Nov. 14, 1933. W. F. HEROLD 1,935,560

CASTER SOCKET FOR TUBULAR LEGS

Filed Feb. 17, 1933

Fig. 1.

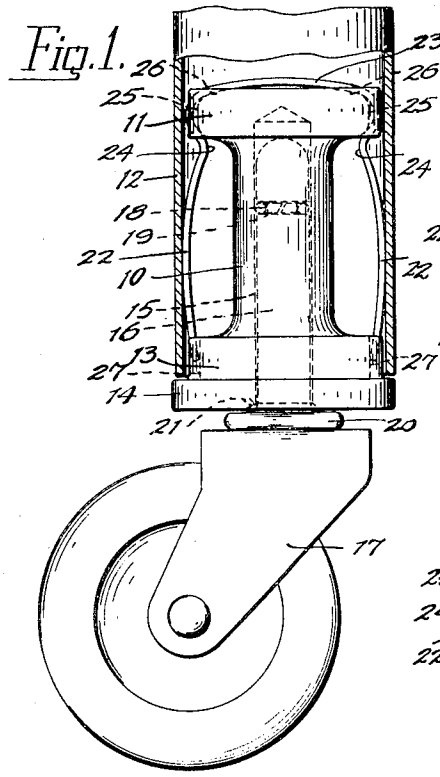


Fig. 2.

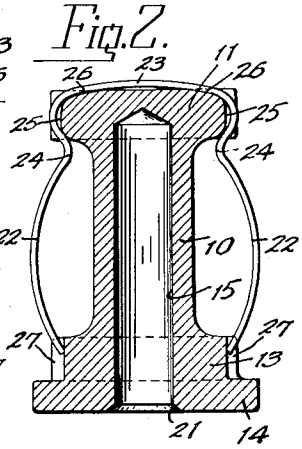


Fig. 3.

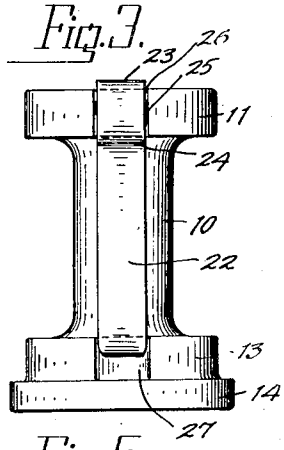


Fig. 4.

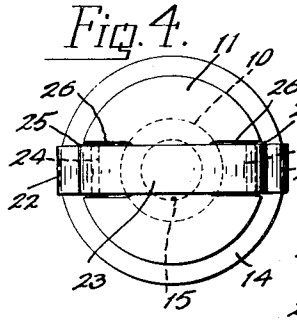


Fig. 5.

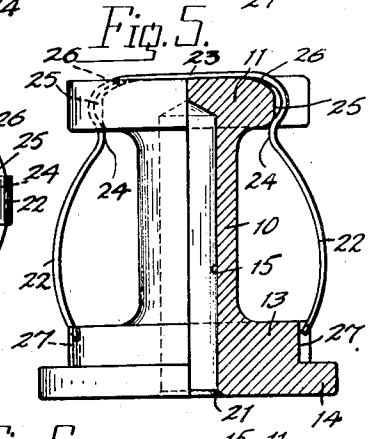


Fig. 7.

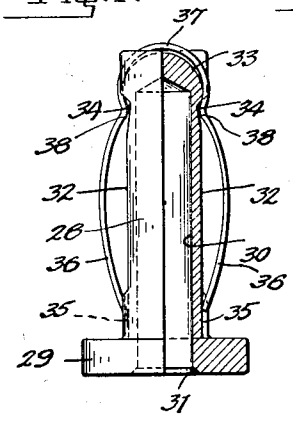


Fig. 8.

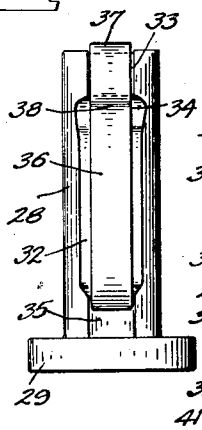


Fig. 6.

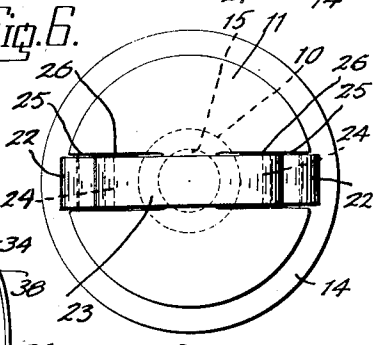


Fig. 10.

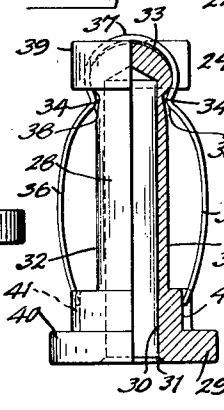


Fig. 11.

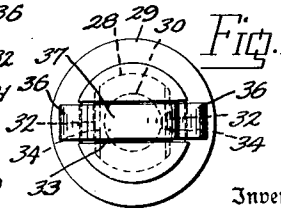
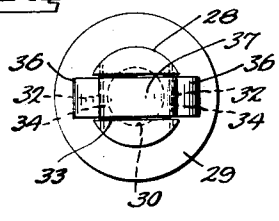


Fig. 9.



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Patented Nov. 14, 1933 1,935,560

UNITED STATES PATENT OFFICE

1,935,560

CASTER SOCKET FOR TUBULAR LEGS

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Application February 17, 1933. Serial No. 657,194

9 Claims. (Cl. 16—39)

The present invention relates to caster sockets, particularly for use in tubular metal legs, and has for an object to provide a socket of extremely simple construction, which may be easily inserted in the leg and will be retained therein firmly. Another object is to provide a socket having a spring retaining member of such construction and arrangement that it will firmly hold the socket in place and against looseness, and in the event of breakage will continue to function effectually. A further object is to provide a socket construction in which a spring element of a given size may be used with a plurality of different diameters sockets, so that with a few sizes of spring elements a relatively large number of diameters of sockets may be provided, without the tool and manufacturing expense that would be attendant upon producing a different sized spring element for every diameter of socket. A still further object is to provide a socket in which the spring element may be easily assembled by hand, so that in shipping the sockets the spring elements may be packed separately and assembled with the sockets by the user. This is particularly important where it is desirable to ship the sockets in bulk, that is, a large number of the sockets loosely placed without wrapping in a single container.

With the above and other objects in view, embodiments of the invention are shown in the accompanying drawing and these embodiments will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawing:

Fig. 1 is a front elevation of a caster socket, according to the illustrated exemplary embodiment of the invention, the same being inserted in a tubular leg, shown partially in vertical section, and the caster being inserted in the socket.

Fig. 2 is a vertical sectional view of the socket, removed from the leg.

Fig. 3 is a side elevation thereof.

Fig. 4 is a top plan view.

Fig. 5 is a view, half in front elevation and half in vertical section, of a larger diameter socket than that shown in Figs. 1 to 4, and in which the same spring element is employed.

Fig. 6 is a top plan view thereof.

Fig. 7 is a view, half in front elevation and half in vertical section, of a smaller diameter socket, employing a smaller size spring element, than that shown in Figs. 1 to 6.

Fig. 8 is a side elevation thereof.

Fig. 9 is a top plan view.

Fig. 10 is a view, half in front elevation and half in vertical section, of a larger diameter socket than that illustrated in Figs. 7 to 9, but employing the same spring element.

Fig. 11 is a top plan view thereof.

Similar reference characters indicate corresponding parts throughout the several figures of the drawing.

Referring to the drawing, and particularly to Figs. 1 to 4, the caster socket, according to the exemplary embodiment of the invention illustrated therein, is preferably formed of cast metal and comprises a central cylindrical pillar 10 capped by a flanged top portion 11 of circular outline and of a diameter greater than the pillar 10 and slightly smaller than the inside diameter of the tubular leg 12 into which the socket is designed to be inserted. At the lower end of the pillar there is provided a flanged base portion 13 corresponding in diameter to the top portion 11 and having a projecting flange 14 at its lower part adapted to extend beneath and abut the lower end of the leg.

A cylindrical bore 15 extends upwardly through the socket and is adapted to receive the pintle 16 of the caster 17, the pintle being rotatably retained by a split spring ring 18 disposed in an annular groove 19 in the pintle, and which grips the wall of the base 15. A filleted base flange 20 has bearing with the bevel bearing surface 21 at the lower end of the bore 15. It will be understood that any desired type of caster and pintle may be employed, the one illustrated merely being shown by way of example.

The spring member, formed of flat strip spring stock and of inverted U-shape, comprises outwardly bowed legs 22—22 and a connecting top portion 23, the side legs being bent inwardly just below the top portion, as at 24—24, to form retaining means for cooperation with the top portion 11 of the socket, as will presently more fully appear.

At diametrically opposed points in the peripheral edge of the top portion 11 there are provided cut outs 25—25 of a width to receive and position the spring, the upper surface of the top being inclined for a short distance inwardly in line with the cut outs, as at 26—26, and the upper and lower corners of the base walls of the cut outs being rounded. The width of the top 23 of the spring, and of the indented retaining portions 24—24, is such that the spring will span the top and be positioned in the cut outs, and the portions 24—24 will snap beneath the top 11 to thus retain the spring.

The lower ends of the spring are engaged and positioned for vertical sliding movement in diametrically opposed vertically disposed cut outs 27—27 in the base portion 13, the depth of these cut outs determining the spread of the spring side legs, which when the socket is out of the leg is substantially greater at the widest part than the interior diameter of the leg. Before attachment of the spring it will be understood that the lower ends are sprung closer together than when attached as shown in Fig. 2.

Upon insertion in the leg the spring side legs will be compressed, their lower ends sliding down in the cut outs 27—27, as clearly indicated in Fig. 1. In this relation each side leg is securely held against displacement and under tension, so that even should a break occur in any other portion of the spring one leg at least will serve to effectually retain the socket. The biting of the edges of the spring legs into the surface of the leg will effectually prevent turning of the socket. While the socket illustrated is of circular shape and intended for a circular leg it will also function in a leg of polygonal form, and if desired the upper and lower portions of the socket may be of non-circular shape to fit any particular non-circular type of leg.

In Figs. 5 and 6 I have illustrated a larger diameter socket than that shown in Figs. 1 to 4. In this case the diameter of the pillar 10 is preferably the same, while the top portion 11 and base portion 13 are of an increased diameter to fit a larger diameter leg. The cut outs 25—25 are of greater depth with relation to the larger diameter portion 11, but the spring engaging portion between them is only slightly wider than this portion of the socket shown in Figs. 1 to 4, so that the upper portion 23 and retaining portions 24—24 of the same spring as employed in the embodiment shown in Figs. 1 to 4 may be engaged therewith. The cut outs 27—27 in the base portion 13 are of substantially the same depth as those in the smaller diameter socket, so that the spring ends engaged therein will be spread to a greater extent than in the smaller diameter socket, and the bowed portions will project to a greater width than the interior diameter of the leg. In this case the arcuate top 23 will be more nearly flat than in the form shown in Figs. 1 to 4 and the retaining portions 24—24 will be more widely spaced due to the fact that the springing apart of the side legs takes place in the top portion 23. When inserted in the leg the bowed spring legs will be compressed and will function to retain the socket in the same manner as in the embodiment shown in Figs. 1 to 4. Obviously any diameter sockets between that shown in Figs. 1 to 4 and that shown in Figs. 5 and 6 may be provided in a similar manner with the same size spring.

In Figs. 7 to 9 I have shown a substantially smaller diameter socket than that illustrated in Figs. 1 to 4. The pillar 28, which is of a diameter slightly smaller than the tubular leg in which it is intended to be inserted, is provided with a flanged base 29 adapted to engage beneath the lower edge of the leg, and a cylindrical pintle receiving bore 30 extends upwardly therein, a beveled bearing surface 31 being provided at the lower end of the bore.

At diametrically opposite sides the pillar is provided with vertically disposed flat surfaces 32—32, extending from a point spaced below the upper end of the pillar to a point spaced above the flanged base 29, thus forming projections at the upper and lower ends of these flat surfaces. The upper end of the pillar is provided with an arcuate recess 33 extending transversely across the top from one flat surfaced side 32 to the other and of a width to receive and position the spring. At the upper end of each flat surface the same is indented beneath the respective sides of the recess 33, as at 34—34, to form spring retaining shoulders. The lower portion of the pillar is provided with spring end retaining recesses 35—35 formed in continuation of the flat surfaces 32—32.

The spring, like that shown in Figs. 1 to 6, is of inverted U-shaped and comprises bowed side legs 36—36, an arcuate top 37, and retaining indentations 38—38 at the upper ends of each side leg. When assembled to the socket the top portion 37 is engaged and positioned in the recess 33, the indented portions 38—38 snap beneath the shoulders formed by the recesses 34—34, and the lower ends of the spring legs are engaged and positioned for vertical sliding movement in the recesses 35—35. When engaged in the tubular leg these spring legs will be compressed in substantially the same manner as described with reference to the other forms, and will function in the same way to retain the socket.

In Figs. 10 and 11 I have shown a socket for somewhat larger diameter legs than that shown in Figs. 7 to 9, but in which the same spring is employed. In this case the pillar 28 is provided at its upper end with a flange 39 of a diameter to fit within the larger diameter leg, and adjacent the base flange 29 is provided with a stepped shoulder 40 of a diameter corresponding to that of the flange 39 and having recesses 41—41 therein for receiving the spring leg ends. The spring is engaged at its upper end with the upper end of the socket in the same manner as in the form shown in Figs. 7 to 9, but the lower ends engaged in the recesses 41—41 are spread to a greater extent to project the bowed spring legs to a greater width than the interior diameter of the tubular leg into which the socket is to be inserted, so that they will be compressed when the socket is inserted in the leg.

I have illustrated and described preferred and satisfactory embodiments of the invention, but it will be obvious that changes may be made therein, within the spirit and scope thereof, as defined in the appended claims.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the lower end of a tubular leg, a pair of spring retaining means at opposite sides of the upper end portion of said insert member, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member, and retaining portions at each side adapted to engage said spring retaining means of the insert member to restrain vertical displacement of said spring member, said side legs having their lower ends bent inwardly toward each other whereby they are out of contact with the tubular leg when said socket is inserted therein.

2. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the lower end of a tubular leg, there being a pair of diametrically opposed peripheral recesses and downwardly directed shoulders at opposite sides of the upper end portion of said insert member, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member and within said recesses to restrain rotary movement, and indented retaining portions at each side adapted to engage beneath said downwardly directed shoulders of the insert member to restrain vertical displacement of said spring member.

3. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the

lower end of a tubular leg, a pair of spring retaining means at opposite sides of the upper end portion of said insert member, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member, and retaining portions at each side adapted to engage said spring retaining means of the insert member to restrain vertical displacement of said spring means, said insert member being provided at its lower portion with oppositely disposed spring end positioning means adapted to be engaged by the lower ends of said spring side legs to predeterminedly spread them with respect to each other.

4. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the lower end of a tubular leg, a pair of spring retaining means at opposite sides of the upper end portion of said insert member, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member, and retaining portions at each side adapted to engage said spring retaining means of the insert member to restrain vertical displacement of said spring means, said insert member being provided at its lower portion with oppositely disposed spring end positioning means adapted to be engaged by the lower ends of said spring side legs to predeterminedly spread them with respect to each other, said positioning means adapted to permit vertical sliding movement of said spring ends therein.

5. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the lower end of a tubular leg, a pair of spring retaining means at opposite sides of the upper end portion of said insert member, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member, and retaining portions at each side adapted to engage said spring retaining means of the insert member to restrain vertical displacement of said spring means, said insert member being provided at its lower portion with oppositely disposed spring end positioning means adapted to be engaged by the lower ends of said spring side legs to predeterminedly spread them with respect to each other, said positioning means adapted to restrain rotary movement of said spring member.

6. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the lower end of a tubular leg, a pair of spring retaining means at opposite sides of the upper end portion of said insert member, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member, and retaining portions at each side adapted to engage said spring retaining means of the insert member to restrain vertical displacement of said spring means, said insert member being provided at its lower portion with oppositely disposed spring end positioning means adapted to be engaged by the lower ends of said spring side legs to predeterminedly spread them with respect to each other, said positioning means adapted to restrain rotary movement of said spring member and permit vertical sliding movement of said spring ends therein.

7. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the lower end of a tubular leg, a pair of spring retaining means at opposite sides of the upper end portion of said insert member, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member, and retaining portions at each side adapted to engage said spring retaining means of the insert member to restrain vertical displacement of said spring means, said insert member being provided at its lower portion with oppositely disposed spring end positioning vertically extending recesses adapted to be engaged by the lower ends of said spring side legs to predeterminedly spread them with respect to each other, said positioning recesses adapted to restrain rotary movement of said spring member and permit vertical sliding movement of said spring ends therein.

8. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the lower end of a tubular leg, there being a pair of diametrically opposed recesses and spring retaining means at opposite sides of the upper end portion of said insert member, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member and within said recesses to restrain rotary movement, and retaining portions at each side adapted to engage said spring retaining means of the insert member to restrain vertical displacement of said spring member, said insert member being provided at its lower portion with oppositely disposed spring end positioning recesses disposed in the vertical plane of said first mentioned recesses adapted to be engaged by the lower ends of said spring side legs to predeterminedly spread them with respect to each other, said positioning recesses adapted to restrain rotary movement of said spring member and permit vertical sliding movement of said spring ends therein.

9. A caster socket for tubular legs, comprising an insert member having a caster pintle receiving socket and adapted to be inserted in the lower end of the tubular leg and including an upper lateral flange adapted to be engaged within the leg, a lower laterally extending portion also adapted to engage with the leg, a lower lateral flange adapted to engage beneath the end of the leg, and a reduced pillar portion between said upper lateral flange and said lower laterally extending portion, there being a pair of diametrically opposed recesses and downwardly directed shoulders at opposite sides of said upper lateral flange, a retaining spring member comprising side legs, a connecting top portion adapted to engage over the upper end of said insert member and within said recesses to restrain rotary movement, and indented retaining portions adapted to engage beneath said shoulders to restrain vertical displacement of said spring member, said lower laterally extending portion being provided with oppositely disposed spring end positioning recesses disposed in the vertical plane of said first mentioned recesses adapted to be engaged by the lower ends of said spring side legs to predeterminedly spread them with respect to each other, said positioning recesses adapted to restrain rotary movement of said spring member and permit vertical sliding movement of said spring ends therein.

WALTER F. HEROLD.