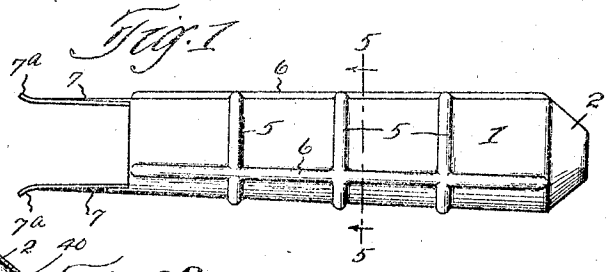
Feb. 16, 1926. 1,573,151

A. S. FISHEL

SOCKET FOR EXPANSION BOLT SHIELDS

Filed March 17, 1924 2 Sheets-Sheet 1

Fig. 1



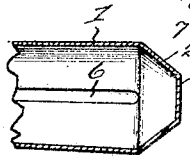


Fig. 6a

Fig. 2

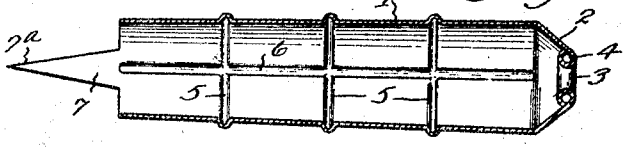
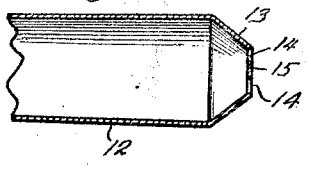


Fig. 7



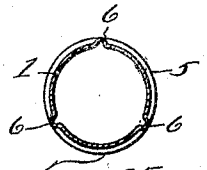
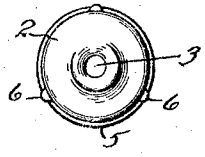


Fig. 5

Fig. 6



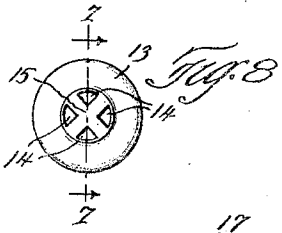
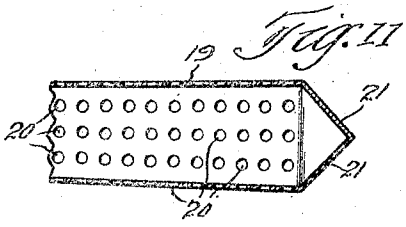


Fig. 8

Fig. 11



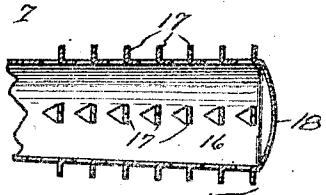


Fig. 9

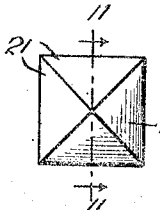


Fig. 12

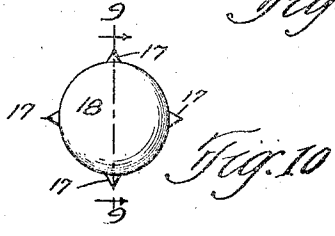


Fig. 10

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SOCKET FOR EXPANSION BOLT SHIELDS

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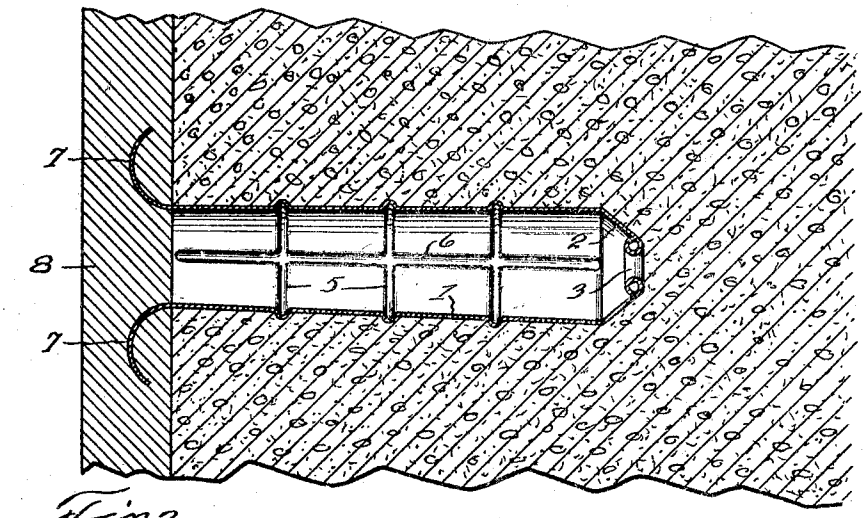

Fig. 3

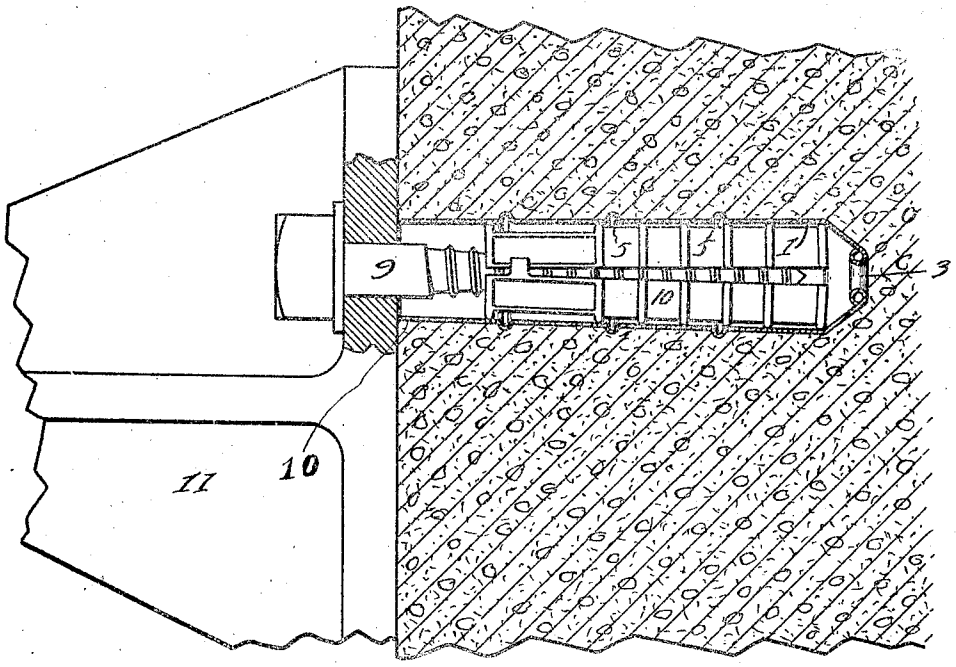

Fig. 4

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Patented Feb. 16, 1926. 1,573,151

UNITED STATES PATENT OFFICE.

ALVIN S. FISHEL, OF CLEVELAND, OHIO.

SOCKET FOR EXPANSION-BOLT SHIELDS.

Application filed March 17, 1924. Serial No. 699,738.

To all whom it may concern:

Be it known that I, ALVIN S. FISHEL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Sockets for Expansion-Bolt Shields, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to sockets such as are adapted to form cavities in concrete and to receive therewithin expansion bolts and the shields therefor. It is the general purpose and object of the invention to provide a socket of this character which may be conveniently applied to and which will remain in the concrete, and without displacement due to the pouring of the concrete mixture; also a socket which will cooperate most effectively with an expansion bolt shield, and particularly in the matter of cooperating with the shield during the setting up of the bolt to prevent rotation of such shield. A further object of the invention is to provide a socket of this kind which is strong, although made of light sheet metal, and which is capable of withstanding all ordinary incidents of use.

I accomplish the foregoing objects and other and more limited objects (to be set forth hereinafter) in and through the construction and arrangement of parts shown in the drawings, wherein Fig 1 represents a side elevation of a socket constructed in accordance with my invention; Fig. 2 a central longitudinal sectional view through said socket; Fig. 3 a view similar to Fig. 2 showing the socket embedded in concrete, with its outer end secured to a mold board or panel; Fig. 4 a similar view, showing the socket with the expansion bolt and shield in place, together with a part of the member secured to the concrete by such board; Fig. 5 a detail in section corresponding to the line 5—5 of Fig. 1; Fig. 6 an elevation of the inner end of the socket; Fig. 6ª a detail in section of the inner end of a slight modification of the socket shown in Figs. 1–6; Fig. 7 a detail in section of a modified form of socket, the section corresponding to the line 7—7 of Fig. 8; and Fig. 8 an elevation of the inner end of such socket; Figs. 9 and 10 are views, corresponding respectively to Figs. 7 and 8, of another modification of my invention, Fig. 9 being a sectional view corresponding to the line 9—9 of Fig. 10; Figs. 11 and 12 are views, similar to Figs. 7 and 8, respectively, of a still further modification of my invention, Fig. 11 being a sectional detail corresponding to the line 11—11 of Fig. 12.

Describing the various parts by reference characters and first in connection with Figs. 1–6 inclusive, the socket comprises a tubular body 1, preferably of sheet metal, of generally frusto-conical shape, the body tapering slightly and having its smallest diameter at the outer end thereof. The extreme inner end of the socket is formed as a short frusto-conical head 2 the extreme inner end of which being provided with an opening 3, the inner end of the metal of which the socket is comprised being rolled into a circular head 4, which defines the opening and which reinforces the inner end of the socket head during the operation of driving the prongs into a form board.

For the purpose of enabling the socket to be interlocked and bonded with the concrete material, as well as for strengthening purposes and to prevent rotation of the socket in the concrete, the body 1 is provided with a plurality of ribs 5 extending therearound at suitable intervals; it is also provided with a suitable number of longitudinal ribs 6, extending the full length of the main body and intersecting the ribs 5. Both the ribs 5 and the ribs 6 are preferably formed by pressing the metal of the body outwardly.

At its extreme outer end, the body 1 is provided with a pair of tapered and pointed prongs 7. Two such prongs are shown, located diametrically opposite each other, and the ends of the prongs are curved outwardly or away from each other, as indicated at 7ª.

In the use of my invention, a required number of sockets are driven into the appropriate boards or panels of the molding form, and preferably with the prongs 7 arranged vertically. When the prongs are driven into a board, such as 8, the divergence of the ends 7ª will cause the prongs to assume approximately the curved form shown in Fig. 3. This enables the sockets to withstand the impact of the falling concrete material without breaking the prongs and thus displacing the sockets; it also pre-

vents the prongs from being withdrawn from the form.

The head 2 constitutes in effect an arched brace for the extreme inner end of the socket, so that the prongs on the opposite end of the socket may be driven into the form board or panel 8 without injury to such head.

After the concrete has "set", the boards 8 will be removed and, in the process of removal, the prongs 7 will be broken off, leaving the sockets embedded, as shown in Fig. 4. They are then in position to receive expansion bolts 9 and shields, such as indicated at 10, whereby brackets or other supported devices 11, may be secured to the concrete.

During the operation of setting up a bolt 9, the shield 10 will be prevented from turning by the engagement of its inner end with the tapered surface of the head, near the junction of such head with the body 1; meanwhile the ribs 6 and the shape of the socket prevents it from rotating in the concrete. As the shield is expanded by the bolt, it works outwardly through the engagement of its inner end with the beveled surface 2, until its inner end engages the end of the socket body at substantially the junction of the head and body. Also, the increase inwardly of the cross-sectional area of the body 1 facilitates the locking of the expansion shield thereagainst as the bolt is finally set up. In Fig. 6[a] there is shown a modification of the socket shown in Figs. 1–6, differing therefrom only in that the extreme inner end is entirely closed by an integral flat plate 40.

In Figs. 7 and 8 there is shown another form of my invention, wherein the body 12 is smooth and not provided with strengthening and interlocking ribs, but is provided with a frusto-conical head 13 having openings 14 at its inner end. These openings are so shaped and arranged that the metal end of the head is in the shape of a cross, as indicated at 15, which gives ample strength to the head to enable the prongs (not shown) to be driven into the mold board or panel without distortion or injury to the head.

In Figs. 9 and 10 there is shown a further modification of the invention, wherein the body 16 is provided with locking prongs 17 struck therefrom, the prongs being arranged in rows extending longitudinally of the body. The outer end of the body is closed by a rounded or convex arched head 18.

In Figs. 11 and 12 there is shown a still further modification of the invention wherein the body 19 is of the same general tapered shape as in the preceding views, the body in this case being square or rectangular in section and provided in each face thereof with apertures 20 which are adapted to interlock with the concrete. The inner end of the socket is closed by a head 21 of pyramidal shape.

In all of the forms of my invention, the socket comprises a body which is of increasing diameter from its outer to its inner end, with a strong tapered or arched head projecting inwardly from such inner end, the outer end of each body being provided with prongs having divergent outer ends whereby they will be spread apart (in substantially the manner indicated in Fig. 3) when driven into a board, thus enabling the sockets to withstand the impact of the concrete material without breaking the prongs, as well as preventing the prongs from being withdrawn from the form boards in which they are driven. Furthermore, in each form of my invention the head is so shaped as to engage the inner end of the expansion bolt shield and thus prevent the same from turning when the bolt therein is set up. Also, the increasing cross-sectional area of the sockets, from the outer ends towards the heads thereof, prevents them from being withdrawn from the concrete

It will be obvious that other modifications of my invention than those shown herein may be made, involving some changes in cross section of the body 1, as well as changes in the specific construction of the head and changes in the means for interlocking the sockets with the concrete; but the failure to illustrate such forms and modifications does not exclude them from the purview of my invention.

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

1. A socket for the purpose set forth comprising a hollow body having one or more prongs projecting from one end thereof, the opposite end thereof having a head of smaller diameter than said body.

2. A socket for the purpose set forth comprising a hollow body having one or more prongs projecting from one end thereof and an arched head of smaller diameter than said body at the opposite end thereof.

3. A socket for the purpose set forth comprising a hollow body provided with one or more prongs at one end thereof and a head at the opposite end thereof, the said body being of increasing cross-sectional dimensions toward the end provided with such head.

4. A socket for the purpose set forth comprising a hollow body provided with one or more prongs at one end thereof and a head at the opposite end thereof, the said body being provided with means preventing its withdrawal from the concrete in which it is imbedded.

5. A socket for the purpose set forth comprising a hollow body having one or more prongs at one end thereof and a head at the

opposite end thereof, the said body increasing in cross-sectional dimensions from the outer end thereof toward the head and being provided with means adapted to engage and interlock with concrete.

6. A socket for the purpose set forth comprising a hollow body having one or more prongs at one end thereof and a head at the opposite end thereof, the said body being provided with means adapted to prevent rotation of the socket and additional means to prevent withdrawal of said socket from the concrete in which it is embedded.

7. A socket for the purpose set forth comprising a hollow body provided at its outer end with pointed prongs adapted to be driven into a mold board or panel, the extreme outer ends of the prongs being bent or deflected away from the axis of said body whereby the said prongs will be spread apart when driven into the mold board or panel.

8. A socket for the purpose set forth comprising a hollow body having prongs at the outer end thereof, the outer ends of the prongs being deflected outwardly or away from the axis of said body, the said body being of increasing cross-sectional area from the inner end toward the outer end thereof and being provided with a frusto-conical head at the inner end.

9. A socket for the purpose set forth comprising a hollow body having pointed prongs at the outer end thereof, the extreme outer ends of the prongs being deflected outwardly or away from the axis of said body, the said body being provided with an arched head of smaller diameter than said body at the inner end.

10. A socket for the purpose set forth comprising a hollow body having prongs at the outer end thereof, the outer ends of the prongs being deflected outwardly or away from the axis of said body, the said body being of increasing cross-sectional area from the inner end toward the outer end thereof and being provided with a frusto-conical head at the inner end, the inner end of said head having a reinforced central aperture.

11. A socket for the purpose set forth comprising a hollow body having one or more prongs at the outer end thereof, the said body being provided with a frusto-conical head at the inner end, the inner end of said head having a reinforced central aperture.

12. A socket for the purpose set forth comprising a hollow body having prongs at the outer end thereof, the outer ends of the prongs being deflected outwardly or away from the axis of said body, the said body being of increasing cross-sectional area from the inner end toward the outer end thereof and being provided with a frusto-conical head at the inner end, the inner end of said head having a reinforced driving portion.

13. A socket for the purpose set forth comprising a hollow body having one or more prongs at the outer end thereof, the said body being provided with a frusto-conical head at the inner end, the inner end of said head having a reinforced driving portion.

14. A socket for the purpose set forth comprising a hollow metal body of increasing cross sectional area from the outer end toward the inner end thereof and provided with one or more prongs at the outer end and with an inwardly extending head at the inner end, the said head constituting an arched brace for driving the said prong or prongs into a mold board or panel and the said body being provided with longitudinal and transverse ribs pressed therefrom.

15. A socket for the purpose set forth comprising a hollow metal body provided with one or more prongs at the outer end and with an inwardly extending head at the inner end, the said head constituting an arched brace for driving the said prong or prongs into a mold board or panel and the said body being provided with longitudinal and transverse ribs pressed therefrom.

16. A socket for the purpose set forth comprising a hollow metal body increasing in cross sectional area from the outer toward the inner end thereof and provided at its inner end with an inwardly extending head constituting an arched brace, the said body being provided with one or more prongs at its opposite end adapted to be driven into a mold board or panel.

17. A socket for the purpose set forth comprising a hollow metal body increasing in cross sectional area from the outer toward the inner end thereof and provided at its inner end with an inwardly extending head constituting an arched brace, the said body being provided with prongs at its opposite end adapted to be driven into a mold board or panel, the outer ends of said prongs being bent or deflected away from the axis of said body.

In testimony whereof, I hereunto affix my signature.

ALVIN S. FISHEL.