

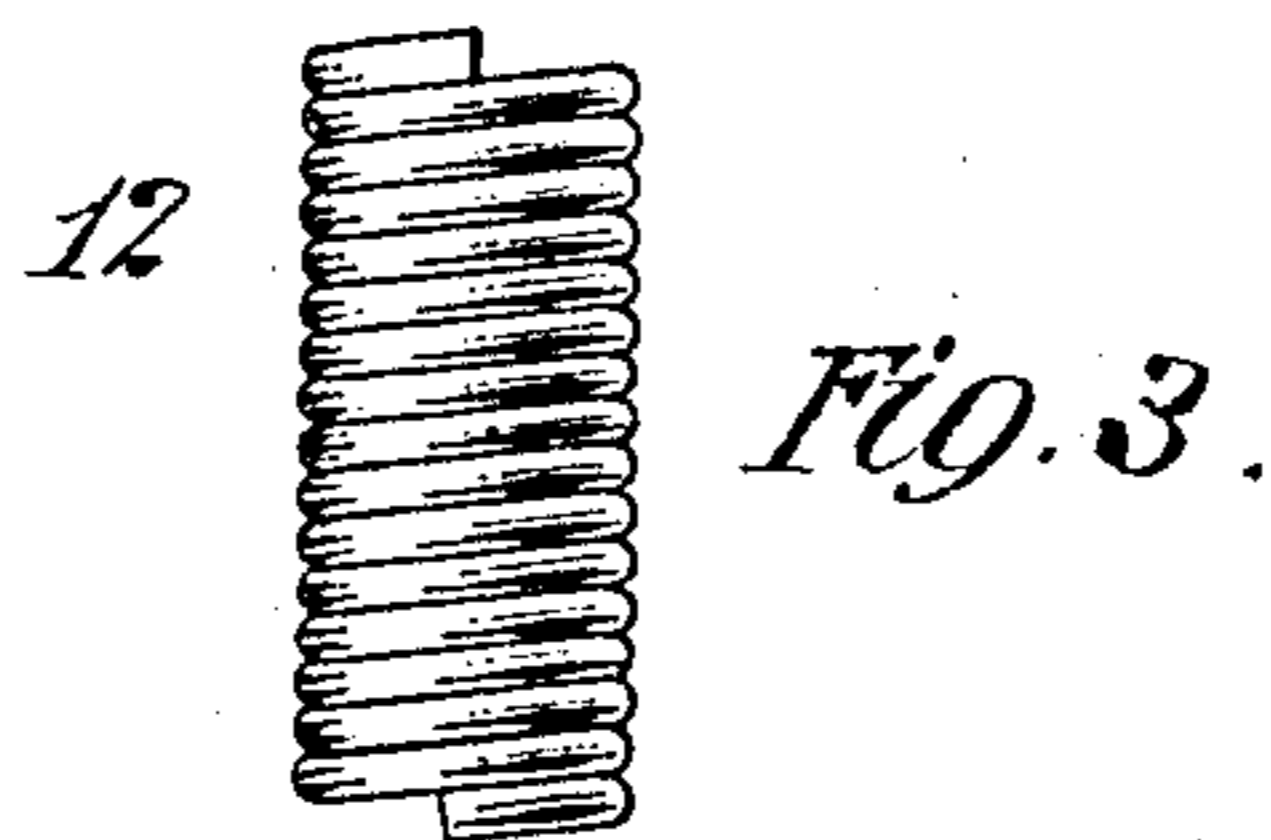
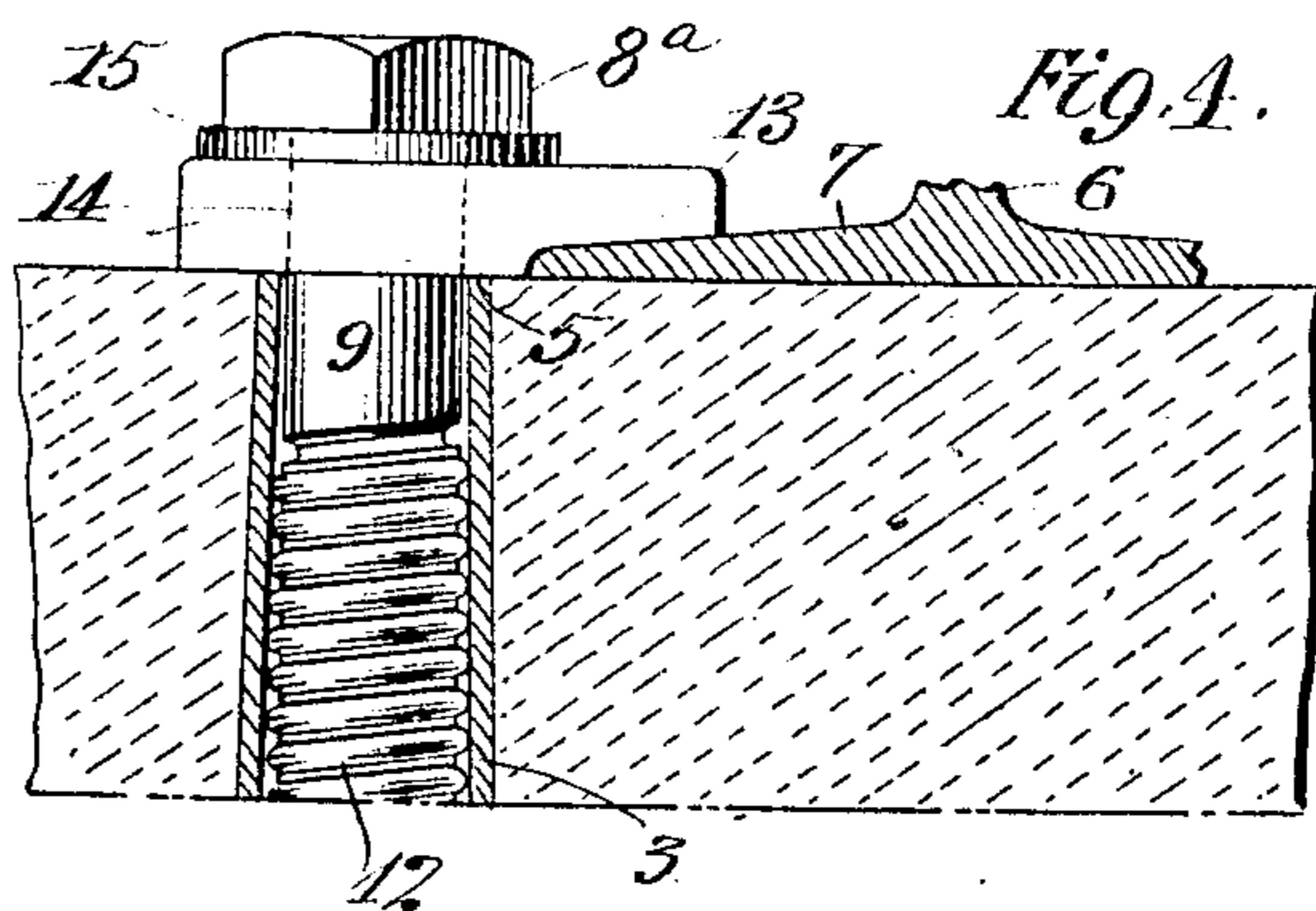
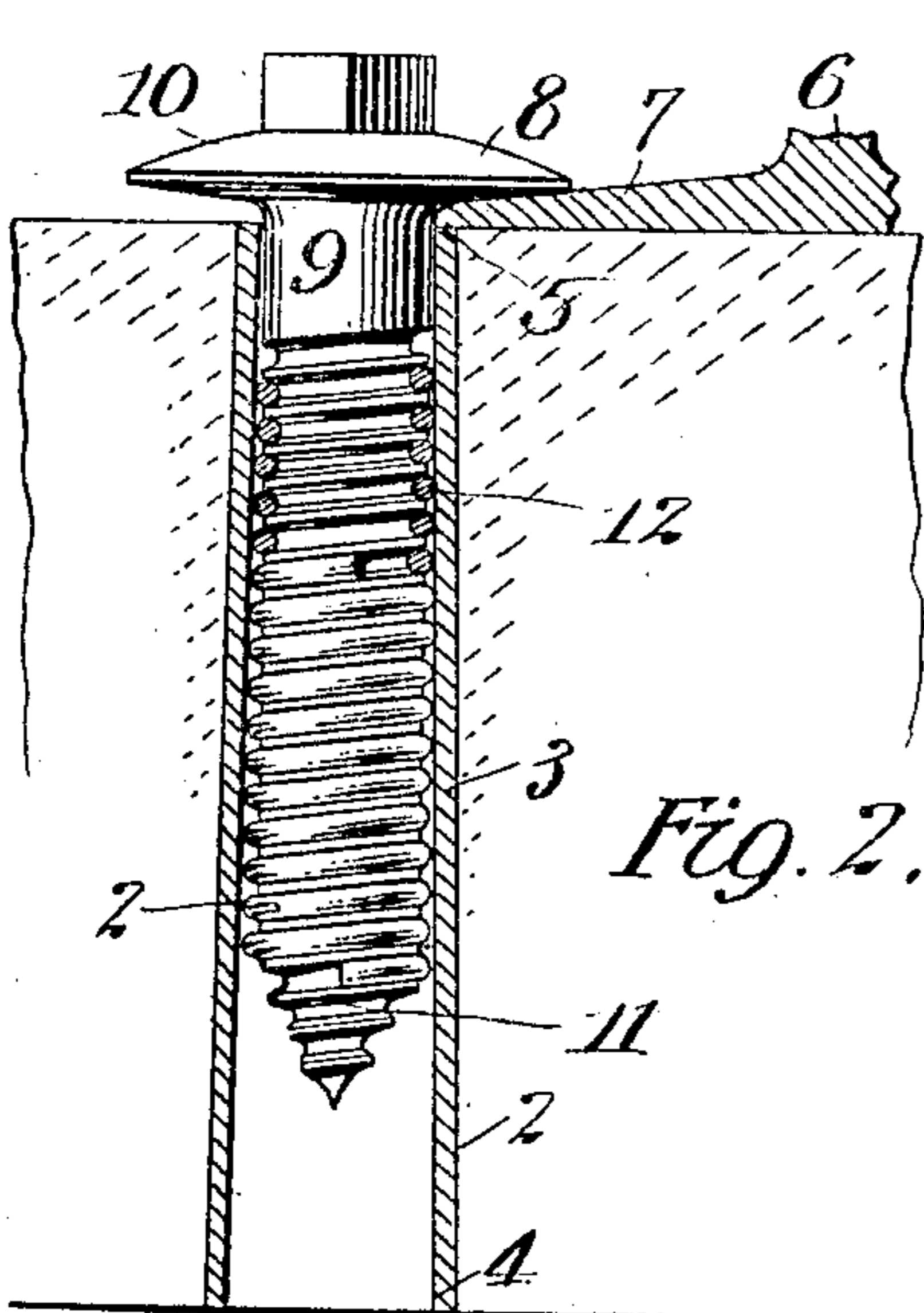
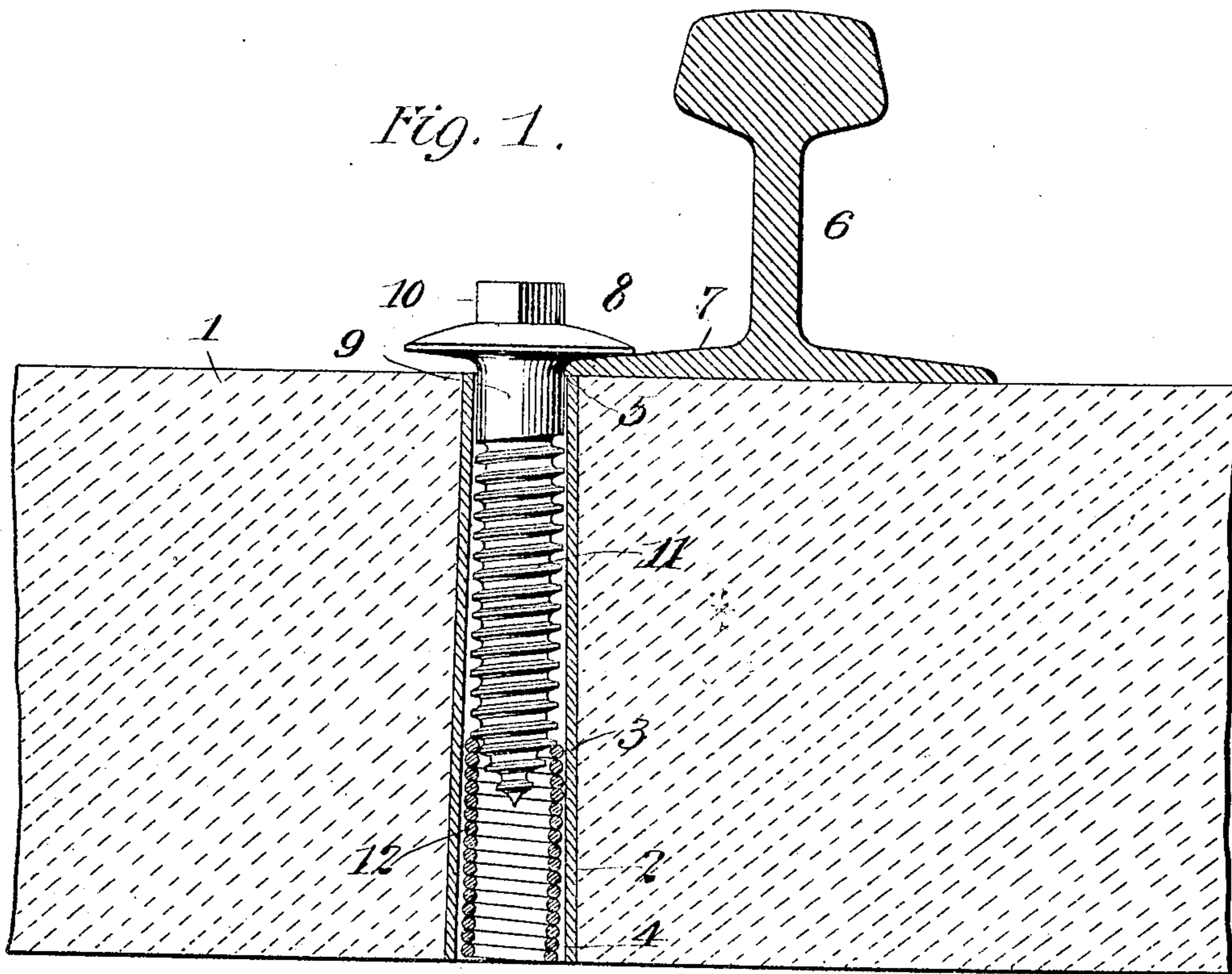
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SCREW FASTENER.

APPLICATION FILED AUG. 5, 1905. RENEWED MAY 12, 1908.

906,691.

Patented Dec. 15, 1908.



Witnesses

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By the Attorney

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# UNITED STATES PATENT OFFICE.

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## SCREW-FASTENER.

No. 906,691.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed August 5, 1905, Serial No. 272,917. Renewed May 12, 1908. Serial No. 432,448.

*To all whom it may concern:*

Be it known that I, ALEXANDER CRAWFORD CHENOWETH, a citizen of the United States, residing in the borough of Manhattan, New York city, county and State of New York, have invented certain new and useful Improvements in Screw-Fasteners, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a device for locking or fastening a screw in its socket so as not only to make it hold fast but to prevent its working loose under vibration or shock.

The present invention is particularly adapted for securing a screw in its socket in earthenware, or composite material, such for instance as concrete or cement and the like. I have herewith illustrated the application of the invention to a railway rail fastener, and with which a concrete tie is used.

The invention consists in the various novel and peculiar arrangements and combinations of the several different parts of the device, all as hereinafter fully described and then pointed out in the claims.

I have illustrated a type of my invention in the accompanying drawings, wherein;

Figure 1 is a vertical section of a railway rail, its tie, and my improved screw fastener applied thereto to fasten the rail to the tie, the section being taken longitudinally of the tie and the parts being shown with the helical coil in the lower part of the socket before it is drawn up by the screw thread on the screw to lock the latter. Fig. 2 is a similar view to that shown in Fig. 1, but with the helical coil drawn up to its uppermost limit of movement on the screw thread and in its final position to lock the screw fast within its socket. Fig. 3 is a view of the helical coil shown as detached. Fig. 4 shows a modified form of a rail fastener in which my invention is used.

Referring to the drawings in which like numbers of reference designate like parts throughout, 1 is a rail tie made of plastic composition, for instance concrete, and provided with a vertical perforation or socket 2 within which is fixed a metallic sleeve or bushing 3 having its interior of a conical shape tapering from its base 4 to its upper end 5. 6

is an ordinary railway rail with the base 7 thereof resting flatly on the tie.

The flat head 8 of the fastening or lag screw 9 extends over upon the base 7 of the rail it being adapted to fit down upon the same in order to clamp it to the tie when the screw is screwed home. The flat end 8 of the screw is provided at its center with a square or polygonal shaped projection 10 adapted to receive a wrench or suitable tool for turning the screw.

The thread 11 of the screw is formed substantially like that of an ordinary lag screw with the stem around which the thread extends being of a substantially uniform diameter throughout and up to the place where the screw begins to suddenly taper to form the gimlet end at its point. The diameter of the screw thread measured from the point of the thread is practically the same as the upper end of the interior of the conical sleeve 3 at the point 5, so that the screw may be inserted within the small end of the sleeve, as indicated in the drawings. Within the tube or sleeve 3 is placed a helical coil 12 made of a suitable resilient steel wire and having the turns of the coil of uniform internal diameter throughout, and adapted to fit the thread 11 of the screw. The external diameter of the coil 12 when screwed on to the thread 11 is larger than the interior diameter of the upper and small end of the sleeve or tube 3 but smaller than the lower end of such part and into which lower end the coil is introduced.

Before the screw is inserted in the socket or tube the coil 12 lies in the lower part thereof in position to be readily engaged by the end of the screw thread as the screw is inserted, so that by turning the screw in the proper direction the threads thereof screw into the thread constituted by the loose coil 12 which is movable endwise in its socket. As the turning of the screw continues, the coil is fed up on the screw towards its head and this continues until the upper end of the coil finally is wedged in the upper end of the tapering socket or tube between the same and the screw so tightly as to prevent further turning of the screw. Under this condition the screw is securely fastened within the socket by means of its thread engaging the coil in the manner described, and the coil in turn engaging the fixed abutment constituted by the walls of the tapering socket or

tube. This peculiar coöperation of these parts serves not only to hold the screw tightly in position when it is screwed home, but the action of the spring coil 12 operates to prevent any jar or vibration of the parts from causing the screw to unscrew or work loose. As the coil 12 is forced by the screw action into its final position, the turns in the coil find a close and complete contact with the coöperating threads of the screw and this intimacy binds the coil upon the screw threads, each turn of the coil having its own individual adjustment relatively to the other turns, with the result that the screw is locked so securely within the socket that in order to release it considerable force has to be applied to the screw to unscrew the same.

In the modification shown in Fig. 4, the screw 9 has an ordinary hexagonal head 8<sup>a</sup>, with which is used a plate or clip 13 having a perforation 14 through which the shank of the screw extends and which plate is adapted to fit over upon the rail base 7 to clamp the same to the tie, a washer 15 being used between the screw head 8<sup>a</sup> and the plate 13.

While I have shown the socket within which the helical coil and the screw operate, as being an upwardly tapering conical tube 3, it will, of course, be understood that any well known suitable form of socket may be employed, so long as it affords a wedging surface or abutment for the exterior of the upper end of the coil to be drawn against under the screw action of the screw working within the coil.

Where the invention is employed in con-

nection with a railway tie, as shown in the drawings, the helical coil 12 is inserted within the large end of a vertical socket 2 in the tie, before the same is placed upon the ground as its external diameter is too great to permit its entrance into the smaller end of the socket. Thus the coil is loose within the socket and may be moved endwise therein on its axis but at the same time is confined therein so that it cannot be dislodged from its place.

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

1. A fastening device comprising a socket, a coil of less length than the socket, the adjacent surfaces of the coil and socket being relatively tapered, and a lag screw of a length to extend into the socket to engage the coil and draw it outwardly whereby the parts will be wedged into locking engagement.

2. A fastening device comprising a socket having a tapering bore, a coil of less length than the socket and located in its inner wider portion, and a lag screw of a length to extend into the socket to engage the coil and draw it outwardly whereby the parts will be wedged into locking engagement.

In testimony whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

ALEXANDER CRAWFORD CHENOWETH.

Witnesses:

C. J. HEERMANCE,  
A. M. HAYES.