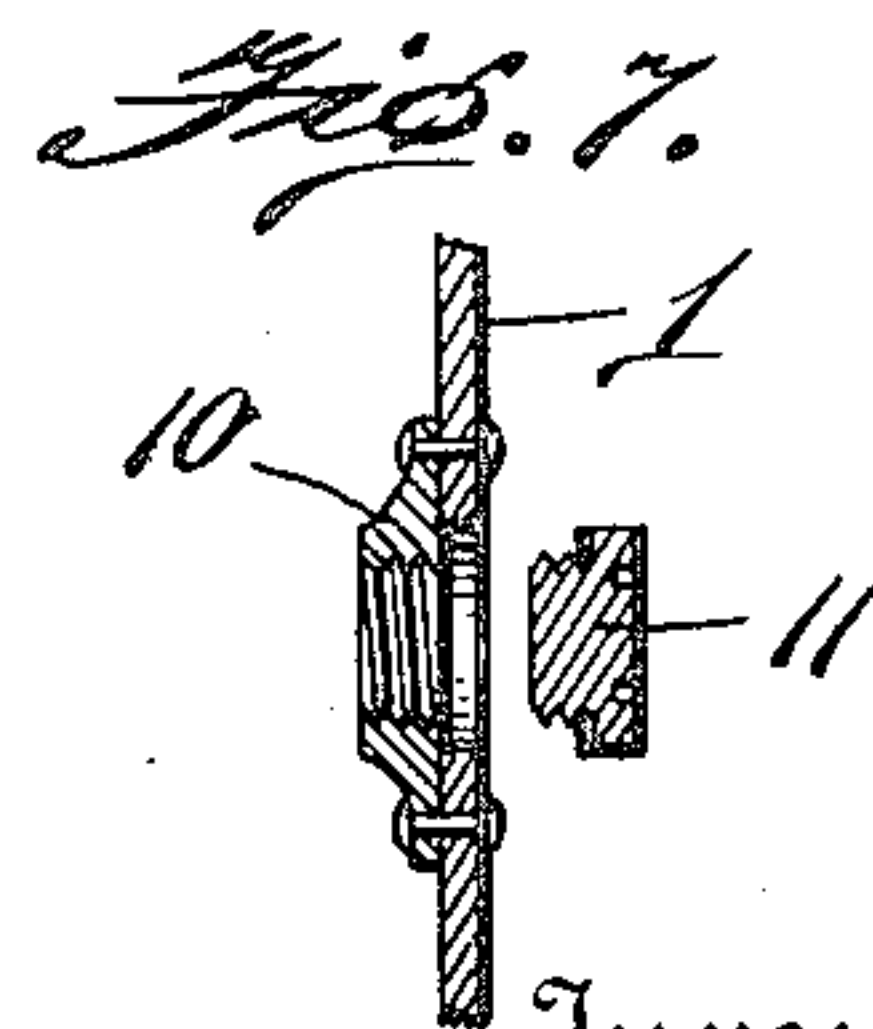
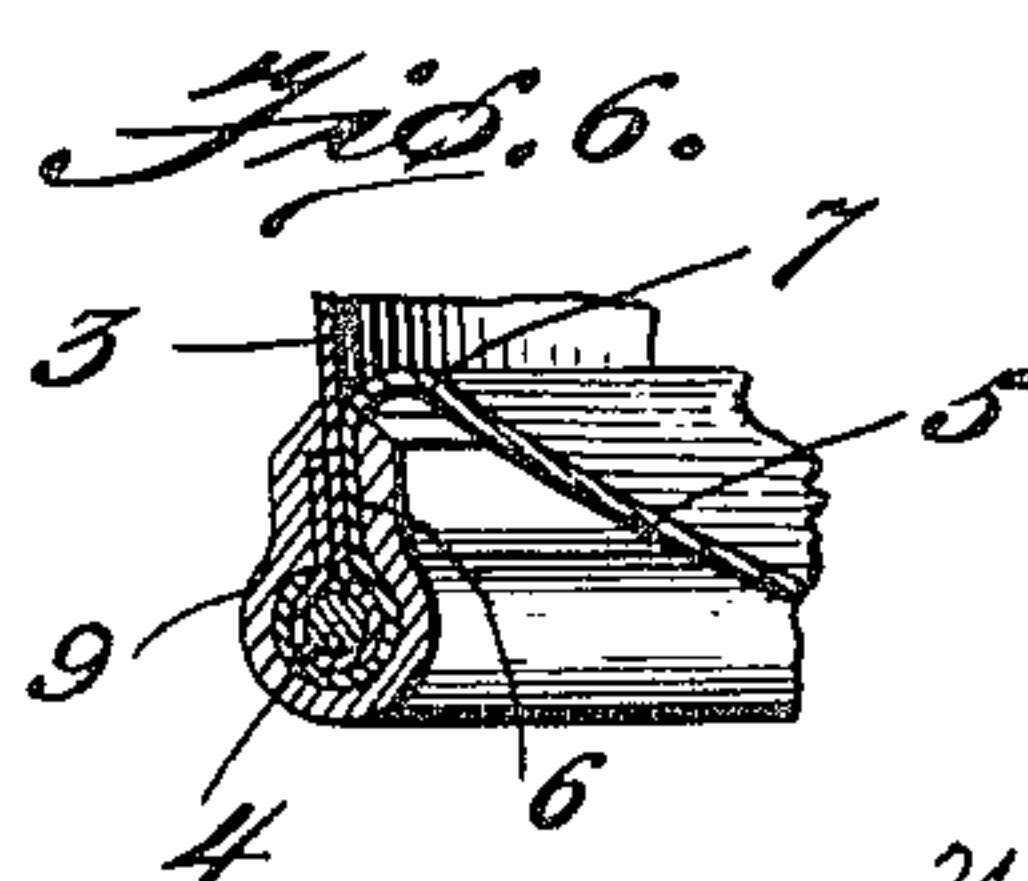
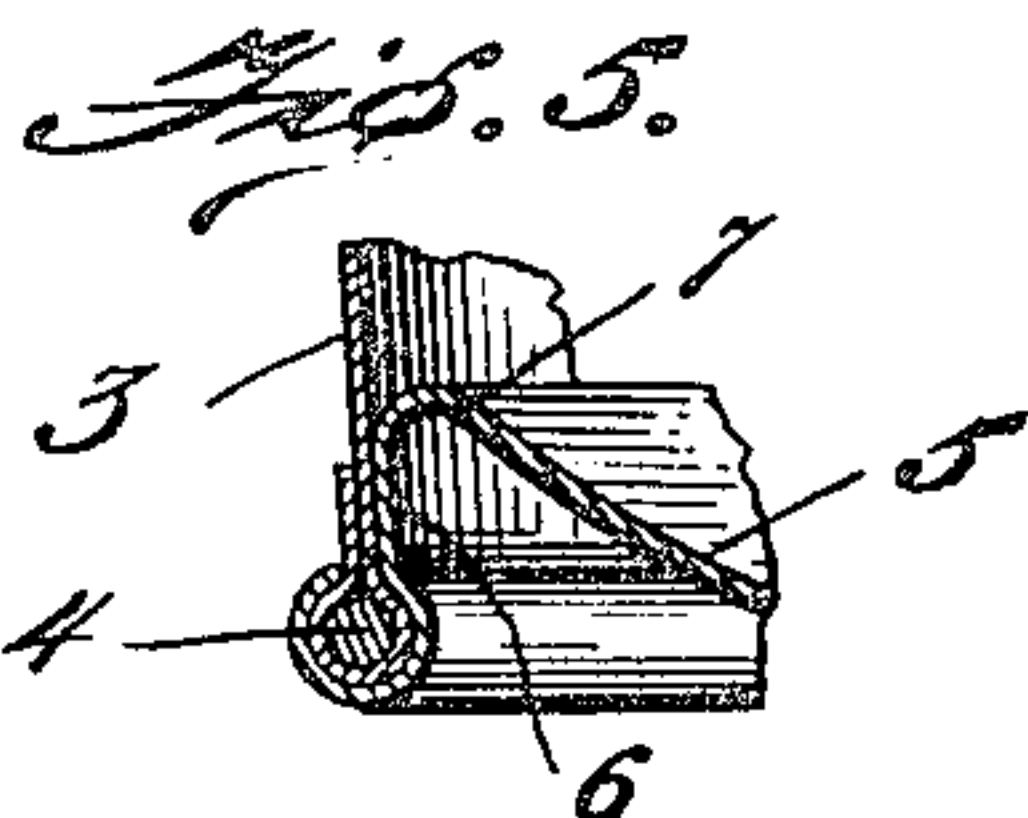
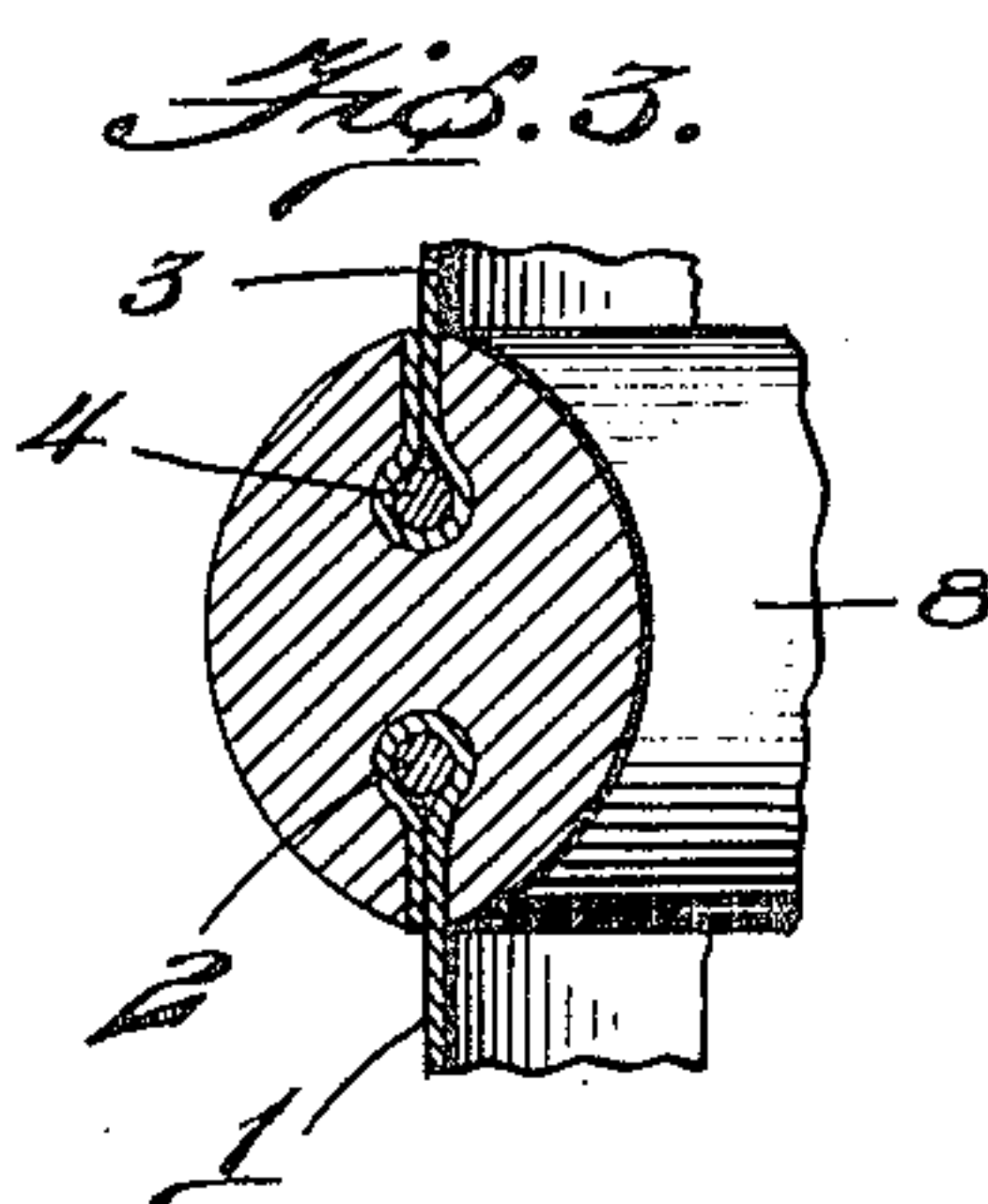
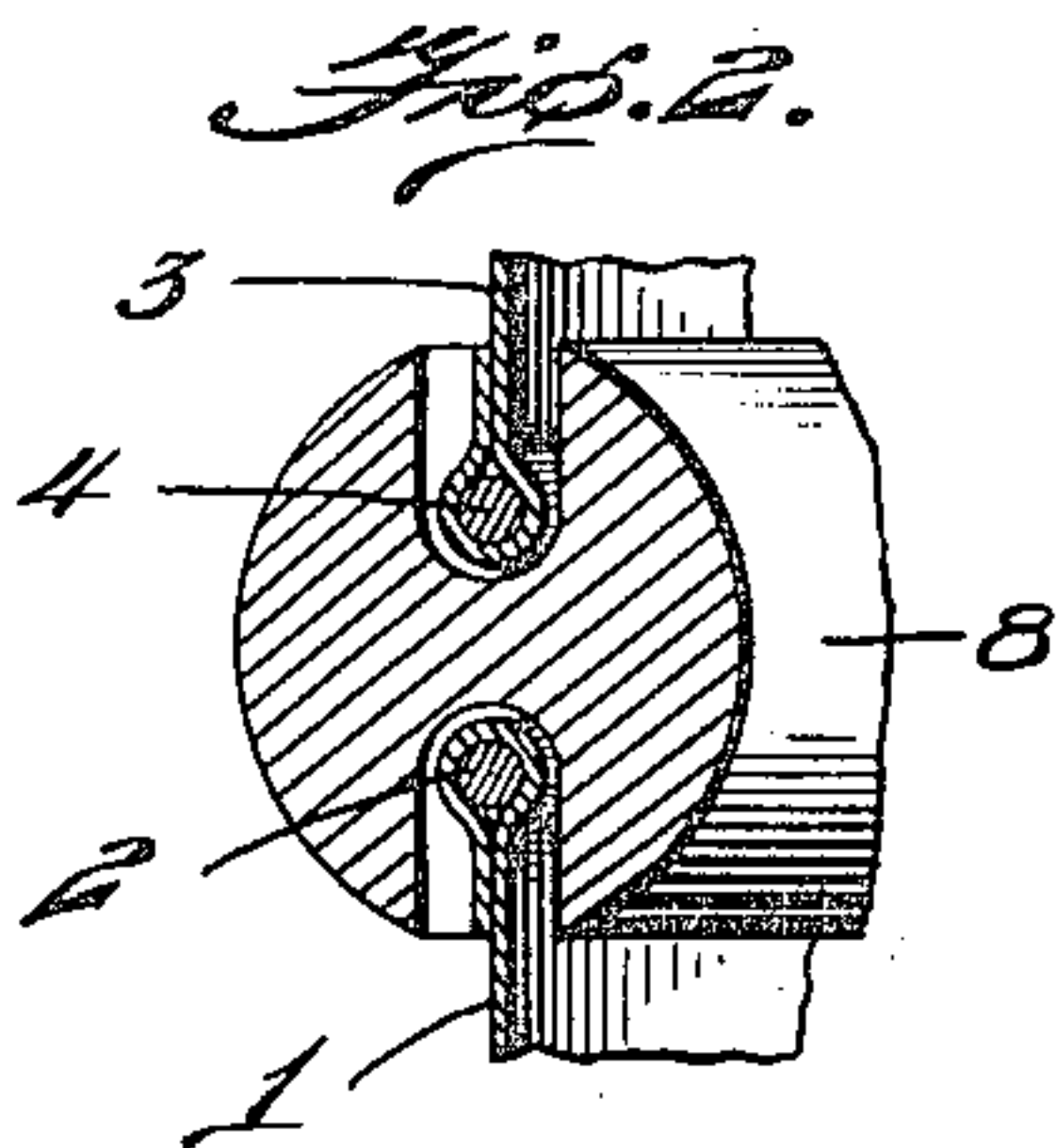
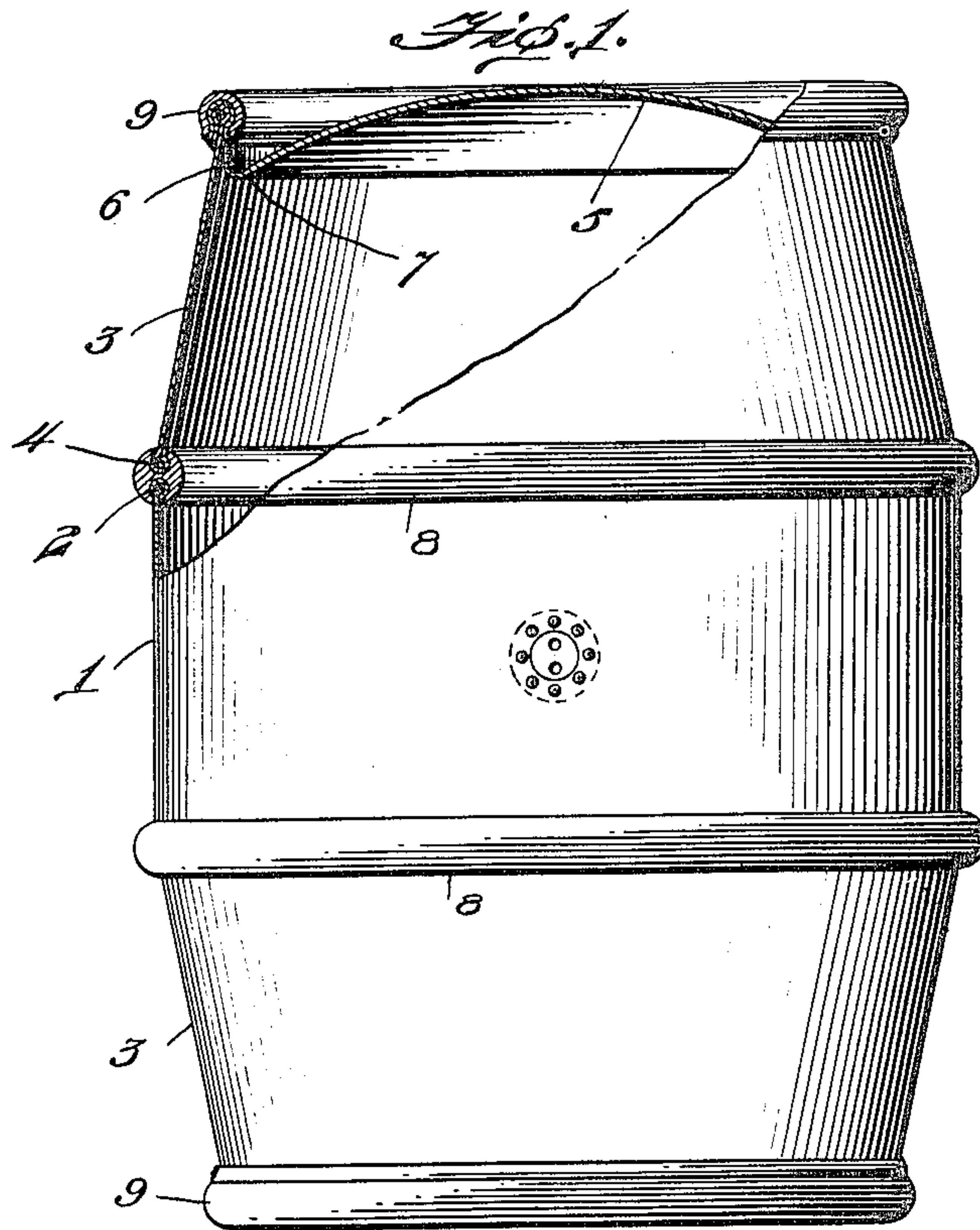


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METALLIC VESSEL.  
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# UNITED STATES PATENT OFFICE.

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## METALLIC VESSEL.

994,128.

Specification of Letters Patent.

Patented June 6, 1911.

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*To all whom it may concern:*

Be it known that I, WILLIAM J. CORLISS, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Metallic Vessels, of which the following is a specification.

My invention relates to improvements in metallic vessels such as barrels, kegs and the like.

The object of my invention is to provide a metallic barrel which while capable of use for any purpose for which a barrel may be employed, is particularly adapted for containing liquids, the construction being such that it may be made liquid-tight while at the same time it is simple in construction and well arranged to resist not only external but also internal stresses.

With this general object in view and some others which will be obvious to those skilled in the art, my invention consists in the features, details of construction and combinations of parts which will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

In the drawings, Figure 1 is a view in elevation partly broken away of a metallic barrel embodying my invention; Fig. 2 is a detail sectional view illustrating the manner of securing the barrel body sections in the rolling hoop; Fig. 3 is a similar view showing the rolling hoop secured in place; Fig. 4 is a detail sectional view of the chime hoop; Fig. 5 is a similar view showing the manner in which the head of the barrel is united to the body section of the barrel; Fig. 6 is a similar view showing the chime hoop secured in place; and Fig. 7 is a detail sectional view of a bushing and bung which may be used in connection with my improved barrel.

Referring to the drawings, which illustrate my invention embodied in a three-section barrel, 1 is a central section of sheet metal, this section being most advantageously cylindrical, this cylinder of sheet metal being produced in any of the well known ways, but preferably by rolling up a sheet of metal into a cylinder and then welding the longitudinal seam by any suitable process, as for example, by the usual electrical butt-welding processes. The edges of the cylinder thus formed are flanged over rings 2 of metal to form a reinforced, en-

larged and thickened rim, it being most advantageous to make these rings of metal having a circular cross-section for the reasons hereinafter pointed out, the rings being welded at their ends, and to rim the sheet metal over the said rings in a suitable rimming apparatus, so that the free edge of the cylindrical section is outside, as will be clear from Fig. 2, the advantages of this construction being explained hereinafter.

In addition to the central section, the three-section barrel, herein shown as embodying my invention, has two end sections of sheet metal, these sections being conical, as indicated at 3 in Fig. 1. These end sections also have their longitudinal seams electrically welded or otherwise joined, and are provided with rings 4 at each end, in the same manner as the central section hereinbefore described.

The barrel heads, indicated at 5, are dished outward, as will be clear from Fig. 1, the depth of this dishing being just sufficient to bring the outer face of the head tangent to the plane through the outer edge of the corresponding chime hoop, so that when the barrel is on its end the head will be supported, not only around its margin, but also at its center. The head at its periphery is turned first upward to form a short cylindrical or substantially cylindrical portion, as indicated at 6, and then outward to form a looped flange. The looped flange is united with the rim 4 of the corresponding end section of the barrel, (as will be clear from Fig. 5) by compressing it over said rim. The dished central portion of the head merges into the short cylindrical portion 6 in a curve, as indicated in cross-section, at 7, Fig. 5, so as to avoid any sharp bends of the sheet metal.

The rolling hoops 8 are formed as endless rings, which, prior to assembling the barrel parts, have open grooves on each side, as will be clear from Fig. 2. These hoops 8 may be made either by casting or by any suitable hoop rolling process, and the grooves are advantageously of U-shape in cross-section, while the exterior of the hoop is generally elliptical, as shown in Fig. 2. The chime hoops, 9, are U-shaped in cross-section and thus also have a U-shaped recess but on one side only. These chime hoops also are endless rings either cast or rolled.

In assembling a barrel, the ends of the cylindrical section after flanging over the



rings are inserted into the corresponding U-shaped grooves of the rolling hoops, and the latter are then rolled down over the rims of the cylindrical section so as to close the open ends of the said grooves against and upon the rim of the sheet metal, as will be clear from Fig. 3 and form a seal within the body of the rolling hoops. The ends of the conical sections are then inserted in the corresponding grooves of the rolling hoops in the same manner and the latter rolled down to close the grooves over and against the rim of the sheet metal of said conical sections, as will be clear from Fig. 3.

By the use of sufficient pressure in this closing and sealing operation the rolling hoops may be so firmly united with the barrel sections they join as to form a liquid-tight joint, but, to insure this, suitable paint, varnish or other plastic sealing material may be applied to the respective rims or to the grooves of the rolling hoops, or to both, prior to rolling down the said hoops. After the barrel sections are thus united the heads are united to the end sections, as hereinbefore explained, and the chime hoops are then put in place and rolled down or otherwise compressed into close contact with the rims of the barrel. The barrel may be provided with a suitable metallic bushing 10 to receive the bung 11 as shown for example in Fig. 7.

In order to insure that the barrel will be liquid-tight a suitable coating may be applied to the interior of the barrel, as by pouring plastic or liquid coating material through the bung-hole, then agitating or rotating the barrel so as to flow the liquid coating material over the entire inner surface of the barrel and drying or otherwise setting such material in place.

It will be observed that in my invention the locks which hold the sheet metal sections to the respective hoops are in the nature of dovetail joints, while at the same time in forming them there are no sharp bends in the sheet metal.

By this invention it is possible to make a structurally strong barrel of comparatively thin and light sheet metal. The thin metal being folded over a ring of circular section forms a structurally strong loop thereover, giving a maximum of strength with a minimum of metal. The body or rolling hoops are also of comparatively light metal but this metal being closed down over the sheet metal which in turn is closed down over the ring, there is formed a structurally strong hoop with a minimum of metal. And similarly in the case of the chime hoop, the assemblage is such as to form a structurally strong combination of metal elements with the production of a round chime.

Using the above described structure, I am enabled to build up a barrel of much thin-

ner sheet metal than it has before been possible to use, and at the same time to obtain a barrel having greatly increased structural rigidity and resistance to both internal and external stresses, and to deformation in general. It is obvious that this lighter construction gives rise to important economies both in the manufacture of the barrel and in the cost of transporting it when in use, and these advantages result directly from the special means above described for joining the barrel sections. It is to be particularly noticed that in this form of barrel the rolling hoops are integral with the body of the barrel, and thus serve to stiffen and strengthen against bursting strains, at the same time preventing deformation due to violent contact with various objects encountered in the rough handling to which the barrel may be subjected.

Among the numerous types of sheet metal barrels hitherto known, the only one capable of any practical use has a substantially uniform cylindrical body made of a single continuous sheet of metal. This sheet metal cylinder is headed up, and rolling hoops are then "sweated" or shrunk onto the body. The completed article constitutes the so-called sheet metal barrel, which is in reality merely a drum, and not a barrel at all, since it lacks the bilge or bulge, a distinctive and well-nigh indispensable feature of barrels. The hoops of such a drum or barrel, being only shrunk against the body, and being otherwise entirely independent of the barrel structure are practically useless as strengthening means except to resist tendency to burst. In order therefore to give the body of such a drum or barrel sufficient stiffness and strength, it is necessary to use very heavy gage metal in its manufacture and consequently add greatly to the weight which would be required if the barrel body were properly reinforced.

Some attempts have been made in the past to obviate the objections to the above described metal barrel by constructing the barrel in sheet metal sections held together by joining means. Without exception however, these attempts have resulted only in failure for the reason that the section-joining means invariably worked loose when the barrel was subjected to any strain. Consequently leaks soon developed and the barrel became useless after a short time. With the joining means employed in the present invention however, the joints between the barrel sections are practically dovetail joints, being liquid-tight and of great strength. The greater is the strain between barrel sections, the tighter do these joints become. There are no angular bends in the metal at the joints which is a further safeguard against weakening and leakage.

Another highly important advantage



gained in the barrel constructed according to the present invention lies in the fact that the rolling hoops, which so immovably lock together the barrel sections, are themselves necessarily held rigidly in their respective positions on the barrel body at all times. This is of particular importance in unloading operations, as for example in unloading barrels from a freight car, where the barrels are rolled down a track or skid having rails or stringers adapted to bear either on the inside or the outside of the rolling hoops, and thus guide the barrel from the car door to the unloading platform. If the barrel hoops get out of true, as they are liable to do in the ordinary type of barrel, the barrel is frequently stalled on the skid due to the binding of the hoops against the skid rails, or from the same cause may even be thrown from the skid and fall between the car and the platform. In either case annoying delay and damage result. This trouble is entirely avoided in the barrel which I have invented.

The dovetail joint as well as the frictional grip of the hoops on the sheet metal render it impossible to pull out the sheet metal from the hoops. Furthermore, by rimming the flanges of the sheet metal sections outward, no opportunity is given for the contents of the barrel to flow into contact with the rings and the inner surfaces of the sheet metal at the joints in case of any leakage, whereby corrosion of the joints is to this extent avoided.

As a result of my invention it is possible to produce a metallic barrel having a bilge whereby the handling of the barrel is easier, the rolling hoops permitting the employment of such a bilge without necessitating the use of very heavy sheet metal for the barrel sections.

Although the barrel heads are secured in place very firmly and so held by the chime hoops that accidental displacement of the same is an impossibility, yet where it is desired to make a barrel in which the heads can be removed as, for example, in barrels for containing ground lime, sugars, paints, white lead, pitch, asphalt and the like, this may be done within the scope of my invention, by a proper choice of materials. For example, if the sheet metal sections are of mild steel and the chime hoop is of annealed ingot iron, or of some other soft metal such as a hardened lead compound, or zinc or zinc alloy, the chime hoop may be removed by the use of suitable tools, and the flange

of the head sprung outward away from the flange of the inner section, thus allowing the head to be removed.

It is to be understood that the barrel may be galvanized inside and out or inside only if desired, which assists in insuring the tightness of all joints.

Having thus fully described my invention, what I claim is:

1. In a barrel, the combination, with a ring, of a substantially cylindrical body section having its margin folded over said ring to form a reinforced rim of enlarged cross-section, and a hoop having a groove to receive said ring and folded margin, the sides of said groove being closed over said rim and against said body section to closely contact with and lock said rim within said hoop, so as to prevent said rim from being pulled out of said hoop.

2. In a barrel, the combination, with a pair of body sections having reinforced rims of enlarged cross section, of a hoop having its sides provided with oppositely facing grooves in which are inserted the rims of adjacent body sections, said grooves being closed over said rims and against said body sections to closely contact with and tightly lock said rims within said hoop so as to prevent pulling apart of said body sections.

3. In a barrel, the combination, with a ring, an end section and a head both being of comparatively thin material, said end section and head having their margins folded over said ring to form a reinforced rim of enlarged cross-section, of a chime hoop having a recess into which said rim is inserted, the sides of the recess being closed over said rim, and against said end section to lock said rim within said hoop, so as to prevent said rim from being pulled out of said hoop.

4. In a barrel, the combination, with an end section, of a head dished so as to bring the central portion of its outer surface tangent to the plane of the outer surface of the chime hoop, a ring over which the margins of the end section and head are folded to form a reinforced rim of enlarged cross-section, and a grooved chime hoop closed over said rim and against said end section to lock said rim within said hoop, so as to prevent said rim from being pulled out of said hoop.

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

WILLIAM J. CORLISS.

Witnesses:

KINGSLY MONTGOMERY,  
WIRT TASSIMO.