June 6, 1950 H. ANDERSEN 2,510,674

SLING PROTECTOR

Filed Dec. 4, 1947

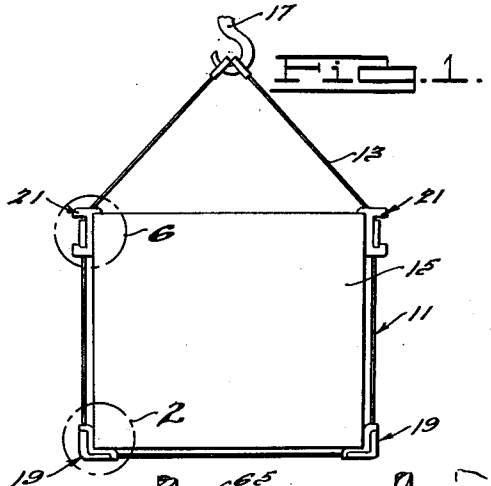


Fig. 1.

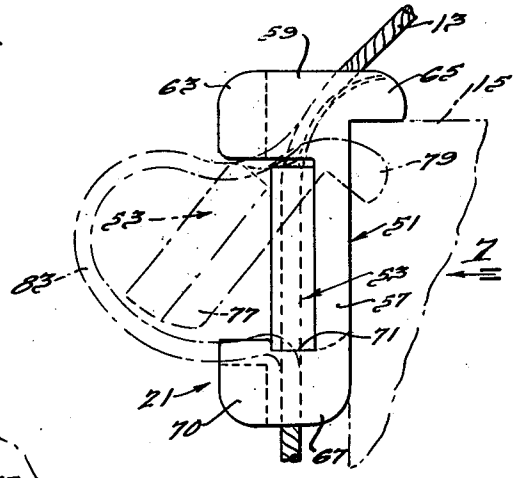


Fig. 6.

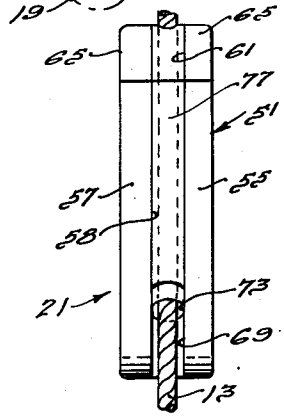


Fig. 7.

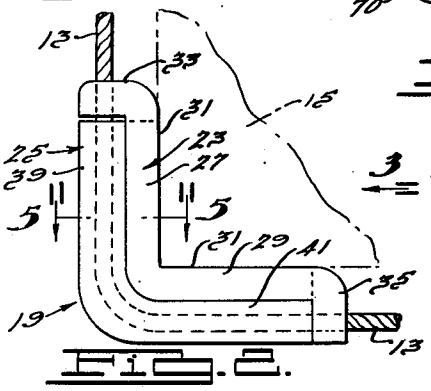


Fig. 2.

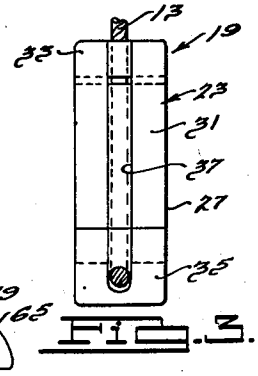


Fig. 3.

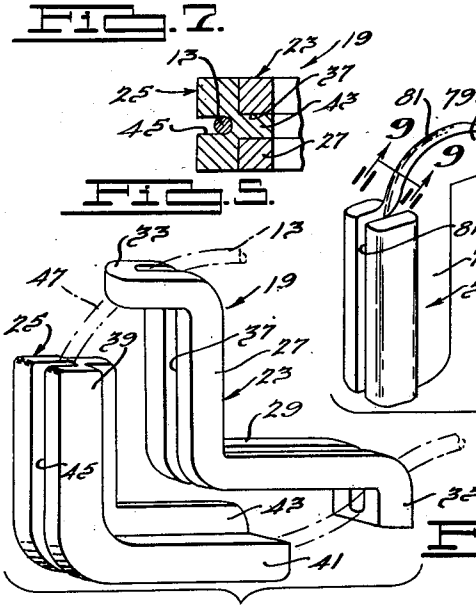


Fig. 4.

Fig. 5.

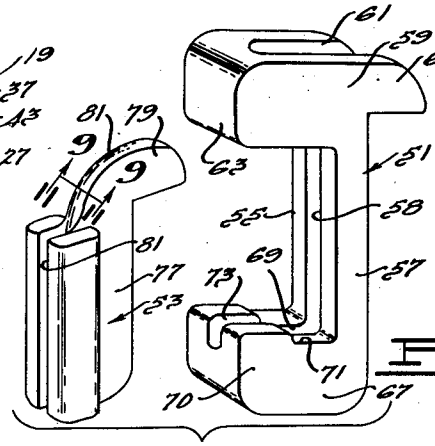


Fig. 8.

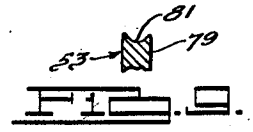


Fig. 9.

INVENTOR.
Hans Andersen.
BY
Harness, Dickey & Pierce
ATTORNEYS.

Patented June 6, 1950 2,510,674

UNITED STATES PATENT OFFICE

2,510,674

SLING PROTECTOR

Hans Andersen, Detroit, Mich.

Application December 4, 1947, Serial No. 789,719

17 Claims. (Cl. 294—74)

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This invention relates to protectors for rope slings and more particularly to sling protectors adapted to protect both a load being lifted as well as the sling rope from damage or gouging during the load lifting operation.

The principal objects of this invention are to provide a sling protector of the aforementioned type which may be easily attached to a conventional rope sling when its use it desired, and which may be easily detached from the sling, when its use is not desired; to provide a sling protector of the aforementioned type which, when it is attached to the sling, will not become accidentally disengaged therefrom; to provide a sling protector of the aforementioned type which is simple and rugged in construction, as well as being inexpensive to manufacture; to provide a sling protector of the aforementioned type which will engage the corners of a load being lifted by the sling so as to protect both the load and the sling rope from damage or gouging; to provide a sling protector of the aforementioned type which may be easily adjusted along the length of the sling for properly engaging various sizes and types of loads being lifted.

These and other objects of this invention will become apparent from the following detailed description taken in conjunction with the accompanying drawing in which:

Figure 1 is a front elevational view of a sling, employing sling protectors of this invention, lifting a load;

Fig. 2 is an enlarged front elevational view of the portion of the structure illustrated in Fig. 1 within the circle designated 2 thereon;

Fig. 3 is an end elevational view of the structure illustrated in Fig. 2 taken in the direction of the arrow 3 thereof;

Fig. 4 is an enlarged, exploded, perspective view of the protector illustrated in Fig. 2;

Fig. 5 is an enlarged sectional view of the structure illustrated in Fig. 2, taken along the line 5—5 thereof;

Fig. 6 is an enlarged side elevational view of the portion of the structure illustrated in Fig. 1 within the circle designated 6 thereon;

Fig. 7 is an end elevational view of the structure illustrated in Fig. 6 taken in the direction of the arrow 7 thereof;

Fig. 8 is an enlarged, exploded, perspective view of the protector illustrated in Fig. 6; and

Fig. 9 is an enlarged sectional view of the structure illustrated in Fig. 8, taken along the line 9—9 thereof.

Referring now to the drawing and more particularly to Fig. 1, it will be seen that, for purposes of illustration, a sling, generally indicated at 11, and comprising a single wire rope 13, such as wire, hemp, plastic, or the like, has its intermediate portion encompassing a load, such as a heavy gauge steel load, a box, or carton 15. The free ends of the sling are connected to a conventional crane hook 17 for lifting the sling and load in a conventional manner. One pair of sling protectors generally indicated at 19, are disposed on the sling 11 so as to engage the lower corners of the box 15, and a second pair of sling protectors, generally indicated at 21, are disposed on the sling 11 so as to engage the upper corners of the box 15. The sling protectors 19 and 21, as will hereinafter appear, protect both the corners of the box 15, as well as the portions of the sling rope 13 which would normally engage the corners of the box, so as to prevent ang gouging, chafing, or wearing of both the box and rope. The protectors 19 and 21, while of somewhat different construction, can both be easily attached to, or detached from, the sling, and can be easily adjusted along the length of the sling so as to accommodate various sizes and types of boxes or loads.

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One of the protectors 19 is illustrated in detail in Figs. 2 through 5 wherein it will be seen that each protector 19 includes a pair of generally L-shaped mateable parts 23 and 25. The part 23 is formed with leg portions 27 and 29, which are disposed at right angles with respect to each other, and each of which has a substantially flat inner face 31. The remote ends of each of the leg portions 27 and 29 are formed with outturned flange portions 33 and 35 respectively. The part 23 is provided with a continuous central slot 37 which extends axially and centrally through both of the leg portions 27 and 29 and into the flange portions 33 and 35 to a point adjacent the outer edge of each.

The part 25 of the protector 19 is formed with leg portions 39 and 41 which extend at right angles with respect to each other in the same manner as the leg portions of the part 23. The legs 39 and 41 are of such a length as to fit between the inner faces of the flange portions 33 and 35 of the part 23 when the part 25 is mated with the part 23, as will be hereinafter described. The inner face of the part 25, that is of the legs 39 and 41 thereof, is formed with a continuous axially extending, inwardly projecting, central tongue 43 which is adapted to be received in that portion of the slot 37 of part 23 which is embraced by the leg portions 27 and 29 thereof. The outer

face of the part 25 is provided with a continuous, axially extending, central groove 45 which is adapted to receive and embrace a portion of the sling rope 13 in a manner which will be hereinafter described.

In order to insert each of the protectors 19 on a portion of the sling rope 13, the portion of the rope to which it is desired to attach the protector is looped, such as illustrated in Fig. 4, at 47, and the looped rope portion 47 is inserted through the slot 37 in the part 23, from the inside out. The opposite ends of the loop portion 47 (Fig. 4) are then embraced in the portions of the slot 37 disposed in each of the flange portions 33 and 35. The protector part 25 is then inserted between the inner face of the loop portion 47 of the rope and the outer face of the protector part 23 so that the inner face of the loop portion 47 is at least partially confined and embraced in the groove 45 in the outer face of the protector part 25. The protector parts 23 and 25 are then moved toward each other so that the L-shaped tongue 43 of the part 25 is disposed within the L-shaped portion of the slot 37, in the leg portions 27 and 29. The remote ends of the leg portions 39 and 41 of the part 25 are then confined between the inner faces of the flange portions 33 and 35 of part 23, and the inner face of the part 25 abuts the outer face of the part 23. In this way the rope sling portion 47 is confined within the protector 19 and both of the protector parts 23 and 25 are releasably held on the sling 11. The protectors 19 can be adjusted along the sling 11 so that the inner faces of the legs 27 and 29 thereof will engage the corners of the box 15, or other load, which is being lifted. However, due to the fact that the rope is bent at right angles as it extends through the protectors, the protectors will not freely slide along the rope, but they may be manually adjusted along the rope in an easy manner. The protectors 19 may be easily removed from the rope by merely pulling the part 25 away from the part 23 and then first removing the part 25 from the rope and then sliding the part 23 outwardly off of the rope.

It will thus be seen that the protectors 19 may be very easily attached or detached to the rope of the sling 11 and that they will engage the corners of the box 15, or other similar load, so as to prevent engagement of the rope 13 and the corners of the box, which would tend to cause gouging, wearing, chafing, or other damage to either the box or the rope. It will also be appreciated that the rope 13 will hold the protectors 19 on the sling against accidental disengagement, due to the construction above described.

The protectors 21, which are shown in Fig. 1 engaging the upper corners of the box 15, are illustrated in detail in Figs. 6 through 9 wherein it will be seen that each protector 21 comprises two mateable parts 51 and 53. The part 51 includes a pair of parallel leg portions 55 and 57 separated by a slot or space 58. The inner faces of the leg portions are substantially flat, parallel and aligned so as to be adapted to fully engage one face of the box 15. A head portion 59 is formed on the upper end of the leg portions 55 and 57 so as to rigidly and fixedly interconnect the leg portions. The head portion 59 is axially slotted at 61, in alignment with the slot or space 58 between the leg portions, so that a continuous slot-like opening is provided between the leg portions 55 and 57 and through the head 59. The head portion 59 is formed with a transversely outwardly overhanging projection 63 and a bifurcated inwardly overhanging projection 65, which overhangs the inner faces of the leg portions 55 and 57 so as to form a corner therewith. The corner formed between the head projection 65 and the inner faces of the leg portions 55 and 57, is adapted, as can be seen in Fig. 1, to engage the upper corner of the box 15 so as to protect the latter as previously described.

The lower ends of the leg portions 55 and 57 are rigidly and fixedly interconnected by a lower head or base portion 67. The base portion 67 is axially slotted at 69 in alignment with the slot or space 58 between the leg portions and the slot 61 in the head portion so that a continuous slot is provided between the leg portions 55 and 57 and through the head and base portions 59 and 67. The base portion 67 is formed with an outwardly extending projection 70, which is directly below the projection 63 of the head portion. The upper face of the base projection 70 is notched or cutback at 71, adjacent the outer faces of the leg portions 55 and 57, and transversely slotted at 73 for reasons which will hereinafter appear.

The other protector part 53 is adapted to mate with the part 51 and to be received between the upper face of the base portion 67 and the lower face of the head portion 59, of the part 51. The inner face of the part 53 is formed with an inwardly projecting tongue 77 which is adapted to be received in the slot or space 58 between the leg portions 55 and 57 of the part 51. The upper end of the tongue 77 projects arcuately above and inwardly of the main portion of the part 53, at 79. The arcuate tongue portion 79 is adapted to be received in the slot 61 of the head portion 59 of the part 51. The tongue portion 79 is so shaped that when the part 53 is mated with the part 51 the extreme inner end of the tongue portion 79 will be disposed in, and flush with the end of the bifurcated head projection 65 of the part 51.

The outer face of the part 53 and the tongue portion 79 are provided with an axially extending groove 81 which is adapted to receive and partially embrace a portion of the rope 13, as will hereinafter appear. The inner face of the part 53, when the parts 51 and 53 are assembled, will abut the outer face of the leg portions 55 and 57, and the lower end of the part 53 will be disposed in the notch 71 in the upper face of the base portion 67 of the part 51, so as to prevent the lower end of the part 53 from accidentally swinging out of mating relationship with the part 51.

In order to connect each of the protectors 21 to its sling rope 13, the rope is looped as indicated at 83, in much the same manner as with the other protectors 19, and the looped rope portion 83 is inserted between the leg portions 55 and 57 of the part 51 from the inside out. The protector part 53 is then inserted between the outer face of the part 51 and the inner face of the rope loop portion 83, as indicated in dot and dash lines in Fig. 6. That is, the arcuate tongue portion 79 is inserted into the slot 61 in the head portion 59 of the part 51, and the inner face of the rope portion 83 is disposed in the groove 81 in the outer face of the protector part 53. The protector part 53 is then pivoted about its forward end, that is, the point where the front edge of the inner face of the part 53 engages the upper ends of the leg portions 55 and 57 of the part 51, toward the member 53 and the rope loop is pulled tight against the part 53 so as to cause it to seat against the leg portions 55 and 57, between the head portion 59 and

base portion 67, of the part 51. The tongue 77 of the part 53 is then disposed in the slot or space 58 between the leg portions. The rope then extends axially through the slot 61 in the head portion 59, along the groove 81 in the outer face of the member 53, and through the slot 69 in the base portion 67. The transverse slot 73 in the base projection 70 is sized so as to receive the lower end of the rope loop 83 during the connecting operation, and permit the lower end of the member 53 to pivot downwardly into the notch 71 in the lower end of the base portion 67 before the rope is tightened up. That is, the slot 73 in the base portion 67 is provided in order to permit the member 53 to pivot into its mating relationship with the member 51 without interference with the rope loop portion 83. The rope 13 will hold the lower end of the member 53 in the notch 71 in the base portion 67 and therefore the rope portion 83 is substantially confined within the protector 21, and the protector parts 51 and 53 are releasably held on the rope and cannot become accidentally disengaged therefrom.

In order to remove the part 53 from the part 51 and thereby disconnect the protector 21 from the rope, the rope is looped outwardly through the slot 73 in the base portion of the part 51. The lower end of the part 53 can then be moved out of the notch 71 and pivoted away from the part 51. The rope loop is made large enough to permit the complete withdrawal of the part 53 from the part 51. After its disengagement from the part 53, the part 51 can be quickly removed from the rope 13. The part 51 then may be pulled outwardly off of the loop 83 and the protector is then completely disconnected from the sling.

It will be noted that with the protector 21 the rope 13 is not bent at right angles, as with the protector 19, and therefore the protectors 21 may be easily slid upwardly or downwardly along the rope 13, even after the sling has been in use for a long period of time. The protectors 21 are therefore easily adjustable to compensate for various sizes and types of loads or boxes 15, for which the sling and protectors may be used.

It will thus be seen that two embodiments of sling protectors are provided, each of which is best adapted for its own particular use. For example, the L-shaped protectors 19 are best suited for supporting the lower portion of the box 15, in that the load is at least partially carried by the protectors and the rope extends outwardly from each leg portion of the protector in a substantially straight path, parallel to the leg portions of the protector. However, at the upper corners of the box, where no direct lifting occurs the rope will extend from the upper end of each protector at various angles, depending on the size and shape of the load, and the construction of the protectors 21 permits the rope to extend at any desired angle while the overhanging head projections 65 of the protectors 21 will sufficiently protect the corners of the box, as well as the cable.

I claim:

1. A sling protector including two parts, one of said parts being insertable over and adapted to at least partially receive a loop portion of a sling, the other of said parts being adapted to be disposed between the loop portion of the sling and said first part so as to mate with said first part and releasably hold both of said protector parts of said sling.

2. A sling protector including two parts, one of said parts being constructed so as to be insertable over a loop portion of a sling and having openings adjacent the opposite ends thereof so that the opposite ends of said sling loop portion will project outwardly through said openings, the other of said protector parts being adapted to be disposed between said first part and the inner face of said loop portion and being constructed as to at least partially embrace the inner face of said loop portion and so as to mate with said first part and releasably hold both of said protector parts on said sling.

3. A sling protector including two parts, one of said parts having a slot therein through which a loop portion of a sling may be inserted, the other of said parts having a slot therein adapted to embrace the inner face of said sling loop portion, said protector parts being constructed so as to mate with each other and thereby be releasably held on said sling.

4. A sling protector including two parts, one of said parts having slot means therein to permit the insertion of said first part over a loop portion of a sling, the other of said protector parts being adapted to be disposed between said first protector part and the inner face of said cable and being so constructed as to at least partially embrace the inner face of said sling and so as to mate with said first part to thereby releasably hold both of said parts on said sling and permit said entire protector to be moved along said sling without disengagement of the parts thereof.

5. A sling protector including two parts, one of said parts being insertable over a portion of a sling and having end openings through which the opposite ends of the inserted portion of said sling are adapted to extend, the other of said parts being adapted to be disposed between said first part and the inner face of said inserted sling portion, said protector parts being formed with complemental mating portions whereby said protector parts may mate with each other and embrace a portion of said sling so as to releasably hold both of said parts on said sling.

6. A sling protector including two parts, one of said parts being insertable over a portion of a sling and having end openings through which the opposite ends of the inserted portion of said sling are adapted to extend, the other of said parts being adapted to be disposed between said first part and the inner face of said inserted sling portion, said protector parts being formed with complemental mating portions whereby said protector parts may mate with each other and embrace a portion of said sling so as to releasably hold both of said parts on said sling, said first part being constructed so as to have a portion thereof engageable with a load adapted to be lifted by said sling whereby the inserted portion of said sling is confined within said protector so as to be out of engagement with the load to be lifted.

7. A sling protector including two parts, one of said parts having a slot therein through which a loop of a sling may be inserted, the other of said parts having slot means therein adapted to embrace the inner face of said sling loop portion, said second part having a tongue thereon engageable in said first part slot so as to substantially confine a portion of said sling within said protector and releasably hold both of said protector parts on said sling.

8. A sling protector including a pair of L-shaped mateable parts, one of said parts having slot means therein through which a portion of a sling may be inserted, the other of said parts being adapted to be disposed between said first part and the inner face of said sling portion and having slot means therein adapted to at least partially embrace the inner face of said sling portion, whereby when said protector parts are in a mating relation both of said parts are releasably held on and substantially confine said sling portion.

9. A sling protector including a pair of L-shaped mateable parts, one of said parts having a slot therein through which a loop portion of a sling may be inserted, the other of said parts being adapted to be disposed between said first part and the inner face of said sling loop portion and having slot means therein adapted to at least partially embrace the inner face of said sling loop portion, said second part having tongue means thereon adapted to mate with said first part slot so that said sling portion will be substantially confined within said protector and both of said protector parts will be releasably held on said sling.

10. In combination, a sling for lifting a load including a strand of rope, a protector for said sling adapted to engage one corner of said load and prevent a portion of said sling from engaging said load, said protector including two parts, one of said parts being insertable over a loop portion of said sling, the other of said parts being adapted to be disposed between said first part and the inner face of said sling loop portion and constructed so as to mate with said first part so as to substantially confine said rope portion and releasably hold both of said protector parts on said rope.

11. In combination, a sling adapted to lift a load and including a strand of rope; a protector for said sling adapted to engage a corner of said load and prevent said rope from engaging said load corner, said protector including two parts, one of said parts having slot means therein through which a loop portion of a sling may be inserted, the other of said protector parts being adapted to be disposed between said first protector part and the inner face of said sling loop portion and having slot means therein adapted to at least partially embrace the inner face of said sling loop portion, said protector parts being constructed so as to mate with each other and substantially confine a portion of said rope and releasably hold both of said protector parts on said rope.

12. A sling protector including a pair of generally L-shaped mateable parts, one of said parts having the inner face thereof adapted to engage the corner of a load adapted to be lifted by said sling, said first part having a slot therein through which a loop portion of a sling may be inserted, the other of said parts being adapted to be disposed between said first protector part and the inner face of said sling and having slot means therein adapted to at least partially embrace the inner face of said sling loop portion, said protector parts being constructed so as to mate with each other and substantially confine said sling portion and releasably hold both of said protector parts on said sling.

13. A sling protector including a pair of L-shaped matable parts, one of said parts having the inner face thereof adapted to engage the corner of the load adapted to be lifted by said sling, said part being provided with outwardly directing flanges at the opposite ends of the legs of the L portions thereof, said one part having a continuous slot therein extending axially of said L portions and into said opposed flanges to a point adjacent the outer ends thereof, said second protector part being adapted to be disposed between the outer face of said first protector part and the inner face of said sling loop portion and having slot means in the outer face thereof adapted to at least partially embrace the inner face of said sling loop portion, tongue means formed on the inner face of the L portion of said second protector part adapted to be received in the slot portion of said first protector L portion whereby said parts may be mated so as to substantially confine said sling portion and releasably hold both of said protector parts on said sling.

14. A sling protector including a pair of mateable parts, one of said parts having a substantially flat inner face adapted to engage one side of a load which may be lifted by said sling, said one part having an overhanging flange projecting inwardly from the inner face of said part and adapted to form a corner therewith so as to be engageable with the corner of a load to be lifted, said one part having slot means therein through which a loop portion of a sling may be inserted, the other of said protector parts being insertable between said first protector part and the inner face of said sling loop portion and having a portion thereof receivable in a portion of the slot means of said first part whereby said protector parts may mate with one another so as to substantially confine a portion of said sling and releasably hold both of said protector parts on said sling.

15. A sling protector including a pair of mateable parts, one of said parts having a substantially flat inner face, an overhanging flange projecting inwardly from one end of said flat face adapted to form a corner therewith which is engageable with the corner of a load which may be lifted by said sling, said one protector part being insertable over a loop portion of a sling, the other of said protector parts being adapted to receive the loop portion of said sling and mate with said first part so as to substantially confine a portion of said sling and releasably hold both of said protector parts on said sling.

16. A sling protector including a pair of mateable parts, one of said parts having a substantially flat inner face and an overhanging flange projecting inwardly from said inner face and forming a corner therewith, said one protector part having slot means therein through which a loop portion of a sling may be inserted, the other of said protector parts being adapted to be disposed between said first protector part on the inner face of said sling loop portion and having slot means therein adapted to at least partially embrace the inner face of said sling loop portion, said protector parts being constructed so as to mate with each other and be releasably held against axial movement relative to each other when so mated, whereby to substantially confine said sling portion and hold both of said protective parts on said sling.

17. A sling protector including a pair of mateable parts, one of said parts having a substantially flat inner face and an inwardly projecting flange at one end thereof forming a corner therewith, said one protector part having an axially extending slot therethrough through which a

looped portion of said sling may be inserted whereby the opposite ends of said sling loop portion may project through the opposite ends of said slot, the other of said protector parts being adapted to be disposed between said first protector part and the inner face of said sling and having slot means in the outer face thereof adapted to substantially embrace the inner face of said sling loop portion, said second member having a tongue thereon adapted to be received in a portion of said first member slot whereby said protector parts may be mated with each other, said members being so constructed that when the parts are mated with each other there

will be no axial movement therebetween, whereby said sling portion will be substantially confined in sliding engagement within said protector and said protector parts will be releasably held on said sling.

HANS ANDERSEN.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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