Sept. 26, 1967 R. A. HOLMES 3,343,862

SLING ASSEMBLY

Filed June 14, 1965

FIG. 1

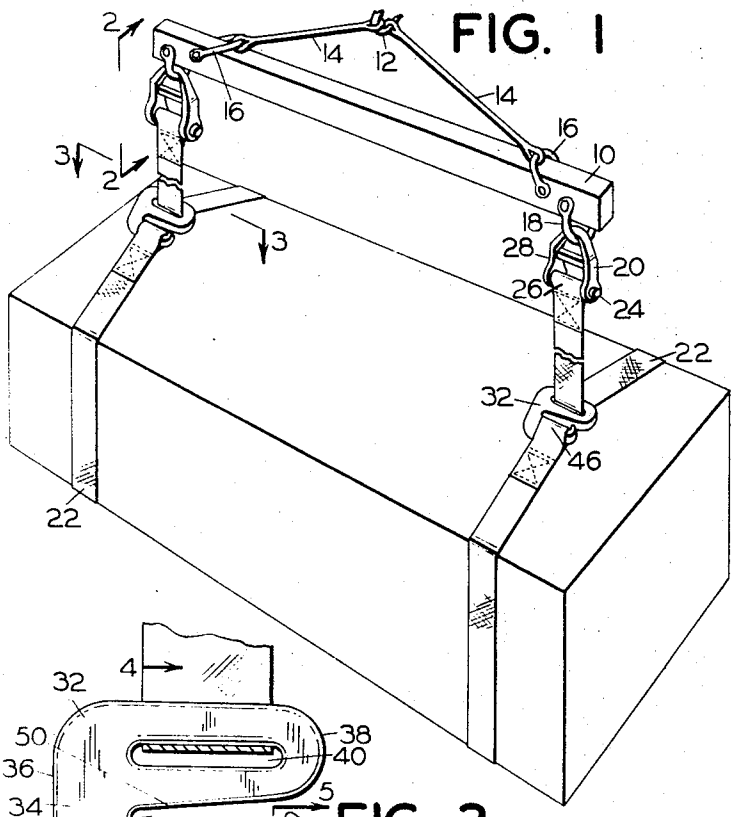
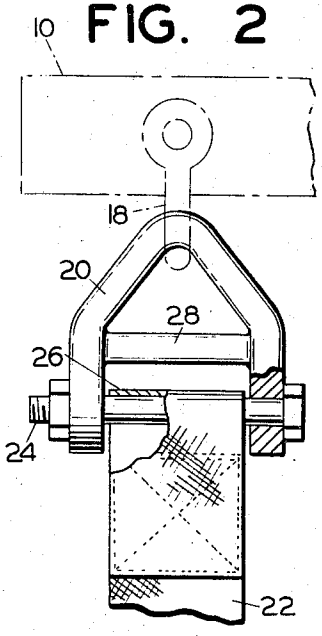


FIG. 2



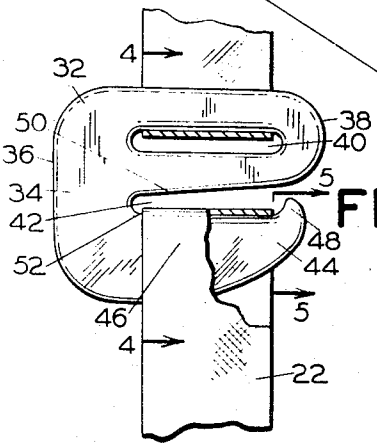


FIG. 3

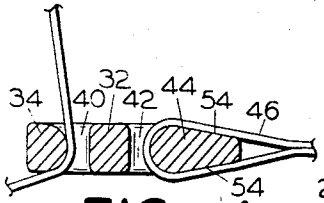


FIG. 4

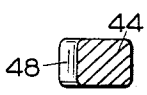


FIG. 5

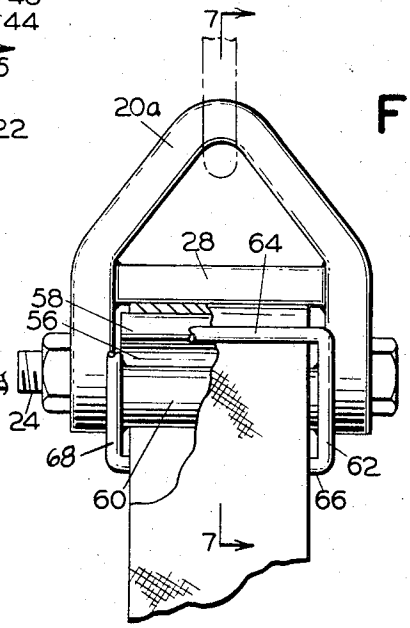


FIG. 6

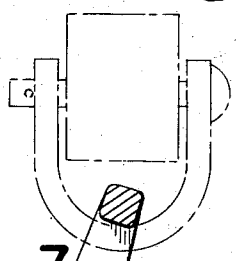
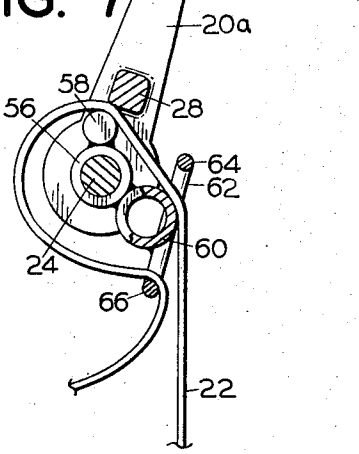


FIG. 7



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SLING ASSEMBLY

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This invention relates to new and useful improvements in sling assemblies.

A primary objective of the present invention is to provide a sling assembly utilizing a belt-type sling, and also to provide in combination with such a sling a noval choker member operative on the sling to cinch the latter around a load.

Another object is to provide a sling assembly employing a choker member having a first aperture therein arranged to slidably receive a belt-type sling and having a second aperture which opens through a side edge thereof to form a hook arranged to be engaged by a looped end of the belt-type sling.

Another object is to provide a sling assembly utilizing a novel shackle arranged to connect a belt-type sling with lifting means and more particularly to provide such a shackle having means automatically gripping the belt-type sling when a downward pull exists on the belt; and more particularly to provide a shackle of the type described having a lever supported thereon which is arranged to provide slidable length adjustment of the sling when desired but which is arranged to hold the sling securely in the shackle when a lifting force is applied thereto.

Still another object is to provide a novel sling assembly employing a spreader bar and a pair of belt-type slings attached to opposite ends of the spreader bar and each associated with a choker member engageable with respective belts for cinching them around the load.

Briefly stated, the present invention relates in particular to a sling assembly which utilizes belts for encircling a load. The assembly employs a spreader bar and a pair of belt-type slings attached to opposite ends of the spreader bar. Each of these slings is associated with a shackle for attaching it to the spreader bar and a choker member of a structure capable of cinching the sling around the load when a lifting force is applied to the spreader bar. As will be more apparent hereinafter, a modified form of shackle is provided which has means for adjusting the length of the sling and for automatically gripping and holding the sling when a load lifting force is applied to the latter.

The invention will be better understood and additional objects will become apparent from the following specification and claims, considered together with the accompanying drawings, wherein the numerals of reference indicate like parts.

In the drawings:

FIGURE 1 is a perspective view in reduced form with relation to the other views of sling means embodying features of the present invention and showing the sling assembly attached to a load;

FIGURE 2 is a fragmentary elevational view, partly broken away, of a shackle which is utilized herein for connecting the belt-type sling to the spreader bar, taken on the line 2—2 of FIGURE 1;

FIGURE 3 is a fragmentary plan view showing in particular the choker member which serves to cinch the belt-type sling around the load, taken on the line 3—3 of FIGURE 1;

FIGURE 4 is a sectional view taken on the line 4—4 of FIGURE 3;

FIGURE 5 is a sectional view taken on the line 5—5 of FIGURE 3;

FIGURE 6 is an elevational view similar to FIGURE 2 but showing a modified form of shackle for connecting the belt-type sling to lifting means; and

FIGURE 7 is a sectional view taken on the line 7—7 of FIGURE 6.

Referring first to FIGURE 1, there is shown a belt sling assembly embodying features of the present invention. The sling assembly comprises a spreader bar **10** attached to a lifting hook **12** on a hoist line, not shown, by means of branch lines **14** and shackles **16** connected to opposite ends of the spreader bar. Also connected to opposite ends of the spreader bar but disposed in depending relation are shackles **18** in turn supporting shackles **20**. These latter shackles are of special construction in that they have sufficient width, also seen in FIGURE 2, for connection to belts **22**. For the purpose of attaching the belts **22** to the shackles **20**, the latter have cross pins **24** and the belts have loops **26** provided in one end thereof. Shackles **20** also have reinforcing cross bars **28** secured to the legs thereof upward from the cross pin **24**.

The belt **22** may be of conventional construction such as Dacron or nylon, and associated with each belt in the formation of end slings is a choker member **32**, FIGURES 1, 3, 4, and 5. These choker members comprise a substantially flat body portion **34** with opposite side edges **36** and **38**, respectively. Choker members **32** have first transversely disposed apertures **40** therethrough of sufficient length and width to slidably receive the belt **22**. These choker members also have second transversely disposed apertures **42** which open through the side edges **38** and form hooks **44**. As best seen in FIGURE 3, the apertures **42** in the choker members are of sufficient length and width for mounting therein the looped portions **46** on the ends of the belts opposite from looped ends **26**. The ends of the hooks **44** are provided with projections **48** extending partially into the apertures **42**, these projections serving to hold the looped ends **46** of the belt on the hooks. Also, as seen in FIGURE 3, the defining edges **50** of the apertures **42** opposite from the belt engaging edges **52** are inclined relative to the latter to provide suitable openings with clearance relative to the projections **48** for easy attachment and detachment of the looped ends **46** of the belts from the hooks **44**.

As best seen in FIGURE 4, the longitudinal surfaces of the hook portion **44** are tapered inwardly at **54** to conform generally to the contour of the loop **46** and thus eliminate any sharp edges in the area of engagement by said loop.

In the operation of the sling, the choker members are mounted on the belts **22** by insertion of the looped ends **46** through the apertures **40**, it being assumed that the other looped ends **26** of the belt are suitably connected to the shackles **20**. The free ends of the belts are brought around the load with the choker members first being positioned at the upper portion of the load. The looped ends **46** are then engaged over the hooks **44** by movement into the apertures **42**. With the looped ends of the belts **22** thus mounted on the hooks, they will be maintained thereon against accidental displacement by the projections **48**. Upon a tensioning force being applied to the belts **22** by means of the lifting means, the belts will be cinched up around the load by the choker members and a secure non-damaging engagement is provided on the load.

Although the present disclosure illustrates a pair of slings on a common spreader bar, it is to be understood that in some cases a single belt **22** may be utilized for lifting a load, in which case there will be no necessity of utilizing a spreader bar and the shackles **20** may have direct connection with a single one of the shackles **16** or even a direct connection with the hook **12**.

FIGURES 6 and 7 illustrate a modified form of shackle **20***a* which instead of having connection with a looped

end **26** of the belt as shown in FIGURE 1 has means for gripping an unlooped end of the belt for providing length adjustment of the belt therethrough. For this purpose, the cross pin **24** of the shackle **20***a* rotatably supports a sleeve **56** to which is secured as by welding a pair of rounded projections **58** and **60**. The projections **58** and **60** are secured to the sleeve **56** in longitudinal parallel relation therewith, and as best seen in FIGURE 7 these projections are located approximately 130° from each other around the sleeve **56** and the belt **22** is reeved in the shackle by passing it over the two projections, the projection **60** extending forwardly beyond the front of the shackle. With the particular arrangement of the projections **58** and **60**, it is apparent that when a downward pull is applied to the forwardly reeved portion of the belt the sleeve **56** and its projections are urged rotatably in a clockwise direction. The projections **58** and **60** thus form a lever construction for a purpose now to be described.

Cross bar **28** of this shackle construction is located selectively such that when the sleeve **56** is rotated and the belt is reeved in the shackle, the projection **58** is arranged to pinch or force the belt against the cross bar **28**. Thus, when a downward pull is applied on the forwardly reeved end of the belt **22** the sleeve **56** will be rotated to the point where the projection **58** secures the belt against longitudinal movement by pinching it against the cross bar **28**. If it is desired to shorten the length of the belt between the shackle **20***a* and the load, the belt is merely pulled rearwardly therethrough. For lengthening the portion of the belt between the shackle and the load, however, the sleeve **56** must first be manually rotated a slight amount in a counterclockwise direction to allow the belt to move forwardly therethrough.

Secured to the projection **60** at the front of the shackle is a rectangular guide frame **62** having upper and lower members **64** and **66**, respectively, and integral end members **68**. The purposes of the guide frame **62** are, first, to guide the belt properly into the shackle; second, to provide a hand grip for manually rotating the sleeve **56** when it is desired to slide the belt forwardly therethrough; and third, as apparent in FIGURE 7, to hold the free or loose end of the belt out of the way by threading it over the bottom frame member **66**.

The present invention comprises a sling assembly designed particularly for use with a belt-type sling **22** which has the important advantage that it can engage a load without damaging the load. The choker members **32** provide for rapid connection of the slings to the load, comprising merely hooking the looped ends of the belts **46** on the hooks **44**. For releasing the sling from the load, the loops **46** are disengaged from their hooks **44** and then the belts pulled out from under the load.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A sling assembly comprising a belt having a pair of ends, one end of said belt having a loop therein, a choker member having a body portion with opposite end edges, said choker member having an eye in said body portion slidably receiving said belt and having a hook in said body portion for hooking engagement by said loop whereby to form a sling arranged to be cinched around a load upon upward movement of the other end of said belt, a shackle arranged to be connected to a hoisting apparatus, a lever rotatably mounted on said shackle, said lever having a pair of opposite ends over which the said other end of said belt slidably extends in a non-lifting condition of the sling assembly and an abutment bar on said shackle adjacent one end of said lever, said one end of said lever being arranged to force said belt against said abutment bar upon rotation of said lever by engagement of the other end of said lever by said belt in a lifting condition of the sling assembly whereby to hold said belt against longitudinal movement in said shackle.

2. In a belt sling structure, a shackle, means on said shackle for connecting it to hoisting apparatus, a lever rotatably mounted on said shackle, said lever having a pair of opposite ends over which a belt is arranged to freely extend and cause rotation of said lever upon tensioned force being applied to the belt, and an abutment bar on said shackle adjacent one of said ends of the lever, said one end of the lever being arranged to force the belt against said abutment bar upon rotation of said lever by engagement of said other end of the lever by the belt whereby to hold the belt against longitudinal movement in said shackle.

3. The belt sling structure of claim **2** wherein said shackle includes shaft means on which said lever is rotatable.

4. The belt sling structure of claim **2** wherein the ends of said lever comprise rounded elongated projections.

5. The belt sling structure of claim **2** including a guide frame secured to said lever for receiving the belt and holding it selectively on said lever.

6. A load engaging assembly comprising a spreader bar, a sling disposed adjacent each end of said spreader bar, each of said slings including a belt having a pair of ends, one end of said belts being connected to respective ends of said spreader bar and the other ends of said belts having a loop formed by folding the said other end back upon itself and securing overlapped portions thereof together, and a choker member for each belt, said choker members each having a body portion with a pair of opposite side edges, and means in said body portion defining eyes slidably receiving respective ones of said belts, said body portions having openings extending thereinto from one of their side edges, said loops comprising the terminal ends of said other ends of the belts and being arranged to have detachable hooking engagement with the hooks of respective ones of said choker members to form slings arranged to be cinched around the load upon upward movement of the said one end of said belts.

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