April 12, 1932. H. A. UNKE 1,853,946

THREAD PROTECTOR

Filed Sept. 9, 1930

Fig. 1

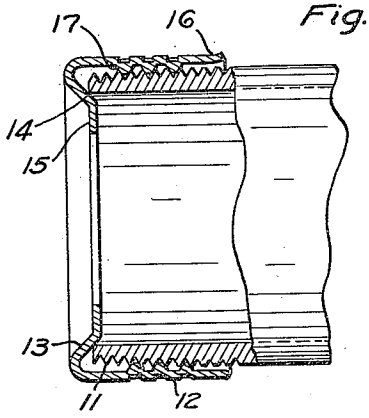


Fig. 2

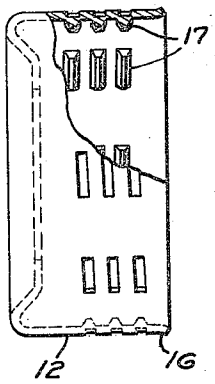


Fig. 3

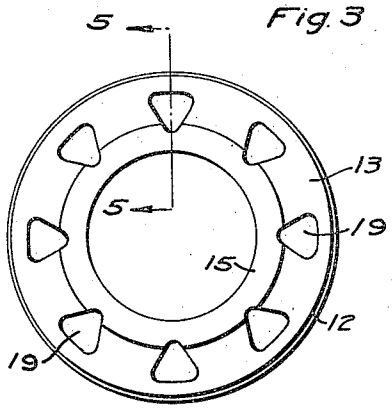


Fig. 4

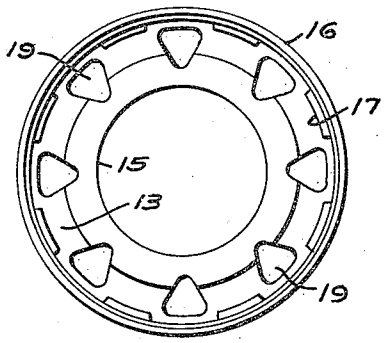


Fig. 5

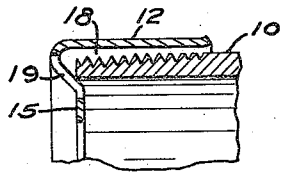
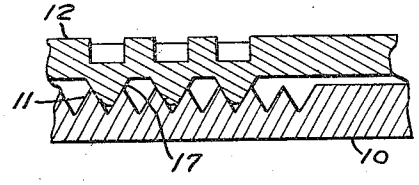


Fig. 6



Inventor

Herman A. Unke

By William Isler

Attorney

Patented Apr. 12, 1932 1,853,946

UNITED STATES PATENT OFFICE

HERMAN A. UNKE, OF CLEVELAND, OHIO

THREAD PROTECTOR

Application filed September 9, 1930. Serial No. 480,744.

This invention relates in general to devices for protecting the threads of pipes and other threaded products during shipment and handling, and which are commonly designated "thread protectors".

Devices of this nature, in addition to their normal use as a protection against mutilation of and injury to the threads of a pipe, also serve to shield and protect the threads of the pipe during the process of applying a corrosion-resistant coating to the pipe, and in the pickling and washing treatments preliminary to the application of the corrosion-resistant coating.

In coating pipe with japan or enamel, for example, it is the usual practice to dip the pipes having thread protectors thereon successively in a pickling solution, water, and japan or enamel, the pipes being removed from the vats after each dip and suspended vertically to permit drainage of these materials.

If the water is not permitted to drain freely, a certain amount is likely to be trapped between the protector and the threads of the pipe, where it may cause corrosion or rusting of the threads, making it difficult in many instances to remove the protector from the pipe. This is particularly true where there has been a long delay between the washing and enameling treatments. Moreover, after the protector has been removed, it is often observed that an excessive quantity of enamel has lodged between and on the threads, rendering it difficult to remove the protectors and to apply couplings to the pipe. These objectionable features are particularly noticeable when thread protectors of the type shown in my Patent No. 1,776,528, granted September 23, 1930, are used, because the thread engaging elements of the thread protector are not continuous, but in the form of circumferentially spaced lugs, the spaces between the lugs affording passages for the flow of the pickling agents, water and enamel. Consequently, a specific embodiment of the invention is hereinafter illustrated and described, by way of example, in conjunction with a thread protector of the type shown in my aforesaid patent.

The present invention has as its primary object the provision of thread protectors having novel drainage apertures which permit free and rapid drainage of liquids and coating compositions from pipes to which the thread protectors have been secured.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings, wherein

Fig. 1 is an elevation of a pipe having a protector embodying my invention applied thereto, the protector and a portion of the pipe being shown in section;

Fig. 2 is a side elevation of the protector shown in Fig. 1, with a portion thereof broken away;

Fig. 3 is an elevation of the outer end of the protector;

Fig. 4 is an elevation of the inner end of the protector;

Fig. 5 is a fragmentary cross-section through the protector, taken on the line 5—5 of Fig. 3, and

Fig. 6 is a detail sectional view, on enlarged scale, of the lugs as shown in Fig. 1.

Referring now to the drawings in detail, Fig. 1 shows the end portion of a length of pipe 10 provided with the usual tapered threads 11, although the invention is in no way restricted to pipes or other threaded products having tapered threads. To protect the threads 11, I arrange thereon a metal sleeve 12, which is preferably stamped from sheet metal and provided at one end with an inturned flange 13 which frictionally engages the inner corner 14 of the end of the pipe 10, so as to assist in securing the protector in place. Additional reinforcement is provided by the flange 15 which extends radially inwardly from flange 13, and also by the rounded form of the exposed or outer end of the protector. At the opposite or inner end of the protector the end portion of the wall of the sleeve 12 is flared outwardly to form the skirt 16. The internal diameter of the skirt 16 is somewhat greater than the external diameter of the threaded portion so that the protector may be readily slipped over the end of the pipe, thus greatly facilitating the

operation of arranging the protector on the pipe.

In forming the sleeve 12, I prefer to have the internal diameter of such size that the inner surface will not engage with the tops of the threads 11, thereby avoiding any mutilation of the threads in placing the protectors thereon, or in removing it. For protectors for tapered threads, I prefer to make the sleeve 12 of slightly tapering form.

In order to secure the protector on the threads, and to prevent it from being knocked or jarred off, I provide lugs 17 on the inner periphery of the sleeve 12 for engagement with the threads 11. These lugs are arranged in a plurality of circumferentially spaced axially extending rows, as shown in Figs. 2 and 4, so that the lugs of the different rows are in relatively helical arrangement conforming to the helix of the threads of the pipe. The lugs are preferably formed in a stamping press by means of dies, which displace slugs of metal radially inwardly from the wall of the sleeve by shearing force, and which swage these lugs to form the wedge shaped projections 17 on the inner periphery of sleeve 12, as is best shown in Figs. 1 and 2. The lugs of the different rows are spaced apart, in the axial direction, a distance which is a multiple of the distance between successive threads, and in this instance are shown spaced apart the distance of two threads.

In applying the protector to the pipe the lugs 17 engage and follow the threads 11 as the protector is rotated. The flange 13 is thereby brought to bear against the inner corner 14, of the end of the pipe 10, which causes lugs 17 to press against the sides, of the threads 11, that are remote from the ends of the pipe. The cooperation of the lugs 17 and the flange 13 thus serves to prevent the protector from being removed from the pipe by straight axial movement.

As is best shown in Fig. 4, the spaces between the rows of lugs 17 form passages 18 between the pipe 10 and the sleeve 12 of the protector, and these passages permit pickling agents, water, and enamel to flow therethrough and on the threads of the pipe.

In order to prevent accumulation of the pickling agents, water, or enamel between the protector and the pipe, I permit free and rapid drainage of these materials by providing circumferentially spaced apertures 19, portions of which lie in the flanges 13 and 15 of the protector, as clearly shown in Fig. 5. For most rapid drainage, the apertures 19 are preferably in axial alignment with the passages 18. These apertures permit drainage of the aforesaid materials from the interior walls of the pipe as well as drainage of these materials from the exterior walls of the pipe and through the passages 18.

While I have shown and described the preferred form of my invention, it will, of course, be understood that I do not regard my invention as limited to the particular embodiment disclosed, since various changes may be made therein without departing from the spirit of the invention and the scope of the appended claims.

Claims—

1. In combination with a threaded element, a protector for the threads thereof comprising a continuous sleeve formed from sheet metal and provided with lugs spaced circumferentially of the sleeve and in engagement with the threads of said element, said sleeve having an inturned flange at one end thereof in engagement with the end of the threaded element, the spaces between the lugs and between the protector and the threads of the threaded element forming passages through which material with which the threaded element is treated may pass, said flange having apertures therein permitting drainage of said material, said apertures being substantially in axial alignment with said passages.

2. In combination with a threaded element, a protector for the threads thereof comprising a continuous metallic sleeve provided with lugs spaced circumferentially on the inner periphery of said sleeve and in engagement with the threads of said element, said sleeve having an inturned flange at one end thereof, the spaces between the lugs and between the protector and the threads of the threaded element forming passages through which material with which the threaded element is treated may pass, said flange having apertures therein for permitting drainage of said material, said apertures being substantially in axial alignment with said passages.

3. A pipe thread protector comprising a continuous sleeve formed from sheet metal and provided with lugs spaced circumferentially of the sleeve for engagement with the threads of a pipe when the protector is screwed on said pipe, said sleeve having an inturned flange at one end thereof adapted to engage the inner corner of the end of the pipe, said flange having apertures therein for permitting drainage of materials with which the pipe is treated, and said apertures being substantially in axial alignment with the spaces between the lugs.

4. A pipe thread protector comprising a continuous metallic sleeve adapted to surround threads to be protected and provided with lugs spaced circumferentially on the inner periphery of said sleeve whereby the protector may be screwed on said threads, said sleeve having an inturned flange at one end thereof, said flange having apertures therein for permitting drainage of materials with which the pipe is treated, and said apertures being substantially in axial alignment with the spaces between the lugs.

5. In combination with a threaded element, a protector for the threads thereof compris-

ing a continuous sleeve formed from sheet metal and provided with lugs spaced circumferentially of the sleeve in relatively helical arrangement and in engagement with the threads of said element, said sleeve having an inturned flange at one end thereof in engagement with the end of the threaded element, the spaces between the lugs and between the protector and the threads of the threaded element forming passages through which material with which the threaded element is treated may pass, said flange having apertures therein permitting drainage of said material, said apertures being substantially in axial alignment with said passages.

6. In combination with a threaded element, a protector for the threads thereof comprising a continuous metallic sleeve provided with lugs spaced circumferentially on the inner periphery of said sleeve in relatively helical arrangement and in engagement with the threads of said element, said sleeve having an inturned flange at one end thereof, the spaces between the lugs and between the protector and the threads of the threaded element forming passages through which material with which the threaded element is treated may pass, said flange having apertures therein for permitting drainage of said material, said apertures being substantially in axial alignment with said passages.

7. A pipe thread protector comprising a continuous sleeve formed from sheet metal and provided with lugs spaced circumferentially of the sleeve in relatively helical arrangement for engagement with the threads of a pipe when the protector is screwed on said pipe, said sleeve having an inturned flange at one end thereof adapted to engage the inner corner of the end of the pipe, said flange having apertures therein for permitting drainage of materials with which the pipe is treated, and said apertures being substantially in axial alignment with the spaces between the lugs.

8. A pipe thread protector comprising a continuous metallic sleeve adapted to surround threads to be protected and provided with lugs spaced circumferentially on the inner periphery of said sleeve in relatively helical arrangement whereby the protector may be screwed on said threads, said sleeve having an inturned flange at one end thereof, said flange having apertures therein for permitting drainage of materials with which the pipe is treated, and said apertures being substantially in axial alignment with the spaces between the lugs.

In testimony whereof I affix my signature.

HERMAN A. UNKE.