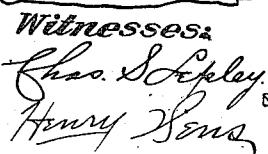


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Inventor:
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UNITED STATES PATENT OFFICE.

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THREAD-PROTECTOR.

994,880.

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To all whom it may concern:

Be it known that I, PETER J. SHRUM, a citizen of the United States, residing at Monaca, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Thread-Protectors, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention consists in an improvement in thread protectors for the threaded ends of pipe, tubing, rods, etc.; and has for its object to provide a simple, cheap and easily adjusted device which may be directly inserted by pushing over the end of the pipe or other article, and then if desired, partially turned to bind it in position by engagement with the threads, to hold it in place until forcibly removed.

The invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of the device detached. Fig. 2 is a vertical sectional view through one side of the threaded portion of a pipe showing a corresponding side of the protector in operative position. Fig. 3 is a view of the device in elevation, applied to the end of a pipe, and indicating the spiral arrangement of the locking abutments. Fig. 4 is a sectional detail view similar to Fig. 2, but showing the abutments secured to the inner side of the ring. Fig. 5 is a view similar to Fig. 4, the abutment being located in a receiving recess in the ring. Fig. 6 is a cross sectional view on the line VI. VI. of Fig. 5. Fig. 7 is a perspective detail view showing a modified form of the locking abutments. Figs. 8 and 9 are detail views showing the locking abutment made of wire, Fig. 9 being a section on the line IX. IX. of Fig. 8. Figs. 10, 11 and 12 are similar detail views showing a further modified construction, Fig. 11 being a section on the line XI. XI. and Fig. 12 a section on the line XII. XII. of Fig. 10. Fig. 13 is a sectional detail view similar to Fig. 2 showing a further modified construction. Figs. 14 and 15 are detail views showing a plurality of locking abutments carried by an encircling band, Fig. 15 being indicated by the line XV. XV. of Fig. 14.

The protector is formed of a band 2 of sheet metal in circular form, connected together by rivets as shown, or in any other suitable way, preferably having a terminal

flange 3 adapted to cover the end or a portion of the end of the pipe or other article when in position, as indicated in Fig. 2.

For the purpose of providing locking devices for engagement with the threads of the protected article, the body portion of the ring is cut or slotted through as at 4 and separate spring tongues 5 are provided, secured to the body portion of the band in any suitable manner as by rivets 6, having their terminals 7 bent inwardly as indicated, said tongue terminals constituting rearwardly extending resilient elements adapted to interlock with the threads.

Upon inserting the protector over the end of the threaded pipe or tubing, it is pushed directly thereon, the terminals 7 of tongues 5 spring over each successive thread and downwardly into the recesses between adjacent threads until flange 3 makes contact or until no more threads can be passed. The ring, upon being turned, may then further feed itself by engagement of the terminals of the tongues with the threads into tight engagement and will there remain until forcibly removed.

When it is desired to remove the device, this may readily be done by merely un-screwing it a few times to release the tongues from engagement and the protector may then be discarded or if desired may be used over again.

It will be understood that any desired number of the tongues 5 may be employed and that in securing them to the ring 2, their terminals may be located to approximate the spiral arrangement of the threads so that all of the tongue terminals will be in engagement, when applied to a threaded pipe, thereby insuring the device in fixed position, as indicated in Fig. 3.

Various other forms and arrangements of the resilient locking tongues may be utilized, and in Fig. 4 I have shown the ring 2' as continuously imperforate and provided with tongues 5' secured by rivets 6' to the inner side of the ring, the terminals 7' engaging the threads of the pipe in the same manner as above described. With this construction of ring a slight clearance is necessary to provide for thickness of the spring tongues, but to obviate the necessity of enlarging the diameters of the rings for such purpose, they may be longitudinally recessed as indicated at 8 in Fig. 5 by merely pressing the metal

outwardly as indicated, the tongues 5' being secured therein in the same manner as described and occupying the space with ample provision for resilient operation of the tongue terminals.

In Fig. 7 I show a modified construction of the spring tongue 5'' having laterally extending attaching wings 9, 9, by which it may be riveted to the shell, if double riveting is preferred. This construction may be used for the inside of the ring, or for the outside, in which case the spring terminal 7'' projects through the slotted opening 4.

In Figs. 8 and 9 I show a further modification of the locking device in which the spring tongue is formed of wire having the side members *a, a*, and the cross terminal thread-engaging member *b*, the lower edge of which as shown, may be made in V form to suit the thread to be engaged, while the rear terminals of the sides *a, a*, are bent inwardly and riveted at their inner portions as indicated at *c*, thereby securing the device in place on the ring.

In Figs. 10, 11 and 12 I show a further modification in which the spring tongue 5''' is provided with a resilient terminal 7''' extending inwardly through the opening 4 and is serrated or toothed across its edge transversely of the several threads to be engaged. With this construction the tongue will spring over the threads in the same manner as above described and will engage several threads at the same time, thereby further insuring its holding effect.

In Fig. 13 I show a construction in which the ring 2 is provided with an interior annular packing 10 of any suitable substance, as felt, adapted to cushion against the threads, and having the spring locking abutments 7^a formed to be secured around the exterior of the ring as shown and bent as at 11 to embrace the edge of the ring and said packing, being free to deflect backwardly against it in springing over the threads, as will be readily understood. The advantage of the packing is in providing an additional protection of the threads.

In Figs. 14 and 15 the locking abutments 7^c are formed as portions, either integral or separately secured, of a continuous encircling band 12, riveted to the ring 2 midway between the several tongues as at 13, thereby providing ample resiliency for the abutments, which extend through the openings 4 and operate in the same manner already described.

It will be understood that with either of the various constructions above described or any other modified forms which may be readily devised, the terminals may be provided with rounded or arched edges for engagement with the teeth as desired to suit different forms of threads or conditions of

use. As thus made and applied the shell or body portion of the protector completely incloses the entire length of threads and envelops and protects them against injury in transit or from any possible cause.

I am aware that thread protectors have been designed having integral inwardly extending tooth-engaging abutments adapted to hold against the threads, but in practice have found that the spring abutments in order to be successfully operative and effective must be of comparatively thin metal, having a considerable degree of elasticity and range of movement.

While good results are secured with the smaller sizes of protectors in which the metal employed may be sufficiently thin to insure such resiliency, the larger sizes, requiring considerably heavier gage of metal for the ring or shell, are not practicable with locking tongues formed of the ring itself for the reason that they are entirely too stiff and unyielding to be operative. In the larger sizes it is desirable and necessary that the rings shall be comparatively heavy, stiff and unyielding to afford proper protection to the threads, and the attachment of the spring abutments in the manner above described permits of them being of comparatively thin spring metal, amply resilient to effect the operation of applying and holding the rings in place, while occupying a comparatively slight space.

The device as thus made is simple and cheap in construction and has proved to be highly efficient in use. It may be made in any suitable size or proportions; the formation of the tongue terminals may be designed to suit the character of the threads of any shape or gage, or the device may be otherwise variously changed or modified in different details, but all such changes are to be considered as within the scope of the following claims:

What I claim is:—

1. A thread protector consisting of a stiff unyielding ring of sheet metal having inwardly extending resilient separately attached abutments adapted to spring over and engage the threads.
2. A thread protector consisting of a stiff unyielding ring of sheet metal having inwardly extending resilient separately attached abutments adapted to move radially with relation to the axial center of the ring to pass over the threads in applying the protector thereto.
3. A thread protector consisting of a stiff unyielding ring of sheet metal having inwardly extending freely resilient separately attached abutments adapted to spring over and engage against the threads, and a terminal inwardly extending flange.
4. A thread protector consisting of a stiff unyielding ring of sheet metal having open-

ings therethrough and inwardly extending
freely resilient separately attached abut-
ments having terminals extending through
said openings adapted to spring over and
5 engage against the threads.

5. A thread protector consisting of a stiff
unyielding ring of sheet metal having open-
ings therethrough and inwardly extending
freely resilient separately attached abut-
10 ments having terminals extending through
said openings adapted to spring over and
engage against the threads, and a terminal
inwardly extending flange.

6. A thread protector consisting of a stiff
15 unyielding ring of sheet metal having in-
wardly extending resilient separately at-

tached abutments adapted to spring over
and engage the threads, said tongues hav-
ing their terminals located in spiral arrange-
ment to conform to the spiral of the threads. 20

7. In a thread protector, the combination
with a stiff unyielding ring, of a plurality of
relatively thin resilient abutments secured
to the ring having terminals adapted to
spring over and engage the threads. 25

In testimony whereof I affix my signature
in presence of two witnesses.

PETER J. SHRUM.

Witnesses:

C. M. CLARKE,
CHAS. S. LEFLEY.