

July 25, 1944.

W. C. RUSSELL

2,354,280

THIMBLE

Filed April 14, 1943

3 Sheets-Sheet 1

Fig. 1

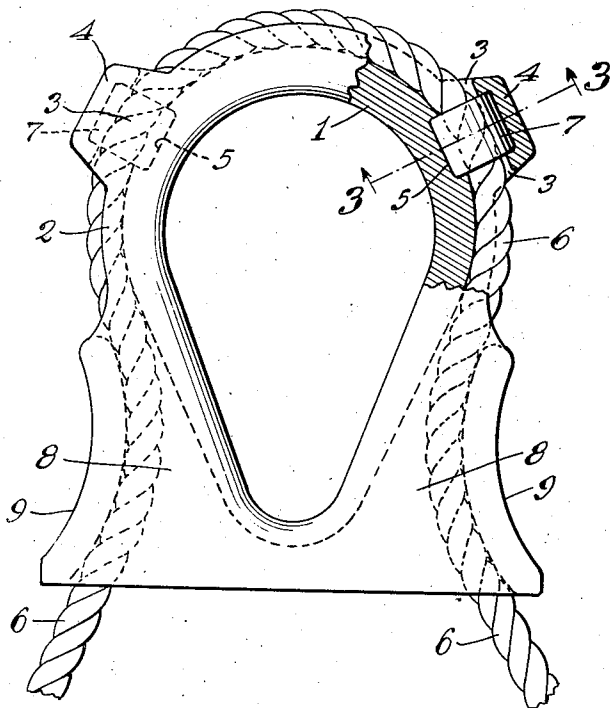
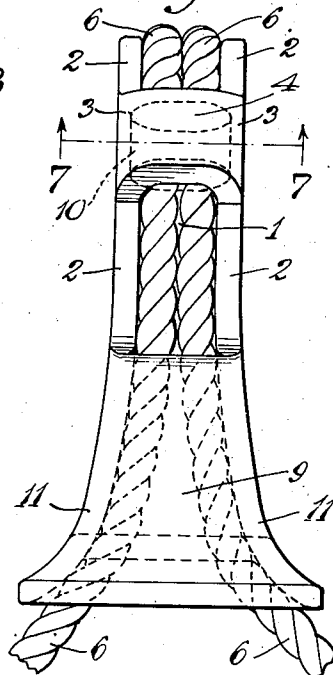
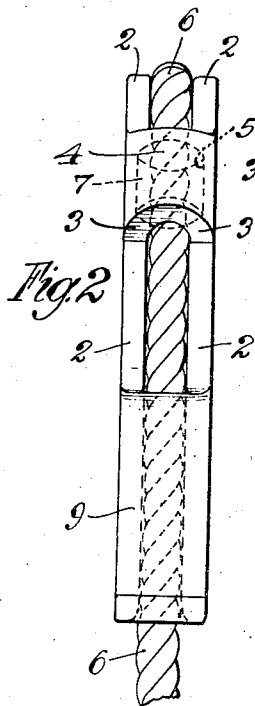
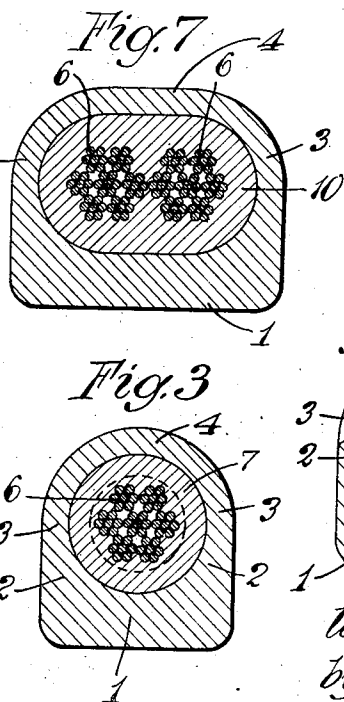
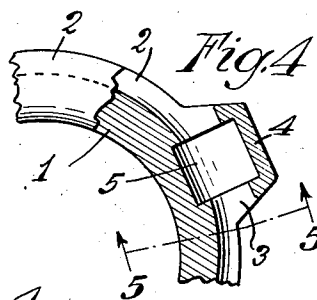
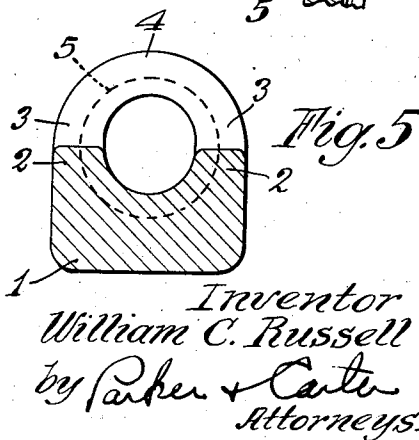


Fig. 6



Inventor
William C. Russell
by Parker & Carter
Attorneys.

July 25, 1944.

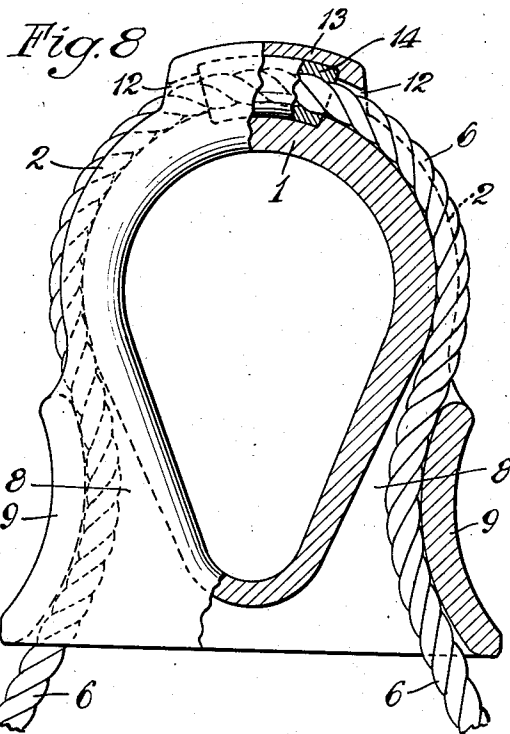
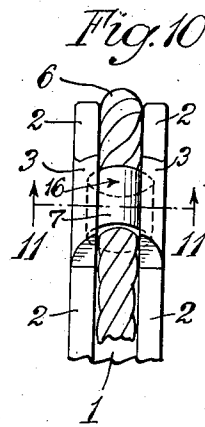
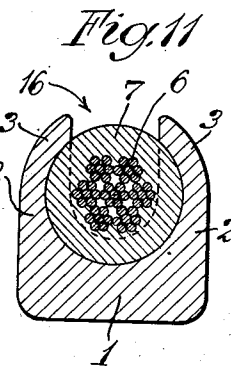
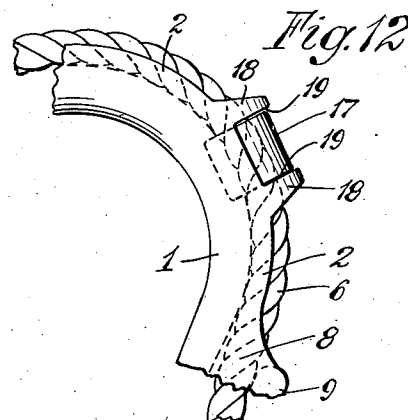
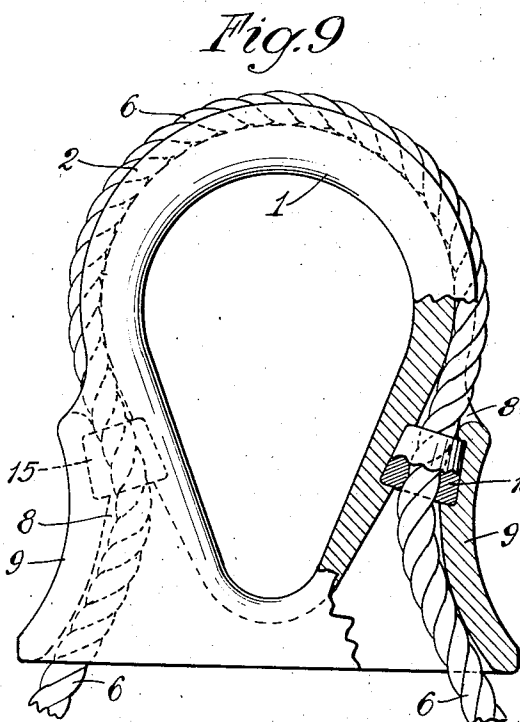
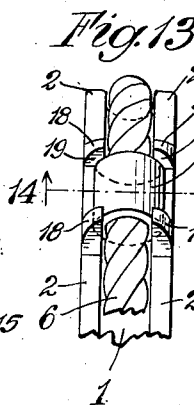
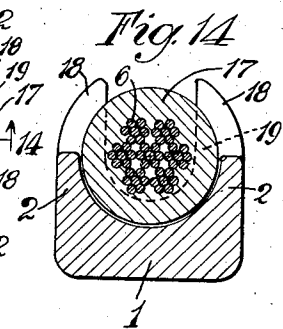
W. C. RUSSELL

2,354,280

THIMBLE

Filed April 14, 1943

3 Sheets-Sheet 2



Inventor
William C. Russell
by Parker & Fante
Attorneys

July 25, 1944.

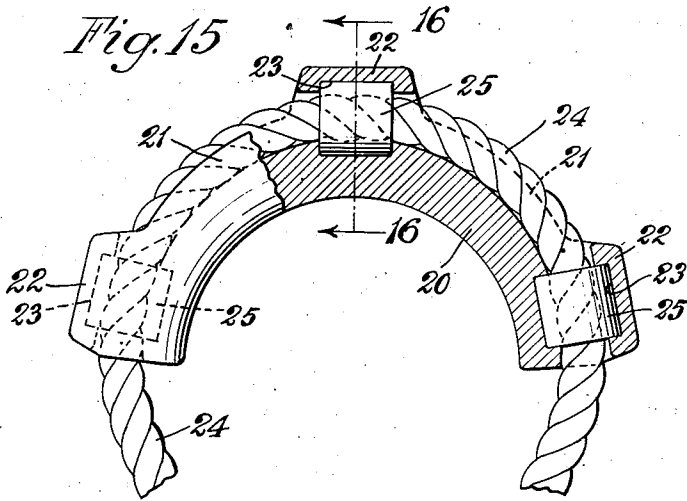
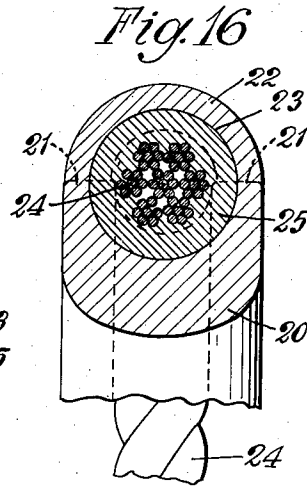
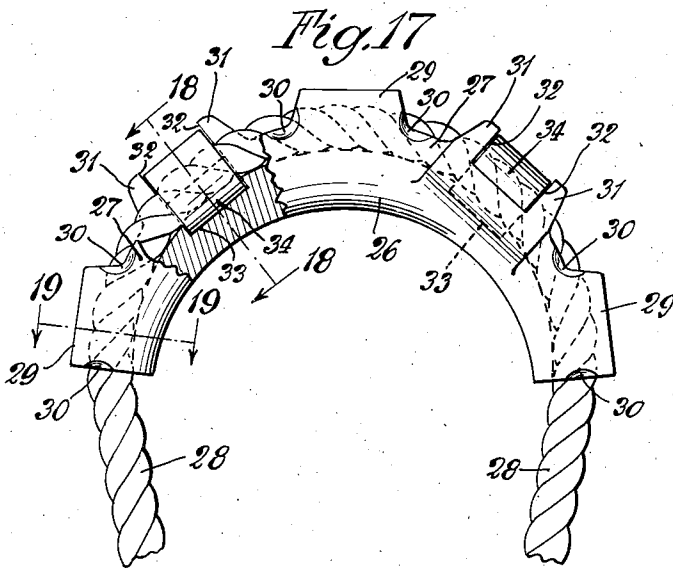
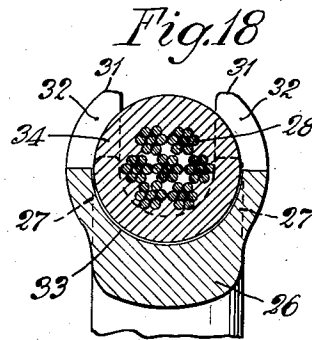
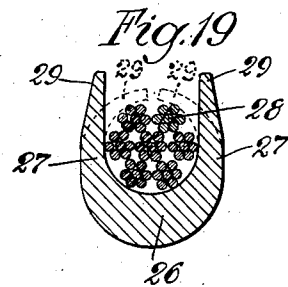
W. C. RUSSELL

2,354,280

THIMBLE

Filed April 14, 1943

3 Sheets-Sheet 3



Inventor
William C. Russell
by Parker & Carter.
Attorneys.

UNITED STATES PATENT OFFICE

2,354,280

THIMBLE

William C. Russell, Kenosha, Wis., assignor to
Macwhyte Company, Kenosha, Wis., a corpo-
ration of Illinois

Application April 14, 1943, Serial No. 482,981

15 Claims. (Cl. 294—74)

This invention relates to a thimble for use in connection with a sling, and it is applicable to slings formed of wire rope or a plurality of wire ropes, or to slings formed of ropes made of materials other than wire. It may also, of course, be used in connection with braided rope slings. One object of the invention is to provide a thimble in which means are provided for forming or receiving a "button" which engages both the sling and the thimble and prevents or limits movement of the sling with respect to the thimble.

Another object is to provide such a thimble with means for receiving a "button" which may be cast in place about and in contact with the sling after the latter has been placed in position about the thimble.

Another object is to provide a thimble so arranged that a "button" which has been positioned upon the sling before it is placed about the thimble may be readily received.

Other objects will appear from time to time throughout the specification and claims.

This invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a front elevation of one form of the thimble with parts broken away and parts in section.

Figure 2 is a side elevation of the thimble of Figure 1.

Figure 3 is a sectional detail taken on an enlarged scale at line 3—3 of Figure 1.

Figure 4 is a sectional detail of the thimble of Figure 1 with the sling omitted.

Figure 5 is a transverse sectional detail taken at line 5—5 of Figure 4.

Figure 6 is a side elevation showing a modified form of the thimble arranged with two sling elements or ropes in place.

Figure 7 is a sectional detail on an enlarged scale at line 7—7 of Figure 6.

Figure 8 is a front elevation with parts broken away and parts in section, showing a further modified form in which only a single "button" is used.

Figure 9 is a front elevation with parts broken away and parts in section, showing a still further modified form, in which two "buttons" are used and in which the "buttons" are positioned adjacent the points of tangency of the sling with respect to the thimble.

Figure 10 is a side elevation of a modification of the form showing in Figure 1 in which that portion of the thimble which encloses the "but-

ton" is slotted or partially cut away to receive the sling.

Figure 11 is a transverse sectional detail taken on an enlarged scale at line 11—11 of Figure 10.

Figure 12 is a fragmentary front elevation of a further modification in which that portion of the thimble which receives the "button" is substantially cut away to permit the insertion of a sling, with a "button" already in position upon the sling.

Figure 13 is a side elevation of the form shown in Figure 12.

Figure 14 is a transverse sectional detail taken on an enlarged scale at line 14—14 of Figure 13.

Figure 15 is a front elevation of a modified form of thimble with parts broken away and parts in section.

Figure 16 is a transverse section taken at line 16—16 of Figure 15.

Figure 17 is a view generally like Figure 15, showing a further modification.

Figure 18 is a transverse section taken at line 18—18 of Figure 17.

Figure 19 is a transverse section taken at line 19—19 of Figure 17.

Like parts are indicated by like characters throughout the specification and the drawings.

As shown in Figures 1, 2, 3, 4 and 5, the thimble is formed of an endless member 1, which may be provided with a pair of laterally extending flanges 2, 2, between which is formed a groove. The flanges are provided with outwardly extending portions 3, 3, which are joined by a transverse member 4. Within the space surrounded by the flanges 2, 2, the extensions or enlargements 3, 3 and the transverse member 4 is formed a cavity 5, within which the "button" may be received. As shown in Figures 1, 2 and 3, the sling is formed of a single rope 6, which extends about the sling and lies partially between the flanges 2, 2 and extends under the member 4 and through the cavities 5. After the sling has been positioned about the thimble, "buttons" 7, 7 are formed upon the sling and within the cavities 5. These "buttons" are formed usually by casting, and one suitable material for such "buttons" is zinc. Obviously the "buttons" may be formed of other materials, and the invention is not limited particularly to a zinc "button." The flanges 2, 2 are expanded adjacent their lower ends to form the enlargements 8, 8 and are joined by cross portions 9, 9. These cross portions may be flared outwardly, as shown in Figure 1, so that the two ends of the sling 6 may be swung outwardly, and the portions 9 are pref-

erably given a flared or curved inner surface to accommodate this movement or positioning of the sling ends.

As shown in the modified form of Figures 6 and 7, the thimble is formed substantially as described, except that the groove is wider, and in the particular arrangement shown two slings or sling members 6, 6 are positioned in the groove and are held by a "button" 10, which is generally like the "button" 7, only it is sufficiently larger to engage the two sling portions. The sides of the thimble are flared outwardly front and back, as shown at 11, 11. This flare is in addition to the flare formed by the members 9 and permits the four ends of the sling sections to be spread out or swung out front and back, as well as right and left.

The modified form of Figure 8 is substantially the same as that shown in Figure 1, except that there is only a single "button," and this is enclosed in enlargements 12, 12 of the flanges 2, these enlargements being joined by a single transverse member 13, and a single enlarged "button" 14 is contained within the depression formed between the flanges 2, the enlargements 12, and the transverse member 13.

In the form of Figure 9, the construction is substantially that of Figure 1, except that the "buttons" are received in the lower portion of the thimble, and instead of requiring enlargements 3 and the transverse member 4, as is the case in Figure 1, the cavities for the "buttons" are formed within the enlargements 8 and the transverse members 9, and the "buttons" 15 are so positioned. These "buttons" may be tapered in shape, as shown, or may have whatever other shape is desired.

In the further modification of Figures 10 and 11, the construction is substantially the same as that shown in Figure 1, except that the transverse member or portion 4 is omitted, and the enlargements or outward extensions 3 of the flanges 2 stop short of each other, so that an open space 16 remains between their ends. The width of this space will normally be the width of the sling 6, and thus the sling, instead of being threaded into place, will merely be passed through the opening 16 and thereafter the "button" 7 is cast in place.

The modified form of Figures 12, 13 and 14 is arranged to receive a sling member 6 upon which one or more "buttons" 17 have been previously placed. These "buttons" may be formed of any suitable material. For example, they may be made of zinc, which may be cast in place about the sling, or they may be steel, wire or other material which is swaged in place upon the sling. To permit the insertion of the sling with the "buttons" in place, the flanges 2 of the thimble are provided with pairs of upwardly extending members 18, and these members are of such size that they provide shoulders 19 against which the ends of the "buttons" 17 abut. This construction does not of itself hold the sling against outward movement away from the groove, but the "button" cooperates with the shoulders to prevent or to limit movement of the sling around the thimble and thus it accomplishes generally the same result in that respect as do the previous forms. This form also, of course, permits removal of the "button" and rope or sling, if desired. While it is of particular advantage where a ferrule, sleeve, or "button" has been secured to the rope or sling before the latter is placed about the thimble, obviously even

with this form the "button," ferrule or sleeve could be secured about the rope after the latter is placed about the sling.

The modified forms of Figures 15 to 19, inclusive, differ from the forms of the preceding figures primarily in the fact that the thimble shown is more or less crescent shaped and does not form in itself a complete eye. In the form of Figures 15 and 16 arrangement is made for three cavities in which are received three "buttons" and the rope or sling will be threaded through the cavities, and the "buttons" will then be formed in place by casting or otherwise. In the form of Figures 17, 18 and 19, cavities are provided for the reception of two "buttons" which may be cast or otherwise formed upon the sling or rope before it is put in place about the thimble. The thimble is provided with several pairs of relatively flexible lugs between which the sling or rope is placed. After the sling or rope is in place about the thimble, the flexible lugs are formed into the position shown in Figure 19, in which they surround and embrace the rope or sling and hold it in place about the thimble.

As shown in Figures 15 and 17, the thimble comprises a segmental or crescent shaped member 20, which is provided on either side with flanges 21 which between themselves form a groove. This thimble differs from those previously shown primarily in the fact that it does not form a complete closed eye. Positioned at one or more points about its periphery are members 22, which are preferably integral with the flanges 21 and which as shown in the figures form with the flanges a complete enclosure. Formed beneath each of the members 22 and partially within them and partially within the members 21 and the thimble 20 are depressions 23. When the thimble is to be used, a rope or sling 24 is threaded beneath the members 22 and "buttons" 25 are cast or otherwise formed within each of the depressions and about and embracing the sling member. The purpose of the "buttons" and the depressions is the same as that described in connection with the earlier forms.

In the form of the device shown in Figures 17, 18 and 19, the thimble 26 is of the crescent or segmental shape, and it is provided on each side with flanges 27 which between themselves form a groove suitable for receiving the rope or sling member 28. Positioned at several points about the periphery of the thimble are pairs of flexible lugs 29. When the sling or rope member has been placed in the groove between the flanges 27, the flexible lugs may be depressed into the dotted line position of Figure 19, and when so depressed they surround and engage the sling or rope and hold it against outward displacement with respect to the thimble.

Each of the flexible lugs 29 may, if desired, be weakened or of reduced thickness, as at 30, adjacent its ends. The purpose of this construction is to facilitate bending of the lugs and to prevent tearing or cracking of the material at this point.

At one or more points about the periphery of the thimble, means are provided for receiving a "button." As shown in Figures 17, 18 and 19, these means comprise pairs of outwardly projecting members 31. Each of these members has an inner face 32 against which a "button" may abut. As shown, there are two sets of members 31 on each side of the thimble. Cavities or depressions are formed between each pair of mem-

bers 31, and these cavities, as indicated at 33, extend into the thimble 26 and also into the flanges 27. "Buttons" 34 are cast or otherwise formed on or attached to the rope or sling 28, and they are in such position that each of them fits readily into one of the depressions 33.

After a sling member or rope has been positioned about the groove in the exterior of the thimble 26, with its "buttons" fitting into the depressions, the lugs 29 are depressed to the dotted line position of Figure 19, and in that position they retain the sling in place about the thimble. They prevent its outward separation from the thimble, and the "buttons" prevent movement of the sling about the thimble.

The use and operation of this invention are as follows:

In general, the thimbles of this invention are intended for use in slings and primarily, although not exclusively, for use with equalizing slings. In such slings, the sling member, of whatever it may be made, is placed about the thimble and some sort of fitting is secured to the free ends of the sling. Typical of such fittings are hooks or other thimbles. In all of the forms except that of Figures 12, 13 and 14, after the sling has been placed about the thimble "buttons" are formed thereon, preferably by casting, and one suitable material for such "buttons" is zinc or an alloy of zinc, although the invention is not limited to this particular metal, nor, in fact, to the use of metal at all, since other materials can be used for forming the "buttons."

In the form of Figures 12, 13 and 14 the "button," sleeve or ferrule is preferably secured to the rope or sling before the latter has been placed about the thimble. It is to be understood that the form of these three figures can be embodied in a device in which the socket for receiving the "button" is placed adjacent the crown of the sleeve, as shown in Figures 1 and 2, or at the top, as shown in Figure 8, or adjacent the points of tangency, as shown in Figure 9.

However the "button," sleeve, or ferrule is secured to the sling member, once it has been secured, it furnishes one or more members which prevent or limit movement of the sling about the thimble. It is recognized that "buttons" have previously been cast or otherwise secured to sling members, but they have been secured to a portion of the sling member which is outside or beyond the thimble. For example, in some cases "buttons" have been secured to each of the sling members just below the thimble. With that construction, when an unequal pull occurs on the sling member, so that a tendency is set up to shift the sling about the thimble, only one of these "buttons" can resist that tendency. Under these conditions, one of the "buttons" will be pulled against the bottom of the thimble, and the other will be pulled away from the thimble. In the several forms of the present construction, and particularly in the forms in which a plurality of "buttons" is used, each "button" is effective to resist movement of the sling about the thimble, because each "button" is enclosed within a cavity which has a plurality of shoulders. Thus in the form of Figure 1, should an unequal pull on the sling tend to move the right-hand portion of the sling downward and thus carry the left-hand portion upward, the right-hand portion 7 will resist this by its contact with the shoulder formed by the cavity within which it has been cast, and similarly, the left-hand portion 7 will also resist this movement by contact with its

shoulder. Should the tendency be reversed, each "button" will resist this tendency just as effectively, because it will then be in contact with and pulled against the oppositely placed shoulders.

The effect just described above occurs equally whether the "buttons" be at or near the crown of the thimble, as in Figure 1, or at or near the points of tangency, as in Figure 9. It occurs similarly in the form of Figures 12, 13 and 14, because each of the "buttons," sleeves, or ferrules 17 is in position to contact either of its shoulders 19, depending upon the direction of the pull.

Another result which follows from positioning the "buttons" within the body of the sling, so that they are wholly or largely surrounded by thimble parts, is that the "button" is protected against accidental displacement or breaking or other undesirable results which do occur when the "button" is positioned outside of the thimble and therefore in an unprotected position. Even in the forms of Figures 12, 13 and 14, there is substantial protection for the sleeve or ferrule 17 because of the member 18, which projects outwardly beyond it, as indicated particularly in Figure 14. The construction of this invention therefore provides effective and improved operation of the "buttons," sleeves, or ferrules and provides also for protection of these members against displacement or damage.

While the thimbles shown here are indicated as being integral, that is to say, as being made of a single, integral mass of metal, it is to be understood that they might be made of separate parts permanently secured together, and for some purposes they need not be made of metal, but might be made of other material. Where in the specification and claims it is stated that the thimbles are "integral" or "unitary," these words are to be taken as meaning that the thimble, whether it be made of one or several parts, comprises after it has been completed a single, permanent unit.

I claim:

1. In combination, a thimble and a sling, said sling being positioned about said thimble, said sling having an enlargement fixed to it, said thimble being shaped to provide a space within which said enlargement is positioned, said space being provided with portions against which both ends of said enlargement bear, and whereby relative movement of the enlargement and of the sling in any direction about the thimble is resisted.

2. In combination, a thimble and a sling, said sling being positioned about said thimble, said sling having enlargements fixed to it, said thimble being shaped to provide spaces within which said enlargements are positioned, said spaces being provided with portions adjacent the ends of said enlargements and against which said enlargements bear, and whereby relative movement of the enlargements and of the sling in any direction about the thimble is resisted.

3. In combination, a thimble and a sling, the thimble being formed of a member shaped to provide an eye and to provide a portion against which said sling is positioned, there being a button formed upon said sling, said thimble provided with members embracing said sling, said members shaped to provide a cavity of approximately the size and shape of said button and overlying its ends, whereby said button and said sling are held against movement in any direction about said thimble.

4. In combination, a thimble and a sling, the thimble being formed of a member shaped to pro-

vide an eye and to provide a portion against which said sling is positioned, there being a button formed upon said sling, said thimble provided with integral members embracing said sling, said members shaped to provide a cavity of approximately the size and shape of said button, and provided with two opposed shoulders against which said button is seated and whereby said button and said sling are held against movement about said thimble.

5. In combination, a thimble and a sling, the thimble being formed of an endless member shaped to provide an eye and to provide a portion against which said sling is positioned, there being a button formed upon said sling, said thimble provided with members embracing said sling, said members shaped to provide a cavity of approximately the size and shape of said button, and provided with two opposed shoulders against which said button is seated and whereby said button and said sling are held against movement about said thimble.

6. In combination, a thimble and a sling, the thimble being formed of an endless, metallic member shaped to provide an eye and to provide a portion against which said sling is positioned, there being a button formed upon said sling, said thimble provided with members embracing said sling, said members shaped to provide a cavity of approximately the size and shape of said button, and provided with two opposed shoulders against which said button is seated and whereby said button and said sling are held against movement about said thimble.

7. In combination, a thimble and a sling, the thimble being formed of a single, endless, metallic member shaped to provide an eye and to provide a portion against which said sling is positioned, there being a button formed upon said sling, said thimble provided with integral members embracing said sling, said members shaped to provide a cavity of approximately the size and shape of said button and to provide stop for the ends of said button, whereby said button and said sling are held against movement about said thimble.

8. In combination, a thimble and a sling, the thimble being formed of a member shaped to provide an eye and to provide a portion against which said sling is positioned, there being a plurality of buttons formed upon said sling, said thimble provided with members embracing said sling, said members being spaced apart a distance substantially equal to the width of the sling member and shaped to provide cavities having opposed shoulders and of approximately the size and shape of said buttons, whereby said buttons and said sling are held against movement about said thimble.

9. In combination, a thimble and a sling, the thimble being formed of a member shaped to provide an eye and to provide a portion against which said sling is positioned, there being a plurality of buttons formed upon said sling intermediate its ends, said thimble provided with members embracing said sling, said members throughout a part of their length being spaced apart a distance equal to the width of said sling and said button and shaped to provide cavities of approximately the size and shape of said buttons and to overlie the ends thereof, whereby said buttons and said sling are held against movement about said thimble.

10. In combination, a thimble and a sling, the

thimble being formed of a single, endless, metallic member shaped to provide an eye and to provide a portion against which said sling is positioned, there being a plurality of buttons formed upon said sling intermediate its ends, said thimble provided with integral members embracing said sling, said members being spaced apart a distance substantially equal to the width of the sling member and shaped to provide cavities of approximately the size and shape of said buttons, the ends of said cavities being reduced to a diameter less than the diameter of said buttons, whereby said buttons and said sling are held against movement in either direction about said thimble.

11. In combination, a thimble and a sling, the thimble being formed of a single, endless, metallic member shaped to provide an eye and to provide a portion against which said sling is positioned, there being a plurality of buttons formed upon said sling intermediate its ends, said thimble provided with integral members embracing said sling, said members throughout a part of their length being spaced apart a distance equal to the width of said sling and said button and shaped to provide cavities of approximately the size and shape of said buttons, the ends of said cavities being reduced to a diameter less than the diameter of said buttons, whereby said buttons and said sling are held against movement in either direction about said thimble.

12. A thimble for use with slings, said thimble comprising an endless body shaped to form an eye and to provide a sling receiving portion, and integral members overlying said sling receiving portion, and adapted to embrace said sling, and provided with a space of greater diameter than said sling, said space shaped to provide a plurality of opposed shoulders, and adapted to engage and retain a button fixed upon said sling.

13. A thimble for use with slings, comprising an endless member defining a sling eye, and defining a space adapted to receive a sling, said member including parts positioned to extend about said sling after the latter is in place, and shaped also to provide within said parts a cavity of greater diameter than the sling member, said cavity being provided with opposed shoulders and being adapted to receive a button cast therein about and in contact with the sling.

14. A thimble for use with slings, comprising a member defining a sling eye, and defining a space adapted to receive a sling, said member including parts positioned to extend wholly about said sling after the latter is in place, and shaped also to provide within said parts a cavity of greater diameter than the sling member, said cavity being provided with opposed shoulders and being adapted to receive a button cast therein about and in contact with the sling.

15. A thimble for use with slings, comprising an endless member defining an eye, and having outwardly extending flanges positioned on each side of said member, said flanges being joined adjacent their lower ends by transverse members and being joined elsewhere by members which extend across from one flange to the other, there being formed within said joining members cavities having opposed shoulders and of a diameter greater than that of the sling, said cavities being adapted to receive material which is to be placed about the sling after the latter has been placed in position about the thimble.

WILLIAM C. RUSSELL,