

July 21, 1942.

G. H. DEIKE, JR., ET AL

2,290,318

SAFETY BELT

Filed July 29, 1940

Fig. 1.

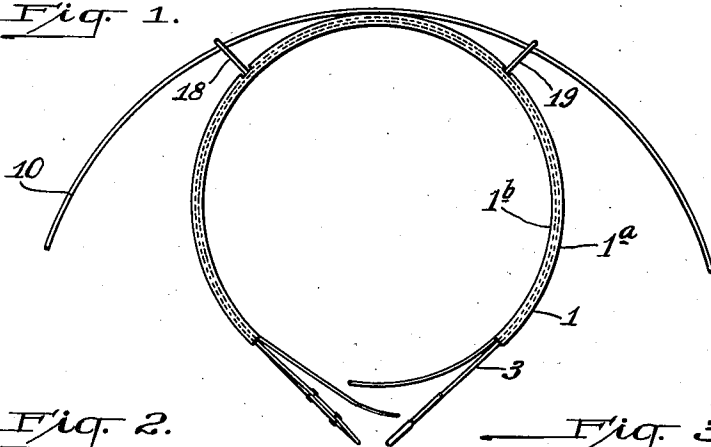


Fig. 2.

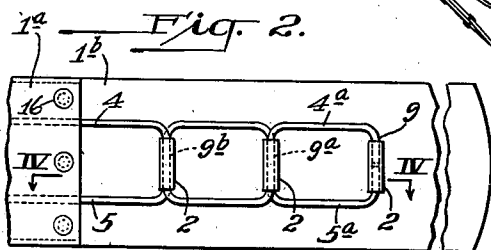


Fig. 3.

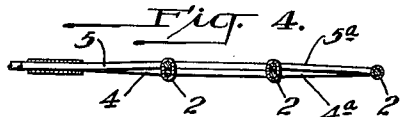
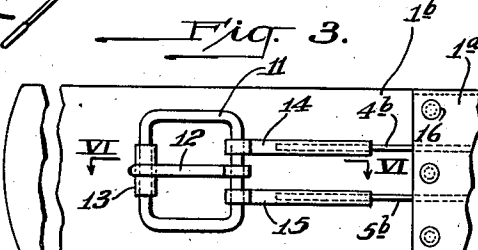


Fig. 6.

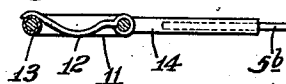


Fig. 5.

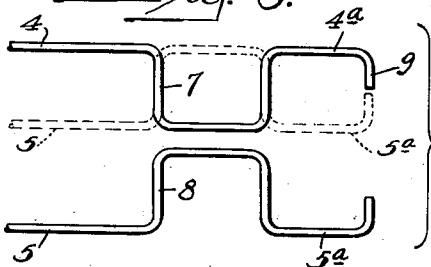


Fig. 7.

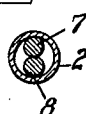
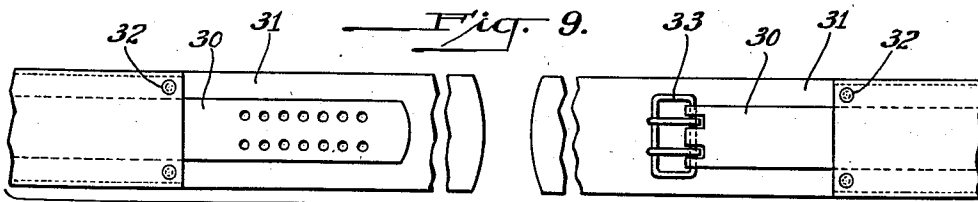


Fig. 8.



Fig. 9.



BY

INVENTOR,
George H. Deike, Jr.
Robert D. Tunney
Frank E. Foot
their ATTORNEY.

UNITED STATES PATENT OFFICE

2,290,318

SAFETY BELT

George H. Deike, Jr., Wilkinsburg, and Robert D. Tunney, Pittsburgh, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Application July 29, 1940, Serial No. 348,266

4 Claims. (Cl. 227—49)

This invention relates to an improvement in the construction of a safety belt such as used by construction workers, window cleaners and others who require a belt adaptable to withstand sudden shocks and stresses of appreciable amounts, and, more particularly, to an improvement in a reinforcement for a fabric belt which is inexpensive in construction, possessing greater strength, and by which an assembly provides a belt more adaptable to the many uses to which this type of belt may be applied.

Heretofore safety belts of the type contemplated have been made of fabric material, and in some instances, they have been reinforced by material stronger than the fabric, but it has been found that a belt, which possesses sufficient tensile strength to withstand the stresses that may be applied to the belt, increases the cost or the overall weight of the belt beyond a practical measure or is made in such a manner that it is uncomfortable to wear or is inconvenient in use.

It is among the objects of this invention to provide a safety belt which is inexpensive in construction and which includes a reinforcement that can be readily fabricated and applied to a fabric construction and which is comfortable, convenient in use, light in weight, and is suitable for all purposes.

In the drawing, Fig. 1 is a plan view illustrating an embodiment of our invention in a belt of the type commonly used by window cleaners.

Fig. 2 is a fragmentary view illustrating the construction of one end portion of an embodiment of our invention.

Fig. 3 is a fragmentary view illustrating the other end portion of the same embodiment illustrated in Fig. 2.

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 2.

Fig. 5 is a fragmentary view illustrating in detail the construction of the two components and their assembly to provide the end portion illustrated in Fig. 2.

Fig. 6 is a sectional view taken along the line 6—6 of Fig. 3.

Figs. 7 and 8 are views in section illustrating one method of attaching portions of each of the components to provide the assembly illustrated in Fig. 2.

Fig. 9 is a fragmentary view illustrating another embodiment of our invention.

While this invention is illustrated in connection with the provision of a safety belt adaptable

for such uses as required by window cleaners in which a support to be connected to two rigid members is connected to the belt, it is to be understood that this in no way is to be construed as a limitation of the application or extent of our invention.

Referring to Fig. 1, the safety belt is illustrated as being composed of a body engaging member 1 which may be made of fabric material and in such a form that it is adaptable to support a reinforcement, and as illustrated, it is in the shape of a sheath and supports a metal reinforcement 3. The reinforcement is placed between the outer layer 1a and the inner layer 1b, each layer being fastened to the other along the edges, as by sewing or rivets. The metal reinforcement 3 is illustrated in Figures 1, 2 and 3 as being composed of two longitudinal cable or wire members 4 and 5 which extend completely around the fabric 1 and beyond so as to provide sufficient extending portions to which engageable means may be attached or from which such engageable means may be formed. It is preferred that the fabric 1 have sufficient length so that its ends can be lapped one over the other in order to provide ample cushioning against the pressure occurring at the location of the engageable means connecting the cable members.

The embodiment illustrated in Figures 1, 2 and 3 is important because by this construction an inexpensive reinforcement is made which is completely fabricated from the two longitudinal wire members except for accessories which are needed in making the fabrication. Referring specifically to Figures 2, 4 and 5, the similar end portions 4a and 5a of the cable members 4 and 5, respectively, are formed into an S-shape such as illustrated in Fig. 5 and with the shape of the one member 4 being opposite in arrangement to that of the cable member 5 so that by positioning one member on to the other, spaced lateral adjustments are provided along the length of the members. This shape is advantageous in that in addition to providing the lateral spaced portions, it also provides closed loops when assembled for retaining a fastener such as illustrated in Fig. 2. A further advantage in this construction is that tubular sleeves 2 can be used to connect the lateral portions together by the application of power presses. This is illustrated somewhat diagrammatically in Figure 7 in which a sleeve is shown as enclosing the lateral portions 7 and 8 of each of the members, and Figure 8 illustrates the result of the application of pressure by which a lateral portion

of one member is rigidly connected to a lateral portion of the other. The extreme end portion of each member is arranged and oppositely disposed relative to the other so that when assembled, the ends engage each other and provide the initial adjustment for the belt.

While the shape of the members has been described specifically, it is recognized that other arrangements can be made which would employ our invention. One method of assembly of an end portion of a reinforcement having these characteristics is to first insert a sleeve 2 into the ends to form the initial lateral portion 9, and then the other ends of the cables are woven through successive sleeves 2 to provide lateral portions 9a and 9b and in a manner such as is obvious from the resulting construction. The remaining portions of the cables 4 and 5 are then inserted into the sheath and sufficiently so that the end portions 4b and 5b of the cables 4 and 5 respectively are available and disposed in an opposite direction and to which an engageable means such as a buckle 11 can be connected. Another method of assembly would be to use a form of a split sleeve which may be welded or fastened together by the application of a power press or it may be suitable to weld directly the lateral portions together.

In connecting a suitable buckle or engageable means 11 to the end portions 4b and 5b, an inexpensive assembly is illustrated in Figs. 3 and 6 which consists of the use of tubular members or sleeves 14 and 15 similar to sleeves 2 which are connected to the end portions 4b and 5b, respectively, by the use of a power press or any other suitable means. The sleeves are provided with suitable openings to accommodate a buckle which may be made of a metal wire strip by shaping it in the form of a loop after passing the strip through the openings in the sleeves and an opening in a pin 12. The ends of the loop may be welded together or fastened by means of a sleeve 13 such as used in connecting the buckle to the cables. In order to position and support the cable members 4 and 5 in spaced relation, it is advisable to use rivets 16 which can be arranged in some such manner as illustrated and which are ample to support the cables in their necessary supporting and spaced position.

With this construction, it is possible to fabricate the whole assembly inexpensively and with materials and equipment that are readily available in the manufacture of belts, and the important advantage is that a belt is provided which possesses sufficient strength to withstand the utmost of stresses that may be applied to this type of belt and which is convenient in use and light in weight. Fig. 1 illustrates the application of this belt to a support 10 and the yokes 18 and 19 engaged to the support are fastened directly so that all the stress applied to the belt is applied directly to the cable members. This member 10 is ordinarily connected to rigid supports from which the wearer is supported.

In Fig. 9, the reinforcement consists of a flat strip of metal 30 which is passed through a sheath 31 similar to sheath 1 of Figures 1, 2 and 3. This member 30 is positioned within by means of rivets 32 which hold the strip member centrally of the sheath. To one end of the reinforcement is connected a buckle 33 and the other end has suitable openings therein to accommodate the engaging members of the buckle. With this arrangement, a suitable lightweight rein-

forced belt is provided and by which it amply reinforces the fabric material to withstand all of the stresses and shocks which may be applied.

It is preferred that the parts used in the reinforcement be made of a stainless steel metal in order to eliminate any objectionable corrosion or deterioration, but ordinary steel or other sufficiently strong material can be used if treated in such a manner as to eliminate corrosion and deterioration.

Other modifications can be made of this invention and it is intended that it be limited only by the scope of the appended claims.

We claim:

1. A reinforced fabric body belt comprising a sheet of fabric material, a pair of longitudinal spaced members within the sheet, an engageable means connected to a similar end of each member, a portion adjacent the opposite end of each member being shaped and arranged relative to each other so that each engages a similar portion of the other to provide spaced portions at intervals longitudinally of the belt and means to permanently bind the engaged portions of each of the members together.

2. A reinforced belt comprising a sheath of fabric material, a reinforcement comprising a pair of longitudinal members within the sheath and positioned in spaced relation to each other, an engageable means connected to a similar end of each member, a portion adjacent the opposite end of each member being shaped to provide in cooperation with the other laterally extending enclosed portions relative to the length of the members and at spaced intervals longitudinally of the member, the shaped end portions of each member being arranged so that portions of each member are in juxtaposition to each other, and means to rigidly bind the juxtaposed portions of each member together to effectively join the ends of the longitudinal members together and to provide spaced lateral means operative with the engageable means connected to the opposite ends to fasten the belt onto the wearer.

3. A reinforced body belt comprising a sheath of fabric material having a length sufficient to extend around the body and to lap one end portion over the other, and a reinforcement comprising a pair of cable members within the sheath and positioned in spaced relation to each other and extending longitudinally thereof, a tubular member swaged to an end portion of each of the members, an engageable means being pivotally connected to each of the tubular members, each of the other end portions of the cable members being S-shaped and in a reverse manner relative to the other and with the lateral portions spaced similarly longitudinally of the cable members, and similarly laterally spaced portions being bound together by a swaged tubular member to join this end of each member together and provide longitudinally spaced lateral means operative with the engageable means to adjust the belt to the wearer.

4. A reinforced body belt comprising a sheath of fabric material having a length sufficient to extend around the body and to lap one end portion over the other and a reinforcement comprising a pair of wire cable members within the sheath and positioned in spaced relation to each other and extending longitudinally of the sheath, a buckle, a tubular member swaged to an end portion of each of the members, the buckle being pivotally connected to an end of each of the

tubular members, each of the end portions opposite to the ends connected to the buckle being S-shaped and in a reverse manner relative to each other and with the lateral portions spaced similarly longitudinally of the cable members, the 5 similarly spaced lateral portions being bound together by a swaged tubular member to join this

end portion of each member together and to provide longitudinally spaced lateral means included as a part of a closed loop and operative with the engageable means to provide an adjustment in joining the ends together.

GEORGE H. DEIKE, JR.
ROBERT D. TUNNEY.