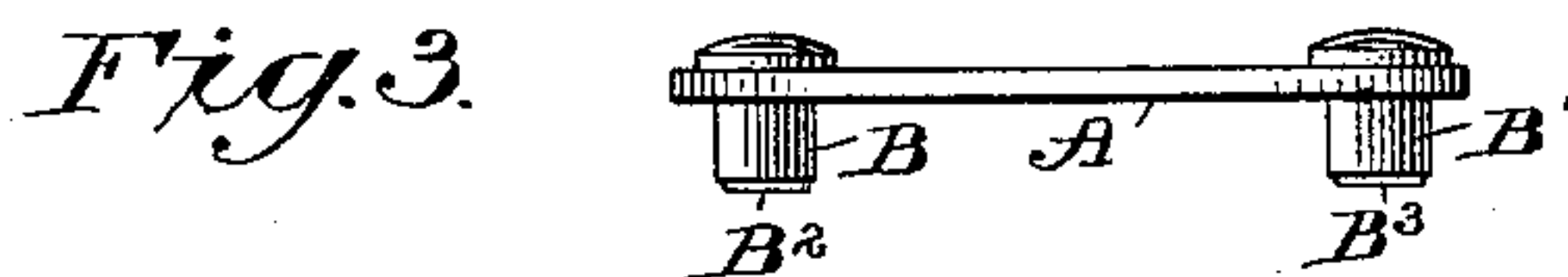
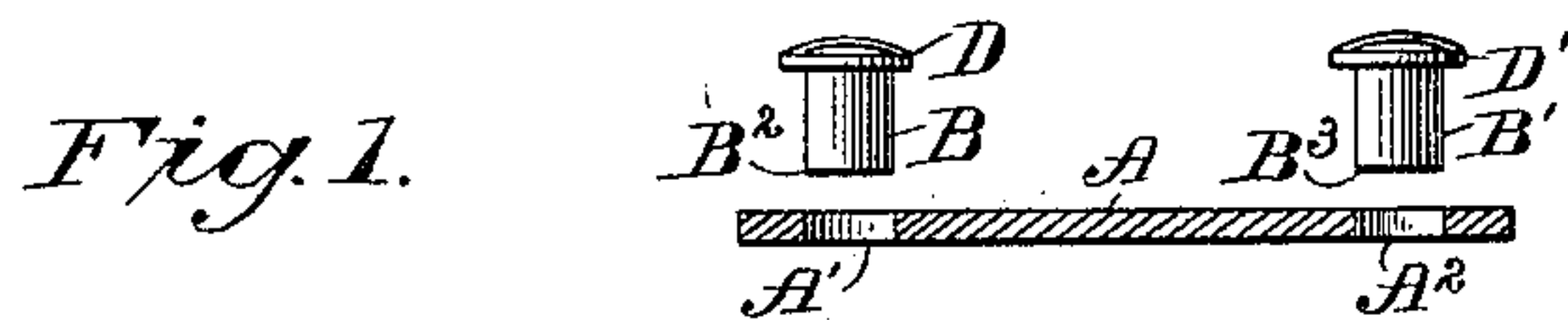
(No Model.)

J. BUTTERWORTH.

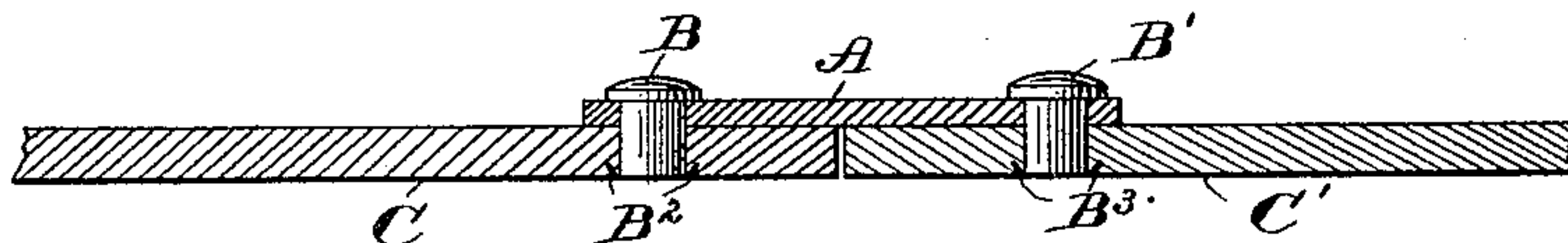
BELT FASTENER.

No. 366,924.

Patented July 19, 1887.



*Fig. 5.*



Witnesses

*Wm. J. Danner*  
*Geo. W. Rea*

Inventor

*James Butterworth*

By *his* Attorney *James L. Norris*

# UNITED STATES PATENT OFFICE.

JAMES BUTTERWORTH, OF ROCHDALE, COUNTY OF LANCASTER, ENGLAND.

## BELT-FASTENER.

SPECIFICATION forming part of Letters Patent No. 366,924, dated July 19, 1887.

Application filed November 29, 1886. Serial No. 220,177. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES BUTTERWORTH, a subject of the Queen of Great Britain, residing at Rochdale, England, have invented a new and useful Improvement in Belt-Fasteners, of which the following is a specification.

My invention has for its object to provide a durable and efficient fastener to be applied to leather and other driving-belts; and to this end the invention consists in the features of construction and combination of devices hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view taken on the line *a b*, Fig. 2, representing a metal piece having only one aperture at each end, and referred to herein as "strip," with the studs detached. Fig. 2 is a plan view of the strip shown in Fig. 1. Fig. 3 is a view showing the studs in position, and which constitutes my invention. Fig. 4 is a plan showing my fasteners in position on the abutting ends of two pieces of material, being portions of a belt. Fig. 5 is a sectional view on the line *c d*, Fig. 4.

When applying my fasteners in position, the strips *A* are placed so that each end shall be on the pieces *C C'* of the material, being the abutting ends of portion of a belt. The tubular studs *B B'*, having annular sharp or cutting edges *B<sup>2</sup> B<sup>3</sup>*, are placed in the apertures *A' A<sup>2</sup>* of the strips *A*, when in position, then pressed or forced into the material of the belt by percussive force. The tubular studs are formed at one end with solid heads extended laterally, to provide surrounding annular rims *D D'*, which are caused to seat or press onto the surfaces of the strips *A*, after which the studs are clinched on the under side, so as to secure them firmly in position, as in Fig. 5. The clinching is such that the thin cutting-edges of the studs are embedded in the belt itself, and thus a smooth surface is provided.

Upon referring to Fig. 4 it will be observed that the strips *A* are of different lengths, for this reason: The perforations or cuttings made by the annular cutting-edges of the studs *B B'* in the pieces *C C'* being distributed at various

parts of the material, the durability of the belt is not impaired or destroyed, as is liable to be the case in the event of cuttings being in line.

By the application of separate tubular studs in conjunction with a strip of flexible metal, as before described, a very effective belt-fastener is provided, as, the studs being so applied, the durability of the strip will not be diminished or its strength impaired, as is the case where hollow tubular projections are formed integral therewith.

The strips being made from a thin and ductile metal, so that they are flexible, and placed lengthwise, as shown in the drawings, the connected ends of a belt provided with such strips are allowed when passing over curved surfaces—such as the rims of pulleys—to lie close to or adhere thereto, whereby a too rigid condition or stiffness at such parts is avoided.

By constructing the tubular studs separate from the strip the belt-fastening can be produced at much less expense, and be much more durable than those fastenings where plates are punched and stamped up with tubular rivets.

Having thus described my invention, what I claim is—

1. A belt-fastening consisting of a flexible metal strip, *A*, having a hole at each end, and the separate tubular studs *B B'*, each having at one end a surrounding laterally-projecting rim, said studs being adapted to pass through the holes in the strip and a belt and to be clinched with the said rims resting on the surface of the strip, substantially as described.

2. A belt-fastening consisting of the flexible metal strip *A*, having end holes, and the separate tubular studs *B B'*, adapted to pass through said holes, and provided with solid heads extended to form lateral rims *D D'*, and having the annular cutting-edges *B<sup>2</sup> B<sup>3</sup>*, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES BUTTERWORTH.

Witnesses:

JOHN H. BUTTERWORTH,  
GEORGE COCKERILL.