

March 6, 1951

G. P. ELMER
THREAD PROTECTOR

2,543,960

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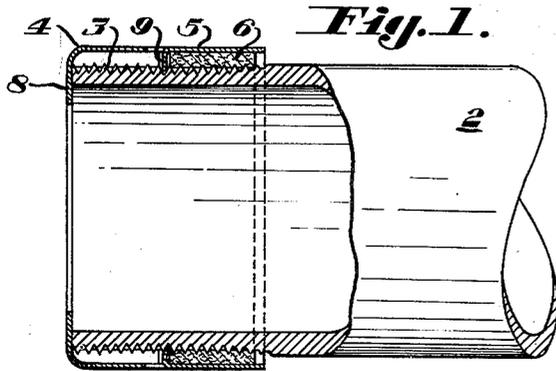


Fig. 1.

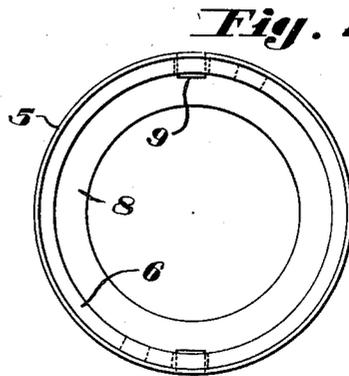


Fig. 2.

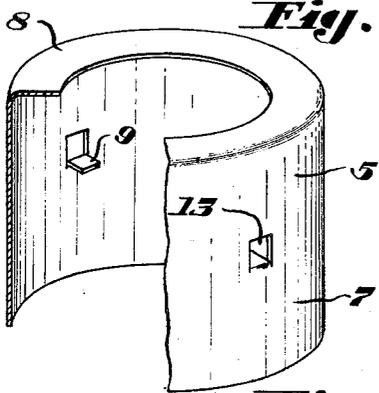


Fig. 3.

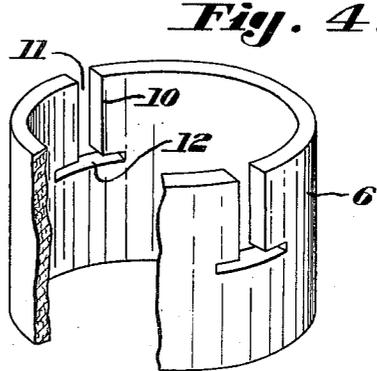


Fig. 4.

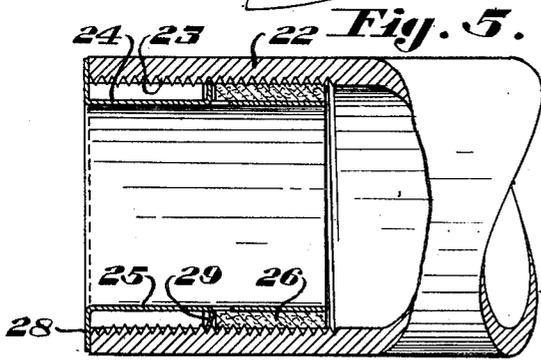


Fig. 5.

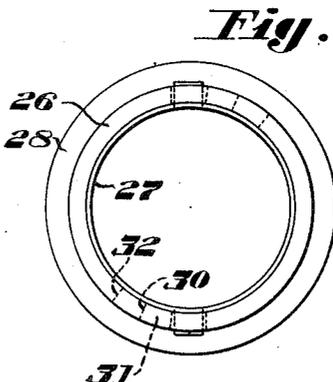


Fig. 6.

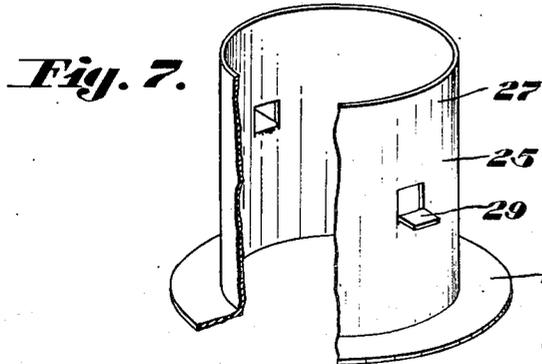


Fig. 7.

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28 by
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UNITED STATES PATENT OFFICE

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THREAD PROTECTOR

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11 Claims. (Cl. 138-96)

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This invention relates to thread protectors. It relates particularly to lined thread protectors, i. e., those having a body of relatively durable material and a liner of relatively deformable material adapted to lie next the threads being protected.

I provide a lined thread protector which is of simple construction, easy to fabricate and highly effective in its protective action. My protector comprises a body of relatively durable material having projection means and a liner of relatively deformable material adapted to be interposed between the body and the pipe and through which the projection means extend. The projection means are preferably in the form of tongue means struck up from the material of the protector body and the liner preferably has an opening or openings through which the tongue means extend. I preferably provide a plurality of projections on the body which are spaced apart circumferentially.

When the projection means are tongue means struck up from the material of the body of the thread protector the body has an opening or openings formed by the striking up of the tongue means, and the liner when the thread protector is applied to the pipe covers the opening or openings in the body.

The protector may be applied over an externally threaded pipe end or within an internally threaded pipe end. In either case the liner is interposed between the body of the protector and the threads being protected. Thus, when the threads being protected are external threads the protector fits over the pipe end like a cap and the liner is disposed within it while when the threads being protected are internal threads the protector fits within the pipe end like a plug and the liner is disposed about it.

The liner preferably has a slot or slots intersecting an edge thereof receiving the projection or projections on the body when the body and liner are assembled. Each such slot preferably has a portion intersecting an edge of the liner and another portion intersecting the first mentioned portion at a point removed from the edge of the liner receiving the projection upon assembly of the body and liner. Desirably the slot is T-shaped with the main portion thereof intersecting the edge of the liner and the cross portion intersecting the main portion at its inner end.

The projection on the body of the protector may have relatively small axial dimension and relatively great circumferential dimension, as when the projection is formed by striking up from

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the material of the body an integral tongue or ear with the connection between the tongue or ear and the main portion of the body extending circumferentially. In such case the liner may have a generally T-shaped slot the main portion of which intersects the edge of the liner and is of a width sufficient to receive the circumferential dimension of the projection and the cross portion of which intersects the main portion at its inner end and is of a width sufficient to receive the axial dimension of the projection.

The protector is applied to a pipe end with the liner next the threads being protected, the projection means on the body of the protector preferably engaging between threads so that when the protector is turned the projection means will cause it to be tightened to the pipe end. Desirably the protector body has a portion adapted to engage the end surface of the pipe when the protector has been applied so as to cover the threads. If the protector body is made so that when the liner is assembled with it by relative axial movement the opening in the body adjacent the tongue is opposite a portion of the slot in the liner the opening in the body is covered when the protector is screwed into place on the pipe end since the body of the protector initially turns through a small angle relatively to the liner until the projection engages an end of the cross portion of the slot in the liner. The relative turning insures covering by the liner of the opening in the body of the protector. Thereafter the body and liner turn together. The liner is preferably of such size that the ends of the threads engage the liner and embed themselves in it to some extent. Thus the threads may form a more or less shallow thread-shaped groove in the surface of the liner next the pipe.

Other details, objects and advantages of the invention will become apparent as the following description of certain present preferred embodiments thereof proceeds.

In the accompanying drawings I have shown certain present preferred embodiments of the invention, in which

Figure 1 is a view of an externally threaded pipe end partially in axial cross-section and partially in elevation showing a thread protector applied thereto;

Figure 2 is a view of the thread protector shown in Figure 1 with the pipe removed and looking into the protector from the right;

Figure 3 is a perspective view with a portion cut away of the body of the thread protector shown in Figures 1 and 2;

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Figure 4 is a perspective view with a portion cut away of the thread protector liner;

Figure 5 is a view of an internally threaded pipe end partially in axial cross-section and partially in elevation showing a thread protector applied thereto;

Figure 6 is a view of the thread protector shown in Figure 5 removed from the pipe and viewing the protector from the right; and

Figure 7 is a perspective view with a portion cut away of the body of the thread protector shown in Figures 5 and 6.

Referring now more particularly to Figures 1-4, there is shown a pipe end 2 having external threads 3. Applied to the pipe end is a thread protector designated generally by reference numeral 4 and comprising a body 5 and a liner 6. The body 5 is made of relatively durable material, as, for example, sheet metal or plastic. The liner 6 is made of relatively deformable material, as, for example, cardboard, fiber, cork, etc. The body 5 comprises a cylindrical portion 7 and an end portion 8 at one end thereof integral with the portion 7 and turned inwardly so as to be adapted to abut the end of the pipe when the protector is applied.

In the cylindrical portion 7 thereof the body 5 of the protector 4 has opposed struck up tongues or ears 9 extending radially inwardly of the body, the line of junction of each tongue 9 with the portion 7 of the body being circumferential of the body. The diameter of the body and the length of the tongues 9 are preferably such that when the body is applied to an externally threaded pipe end the extremities of the tongues engage between threads of the pipe as shown in Figure 1.

The liner 6 (see Fig. 4) is of generally cylindrical shape and is provided with two opposed slots 10, each having a main portion 11 and a cross portion 12 at the inner end of the main portion 11. The width of the main portion 11 of each slot 10 is sufficient to receive the circumferential dimension of one of the tongues 9 and the width of the cross portion 12 of each slot 10 is sufficient to receive the axial dimension of one of the tongues 9.

The protector body 5 and liner 6 are assembled by introducing the liner into the body, the external diameter of the liner being just enough smaller than the internal diameter of the body to permit the liner to be slid into the body. The liner is moved axially into the body from the open end of the body and with the end of the liner intersected by the slots 10 thereof entering the body first. The liner is advanced within the body until the tongues 9 enter the portions 11 of the slots. When the leading end of the liner engages the end portion 8 of the body 5 the tongues 9 will have left the inner ends of the portions 11 of the slots and hence will lie within the portions 12 thereof. At that moment the openings 13 in the body formed when the tongues 9 are struck up register with parts of the slot portions 11. However, upon slight relative turning in either direction between the protector body 5 and the liner 6 each tongue passes to an end of the corresponding slot portion 12 and the openings 13 pass out of register with the slot portions 11 and are covered by the liner.

The protector 4 is applied to the pipe by introducing it over the threaded end of the pipe and turning it into place as one would apply a nut to a bolt. When the tongues 9 engage between threads of the pipe they serve to positively ad-

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vance the protector onto the pipe end as the protector is turned. The ends of the pipe threads preferably embed themselves in the material of the liner 6, which is deformable to receive them. Thus the thread ends may form a more or less shallow female thread in the protector liner.

If the body and liner of the protector have not been relatively turned prior to screwing the same onto the pipe end the body will initially turn through a small angle relatively to the liner until the tongues 9 reach the forward ends of the respective slot portions 12, after which turning of the body 5 will cause the liner 6 to turn with it by reason of engagement of the tongues 9 with the ends of the slot portions 12.

While it is desirable that the extremities of the tongues 9 engage between threads of the pipe this is not in all cases essential as turning on of the protector may be accomplished through the engagement between the ends of the pipe threads and the liner of the protector.

Figures 5, 6 and 7 show a protector for an internally threaded pipe end which is exactly analogous to the protector 4 except that it is applied within the pipe end like a plug instead of over the pipe end like a cap as in Figure 1.

Referring now to Figures 5, 6 and 7, there is shown a pipe end 22 having internal threads 23. Applied to the pipe end is a thread protector designated generally by reference numeral 24 and comprising a body 25 and a liner 26. The body 25 is made of relatively durable material, as, for example, sheet metal or plastic. The liner 26 is made of relatively deformable material, as, for example, cardboard, fiber, cork, etc. The body 25 comprises a cylindrical portion 27 and an end portion 28 at one end thereof integral with the portion 27 and turned outwardly so as to be adapted to abut the end of the pipe when the protector is applied.

In the cylindrical portion 27 thereof the body 25 of the protector 24 has opposed struck up tongues or ears 29 extending radially outwardly of the body, the line of junction of each tongue 29 with the portion 27 of the body being circumferential of the body. The diameter of the body and the length of the tongues 29 are preferably such that when the body is applied to an internally threaded pipe end the extremities of the tongues engage between threads of the pipe as shown in Figure 5.

The liner 26 is of generally cylindrical shape and is provided with two opposed slots 30, each having a main portion 31 and a cross portion 32 at the inner end of the main portion 31, the liner being virtually identical with the liner 6 shown in Figure 4. The width of the main portion 31 of each slot 30 is sufficient to receive the circumferential dimension of one of the tongues 29 and the width of the cross portion 32 of each slot 30 is sufficient to receive the axial dimension of one of the tongues 29.

The protector body 25 and liner 26 are assembled in the same manner as above described with respect to the body 5 and liner 6 of the protector 7 except that the liner 26 is applied over the body 25 instead of within it. Likewise the protector 24 is applied to the pipe end in the same manner as above described with respect to the protector 4 except that it is applied internally of the pipe end instead of externally.

While I have shown and described certain present preferred embodiments of the invention it is to be distinctly understood that the invention is not limited thereto but may be otherwise

variously embodied within the scope of the following claims.

I claim:

1. A thread protector comprising a body of relatively durable material having projection means adapted to engage between threads of a pipe to which the protector is applied and a liner of relatively deformable material lying against the body adapted to be interposed between the body and the pipe and through which the projection means extend.

2. A thread protector comprising a body of relatively durable material having tongue means struck up from the material thereof and adapted to engage between threads of a pipe to which the protector is applied and a liner of relatively deformable material lying against the body adapted to be interposed between the body and the pipe, the liner having an opening or openings through which the tongue means extend.

3. A thread protector comprising a body of relatively durable material having a plurality of projections adapted to engage between threads of a pipe to which the protector is applied, the projections being spaced apart circumferentially, and a liner of relatively deformable material lying against the body adapted to be interposed between the body and the pipe and through which the projections extend.

4. A thread protector comprising a body of relatively durable material having tongue means struck up from the material thereof and adapted to engage between threads of a pipe to which the protector is applied and a liner of relatively deformable material lying against the body adapted to be interposed between the body and the pipe and through which the tongue means extend, the liner when the thread protector is applied to the pipe covering the opening or openings in the body formed in striking up of the tongue means.

5. A thread protector comprising a body of relatively durable material having projection means adapted to engage between threads of a pipe to which the protector is applied and a liner of relatively deformable material lying against the body adapted to be interposed between the body and the pipe, the liner having a slot or slots intersecting the edge thereof receiving the projection means upon assembly of the body and liner.

6. A thread protector for an externally threaded pipe end comprising a body of relatively durable material adapted for application over said pipe end and having inward projection means and a liner of relatively deformable material disposed within the body, the liner having a slot or slots intersecting the edge thereof receiving the projection means upon assembly of the body and liner.

7. A thread protector for an internally threaded pipe end comprising a body of relatively durable material adapted for application within said pipe end and having outward projection means and a liner of relatively deformable material disposed about the body, the liner having a slot or slots intersecting the edge thereof receiving the projection means upon assembly of the body and liner.

8. A thread protector comprising a body of relatively durable material having projection

means extending therefrom and a liner of relatively deformable material lying against the body adapted to be interposed between the body and a pipe end to which the protector is applied, the liner being assemblable with the body at the face of the body at which the projection means are disposed and having a slot or slots intersecting the edge of the liner receiving the projection means upon assembly of the body and liner.

9. A thread protector comprising a body of relatively durable material having a projection extending therefrom and a liner of relatively deformable material lying against the body adapted to be interposed between the body and a pipe end to which the protector is applied, the liner being assemblable with the body at the face of the body at which the projection is disposed and having a slot a portion of which intersects the edge of the liner and another portion of which intersects the first mentioned portion at a point removed from the edge of the liner receiving the projection upon assembly of the body and liner.

10. A thread protector comprising a body of relatively durable material having thereon opposed projections and a liner of relatively deformable material lying against the body adapted to be interposed between the body and a pipe end to which the protector is applied, the liner being assemblable with the body at the face of the body at which the projections are disposed and having opposed T-shaped slots the main portion of each of which intersects the edge of the liner and the cross portion of each of which intersects the main portion of the corresponding slot at its inner end receiving the respective projections upon assembly of the body and liner.

11. A thread protector for a threaded pipe end comprising a body of relatively durable material adapted for application to said pipe end and having a projection having relatively small axial dimension and relatively great circumferential dimension and a liner of relatively deformable material lying against the body adapted to be interposed between the body and a pipe end to which the protector is applied, the liner being assemblable with body at the face of the body at which the projection is disposed and having a generally T-shaped slot the trunk portion of which intersects the edge of the liner and is of a width sufficient to receive the circumferential dimension of the projection and the cross portion of which intersects the trunk portion at its inner end and is of a width sufficient to receive the axial dimension of the projection.

GEORGE P. ELMER.

REFERENCES CITED

The following references are of record in the file of this patent:

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Certificate of Correction

Patent No. 2,543,960

March 6, 1951

GEORGE P. ELMER

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 6, line 48, after the word "with" insert *the*; line 70, list of references cited, add the following:

1,970,709 *Rose* ----- *Aug. 21, 1934*

and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22nd day of May, A. D. 1951.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.