April 13, 1937. W. M. BROOKS 2,077,209

SEALING MEANS

Filed July 3, 1936

Fig. 4

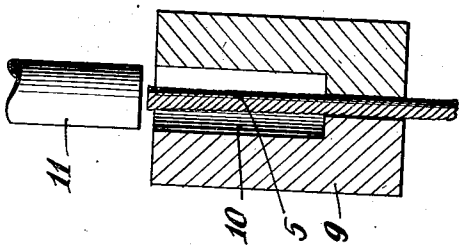



Fig. 5

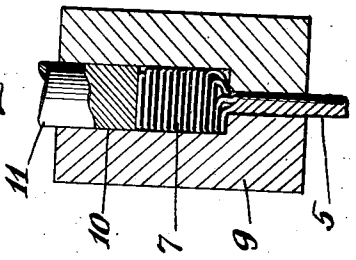



Fig. 3

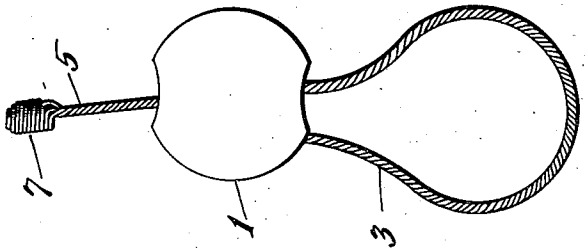



Fig. 2

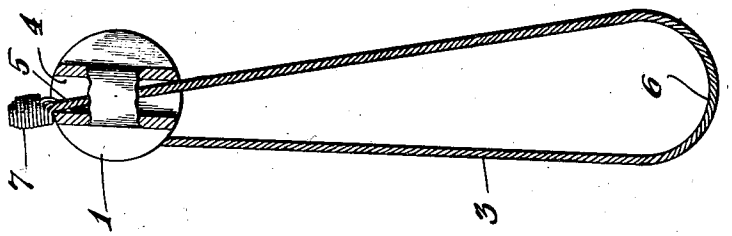
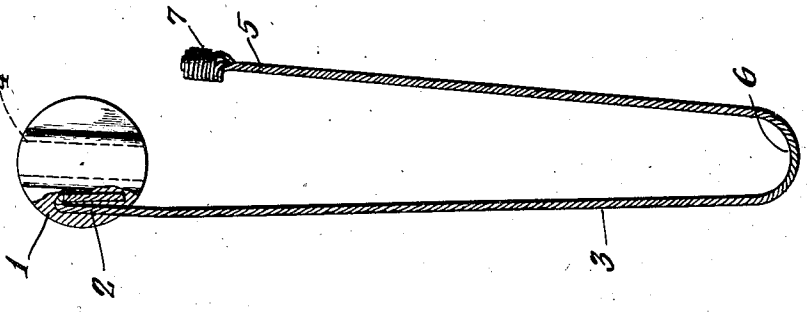



Fig. 1




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# UNITED STATES PATENT OFFICE

2,077,209

## SEALING MEANS

Winfred M. Brooks, West Orange, N. J.

Application July 3, 1936, Serial No. 88,841

1 Claim. (Cl. 292—308)

This invention relates to sealing means and has more particularly reference to a seal composed of a body of compressible material, such as lead, and a shackle member.

The main object and feature of the invention is to facilitate easy insertion or threading of the free end of the shackle member into the body of lead and withal to prevent the shackle member from jumping out after it has been inserted into the lead body but before the latter has been compressed around it.

In the accompanying drawing the invention is disclosed in a preferred form in which

Fig. 1 is a plan view partly in section of a seal embodying the invention, the parts being shown in the position they occupy before the shackle member has been threaded through the lead body;

Fig. 2 is a view similar to Fig. 1, but showing the shackle member threaded through the lead body;

Fig. 3 is a view similar to Fig. 2 but showing the lead body compressed around the shackle; and

Figs. 4 and 5 are diagrammatic views showing the method of increasing the diameter of the free end of the shackle member.

1 indicates a body of compressible material, such as lead, in which is imbedded one end 2 of a shackle member 3. The body of compressible material is provided with an opening 4 extending substantially straight through from one side to the other thereof. The shackle member is made of resilient material, in the form of a strand consisting of a plurality of twisted wires. It is the practice in the art to preliminarily thread the free end 5 of the shackle member through opening 4 and to leave it in that position, and at a later stage to pull the wire through to the desired extent after which a tool is used to compress the lead body around the shackle member. Although the shackle member can be permanently deformed by bending, yet it seldom occurs that the operator imparts a sharp bend to the shackle member; he generally merely loops it on a wide curve. The loop 6 therefore possesses considerable resiliency which urges it to return to a more nearly straight position. After the preliminary threading of the free end of the shackle member into the lead body and before the latter is compressed around it, it therefore frequently occurs that the resiliency of the shackle member causes the wire to pull or jump out of the opening. I have found that this difficulty can be overcome by making strand 3 of substantially smaller diameter than that of opening 4 and by providing the tip of the free end of the shackle member with an enlarged portion 7 of a diameter smaller but not substantially smaller than the diameter of the opening aforesaid. In this way I utilize the resiliency of the shackle member to prevent it from jumping out of the lead body because, it will be understood, said resiliency will tend to tilt the shackle member in the opening and will cause portion 7, on account of its relatively large diameter, to abut against the walls of the opening and will therefore prevent the shackle member from returning. In addition, enlarged portion 7 has the advantage of somewhat nullifying the raw ends of the wires and so diminishes the danger of the operator injuring and poisoning his hands or fingers.

In Figs. 4 and 5 is shown the method of enlarging the end of the shackle member. As there indicated, 5 is the free end of the shackle member which is inserted in a die 9 having an enlarged portion 10. 11 is a plunger which when it descends crushes or compresses the end of the shackle member or the convolutions of the twisted wires into the desired enlarged diameter 7.

I claim:

Sealing means including: a body of compressible material having an opening that extends substantially straight through from one side to the other thereof; a shackle member of resilient material in the form of a strand composed of a plurality of twisted wires and of substantially smaller diameter than that of said opening, one end of which member is imbedded in the body of compressible material and the other and free end of which is to be inserted through the opening aforesaid and to have the body of compressible material compressed around it; and means to utilize the resiliency of the shackle member, after the free end of said member has been inserted in the opening but before the body of compressible material has been compressed around it, to prevent said member from pulling out of the opening aforesaid consisting of a crushed-down portion of the strand at the tip of the free end of the shackle member, said crushed-down portion, consisting of convolutions of the twisted wires, of a diameter greater than that of the strand and smaller but not substantially smaller than the diameter of the opening aforesaid.

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