Dec. 23, 1941. A. E. MULLEN 2,266,892

ANCHORING DEVICE

Filed March 11, 1940

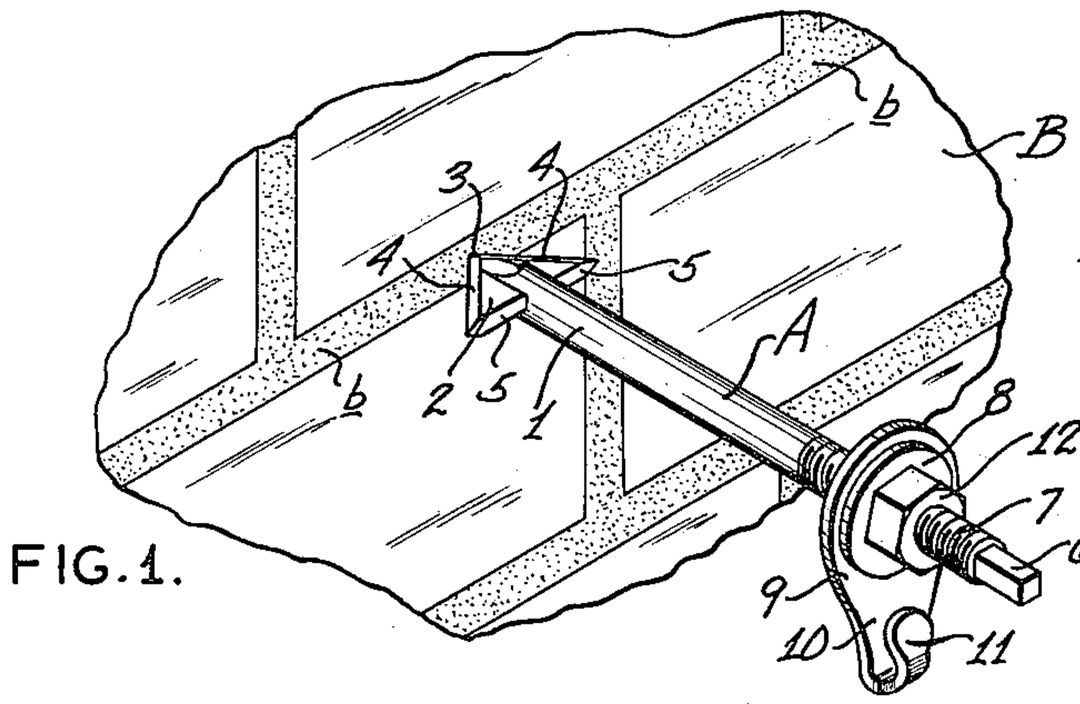


FIG. 1.

FIG. 7.

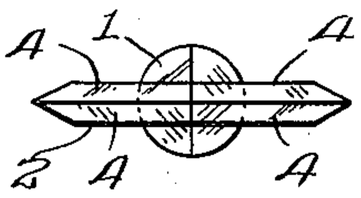


FIG. 8.

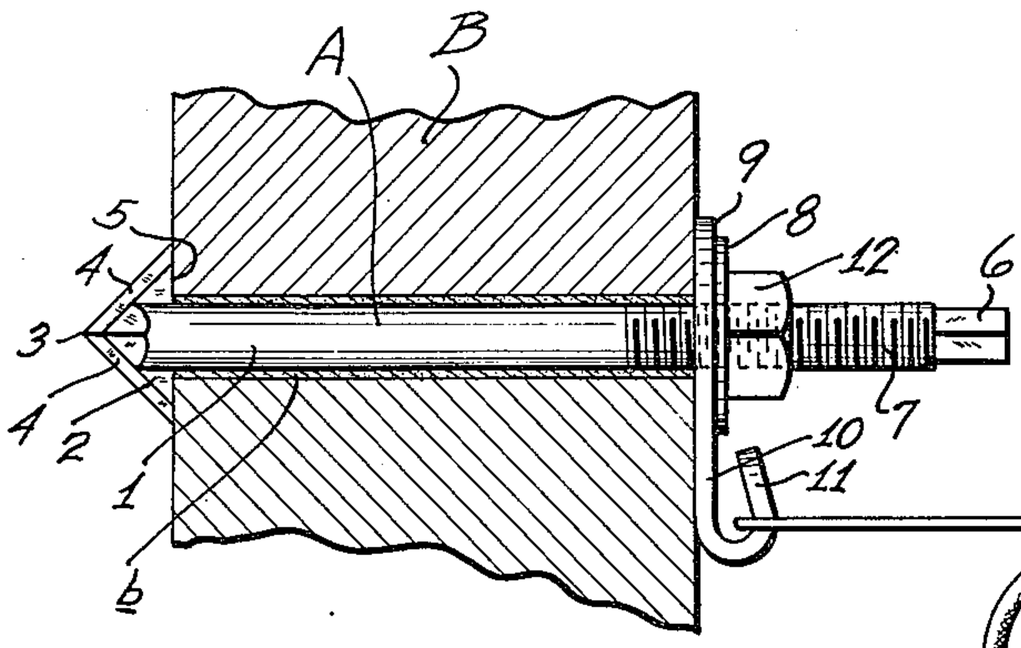


FIG. 6.

FIG. 3.

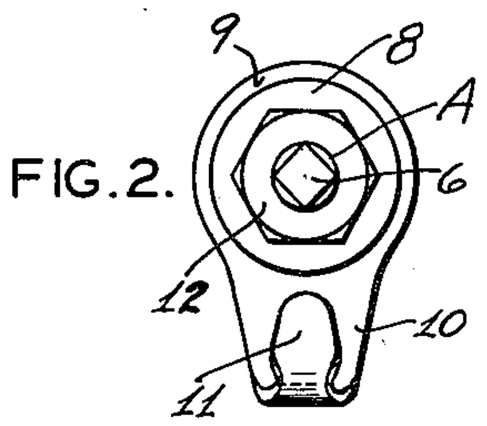
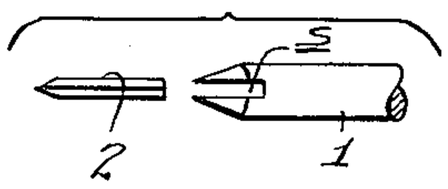


FIG. 2.



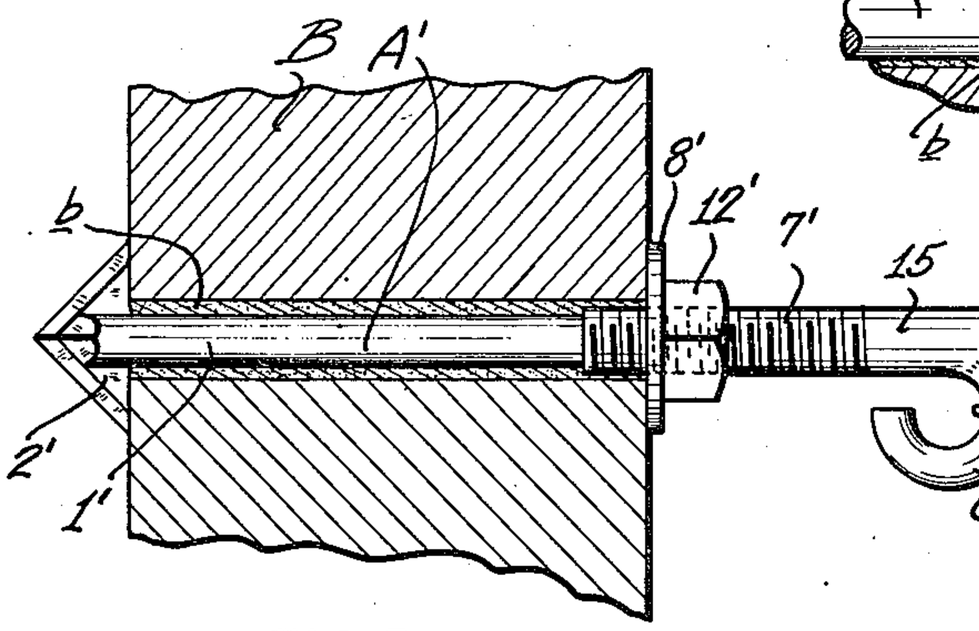


FIG. 5.

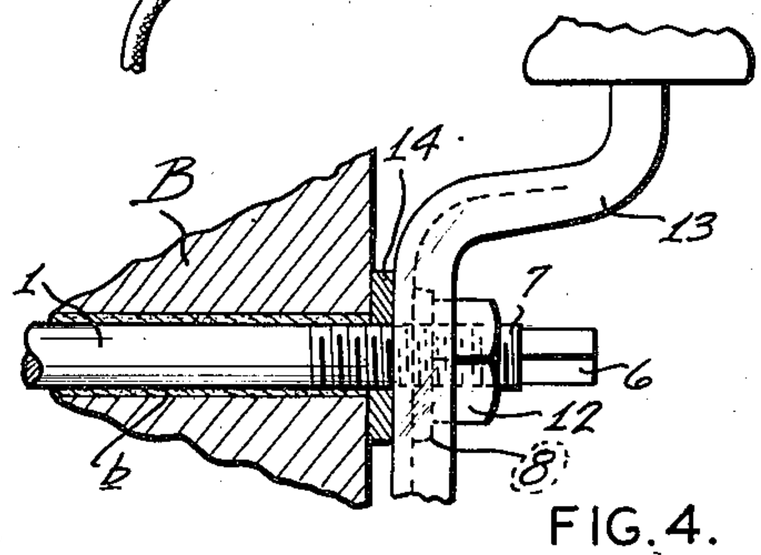
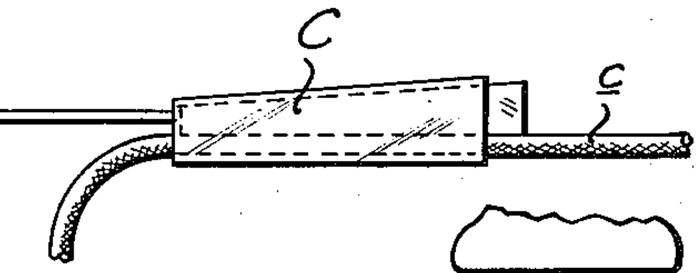
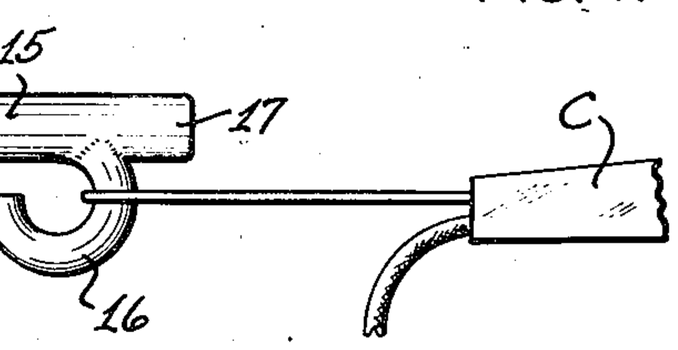


FIG. 4.





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UNITED STATES PATENT OFFICE

2,266,892

ANCHORING DEVICE

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7 Claims. (Cl. 85—9)

This invention relates in general to certain new and useful improvements in anchoring devices and more particularly to anchor bolts adapted for securement in brick walls and other types of masonry structures.

In the erection of telephone lines, power lines, the hanging of advertising signs and awnings, as well as in a wide variety of detailed uses, it is common practice at the present time to drill a suitable aperture in the wall to which attachment is being made and insert a lead ferrule or so-called expansion shell. The shell is usually provided with some form of internally threaded nut having a frusto-conical or wedge-forming outer face for expanding the shell, a bolt being threaded into the nut for engaging the hanger or other means, which is in turn employed for directly supporting the telephone line, power line, sign, awning, or the like.

The expansion shell, however, and its associated bolt, are somewhat expensive to manufacture and, by reason of the necessity for drilling a receiving aperture, become extremely expensive to install. In addition to this, the expansion shell, upon being expanded, exerts a considerable crushing force against the side walls of the receiving aperture and frequently, where the brick or concrete in which the shell is being inserted is weathered, the shell will actually crush the masonry structure to such an extent that it will be impossible to seat the shell properly. Under such circumstances, the shell must be discarded and an over-size shell inserted in the aperture or the shell-receiving aperture must be plugged up and a second aperture drilled at a different location. Once installed, the shells assume a substantially fixed diameter and when subjected to vibration frequently become looosened and pull out. Finally, the shells cannot readily be removed from a wall or other masonry structure and cannot be reused.

In order to avoid this expense and labor cost, it has also been a common alternative practice to chisel or dig out a substantial section of mortar from a selected seam between two bricks or tiles and drive an over-size block of wood into the crevice thus formed and then insert a conventional lag-screw, nail, or other suitable attachment means into the wood block. This method is considerably cheaper and less time-consuming than the use of expansion shells, but is even less satisfactory because the wood block invariably shrinks and deteriorates as a result of exposure to the elements, very quickly becoming looosened and pulling out.

My invention hence has for its primary objects the provision of an anchor bolt which is simple and inexpensive, which may be readily installed in the seams between brick-work and other masonry structures in a very simple, con enient, and speedy manner, which is extremely secure against pull-outs, and which at the same time may be removed with comparative ease and simplicity when its use has terminated.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing—

Figure 1 is a perspective view of an anchor bolt constructed in accordance with and embodying my present invention, illustrating the anchor bolt in position adjacent to a brick wall for insertion therein;

Figure 2 is a front elevational view of the anchor bolt;

Figure 3 is a longitudinal sectional view of the anchor bolt in operative position in the brick wall;

Figures 4 and 5 are longitudinal sectional views of modified forms of anchor bolts constructed in accordance with my present invention;

Figure 6 is an exploded view of the head portion of the bolt, illustrating one preferred manner of construction; and

Figures 7 and 8 are end and side elevational views, respectively, of the bolt head, showing in more detail the flaring cutting edges thereof.

Referring now in more detail and by reference characters to the drawing, which illustrates practical embodiments of my present invention, A designates an anchor bolt including an elongated preferably cylindrical shank 1 provided at its forward or entrant end with a preferably drop-forged arrow-like or triangular head 2 having a forwardly presented point 3, somewhat beveled leading edges 4, and blunt rearwardly presented abutment faces 5 disposed preferably in a plane at right angles to the longitudinal axis of the shank. In this connection it may be pointed out that the shank may, if desired, be axially slotted, as at *s*, and the head member 2 may be separately formed and secured therein by welding, riveting, or any other suitable method, as shown in Figure 6. By reference to Figure 3 and to the enlarged detail view, Figure 7, it will be seen that the leading edges 4 and the forward end of the shank merge in the provision of four forwardly presented cutting edges arranged re-

spectively at 90° to each other. At its other end, the shank 1 is ground off or otherwise formed to provide a four-sided extension or tail-portion 6 and, inwardly of the tail-portion 6, the shank is finally threaded in the provision of a nut-receiving portion 7, all as best seen in Figures 1 and 3 and for purposes presently more fully appearing.

Loosely mounted upon the threaded portion 7 of the shank 1 is a conventional washer 8 and a hanger 9 having an integrally formed radially outwardly extending arm 10 bent inwardly at its outer extremity in the provision of an attachment hook 11, and outwardly of the washer 8, the threaded portion 7 of the shank 1 is finally provided with a conventional nut 12.

In use, the anchor bolt A is presented toward a brick wall B, for instance, with the point 3 approximately midway of a selected mortar seam *b*, with the head 2 disposed in the same general direction as the seam *b*, that is to say, if the seam *b* is a horizontal seam, the head 2 should be substantially horizontal, and if the seam is a vertical seam, the head 2 should be vertical. If, as may infrequently happen, the seam should extend in some other general direction than vertical or horizontal, the head member 2 should be disposed more or less in that general direction or plane. It will, of course, be evident that the shank 1 should preferably be held so that its longitudinal axis is approximately at right angles to the seam *b*. Thereupon, the workman may strike the end face of the extension or tail-member 6 a sufficient number of blows with a hammer or suitable tool to drive the anchor bolt into the mortar or cement which forms the seam *b* until the pointed head 2 has been driven beyond the inner face of the bricks of the wall B. Thereupon, the extension or tail-member 6 is gripped with a wrench or pliers and the bolt A turned through an angle of approximately 90°. Finally, the nut 12 is threaded forwardly on the threaded portion 7, forcing the washer 8 and hanger member 9 against the outer face of the brick wall B and pulling the bolt A rearwardly until the abutment faces 5 of the head 2 are brought into tight abutting engagement with the inner face of the brick wall B on either side of the seam *b*, as best seen in Figure 3. The nut 12 is then drawn down tightly and the anchor bolt thus securely and permanently seated in the wall B, and a conventional cable clamp C and cable *c* hooked or looped over the hook 11 of the hanger 9.

If desired, an insulator-supporting bracket 13 may be substituted for the hanger 9, as shown in Figure 4. In such case, however, it has been found preferable to provide the threaded portion 7 of the shank with a relatively thin auxiliary nut or threaded washer 14. The bolt A is then driven into the brick wall with the washer 8, the nut 12, and the auxiliary washer 14 in place. Upon completion of the driving operation, the bolt A is turned through an angle of 90° and the auxiliary washer 14 threaded up into abutment with the outer face of the brick wall, drawing the abutment shoulders 5 of the head 2 into engagement, as above described. Thereupon, the washer 8 and nut 12 are removed and the suitably apertured bracket 13 passed over the outwardly projecting threaded portion 7 of the shank 1 and secured in place by the washer 8 and nut 12.

I may also provide a modified form of anchor bolt A' integrally including a shank 1' provided at its rearward end with a diametrally enlarged barrel 15 having a threaded portion 7' for receiving the washer 8' and nut 12'. At its outer extremity, the barrel portion 15 is integrally provided with a downwardly depending forged hook 16 and an axially projecting impact head 17. The washer 8' and nut 12' are then placed upon the threaded portion 7' and thereupon the head member 2' is forged or otherwise formed. The anchor bolt A' may be installed in a brick or masonry wall in substantially the same manner as previously described in connection with the anchor bolt A, all as best seen in Figure 5.

It will be evident that by my invention I have provided an anchor bolt which may be very quickly and simply installed with a minimum of labor cost. In addition, the anchor bolt, when installed, will be securely and positively held in place and will not easily become loosened or pull out during actual use. Furthermore, when it becomes desirable or necessary to remove the power line, advertising sign, or other object supported by the anchor bolt, the latter may be very simply and easily removed from the wall and in a great many cases may be used over again, the vacant space left by such removal being readily plugged up with new mortar, putty, or other suitable calking material.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the anchoring device may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

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

1. An anchor bolt for insertion into the seam of a masonry structure including an elongated shank provided at its one end with a flat arrow-like pointed head substantially smaller in thickness than the shank and having parallel planar faces, said head being adapted to retentively engage the inner face of the wall on either side of the seam upon rotation of the shank through an angle of 90°, said head being beveled along its forwardly presented oblique margins in the provision of sharpened edges, said shank at its other end being threadedly provided with an attachment nut for engagement with the outer face of the wall.

2. An anchor bolt for insertion into the seam of a masonry structure, being provided at its one end with a flat laterally projecting head substantially smaller in thickness than the width of the seam and having parallel planar faces, said head being adapted to retentively engage the inner face of the wall on either side of the seam upon rotation of the shank through an angle of 90°, said shank at its other end being threadedly provided with an attachment nut for engagement with the outer face of the wall.

3. An anchor bolt for insertion into the seam of a masonry structure, being provided at its one end with a flat arrow-like pointed head substantially smaller in thickness than the width of the seam and having parallel planar faces, said head being adapted to retentively engage the inner face of the wall on either side of the seam upon rotation of the shank through an angle of 90°, said shank at its other end being provided with a diametrally enlarged threaded barrel, and a hook member formed integrally with and extending outwardly from the barrel.

4. An anchor bolt including an elongated shank tapered at one end and provided at such tapered end with a diametral slot extending axially into

the shank beyond the taper, and a triangularly shaped metallic element fixed within the slot having its apex substantially coincident with the outer extremity of the tapered end in the formation of a point and at its base extending symmetrically on opposite sides of the shank in the provision of abutment wings substantially thinner than the shank.

5. An anchor bolt for insertion into the seam of a masonry structure including an elongated shank provided at its one end with a flat arrow-like pointed head substantially smaller in thickness than the shank and being adapted to retentively engage the inner face of the wall on either side of the seam upon rotation of the shank through an angle of 90°, said head being beveled along its forwardly presented oblique margins in the provision of sharpened edges, said shank being tapered adjacent the head and forming, with the beveled edges of the head, a common continuous point.

6. An anchor bolt for insertion into the seam of a masonry structure including an elongated shank having a triangularly pointed end including a pair of diametrally extending flat blades having forwardly presented angular cutting edges merging with the shank in the formation of a tip having four equally spaced rearwardly flaring cutting edges.

7. An anchor bolt for insertion into the seam of a masonry structure including an elongated shank having a triangularly pointed end including a pair of diametrally extending flat blades having forwardly presented angular cutting edges merging with the shank in the formation of a tip having four rearwardly flaring cutting edges disposed at 90° to each other.

ARTHUR E. MULLEN.