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THREAD PROTECTOR.

APPLICATION FILED JAN. 25, 1911.

1,023,969.

Patented Apr. 23, 1912.

Fig. 2.

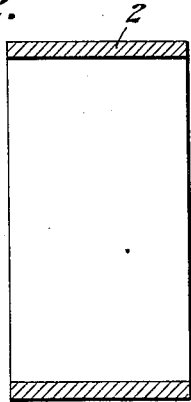


Fig. 1.

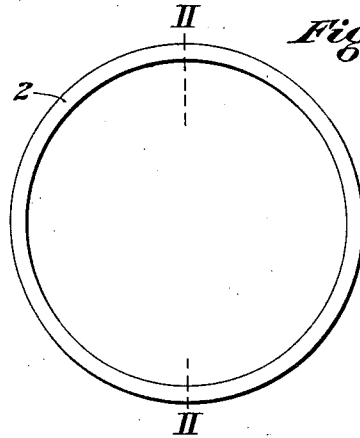


Fig. 4.

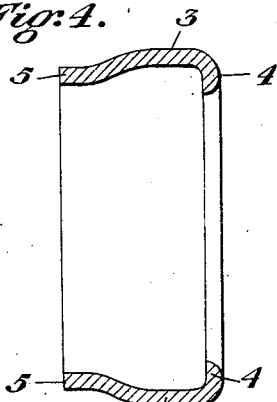


Fig. 3.

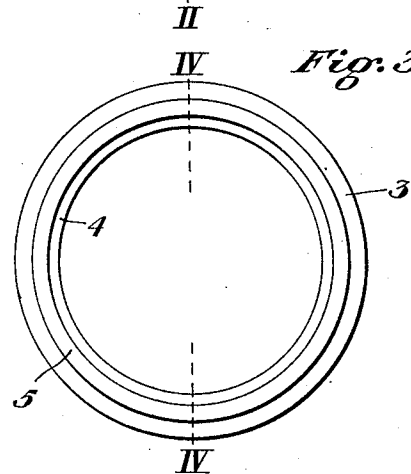


Fig. 6.

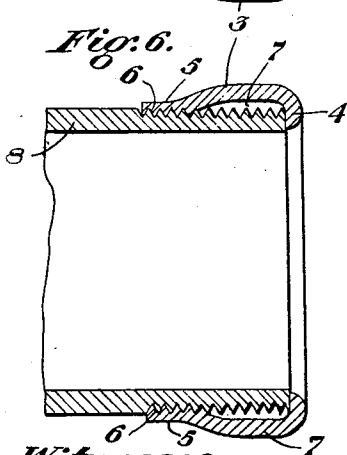
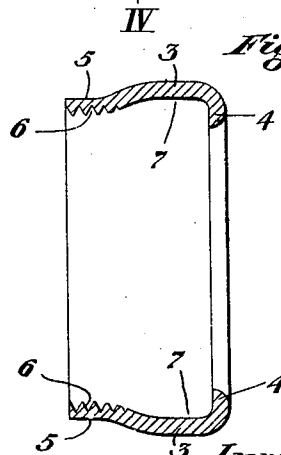


Fig. 5.



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UNITED STATES PATENT OFFICE.

PETER J. SHRUM, OF MONACA, WILLIAM C. RAE, OF PITTSBURGH, AND JOSEPH W. RIPPER, OF GLENFIELD, PENNSYLVANIA, ASSIGNORS TO COLONA MANUFACTURING COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

THREAD-PROTECTOR.

1,023,969.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, PETER J. SHRUM, WILLIAM C. RAE, and JOSEPH W. RIPPER, citizens of the United States, residing, respectively, at Monaca, in the county of Beaver, and Pittsburgh and Glenfield, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Thread-Protectors, of which the following is a specification.

Our invention consists of an improvement in thread protectors for the threaded ends of pipes, tubing, rods, etc., and has for its object to provide a simple, cheap and easily applied device which may be directly placed on the threaded article by screwing in the manner customary with an ordinary coupling.

The improvement resides in a protector made from an integral cylindrical section of rolled metal as either seamless, lapped or butt-weld tubing.

The invention is designed to provide a protector having ample weight and strength for the larger sizes of pipes, etc., having comparatively coarse threads or of the smaller sizes, if desired, the principal object being to surround the threads with a wrought metallic covering of sufficient strength and rigidity to protect the thread from injury in transit or handling.

In the accompanying drawings, which illustrate the several progressive steps in making the complete protector from a blank: Figure 1 represents an end view of the blank of continuously integral wrought metal. Fig. 2 is a vertical sectional view on the line II. II. of Fig. 1. Fig. 3 is an end view of the blank after it has been swaged down at each end to provide the thread-receiving and flange terminals respectively. Fig. 4 is a vertical section on the line IV. IV. of Fig. 3. Fig. 5 is a view of the protector provided with the threads at its applying end. Fig. 6 is a vertical sectional view showing the protector applied to the end of a threaded pipe or tube.

In manufacturing thread protectors, which are ordinarily used but once and then discarded, it is very desirable that the protector shall be as simple and cheap in construction and material as possible. It is also desirable that, in the case of protectors which are screwed upon the threaded ends

of the article to be protected, the thread engagement shall be sufficient to rigidly hold the protector in position but not more than sufficient, whereby to simplify the operation of application and removal; also that the protector itself shall be capable of completely inclosing and protecting not only the threads of the article, but also the exposed end. Also, that it shall be of as compact and smooth construction as possible, whereby to occupy a minimum of space, avoid interference or entanglement with adjacent protectors as in a loaded car, and shall avoid any connections or joints which are liable to breakage or disarrangement. To insure strength and resistance to the blows and shocks incident to its use, the protector is preferably made of wrought metal which will not easily fracture. To accomplish these ends, we have utilized a cylindrical wrought metal blank 2, cut off in sectional lengths from rolled tubing, providing a continuously annular band of integral wrought metal of uniform thickness, having a continuously smooth interior and exterior peripheral surfaces.

The blank is made of sufficient length, to provide ample length of the body portion of the protector when treated by the pressing or swaging operations to form the blank into shape as indicated in Figs. 3 and 4. This is done by suitable dies, preferably over an interior mandrel, whereby to maintain the middle body portion of the blank at its maximum diameter, rounded as indicated at 3, while one end is bent downwardly to provide the inwardly extending annular flange 4, the other end being depressed inwardly to a somewhat less extent providing the thread-engaging portion 5. Said portion as shown, extends longitudinally of the blank parallel with its center for a sufficient distance to provide enough stock to cut several threads, as four or more, and is then rounded upwardly into the middle body portion 3, as clearly shown. Threads 6 are then tapped into the reduced extension 5 for its full interior length, as indicated in Fig. 5. By this construction, it will be seen that an inner annular space 7, outwardly beyond the threads 6 and bounded at the other end by the flange 4, is provided, into which extends the end of the pipe or tube 8, when the protector is ap-

plied as in Fig. 6. As shown, the length of the protector is preferably practically co-extensive with the length of the threads on the pipe, so that it is entirely protected and whereby the terminal flange 4 may be tightly jammed up against the end of the pipe as shown.

The operation of swaging the reduced sleeve 5 downwardly over the mandrel compresses the metal and renders it somewhat more dense than the main body portion, whereby to reinforce its strength at the threaded end. The thickness of the metal at such end may also be somewhat reduced in the swaging operation, so that when the protector is screwed upon a pipe it extends over slightly beyond the outside diameter of the pipe itself, at the threaded portion. If desired, the tubular blank may be first formed from a flat centrally apertured disk pressed into tubular form by any suitable dies or forming mechanism, or it may be formed from a flat blank having its ends connected in any suitable manner and pressed into the form described.

The rounding of the metal beyond the threaded portion, outwardly into the middle enlarged body 3, which in turn is rounded into the flange 4, provides a continuously curved annular surface in all directions, without any shoulders or projections but entirely capable of being grasped by an ordinary pipe wrench. The avoidance of all projections greatly facilitates the handling of the material when supplied with protectors; insures compact packing for storage or shipment, avoids any danger of injury to the workman, and in general provides a device which is well adapted to the objects in view.

What we claim is:—

1. A thread protector for pipes, etc. consisting of a continuously integral metal ring having a middle non-contacting portion and terminal inwardly pressed portions providing a flange and threaded portion respectively of less diameter than the middle portion, said flange extending inwardly beyond the outer diameter of the pipe to be protected, substantially as set forth.

2. A thread protector for pipes, etc. consisting of a continuously integral wrought metal ring having a middle non-contacting portion and terminal inwardly pressed portions providing a flange and threaded portion respectively of less diameter than the middle portion, said flange extending inwardly beyond the outer diameter of the pipe to be protected, substantially as set forth.

3. A thread protector consisting of a continuously integral wrought metal ring of substantially uniform thickness having a middle maximum diameter, an annular in-

wardly turned flange at one end extending inwardly beyond the outer diameter of the pipe to be protected, an interiorly threaded annular portion at the other end pressed inwardly beyond the maximum diameter, and an intervening outwardly bulging annular body portion providing the maximum diameter and an interior annular cavity outwardly beyond the greatest diameter of the threaded portion and longitudinally between it and the terminal flange, substantially as set forth.

4. A thread protector consisting of a continuously integral wrought metal ring of substantially uniform thickness having a middle maximum diameter, an annular inwardly turned flange at one end, an interiorly threaded annular portion at the other end pressed inwardly beyond the maximum diameter of the protector and of the pipe to be protected, and an intervening outwardly bulging annular body portion providing an interior annular cavity outwardly beyond the greatest diameter of the threaded portion and longitudinally between it and the terminal flange, the exterior of the protector being continuously rounded and smooth, substantially as set forth.

5. A thread protector consisting of a continuously integral metal ring of substantially uniform thickness having a middle maximum diameter, an annular inwardly turned flange at one end extending inwardly beyond the outer diameter of the pipe to be protected, an interiorly threaded annular portion at the other end extending inwardly beyond the maximum diameter, and an intervening outwardly bulging annular body portion providing the maximum diameter and an interior annular cavity outwardly beyond the threaded portion and longitudinally between it and the terminal flange, substantially as set forth.

6. A thread protector consisting of a metal ring of substantially uniform thickness having an internally threaded end portion, a middle enlarged portion having an internal diameter greater than that of the threaded portion of the article to be protected, and provided with an inwardly turned flange at its other end extending inwardly beyond the outer diameter of the thread to be protected, substantially as set forth.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

PETER J. SHRUM.
WILLIAM C. RAE.
JOSEPH W. RIPPER.

Witnesses:

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GILBERT TRUMPETER.