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H. W. PLEISTER ET AL

2,240,716

BOLT ANCHOR

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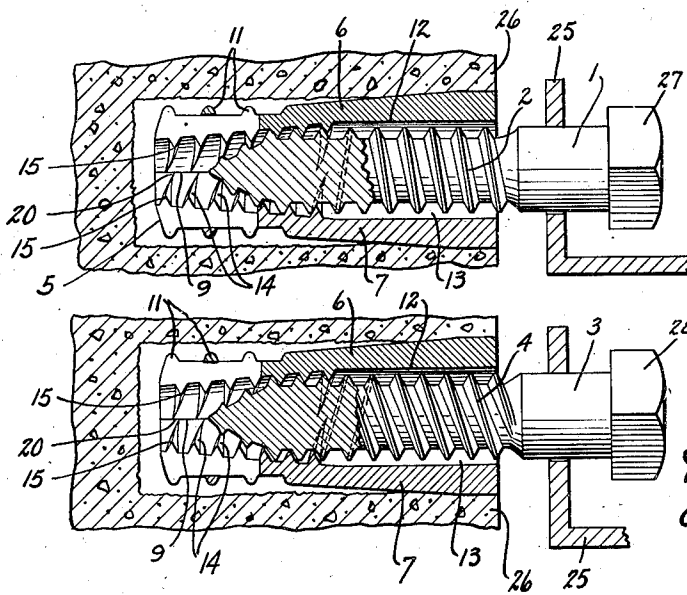
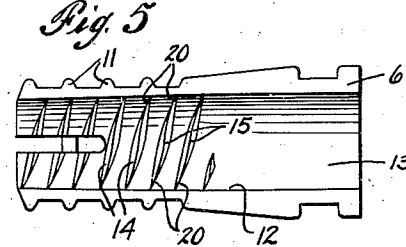
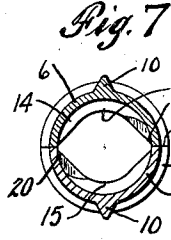
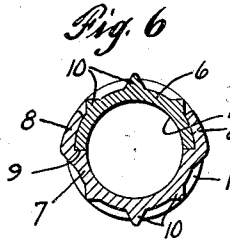
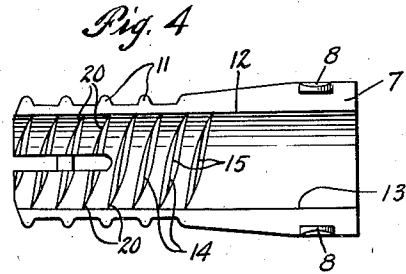
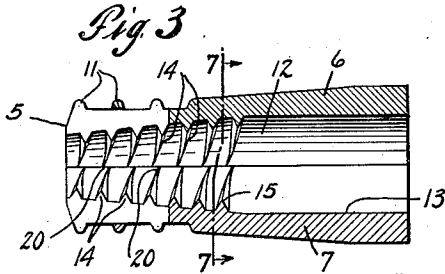
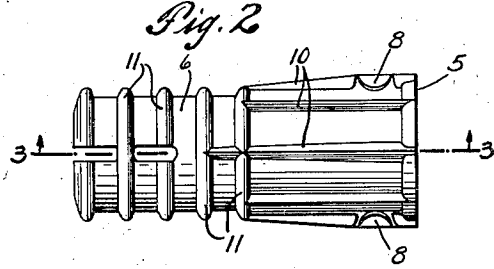
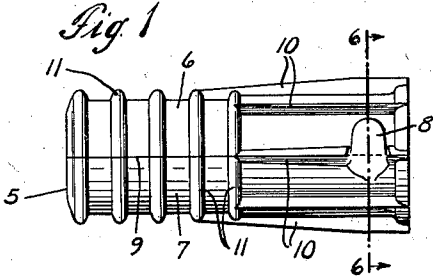


Fig. 8

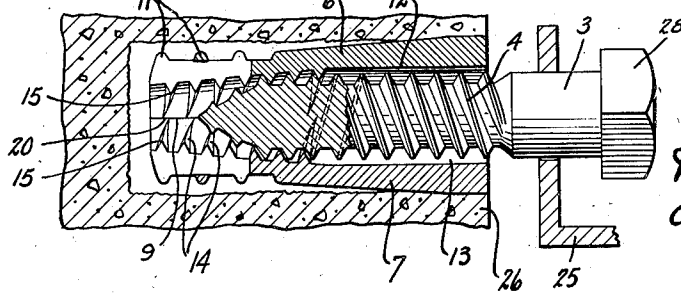


Fig. 9
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BOLT ANCHOR

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4 Claims. (Cl. 85—2.4)

Our invention relates to bolt anchors.

More particularly it covers shields for bolt anchors and providing them with female threads, which will cooperate with the standard male threads of a standard size screw or bolt, and also will cooperate with male threads of a different pitch, on a different screw or bolt, which may be used interchangeably with our new bolt anchor shield.

The particular forms of shields to which our invention is particularly adapted are known commercially as lag shields, and are used with lag screws. Our lag shields may be formed of hard metal, such as malleable iron, or any other suitable material.

Our invention more particularly covers a lag shield provided with female threads to cooperate with the standard male threads of a standard lag screw of any given size; and also with a lag screw of the same size, but having coarser, or steeper, threads, both lag screws being adapted to be used interchangeably with our shield.

Our invention further relates to certain combinations, sub-combinations, articles of manufacture and details of construction, all of which will be more fully hereinafter described and pointed out in the claims.

In the figures we have shown by way of example one embodiment of our invention; the same reference numerals refer to similar parts in the several figures:

Fig. 1 is a side elevation of a bolt anchor shield embodying our invention.

Fig. 2 is a plan view.

Fig. 3 is a longitudinal section on line 3—3, Fig. 2, looking in the direction of the arrows.

Fig. 4 is an interior plan view of one section of our lag shield.

Fig. 5 is an interior plan view of the other section of our lag shield.

Fig. 6 is a cross-section on the line 6—6 of Fig. 1, looking in the direction of the arrows.

Fig. 7 is a cross-section on line 7—7 of Fig. 3, looking in the direction of the arrows.

Fig. 8 is a sectional view of a wall or other support in which our bolt anchor is mounted and about to be expanded by a standard single thread lag screw, the lag screw being partly broken away.

Fig. 9 is a view, similar to Fig. 8, but illustrating our lag shield about to be expanded by a twin threaded lag screw.

For purposes of description we will disclose our invention in connection with a standard $\frac{1}{2}$ " lag screw 1, Fig. 8, provided with the regular stand-

ard pitch male thread 2, there being in this standard size, six turns of the male thread 2 to the inch. Of course, the number of standard thread turns to the inch varies with the size of the standard lag screw 1.

For purposes of example and comparison, we have illustrated in Fig. 9, a $\frac{1}{2}$ " twin lag screw 3 provided with male threads 4 of a different and coarser pitch from those of the standard lag screw 1, Fig. 8, for purposes which will be more fully hereinafter described.

For purposes of illustration, we have shown our invention in connection with a lag screw shield 5, having two sections 6 and 7, preferably held together by the lugs 8, 8, the two sections in their inoperative position contacting with each other on the parting line 9. The exterior surface of the shield is provided with longitudinally extending ribs 10, 10, and circumferential ribs 11, 11. The interior is provided with a tapering axial bore 12, unthreaded at 13, and provided with a female thread 14, of a peculiar and novel form, to cooperate either with the standard thread 2 of the single standard threaded lag screw 1; or, interchangeably with the twin male thread 4 of the twin threaded lag screw 3, Fig. 9. Our present invention covers a lag shield provided with means in the form of a novel and original female thread, 14, which is adapted to cooperate with the single standard thread 2 of the lag screw 1, Fig. 8, or, interchangeably, with the coarser pitch thread 4 of the twin threaded lag screw, Fig. 9.

While we have, for purposes of description, referred to a single threaded screw and a twin threaded screw, it is of course to be understood our invention covers a shield for a bolt anchor, provided with a female thread to cooperate with a single threaded screw of one pitch, or a multiple threaded screw of a different pitch.

In making our lag screw shield to fit either the single threaded lag screw 1, or the twin threaded lag screw 3, it is understood that each must have substantially the same number of thread turns per inch. In placing such threads together, it is found that if one longitudinal line of thread is selected as a starting point, the threads coincide on that line. This line of coincidence may be placed anywhere in the opposite sides of the two malleable shield sections 6 and 7; but as a matter of convenience it is found better to place it at 15 at the bottom of each half, that is 90° from the parting line 9 of the two halves 6 and 7. In our invention the single female thread 14 has different thicknesses or areas. In the form shown, by way of example,

from the points 15, 15 of the female thread 14, Figs. 4 and 5, the thickness of the female thread 14 tapers in both directions, as shown in these figures.

In order to allow for this difference in angle and pitch we take that portion of the threads 2 and 4, which coincides on both lag screws of the single lag screw 1, and the double threaded lag screw 3, and build up a new and novel female thread 14 in the shield 5, and support the different threads 2 and 4 over that area where the difference in angle and pitch is slight and still allow for the different male threads 2 and 4 of the lag screws 1 and 3, respectively, to be interchangeably inserted in the female thread 14 in the shield 5.

It will be seen that the longitudinal cross sectional area or thickness of the female thread 14 is greatest at the points 15, 15, Figs. 4 and 5, the tapers in both directions to zero at the points 20, 20, Fig. 4.

It will be noted that the number of thread turns in both the single screw lag 1, and the twin lag screw 3, is approximately the same.

In the standard half inch size of lag screw, illustrated by way of example, as 1, Fig. 8, there are six threads to the inch. In the twin screw, lag screw 3, Fig. 9, there is the same number of threads, but in the twin form 3, Fig. 9, each thread advances twice the distance advanced by the single thread lag screw 1, Fig. 8. In the twin threaded lag screw 3, Fig. 9, each thread advances the lag screw one-third of an inch, whereas in the standard single thread lag screw 1, each thread only advances the lag screw one-sixth of an inch.

This is very important in use. For example, to hold the work 25 to the wall 26, Figs. 8 and 9, the head 27 of the standard single threaded lag screw 1 would have to be turned twice the number of times that the head 28 of the twin threaded lag bolt 3 would have to be turned. In the particular form shown the head 27 would have to be turned six times to advance the lag screw one inch. In the twin form, Fig. 9, the head 28 would only have to be turned three times to advance the twin lag screw 3 one inch.

It can readily be seen that on a job this would save a great deal of the mechanic's time, thereby reducing the cost of installation.

There is also a marked merchandising advantage.

A hardware dealer, or other merchant, handling bolt anchors, now has to keep in stock lag shields to cooperate with the single standard lag screw 1; and, also, a duplicate stock of lag shields to cooperate with the twin lag screw 3, illustrated in Fig. 9.

By our invention he need carry in stock only our new lag shield which will cooperate equally well with either the single threaded standard lag screw 1, Fig. 8, or the twin threaded lag screw 3, Fig. 9.

Applicants make no claim to a double pitch screw, or bolt anchor provided with screw threads for a lag screw and separate screw threads for a machine bolt, thereby forming two complete female threads of different pitch in the bolt anchor, one for the lag screw and one for the machine bolt, whichever may be used.

Applicants have invented an expansible bolt anchor shield having an interior single female thread 14 of a peculiar and novel contour which cooperates with the standard male threads of a standard lag screw of any given size; and also

with a lag screw of the same size but having coarser, or steeper threads, both lag screws being adapted to be used interchangeably with their expansible shield, and cooperate with the single female thread 14 in the tapered bore 12.

In the particular form shown by way of example, the enlarged or portion of greatest area of the female thread 14 is at the points 15, 15 in each expansible member or section 6 and 7, see Figs. 4 and 5. From the points 15, 15, on each section 6 and 7, the single female thread 14 tapers in both directions to the parting lines 9, 9 where the two expansible members 6 and 7 contact with each other in their inoperative position, Figs. 1, 6 and 7. At these parting lines the single female thread 14 has its least area or thickness, as represented at the points 20, 20, Figs. 4, 5 and 7.

This corresponds with the greatest difference in pitch between the male thread 2 on the standard threaded lag screw 1 and the twin male thread 4 on the twin threaded lag screw 3.

The single female thread 14 in the expansible members 6 and 7 is therefore, in effect, interrupted at the parting lines 9, 9 between the two expansible members 6 and 7 which permits either the male thread 2 on the standard lag screw 1, or the twin thread 4 on the twin threaded lag screw 3, to become seated in the lag shield 5 and cooperate, interchangeably, with the same female screw thread 14.

Of course it is to be understood that the points 15, 15 of greatest thickness or longitudinal cross-sectional area of the female thread 14 may be located at some other point in the tapered bore than 90° from the parting lines 9, 9 of the two sections 6 and 7 of the shield. Such a change, of course, would vary the location of the points of least thickness or longitudinal cross-sectional area 20, 20 from that shown in Figs. 4 and 5.

The advantages of applicants construction are set forth in full in the specification.

Having thus described this invention in connection with an illustrative embodiment thereof, to the details of which we do not desire to be limited, what is claimed as new and what is desired to secure by Letters Patent is set forth in the appended claims.

What we claim is:

1. An expansible bolt anchor shield formed of a plurality of expansible parts provided with a tapering bore having a single interrupted female thread having areas of maximum and minimum thickness to cooperate interchangeably with lag screws having male threads of different pitches, the maximum longitudinal cross-sectional area or thickness of the turns of the female thread being spaced from the parting line between the sections of the expansible shield.

2. A bolt anchor shield provided with an interior bore having a single female thread, having turns of varying thicknesses, the points of maximum and minimum thickness of the turns of the thread, being along lines parallel with the longitudinal axis of the shield, to permit the female threads of the shield to cooperate interchangeably with screws having male threads of different pitches.

3. An expansible lag shield, having an interior bore formed of a plurality of parts or sections, each section being provided with an interior single female thread, having turns of varying thickness, the points of maximum and minimum thickness of the turns of the female thread, being along lines parallel with the longitudinal axis

of the shield, to permit the turns of the female thread, located on the interior of each section of the shield, to cooperate inter-changeably with lag screws having male threads of different pitches.

4. A bolt anchor shield, formed of a plurality of expansible shield sections, provided with an interior bore each expansible section being provided with portions of a single female thread of varying thickness, the turns of the female thread 10

being of greatest thickness along the longitudinal median lines of the sections and gradually tapering to a minimum at the parting lines or edges of the shield sections, to permit the turns of the single female thread to cooperate inter-changeably with screws having male threads of different pitches.

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