June 28, 1949. W. DANIEL 2,474,516

TRACTOR UMBRELLA

Filed Feb. 26, 1945 2 Sheets-Sheet 1

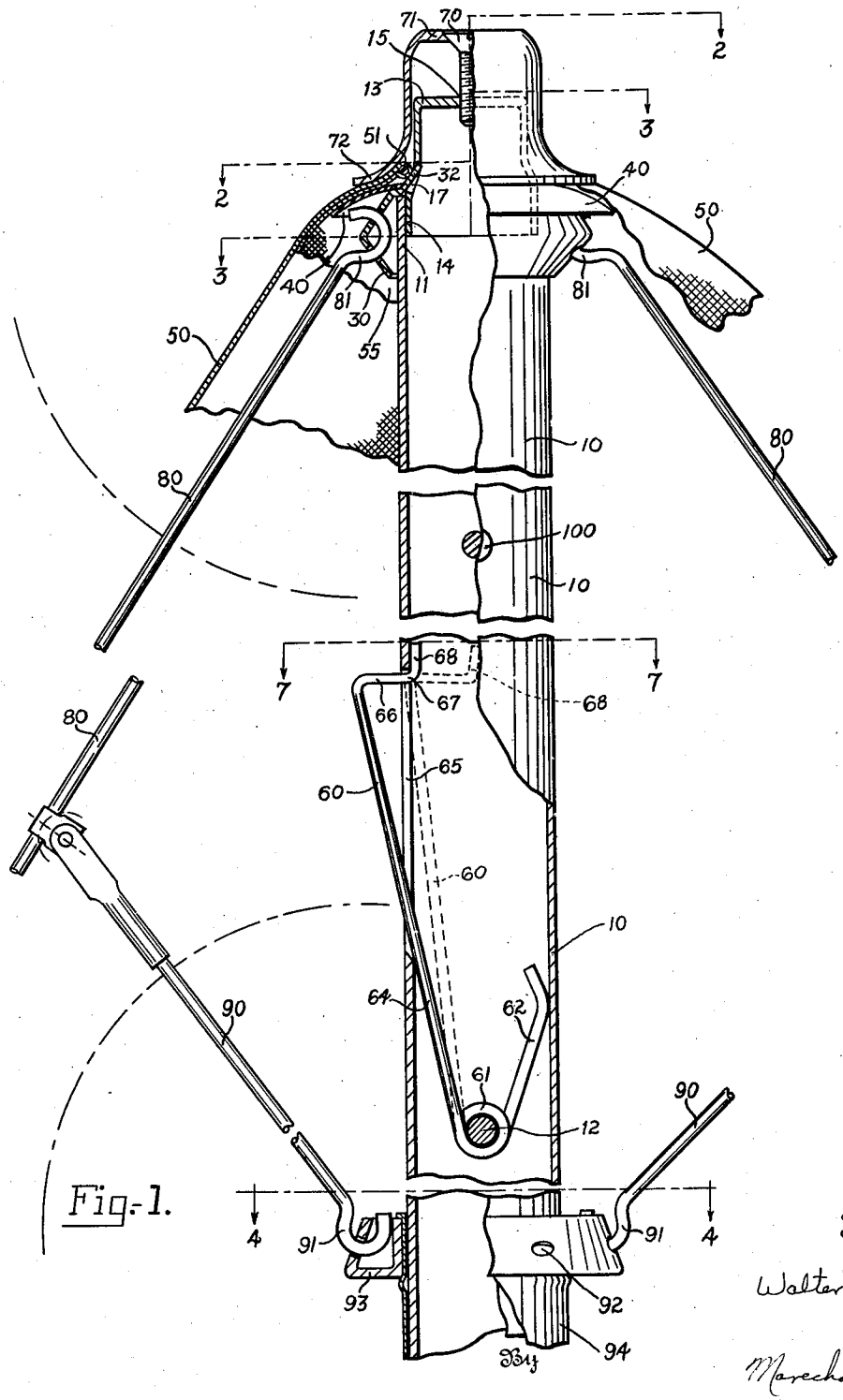


Fig.-1.

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2 Sheets-Sheet 2

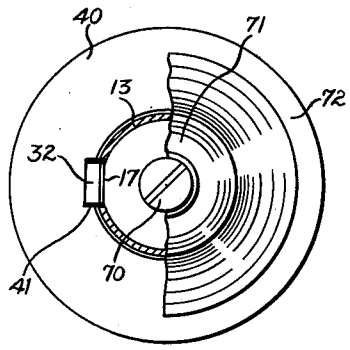


Fig.-2.

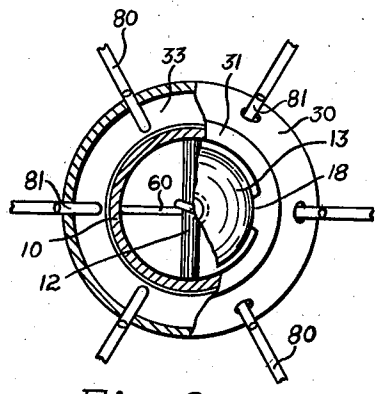


Fig.-3.

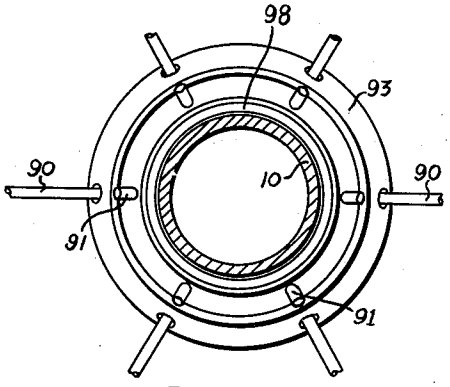


Fig.-4.

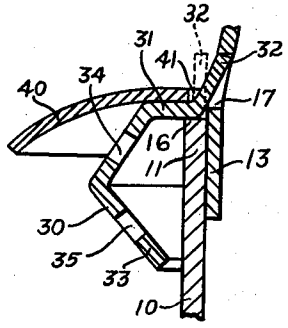


Fig.-5.

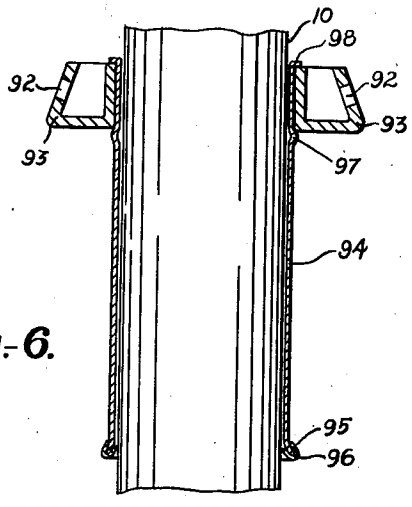


Fig.-6.

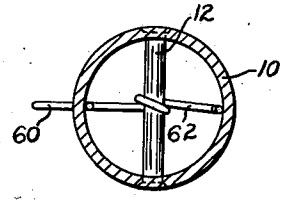


Fig.-7.

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TRACTOR UMBRELLA

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Application February 26, 1945, Serial No. 579,770

8 Claims. (Cl. 135—20)

1

This invention relates to an umbrella of strong and sturdy construction adapted for use on tractors, at the seashore and other places, particularly where the umbrella may be subject to rough treatment. As an example of such a field of use, in the wheatlands of the country much of the work is done by tractors whose drivers need protection from the intense heat of the summer sun. Various means have been considered for mounting umbrellas on tractors to shade drivers but heretofore the umbrellas have not been satisfactorily adapted to the circumstances of their service. In addition to the continual vibration and general rough usage, a lightly built umbrella of ordinary construction may be torn apart by the high winds that are encountered.

It is an object of this invention to construct an umbrella which is relatively simple, inexpensive in construction, easily operated, and at the same time capable of withstanding severe conditions of use. Other objects of the invention are to mount the ribs or braces of an umbrella on the standard by a strong and simple connection, and to mount the cover of an umbrella on the ribs and standard in such a way that the material of the cover is protected against the forces which tend to weaken and to tear it.

Referring to the drawings which illustrate a preferred embodiment of the invention,

Fig. 1 is an elevational view partly in section of the upper end of an umbrella constructed in accordance with the present invention, the standard being broken away in several places in order to show the ribs and braces partly closed;

Fig. 2 is a plan view of the assembled standard partly in section on the line 2—2 of Fig. 1, the cover being removed and the cap being broken away at its center to expose the inner mounting members at the top of the standard;

Fig. 3 is a plan view with the cap removed and partly in section on the line 3—3 of Fig. 1;

Fig. 4 is a section on the line 4—4 of Fig. 1;

Fig. 5 is an enlarged detail of the mounting of the plug, the notcher and the notcher ring on the upper end of the standard;

Fig. 6 is a vertical sectional detail of the runner assembly with the braces omitted; and

Fig. 7 is a cross section on the line 7—7 of Fig. 1.

In the drawings the numeral 10 indicates an

2

umbrella standard composed preferably of steel tubing which may advantageously be cut off square at its upper end 11. A mounting pin 12 for the latch spring 60 passes through the tube and is held therein by means, such as welding, or riveting, which permits the runner to pass over its ends. The upper end of the standard is substantially closed by a plug 13 which is of slightly enlarged diameter at its base 14, and which telescopes within and is welded, brazed or otherwise fixedly attached to the upper end 11 of the standard 10. Plug 13 is cup shaped and has a screw threaded opening 15 centrally of its top. The end 11 of the standard surrounds the plug 13 and forms a small ledge 16 for a purpose to be hereinafter described. The plug 13 has openings 17 and 18 on opposite sides to serve as detents for other elements of the construction.

A ring shaped notcher 30 is composed of an annulus 31 of such diameter that it may be seated upon the ledge 16 of the standard 10. This annulus has a pair of upstanding lugs or ears 32 which may be bent into the openings 17, 18, as shown in Fig. 5 to definitely locate the notcher and to prevent it from working around the standard. From the annulus 31 of the notcher depends the skirt 33 which is of angular shape and which has a series of upper holes 34 and lower holes 35 on opposite sides of the angle to receive the fastening elements of the ribs which are hereinafter to be described. Mounted above the notcher 30 is a notcher plate 40 which is dished and placed in inverted position over the notcher. The notcher plate 40 has notches 41 which fit down over the bases of the lugs 32 and prevent the notcher plate from rotating about the standard.

The cloth, or other suitable covering, 50 of the umbrella is provided with a central hole having a beaded, or serged, i. e., overcast, edge 51 just large enough to fit snugly over the plug 13. A stiffening member 55 may be provided for the inner side of the cover about its mounting on the standard which may be of heavier canvas, impregnated cloth or the like. The umbrella material may be canvas, nylon, strong cotton or any other material which has enough strength and the other desired qualities to withstand the conditions of use.

Adjustably mounted upon the end of the plug 13 by a screw 70 received in opening 15 is a bell-

shaped cap 71 whose lower flared part 72 presses the material of the canvas or covering against notcher plate 40. The reverse curves of the bell and the notcher plate form between them an annular space which is roughly triangular in section, as shown in Fig. 1, in which the beaded or serged edge 51 of the cover is caught. This mounting is strong and yet easily removed and does not put any strain of its own upon the umbrella fabric. Ribs 80 have hooks 81 at their inner ends which are instantly and easily applied through the holes of the notcher, but when once they are so emplaced and the ribs are attached to the braces 90, they cannot be accidentally displaced or in any other way withdrawn without disconnecting them from the braces. The fabric cover 50 is attached to the outer ends of the ribs 80 by means which need not be disclosed in detail, any suitable means being used as desired.

The braces 90 are mounted by hooks 91 in holes 92 of a runner 93, mounted upon a barrel or sleeve 94 having an outwardly peened lower end 95 over which is bent and to which is attached a protective cover 96 which strengthens and guards the sharp lower edge of the barrel. The runner is mounted upon the upper end of the runner barrel 94 in any suitable way. In Fig. 6 the barrel is shown as expanded at 97 to form a stop ring against which the runner rests and the upper end of the barrel is peened out at 98 to lock the ring in place. However this is only a preferred method of attachment as methods such as welding or brazing may be employed, and the barrel and runner can be made unitary if desired. The runner 93 is a ring which is roughly U-shaped in cross section the outer sides of the U being bent inwardly with a substantial inclination as shown in Fig. 6. When the hooks 91 of the braces 90 are in place in holes 2 and joined to the ribs the angular relationship is such that they cannot be removed from the runner without dismantling the top mounting.

In order to keep the runner in its upper position on the standard, and the ribs and braces extended, there is provided a spring 60 which is shown as coiled at 61 about the pin 12 and as having its ends 62 braced against the inside of the standard. The spring thus has two arms 62 and 64 of which the latter is offset outwardly through a slot 65 in the side of the standard, is bent horizontally at 66 to form a stop or rest for the runner barrel, passes through the slot again at 67 and is bent upwardly at 68 to rest against the inside of the standard. This stop is simple in construction and efficient in operation.

The runner has free sliding movement along the standard up to a pin or screw 100 which is fixed in the standard and which projects into the path of the runner to prevent it from traveling upward beyond a definite limit, thus preventing the umbrella from being turned inside out.

The construction of the parts and their proportions are such that when once assembled the connections of the ribs and braces to the standard cannot be unhooked carelessly or unintentionally. In assembling the umbrella the various parts are laid out and the hooks on ribs 80 are passed through the lower hole 35 of the notcher and then through the upper hole 34. The hooks on the ends of the braces 90 are passed through the holes 92 in the runner ring 93; the runner is then put in position on the standard and the notcher is mounted on the ledge formed by the upper end of the standard and its ears are peened into the openings in the plug to hold it in position.

Prior to mounting the parts on the standard the ribs and braces are joined. This may occur either prior to the mounting of the hooks in the ring and the notcher, respectively, or afterwards. The notcher plate is then seated upon the notcher, the cover is emplaced and the whole is held in position by the cap. It is convenient to place the stop rivet or screw 100 after the supporting ribs and braces are in place and before the cover has been applied.

The skirt 33 of the notcher has angularly arranged sides. These angles are chosen with respect to the size of the holes and the diameter and curvature of the hooks on the ribs so that there is no possibility of accidental or intentional dislodgement except by dismantling the assemblage and removing the parts from the standard. This is similarly calculated with respect to the runner ring 93 whose outer wall is placed at such an angle with respect to the base that the hooks of the braces cannot be dislodged or removed without removing the assemblage from the standard. The gauge of the braces and ribs is such that the material cannot be easily deformed and when once bent to its original shape will retain it despite great stresses. In calculating the curvature of the hook for an umbrella of particular size having standard end parts of particular dimensions it should be remembered that the curvature must be sharp enough in the case of the notcher to pass in through one and out through the other of the seating holes and in the case of the runner ring to pass through the seating holes and then through the opening at the top. The extent of the hook is determined by the primary consideration of how long it must be to prevent dislodgement. Similarly the extent of the portion 31 of the notcher is determined by the spacing of the openings 34—35, their size, and the size of the hook. The element 31 will not be so large in extent that the hook will be held a useless distance away from the standard, nor so small that a hook of the proper size when emplaced in the holes 35—34 will prevent the notcher from being mounted on the standard.

In one successful construction, which is not a limitation but an illustration of good practice, a runner ring was used having a largest diameter of $2\frac{1}{32}$'' approximately, a height of ½'', an interior diameter of $1\frac{1}{32}$'', a 15° inclination to the outer wall, $\frac{7}{32}$ of an inch spacing from the top of the outer wall to the center of the hole for the brace, and a brace of Number 6 iron wire turned on a $\frac{5}{16}$'' radius to an angle of 45° and in reverse on a $\frac{3}{32}$'' radius through 180°, the end of the wire being continued at that angle sufficiently to prevent the possibility of dislodgement. The hole in the runner ring was sufficient to receive the so formed hook but not so great as to allow it unnecessary play.

The notcher in the same umbrella was made from a blank having a diameter of 3⅜'' of 14 gauge sheet steel, the center being punched out to $1\frac{5}{32}$'' diameter leaving ears for the purpose described. The rim of the blank was then bent at an angle of 60° on a circle having a radius of $\frac{11}{16}$'' from the center, bending taking place about a $\frac{11}{32}$'' radius. ½'' further from said circle the second bending occurs at 120° to the angle of the first, the skirt being continued in this direction for approximately $\frac{7}{16}$''. The holes for the hooks were spaced at about $\frac{3}{16}$'' from the bend in the middle of the skirt, the diameter of the holes being about $\frac{3}{16}$''. The rib to seat this construction was made of Number 8 iron wire bent at 45° on a

$\frac{3}{16}$'' radius for about $\frac{3}{32}$ of an inch and then reverse bent on a $\frac{1}{8}$'' radius and continued in that line for about $\frac{5}{32}$''.

The foregoing details of construction are only illustrative and these dimensions would be varied if standard, standard ring, notcher and ribs were of other dimensions. It should be understood however that the general principles of the invention as set forth herein should be followed with some care in order to prevent dislodgement and failure of parts and in order to secure reliably the desired results and objects of this invention. From the particular dimensions which have been given here it will be seen that the drawings are not to scale but are illustrative and diagrammatic.

This umbrella is made largely of metal parts which are very strong and which will withstand the most rugged use. The assemblage of cover, ribs and braces and their attachment to the standard and to each other is simple and extremely effective, producing an umbrella capable of withstanding the most rigorous conditions of use without failure.

In opening large umbrellas of this kind it is customary to place the upper end of the standard on the ground and press downward upon the runner. This subjects the fabric of the cover to hard use and in the ordinary top connection leads to early disintegration. In the construction of my invention however, this is not so. The metal cap 71 takes the weight and protects the fabric against damage from the ground. Strains which the fabric undergoes for any cause are not applied to a particular spot at which a fastening is found on the standard but are absorbed by the whole fabric where it is caught between cap and the notcher plate. There is therefore substantially no tearing strain at any one point where the fabric is connected to the standard, no matter how severe the use. The notcher plate protects the fabric from contact with the pivoted ends of the ribs and the heavy under layer prevents the fabric from being worn off against the edge of the notcher plate. The runner, being mounted upon a barrel, having a hand grip makes it impossible for the hands of the manipulator to be pinched when the top is raised or let down. The sliding connection between the ends of the braces and the standard is positive, simple and a substantial improvement over prior structures. Further even severe or continuous jolting while raised, or the forces developed by strong wind, will not damage nor objectionably strain the construction which is thus made highly suitable for the more severe fields of use such as those referred to above.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. An umbrella comprising a hollow standard, a plug mounted within the upper end of said standard and leaving said upper end exposed to form a ledge, a ring shaped notcher mounted upon said standard and supported by said ledge, said notcher and said plug including means cooperating to hold the notcher in fixed relation thereto, a dished notcher plate mounted above the notcher and cooperating with said holding means to prevent displacement thereof, a cover having a central hole through which the standard projects, and a removable cap to clamp the cover against the notcher plate.

2. An umbrella comprising a standard, a notcher plate, means for removably mounting said notcher plate at the upper end of said standard, means preventing relative rotation thereof, a cover having a central hole with a beaded edge, and means to hold the cover against the plate comprising a cap mounted on the standard for the application of pressure to said cover and said plate.

3. An umbrella comprising a hollow standard, a plug mounted in the end of said standard and provided with a screw threaded central opening, means mounted at the end of the standard and about said plug to hold the ends of the ribs of the umbrella and to support an umbrella cover out of contact with said ribs, and means to hold the parts assembled comprising a cap, and a screw seated in said cap and receivable in said screw threaded opening of said plug.

4. An umbrella comprising a standard, a hollow plug in an end thereof having an opening in its side above the standard, and a notcher ring seated about the plug and on the end of the standard having an ear engaging said opening to prevent relative rotation thereof.

5. An umbrella comprising a standard, a plurality of ribs, means to mount said ribs pivotally on the standard toward one end thereof, a flexible cover for the umbrella having a central hole and a beaded edge thereabout, a notcher plate cooperating with said standard for retaining said beaded edge, means for mounting said notcher plate on the standard preventing relative rotation thereof, said notcher plate covering the connection between said ribs and said standard, a cap, and means to secure the cap in position above said notcher plate and for urging said cap axially toward said standard to grip the cover between the cap and the notcher plate.

6. An umbrella comprising a hollow metal standard, a hollow plug in an end thereof having openings in the side above the standard, a notcher ring seated about the plug and on the end of the standard and having ears engaged with the said openings, a notcher plate mounted on and covering said notcher, a cap having a belled bottom overlying the notcher plate, means for attaching said cap in position over said plug, ribs having hooked ends mounted in the notcher, and a covering having a beaded inner edge caught between said cap and said notcher plate.

7. An umbrella comprising a hollow metal standard, a hollow plug in an end thereof having an opening in the side above the standard, a notcher ring seated about the plug and on the end of the standard and having a part engaging with said opening preventing relative rotation between said plug and said notcher ring, a notcher plate mounted on and covering the notcher having a downwardly curved surface, a cap having an upwardly curved bottom overlying the notcher plate and engageable with said downwardly curved surface thereof, means for securing said cap in position over said notcher plate, ribs having hooked ends mounted in the notcher, and a covering having a beaded inner edge caught between said surfaces of said notcher plate.

8. An umbrella comprising a hollow metal standard, a hollow plug in an end thereof having an opening in its side above the standard, a notcher seated about the plug on the end of the standard having an ear extending into the said

opening and having a depending angular skirt with holes therein, a dished notcher plate mounted on and overlying the notcher, a cap having a belled bottom overlying the notcher plate, means for attaching said cap to said plug, ribs having hooked ends mounted in the notcher, and a cover having a beaded inner edge received between the cap and the notcher plate.

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