G. E. PURPLE.

BELT FASTENER.

APPLICATION FILED MAR. 1, 1919.

1,382,799. Patented June 28, 1921.

Fig. 1.

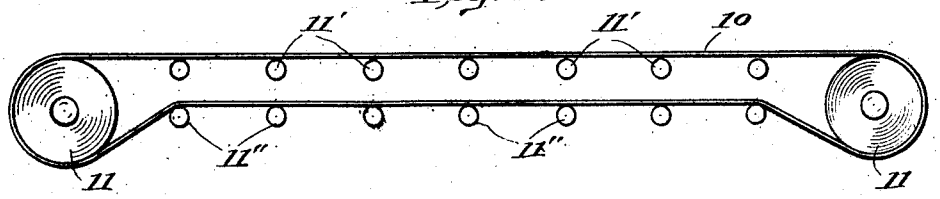


Fig. 2.

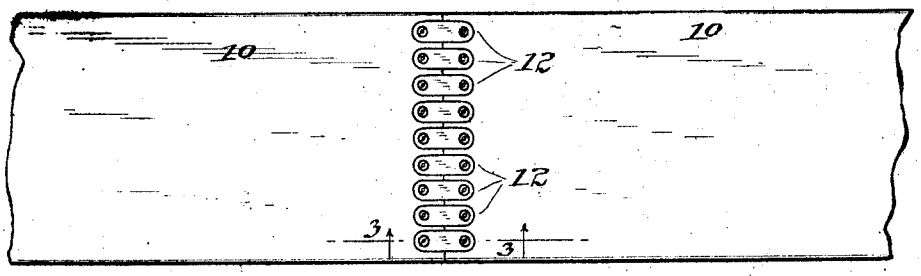


Fig. 3.

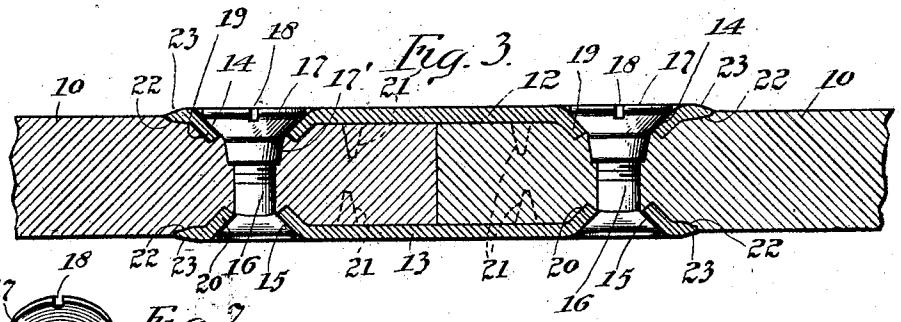


Fig. 7.

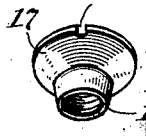


Fig. 4.

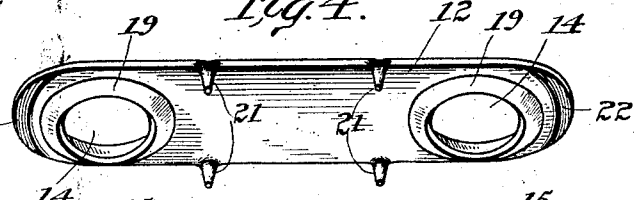
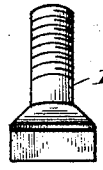


Fig. 6.



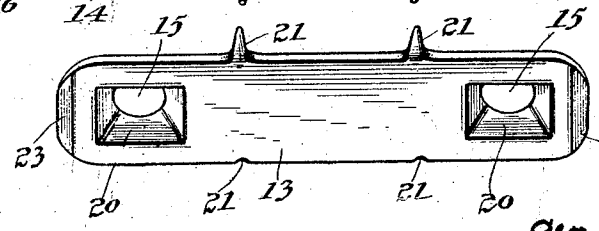


Fig. 5.

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Attys.

UNITED STATES PATENT OFFICE.

GEORGE E. PURPLE, OF LA GRANGE, ILLINOIS, ASSIGNOR TO FLEXIBLE STEEL LACING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BELT-FASTENER.

1,382,799. Specification of Letters Patent. Patented June 28, 1921.

Application filed March 1, 1919. Serial No. 279,965.

To all whom it may concern:

Be it known that I, GEORGE E. PURPLE, a citizen of the United States, residing at La Grange, in the county of Cook and State of Illinois, have invented new and useful Improvements in Belt-Fasteners, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to belt fasteners,—that is, devices designed to connect the adjoining ends of a belt.

The object of my invention is the production of a device of this character which will be of durable and economical construction, one which may be readily and easily applied, and one which will engage with the adjoining ends of the belt with great firmness and security. A still further object is the production of a fastener of the character mentioned which will rest flat against the opposite surfaces of the belt and which will be substantially flush therewith, so as to avoid the formation of an obstruction thereby. Other objects will appear hereinafter.

With these objects in view, the invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which—

Figure 1 is a side elevation of a belt of the type with which the device forming the subject matter of this application is especially designed for use, said belt being shown mounted for operation;

Fig. 2 is a top plan view of the adjoining end portions of the belt, said ends being shown connected with belt fastening devices embodying the invention;

Fig. 3 is an enlarged section taken on line 3—3 of Fig. 2;

Figs. 4 and 5 are perspective views of the opposing plates included in the construction; and

Figs. 6 and 7 are perspective views respectively of a bolt and its coöperating nut, used in connection with the plates shown in Figs. 4 and 5.

The preferred form of construction, as illustrated in the drawings, is designed for use especially in connection with a conveyer belt 10 used in the conveying of excavations or other material, the belt being of exceptionally heavy construction and being arranged to travel around drums 11 of comparatively large diameter. To support the belt in the travel thereof between the drums 11, two sets of rollers 11′ and 11″ are provided; the former for the support of the upper portion of the belt and the latter for the support of the lower portion of the belt. Such a belt is subjected, when in use, to excessively hard wear and severe strains, necessitating an exceptionally strong and efficient connection between the ends thereof, as will, of course, be readily understood.

The device which I have provided to fill this mission comprises two enlongated flat plates 12 and 13 adapted, when in use, to be arranged upon opposite sides of the belt in opposing or registering positions, so that said plates traverse the joint in the belt, as clearly seen in Fig. 3. Formed in the opposite ends of said plates 12 and 13 are alining openings 14 and 15 respectively adapted to accommodate connecting bolts 16 and their coöperating nuts 17. The nuts 17 are provided at their outer sides with screw-driver slots 18 to permit of engagement therewith of a suitable tool for rotating the same.

At the openings 14 and 15 said plates 12 and 13 are formed with inwardly inclined flanges 19 and 20 respectively. Said flanges 19 and 20 result in the formation of seats or countersunk portions adapted to snugly receive the nuts 17 and the heads of bolts 16, so that, in the application of the device to a belt, the outer sides of said nuts and bolt heads will be flush with the outer sides of plates 12 and 13, as clearly seen in Fig. 3. The flange 20 is of squared formation to receive the correspondingly formed heads of the bolts, whereby the latter are held against relative rotative movement.

The provision of the inwardly inclined flanges 19 and 20, in addition to resulting in the formation of seats or countersunk portions as just described, also results in the formation of inwardly extending projections adapted, in the application of the device to a belt, to sink into or depress the belt, thereby more firmly grasping or clamping the same,

with the result that a secure engagement of the belt is effected and pulling or tearing out of the device prevented.

To further aid in the effective engagement of the device with the ends of the belt, the plates 12 and 13 intermediate the bolt openings therein, are formed with inwardly extending prongs 21 which are adapted, in the application of the device to a belt, to pierce the latter as clearly seen in Fig. 3.

In order to provide a wide purchase between the nuts 17 and the bolts 16, so as to prevent the stripping of the threads, said nuts are formed at their inner ends with reduced extensions 17′ adapted to pass through the openings 14 so as to engage with a comparatively wide or long portion of said bolts. In the application of the device to a belt, the bolts used are longer than the thickness of the belt, so that after application of the nuts to the bolts, the threaded ends of the latter will protrude from the nuts and beyond the surface of the belt. These protruding bolt ends, after the nuts have been tightened to the point desired, will be sheared off through the medium of a suitable shearing device. In this shearing of said ends of the bolts, the latter are made flush with the outer sides of the nuts, and in the shearing operation the ends of the bolts are mutilated or distorted to such an extent as to lock the nuts thereon, preventing accidental detachment therefrom.

The ends of the plates 12 and 13 are beveled at their inner and outer sides as at 22 and 23 respectively. The beveling 22 at the inner sides of said plates obviates the possibility of cutting of the belt as might otherwise occur were square corners employed at these points. The beveling 23 at the outer sides of said plates avoids the formation of obstructions which might otherwise be formed and against which the rollers used in connection with the belt would pound in the operation of the belt. By beveling the ends of the plates the rollers will readily ride up thereon and thus entirely eliminate any pounding action.

In the connection of the adjoining ends of a belt, a plurality of connecting devices of the character described is employed, these devices being arranged side by side in spaced relation extending across the joint in the belt, as clearly seen in Fig. 2. When thus applied it will be seen that the connecting devices will lie flat upon the opposite sides of the belt, the outer sides thereof being practically flush with the corresponding sides of the belt avoiding the production of any obstructions, such as might interfere with the rollers about which the belt moves when in use.

Although the device is shown applied to a belt and this use thereof has been described and claimed, it is understood that the employment of the device is not confined to this use, but may be used in a multitude of different ways to connect the adjoining ends of other devices or members resembling in form the ends of a belt.

I, therefore, do not wish to be limited in this respect but desire to avail myself of the use of the device in any connection commensurate with the scope of the claims hereto appended.

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

1. A device for connecting the abutting ends of a belt, comprising two co-extensive plates engaging opposite sides of the belt and extending across the abutment of said ends; securing means extending between and connecting corresponding ends of said plates and passing through the belt; and countersunk seats provided in said plates for the ends of said securing means, said seats being so formed and disposed that they grip the belt as clamping force is exerted by the tightening of said fastening means, whereby the plates are embedded in the belt surface.

2. A device for connecting the abutting ends of a belt, comprising two opposing members engaging against opposite sides of the belt and each extending across the abutment of said ends; securing means extending between and connecting said members and passing through the belt, said members having openings to accommodate said securing means; and projections on the inner sides of said members surrounding said openings and engaging the belt, to cause said plates to become substantially flush with said belt when said fastenings exert a clamping pressure.

3. A device for connecting the adjoining ends of a belt, comprising two opposing members extending across the junction of said belt ends and having openings; securing means extending between and connecting said members and passing through the belt and the openings in said members; and enlargements at the ends of said securing means, said members being countersunk to accommodate said enlargements and to form inclined projections on the inner sides of said members surrounding said openings for engagement with the belt.

4. A device for connecting the adjoining ends of a belt, comprising two opposing members extending across the junction of said belt ends and having openings; securing means extending between and connecting said members and passing through the belt and the openings in said members; enlargements at the ends of said securing means, said members being countersunk to accommodate said enlargements and to form inclined projections on the inner sides of said members for engagement with the belt; and

inwardly extending belt engaging projections on said members intermediate said first mentioned projections.

5. A device for connecting the adjoining ends of a belt, comprising two opposing members extending across the junction of said belt ends and having openings; headed bolts passing through the belt and said openings; nuts threaded on said bolts, said members being countersunk to accommodate said nuts and the heads of said bolts, said nuts being formed to pass through the corresponding openings in said members; and extensions of reduced diameter on said nuts passing through the corresponding openings in said members.

6. A device for connecting the adjoining ends of a belt, comprising two opposing members engaging against opposite sides of the belt and having openings; headed bolts passing through the belt and said openings; nuts threaded on said bolts, said members being countersunk to accommodate said nuts and the heads of said bolts, the countersunk portions of said members engaged by the heads of said bolts being formed to prevent relative rotation of said bolts.

7. A device for connecting the adjoining ends of a belt, comprising two opposing members engaging against opposite sides of the belt; securing means having enlarged ends extending between and connecting said members and passing through the belt, said members having countersunk openings to accommodate said enlarged ends and the countersunk portions being surrounded with inwardly extending inclined projections which engage the belt, and the ends of said members being beveled at their inner and outer sides.

8. A device for connecting the abutting ends of a belt, or the like, comprising two opposed plates lying on opposite sides of said belt and each extending across the abutment of the belt portions, said plates being beveled on their outer and inner sides at the ends thereof whereby no substantial change in the plane faces of the belt is apparent, adjustable means provided with enlarged head portions for securing said plates together, said plates also being provided with registering openings which are surrounded with inwardly extending inclined countersunk portions to engage said belt and to seat the enlarged portions of said securing means.

In witness whereof, I have hereunto subscribed my name.

GEORGE E. PURPLE.