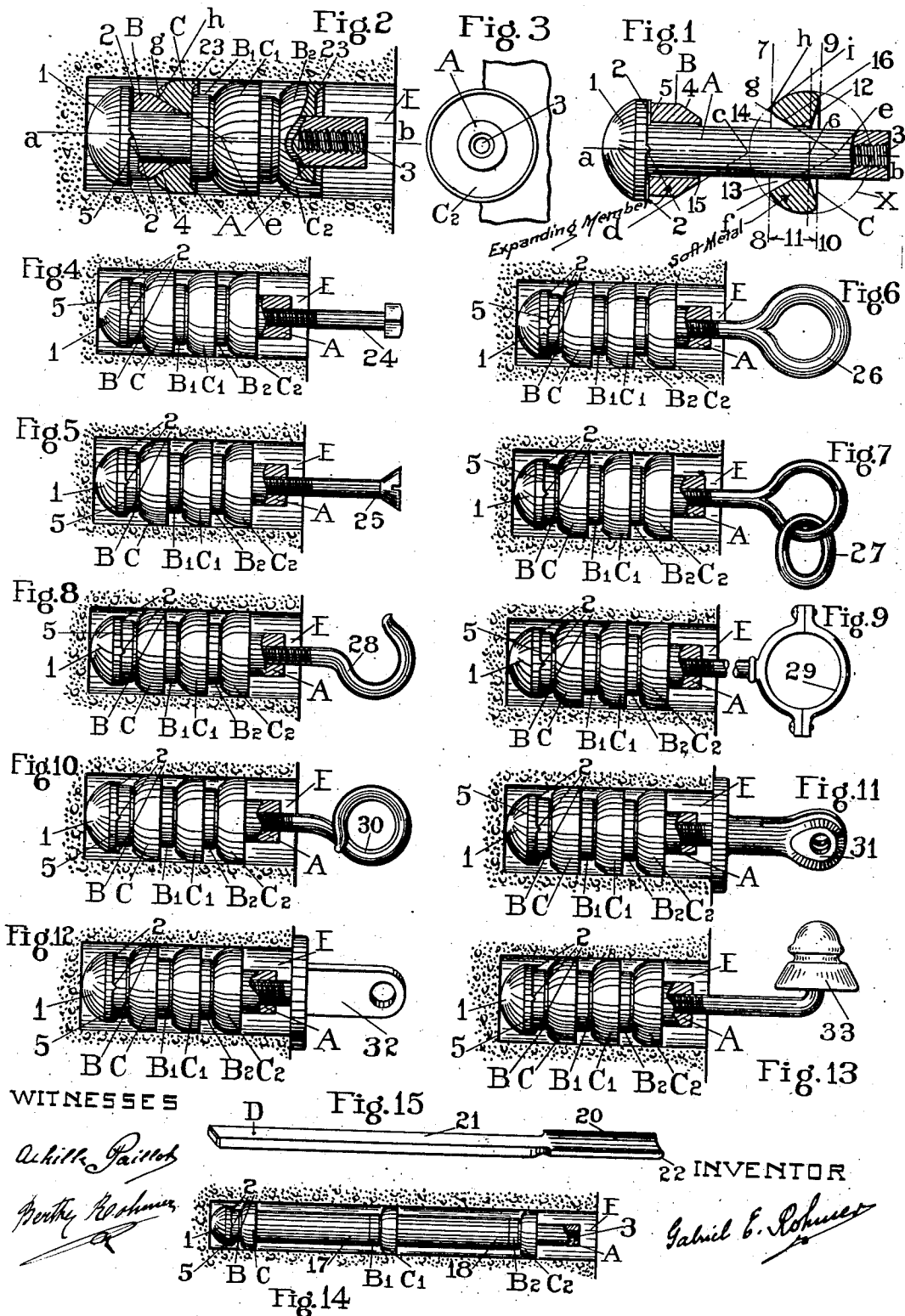


LEAD PACKED ANCHOR DEVICE.

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UNITED STATES PATENT OFFICE.

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LEAD-PACKED ANCHOR DEVICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GABRIEL E. ROHMER, a citizen of the United States of America, and resident of Pelham, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Lead-Packed Anchor Devices, of which the following is a specification.

This invention relates to anchorages, and the object of this invention is to provide an improved anchorage in which the female or expansible member is of spheroid shape at its exterior, and is formed by two planes which cut an imaginary sphere, so that the cut-out portion will have the exterior spheroid shape, and whereby the cut-out portion may be movable in respect to the center. For this purpose the invention consists of certain novel features which will be more fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of the anchorage, Fig. 2 shows how an embodiment of my invention is anchored into a concrete hole, Fig. 3 is an end-elevation of Fig. 2, Figs. 4 to 14 are different illustrations of the variety of attachment contrivances that can be used in combination with this anchor device, and Fig. 15 illustrates a tool used for packing purposes.

Similar reference characters indicate corresponding parts throughout the different figures.

Referring to the drawings, the anchorage body or bolt A engages a collar B and an anchorage-washer C. This collar B acts as an expanding member, and the washer C acts as an expansible member. The bolt A has a semi-spherical head 1 at one end, and on the inside face thereof this head has four ribs 2. The length of the anchorage body A corresponds substantially to the depth of the hole into which it is to be set. The collar B is made of lead composition or any other soft metal of an appropriate thickness and with an inside hole of a diameter slightly larger than the diameter of the bolt, and is engaged by the ribs 2 of the head 1 of the bolt. One end of this collar is beveled, as shown by the numeral 4 of Fig. 1, this bevel making with the center $a-b$ of the collar-hole an angle $a-c-d$ slightly larger than 30° . The washer C has an out-

side shape being that of a portion of a sphere obtained by two planes running parallel to each other and cutting the sphere X on each side of its center 6, these two planes being shown in Fig. 1 by the lines 7-8 and 9-10. The outside diameter of the washer C must be larger than the diameter of the hole into which this anchor system has to be used, while its thickness 11 is about equal to the diameter of the bolt A. The washer-bore 12 runs straight a short distance appropriated to the size of the bolt A, then it spreads open or flares outwardly so as to form a countersunk hole 13 of an outside diameter 14 slightly larger than the diameter of the collar B taken where the bevel starts, as indicated at 15. The periphery 16 of the flaring hole 13 makes with the center $a-b$ of the washer C an angle $a-e-f$ equal to substantially 30° . On the other hand, it will be noted that the line $g-i$ is tangential to the outside periphery of the washer C and makes with the periphery 16 an angle $i-g-e$ of about 15° less than 90° , the angle $h-g-e$ being a right angle. To anchor this system into a concrete hole E, as shown in Fig. 2, it is desirable to have an iron bar of a square or round section, small enough to work freely between the bolt A and the inside periphery of the hole E, but a tool D with a concave blade 20, as illustrated in Fig. 15, and having a handle 21 of a length to suit the depth of the concrete hole E, would answer. It will be also noted that the exterior end of the blade 20 of the tool D is rounded off, as indicated at 22. The bolt A with the collar B is dropped into the concrete hole E, the head 1 resting upon the bottom of the hole in the embodiment shown in the drawings. The plain end 5 of the collar B rests on the four ribs 2 of the head 1 of the bolt A, while its beveled end 4 stands ready to receive the washer C. The outside diameter of the washer C is larger than the diameter of the concrete hole E and is determined by experiments, but must be such as to necessitate the use of a hammer and the tool D to drive the washer C into the hole E. It will also be noticed that under the action of the hammer the four ribs 2 of the bolt A become firmly embedded into the lower end 5 of the collar B, this preventing the bolt A from being twisted or forced loose into the hole E.

By driving the washer C, which is of soft material, as lead composition or the like, into the concrete hole E, the angle $i-g-e$ is a good deal lessened owing to the malleability of the lead, which, on account of the difference of diameters between the washer C and the hole E, causes the periphery of the washer C to draw closer to the center of the bolt A. Now, if with the tool D the circumferential edge of the washer C is hammered down against the wall of the hole E, the angle $i-g-e$ is increased again close to 90° , as indicated by angle $h-g-e$. It will also be noticed that when the washer C is packed, the curved end 22 of the tool D has chased the lead in such a manner as to form the circumferential ridge 23, as shown in Fig. 2, all around the periphery of the hole E, thus increasing the bearing surface of the washer C against the hole. By a careful packing of the washer C the lead of which it is made will draw back all around the bolt A on the bevel seat made by the collar B. As that bevel seat makes with the center of the bolt A an angle of 30° , and as the washer C in drawing back makes with the bevel seat an angle $h-g-e$ of 90° all around the bolt, this device offers a perfect and theoretical truss line to resist any force exerted on the anchorage body A to pull it out of the hole E. It will be noticed that the periphery of the outer bore is inclined to the axis of the bolt, whereas when the unit is applied this periphery is substantially vertical to the axis of the bolt. The lead gradually fills up all the open interstices of the concrete, thus insuring a perfect grip. The more a pull is exerted on the bolt A, the more the curved shape of the periphery of the washer will flatten itself against the wall of the hole and increase its bearing surface. The collar B and soft-metal washer C being an anchorage unit, it is possible to multiply these units, as shown in Figs. 2 to 14, by successively packing collar B¹ on top of washer C, and so on. The bolt A, illustrated in Figs. 2 to 14, is shown anchored by three units.

Figs. 4 and 5 show respectively square and flat countersunk head-screws, indicated by numerals 24 and 25; Fig. 6 shows an eye 26; Fig. 7, an eye and ring 27; Fig. 8, a hook 28; Fig. 9, a pipe-hanger 29; Fig. 10, a bridle-ring 30; Fig. 11, an awning-stub 31; Fig. 12, an awning shutter hinge 32; and Fig. 13, an insulator-pin 33. In Fig. 14, the couples are separated by pipe-fillers 17 and 18.

While the drawings show the washer cut out from a sphere, it is clear that a spheroid or a substantially spherical member may also be used.

I have shown various embodiments of my invention, but it is clear that changes may be made therein without departing from the spirit of my invention as defined in the appended claim.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

In an anchorage unit, the combination of a bolt, a conically-shaped expanding member upon the bolt, and a soft metal member also on the bolt, and formed by two parallel planes cutting a sphere at each side of its center, and being substantially spherically-shaped at its exterior and provided with a conical bore at one end engageable by the conically-shaped expanding member, said spherically-shaped portion of the soft metal member being bodily movable relatively to the axis of the bolt, with the center of the sphere coincident with the axis of the bolt and acting as a pivot and nearer to the plane passing through the free end of the soft metal member than to the plane passing through the end entered by the expanding member.

In testimony whereof, I have hereunto affixed my signature to this specification in the presence of the two undersigned witnesses.

GABRIEL E. ROHMER

Witnesses:

ACHILLE POILLET,
BERTHA ROHMER.