May 31, 1955 A. P. ANDERSON 2,709,393

REFLECTIVE BELT AND STORAGE BUCKLE

Filed Sept. 27, 1954

Fig. 1.

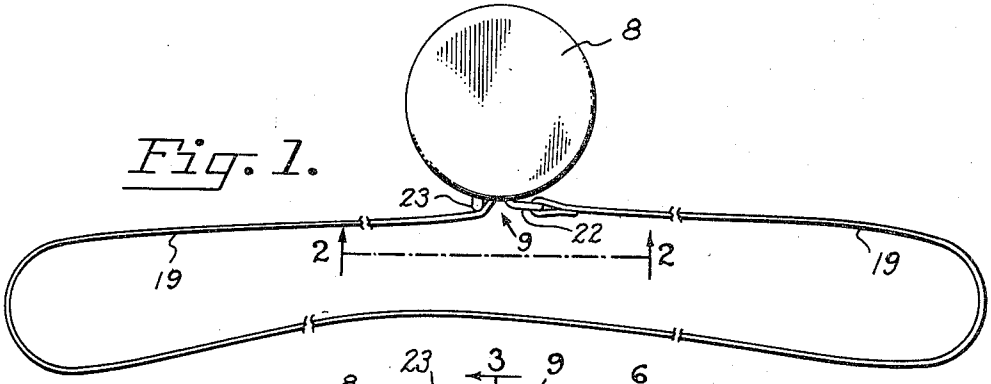


Fig. 2.

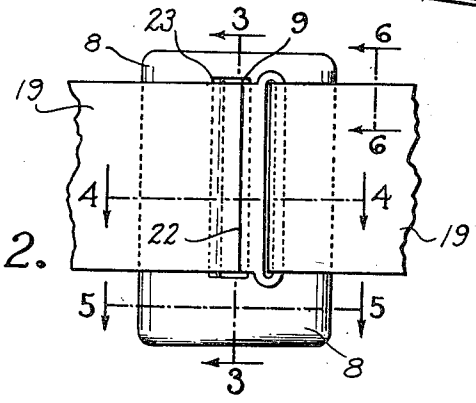


Fig. 3.

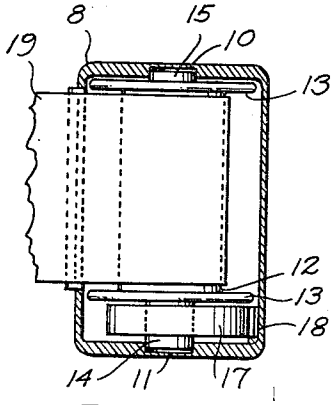


Fig. 4.

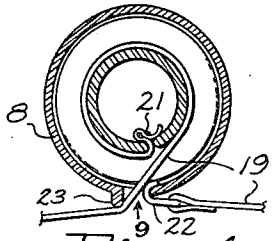


Fig. 6.

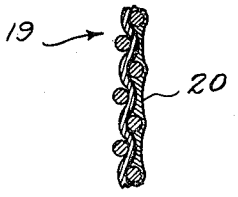


Fig. 5.

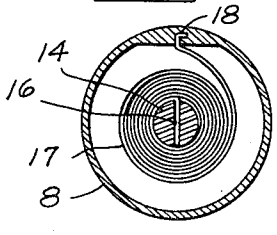
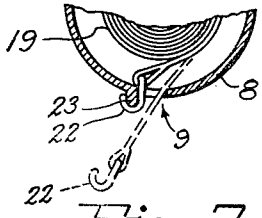


Fig. 7.



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2,709,393

REFLECTIVE BELT AND STORAGE BUCKLE

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Application September 27, 1954, Serial No. 458,474

5 Claims. (Cl. 88—80)

This invention relates to a reflective retractile belt and buckle adapted to encircle the body of a wearer and serve as a light reflective warning of the presence of the wearer upon or adjacent to a roadway after dark.

Hundreds of pedestrians, hikers, workers, cyclists, and others who walk or work upon or adjacent to the highway are killed each year by motor vehicles. In the United States and Canada, a majority of these deaths arise after dark as a result of the inability of a motorist to see the person walking or working upon the highway. Citizens everywhere are appalled by this needless slaughter. As a result, safety organizations have been founded, educational pedestrian safety campaigns launched, special laws enacted by local and national legislatures, and police enforcement of pedestrian safety laws greatly intensified. In furtherance of this recent common effort towards protection of the pedestrian and walker, I have determined to take direct action. Thus, my inventive efforts have been turned toward the provision of a safety device which will warn motorists by generating a bright, attention attracting signal by reflection and thus will protect the life of those walking or working upon the highway after dark. More specifically, my invention provides a brilliantly reflective warning which is worn about the waist of a pedestrian and which reflects the headlights of an approaching vehicle. This reflection is visible for a long distance and thus serves to warn motorists of the presence of a person on or adjacent the roadway in a position of potential danger.

One object of my invention is to provide a belt which is small and compact for ease of storage, yet which is brilliantly reflective so as to serve a maximum attention attracting function when worn and displayed on a traveled highway after dark.

In brief summary, my safety device consists of a buckle element which is defined by a hollow cylindrical case having a longitudinal slot opening therethrough and having a spool member journaled within the case. An elongated flexible fabric belt extends through the slot and is wound about the core of the spool. Spring means within the hollow case yieldably bias the belt towards retraction within the case for storage yet allow the belt to be withdrawn for use. In addition, the outer terminal end of the belt carries a hooked clasp for detachable engagement either with an edge of the aforementioned slot in the case when the belt encircles the body of the wearer or with a separate keeper means when the belt is to be stored. To serve the warning and safety function, the inner face of the belt is coated with a brilliantly light reflective material and it is this face which is exposed to view when the belt is worn about the body.

In functional qualities, the above described safety belt will be seen to be portable and easily carried in the pocket when not in use. Further, the belt is retractile into the protective case when not in use so as to protect, shield, and preserve the reflective qualities of the coating. That is to say, the brilliance of the reflective coating easily is diminished by dirt, wear or abrasion. By

providing a protective case and by winding the belt about the spool with the reflective coating faced inwardly, cleanliness and quality of the light reflective material are preserved and protected.

If the safety belt as above described is to be of a maximum effectiveness, it must be made available to and actually must be used in large numbers by pedestrians, hikers, workers, cyclists, and others who walk or work upon the highway. In furtherance of this purpose, it is one object of my invention to provide a reflective safety belt which is extremely simple to use, is attractive and eye catching in appearance, and is of maximum efficiency for its intended warning function. At the same time, my belt is of minimal expense in fabrication and sale cost so that large numbers of persons can afford to purchase the same in service to the mass market which is available for such a safety device.

Various types of warning or safety belts heretofore have been suggested for wear by pedestrians upon the highway. A typical form is a regulation belt and buckle, such as a man's belt, but equipped with reflective glass beads or other reflective surface material. A similar device is a Sam Brown type belt with jeweled reflectors or the like for use by school boy patrolmen. Each of these prior belts possess certain disadvantages and one object of my invention is to provide an improved belt which eliminates these disadvantages. Thus, it is a common propensity of a human being that he does not like to be bothered or put to the trouble of carrying a conspicuous, a weighty or a bulky reflective belt with him. Neither does he care to adjust or to put on a complicated form of belt unless it is absolutely essential. Accordingly, the safety belt and buckle of my invention are fabricated, as an article of manufacture, in a small hollow case of minimum weight and size. In fact, it easily fits in a pocket or the palm of the hand, the over-all size being less than half that of a package of cigarettes. The belt itself is retractable within the case and no complex buckle or snap is required as the case itself provides a keeper for retaining the belt in an extended or display position about the body of the wearer. Because of this compact, unitary construction, the case can be carried in the pocket of a coat, jacket or trousers and the propensity of a human not to be bothered or to take the trouble to carry a safety type warning device is overcome. Additionally, the simplicity with which the belt can be withdrawn from the case, brought about the body of the wearer and locked in place allows even small children readily to grasp the function of the device. Still further, but one size of the safety belt need be manufactured and, since this size is sufficient to encircle the body of the largest person, it provides a universal fit. This factor further reduces fabrication cost and allows the belt to sell at an inexpensive, competitive price.

Another object of my invention is to provide a brilliantly reflective belt which is effective as a safety warning device when worn about the body and over the outer garments by pedestrians, cyclists, equestrians, school boy safety patrols, hikers, policemen, motorists while changing a tire, and utility or other repair crews required to work upon or closely adjacent to a traveled highway.

These and other objects and advantages of my invention will be set forth in the following detailed description, taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a plan view of the safety device with the belt completely extended, yet foreshortened somewhat, the exposed surface of the loop being coated with a brilliantly light reflective material;

Fig. 2 is a detail view showing the non-reflective face of the belt and the hooked clasp which holds the belt to

the case, this view being taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a section detail, taken substantially on the line 3—3 of Fig. 2, showing the flanged spool which is journaled within the hollow case and the spiral wound spring which encircles one of the shafts of the spool;

Fig. 4 is a detail section, taken substantially on the line 4—4 of Fig. 2, better illustrating the manner in which the hooked clasp engages the edge of the slot in the case to retain the belt in the extended position while worn encircling the body of a person;

Fig. 5 is another section detail view, taken substantially on the line 5—5 of Fig. 2, showing the spiral wound spring as it engages one of the shafts of the spool and, at the opposite end, the cylindrical case which defines a buckle for the belt;

Fig. 6 is an enlarged detail section, taken substantially on the line 6—6 of Fig. 2, illustrating the difference between the two faces of the flexible fabric belt, one face being coated with a brilliantly light reflective material and the other face being left in the naturally rough condition in order to grip the clothing of a person wearing the belt; and

Fig. 7 is a partial detail, also in section and somewhat similar to Fig. 4, showing in full lines the manner in which the hooked clasp engages the radially protruding lip when the belt is retracted within the case and, in dashed lines, the manner in which the belt is unwound from about the spool with the light reflective coating on the inner face thereof so as to be protected against abrasion and wear.

In attention to that object of my invention which is to provide an inexpensive reflective belt and protective storage buckle, in service to the mass market available therefor, a majority of the parts and elements illustrated in the drawings are a polystyrene plastic material formed in a mold. Where separate pieces of this polystyrene plastic are to be joined, the pieces are immersed in a solvent and, thereafter, are welded together by pressure alone as will be understood by those skilled in the plastic art. By way of example, the protective storage buckle element consists of a hollow cylindrical case 8 formed with a straight longitudinal slot 9 which opens radially therethrough. This case is molded in two halves, and, for assembly, is immersed in a solvent followed by a pressing of the two halves together. This is an accepted method of assembly of polystyrene plastic parts and is one which is extremely simple and inexpensive to effect.

Referring initially to Fig. 3, it will be seen that the opposite inner ends of the plastic cylindrical case 8 are formed with circular recesses 10 and 11 which are disposed axially of the case. A hollow spool element 12 having radial flanges 13 is carried within the case 8. This spool is provided with protruding axial jack shafts 14 and 15 which are journaled in the previously mentioned recesses 11 and 10, respectively. In this manner, the spool is journaled for rotation within the case, yet space is provided intermediate the lower flange 13 and the end of the case for an additional element.

In Fig. 5, the lower jack shaft 14 is shown in cross section and it can be seen that a slit 16 is formed therein. This slit receives one end of a spiral wound band spring 17, the other end of which is fixed, as in 18, to a portion of the hollow case 8. Thus, the spiral spring 17 encircles the jack shaft 14 outboard or below the lower flange 13 yieldably to bias the spool 12 toward a position for retraction of the reflective safety belt as hereinafter will be described.

The reflective safety belt itself consists of an elongated flexible strip of fabric material 19 shown enlarged in cross section in Fig. 6. In this figure, the woof and warp of the woven fabric are magnified and enlarged to reveal the manner in which one face of the fabric belt is rough so as to inhibit slipping during use and the opposite face is coated and smooth as at 20. This coating 20 is a brilliant light reflective material such as microscopic glass beads dispersed through a transparent binder. It is applied to the fabric by the manufacturer and sold on the open market in 50-yard rolls in varying widths. I prefer to purchase this material in the width which is approximately one and one-half inches edge to edge so as to obviate the need to trim or cut the same except lengthwise. Accordingly, the width of the belt 19 is approximately one and one half inches, the thickness is less than one sixty-fourth inch, and the inner face 20 is coated by the manufacturer with the said light reflective material. The reflective material itself is available in various colors but I prefer to utilize a gray-colored fabric having a gray-colored reflective coating 20 thereon. When this material is used on a belt at night on the public highway, the headlights from oncoming vehicles reflect a white light from the face 20 to warn motorists of the presence of the wearer of the belt. In fact, tests have shown that the reflective quality of the coating 20 is more than 100 times that of the conventional white line on a highway. Such an exceptional brilliance allows a motorist sufficient warning to avoid the wearer of the belt. At the same time, the coating 20 is somewhat fragile in that abrasion and wear thereof will reduce the brilliancy. Similarly, dirt and other overlying coatings tend to decrease the brilliance of the belt and it is for this reason that I prefer to protect the belt by providing a structure which allows retraction inside a casing such as that shown in the drawings.

Referring to Fig. 4, one end of each section of the fabric belt is lapped and sewn as shown in 21. Thereafter, this end of the belt is slipped down through a slot in the spool 12 prior to assembly of the flanges 13. A substantial length of the fabric, preferably 46 to 48 inches in length, then is wound about the spool 12 with the terminal end protruding through the aforementioned slot 9. The spool then is assembled within the case 8 and the terminal end of the belt is provided with a hooked clasp 22 which also can be sewn with a lapped joint as shown in the drawings. This clasp is an important feature of my invention and will be described in detail.

It heretofore has been mentioned that the hollow cylindrical case 8 is pierced radially by an elongated straight-sighted slot 9. This slot is bounded, on one side, by an elongated radially protruding lip 23 (see Figs. 4 and 7). The clasp 22 is hooked so as to fit over this radially protruding lip 23, and, accordingly, I term the latter a "keeper" for the clasp. In similar manner, the thickness of the hollow case 8 is substantially identical to the width of the radial lip 23 so as to mate with the clasp 22 as shown in Fig. 4. Accordingly, this edge of the slot 9 also serves the function of a "keeper" as hereinafter will become apparent.

In use, the hollow case 8 is sufficiently small and compact to be readily carried in the pocket with the belt 19 retracted about the spool 12 and with the clasp 22 secured to the keeper 23 in the full line position of Fig. 7. It would be presumed that a motorist is carrying one of my retractable reflective belts in a clothing pocket or in the glove compartment of his automobile at a time when he is required to stop upon the shoulder of the highway to change a tire. Prudence and caution require that he strap the belt around his waist over his outer garment as a safety measure while on the highway. Initially, the position of the parts of the safety belt are as shown in full lines in Fig. 7. The hooked clasp 22 is grasped in one hand while the hollow case 8 is held in the other and the belt 19 is withdrawn (see the dashed line position of Fig. 7) and wrapped around the waist. During this withdrawal, it will be noted that the positioning of the reflective coating on the inner face of the belt avoids contact of the coating with the edges of the slot 9 and the keeper 23. This is an important provision since the reflective material is somewhat fragile and abrasion or wear soon would reduce the reflective quality thereof.

After the belt is wrapped about the waist, the hooked clasp 22 is secured within the straight side of the slot 9

as shown in the Figs. 1, 2, and 4. In this position, it will be noted that a portion of the belt **19** overlies the clasp **22** and tends to retain the same in hooked, positive engagement with the straight edge which bounds the slot **9**. This also is an important factor since, even though the motorist may move about and exercise considerably while changing the tire, the clasp **22** will remain in engagement and the belt will not fall off so long as the belt overlies the clasp.

Once the motorist has wrapped the belt around his waist, of course, the brilliant light reflective coating **20** will be exposed to view and will serve as a warning generated by light reflected from the headlights of oncoming vehicles. He thus can proceed to change the tire in comparative safety. At the same time, it will be appreciated that the reflective coating **20** is somewhat fragile and must be protected from dirt as well as from wear and abrasion. To this end, it is the inner face of the belt **19** which carries the coating **20** and this face always is tightly held against the backing when the spool is retracted. Referring to Fig. 7, when the belt is withdrawn from about the spool **12** and through the slot **9**, it is the rough backing on the belt which rubs against the edge of the slot **9** and is positioned against the outer clothing of the wearer. Thus, the rough character of this face of the belt helps to prevent slippage or movement when the belt is worn.

Other uses for my novel belt will, of course, present themselves. Thus, for example, the compact, light weight construction thereof and the ease and sureness of buckling or clasping are of primary utility to a cyclist. Such a person can carry the belt in a jacket or trouser pocket and, while still riding his bicycle, strap it about his waist when darkness approaches. The reflective warning signal thus generated by approaching or overtaking vehicles will protect the cyclist from danger.

Yet other uses by equestrians, members of the school boy patrol, hikers, policemen, children at play and utility or other repair crews are apparent. In summary of all these uses, it will be seen that I have provided a reflective retractile belt which is compact, light weight, and inexpensive. This belt is adapted for use in conjunction with a novel hollow case to encircle the body of a wearer and serve as a light reflective warning of the presence of the wearer upon or adjacent to a roadway after dark. The belt itself is brilliantly reflective so as to serve a maximum attention attracting function, yet, at the same time, is inexpensive to fabricate in service to the mass market available thereto. Further, the retractile quality of the belt serves to protect the somewhat fragile reflective coating against wear, abrasion, and dirt, and, at the same time, to provide a portable casing or buckle with which the belt can be carried about in a protected manner.

I claim:

1. As an article of manufacture, a portable buckle and retractile reflective belt to be worn about the body after dark as a safety measure, comprising a hollow protective case having a slot opening through the wall thereof, a spool member journaled within said hollow case, an elongated flexible belt extending through said slot and wound about said spool, that face of said belt which is the inner face in the wound position upon the spool being coated with a light reflective material having a high brilliance, the outer end of said belt carrying a hooked clasp means selectively for detachable engagement either with one edge of said slot or with a separate keeper means which protrudes from said case adjacent said slot, said belt being extensible and retractable in conjunction with rotation of said spool between a position where the belt is wound about said spool with said hooked clasp engaging said separate keeper means and a position where the belt is unwound and encircles the body of a wearer with said reflective coating exposed and said hooked clasp engaging said one edge of the slot.

2. As an article of manufacture, a buckle and retractile reflective belt to be worn about the body, said article comprising a hollow cylindrical case having a straight edged longitudinal slot opening radially therethrough, a spool member journaled axially within said hollow case and having a central cylindrical core bounded by radial flanges, an elongated flexible belt extending through said slot and about the core of said spool intermediate said flanges, spring means within said case rotatively bearing on said spool outboard of said flanges yieldably to bias the belt toward retraction within said case, that face of said belt which is the inner face in the retractile position being coated with a light reflective material, the outer end of said belt carrying a hooked clasp means for detachable engagement with one straight edge of said slot when the belt encircles the body of a wearer, and keeper means protruding radially from said case adjacent said slot for detachable engagement with and retention of said clasp when the belt is retracted within the case.

3. A retractile reflective safety belt with a protective storage buckle, comprising a molded hollow cylindrical plastic case defining a storage buckle and having a straight longitudinal slot opening radially therethrough, said slot being bounded by one straight longitudinal edge defining a first keeper element and by a radially protruding lip defining a second keeper element, a molded hollow plastic spool element journaled within said hollow case and carrying a flange at each end thereof, an elongated flexible fabric belt wound about and secured at one end to said spool intermediate said flanges, said belt being threaded through and beyond said slot and having two wide flat faces with a coating of brilliantly light reflective material on the inner one thereof, an elongated hooked clasp means sewn to the terminal end of said fabric belt and arranged to grasp said second keeper in the retracted position of the parts, and said hooked clasp being mateable and engageable with said first keeper element with an intermediate portion of the fabric belt overlying and flexibly bearing upon a portion of the clasp to retain the engagement of the clasp and first keeper in the display position of the parts.

4. A reflective belt retractable within a protective storage buckle, comprising a hollow cylindrical case defining a storage buckle and having a straight longitudinal slot opening radially therethrough, a radially protruding lip bounding one longitudinal edge of said slot to define a keeper element, the opposite inner ends of said case having circular recesses formed axially therein for the journaled reception of rotatable shafts, a flanged spool element journaled within said hollow case and having a protruding axial jack shaft at each end thereof rotatably carried by a corresponding one of said circular recesses, a spiral wound band spring encircling one of said jack shafts and joined at one end to that jack shaft and at the opposite end to said cylindrical case, an elongated flexible fabric belt wound about said spool intermediate said flanges and threaded through and beyond said slot, said belt having two opposite faces of substantially the same width as the length of said slot, a coating of brilliantly light reflective material carried upon the inner one of said wide faces, the opposite face of said belt having a rough surface so as to grip the clothing of a person wearing the belt, said belt being secured at the inner end thereof to said spool and carrying adjacent the outer end thereof an elongated hooked clasp means for grasping said keeper in the retracted position of the parts, and said hooked clasp being mateable and engageable with a straight bounding edge of said slot with an intermediate portion of said belt overlying and flexibly bearing upon a portion of the clasp to retain the engagement of the clasp and keeper in the display position of the parts.

5. A retractile reflective belt with a protective storage buckle, comprising a hollow cylindrical plastic case defining a storage buckle and having a straight longitudinal slot opening radially therethrough, a radially protruding lip bounding one longitudinal edge of said slot to define a keeper element, the opposite inner ends of said case having circular recesses, formed axially therein for the

reception of rotatable shafts, a hollow flanged plastic spool element journaled within said hollow case and having a protruding axial jack shaft at each end thereof rotatably carried by a corresponding one of said circular recesses, one of said jack shafts being longer than the other and carrying an axial slit intermediate the ends thereof, a spiral wound band spring encircling said last named jack shaft and joined at one end to that jack shaft through said slit and at the opposite end to said cylindrical case, an elongated flexible fabric belt wound about said spool intermediate said flanges and threaded through and beyond

said slot, said belt having two wide faces with a coating of brilliantly light reflective material on the inner one of said wide faces, said belt being secured at the inner end thereof to said spool and carrying adjacent the outer end thereof an elongated hooked clasp means for grasping said keeper in the retracted position of the parts, said belt being adapted to encircle the body of a wearer with said light reflective material exposed to view in the extended, display position of the parts.

No references cited.