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## ANCHOR BOLT ASSEMBLY

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17 Claims. (Cl. 50—475)

This invention relates to anchor bolts and is directed particularly to an improved anchor bolt assembly for securing machine pedestals, structural columns, and the like, to concrete flooring, ceilings, walls, etc.

The principal object of this invention is to provide an improved anchor bolt assembly of the above nature, which is laterally adjustable in all directions.

Another object of this invention is to provide an anchor bolt assembly of the above nature, which presents a perfectly smooth flush and durable surface to receive columns and machine bases or pedestals on concrete flooring, thus eliminating grouting under the bases after the columns or machines are installed.

Another object of this invention is to provide an anchor bolt assembly of the character described, which has no bolt projection above the surface of the floor.

Still another object is to provide an anchor bolt assembly of the character described, which permits full development of the structural strength of the anchor bolt.

Another object is to provide an anchor bolt assembly of the above nature, which is simple in construction, inexpensive to manufacture, and which can be easily installed by unskilled workers.

Other objects, features and advantages of this invention will be apparent from the following description when read with reference to the accompanying drawings wherein:

Fig. 1 is a vertical cross-sectional view illustrating in unassembled condition an anchor bolt assembly installed in concrete flooring and ready for bolting down a machine pedestal;

Fig. 2 is similar to Fig. 1, but shows the machine pedestal assembled to and bolted down by the anchor bolt assembly;

Fig. 3 is a bottom view of the anchor bolt assembly, taken along the line 3—3 of Fig. 1, in the direction of the arrows;

Fig. 4 is a vertical cross-sectional view of the anchor bolt assembly taken along the line 4—4 of Fig. 1 in the direction of the arrows; and

Fig. 5 is a fragmentary view, in vertical cross-section, illustrating a modification of the invention.

Referring now in detail to the drawings, wherein like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates generally the anchor bolt assembly embodying the invention shown embedded for use in a concrete flooring F. The anchor bolt assembly 10 comprises a metal base plate 11 in the shape of a square and having a pair of right angularly turned down opposite end walls 12. The base plate 11 is centrally drilled to receive therein one end of a cylindrical metal sleeve 13, which may be of standard steel or iron piping, for example. As indicated at 14 in Figs. 1 and 2, the sleeve B is preferably welded to the base plate 11 about the top of said base plate.

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Loosely arranged between the end walls 12 of the base plate 11 is a metal square nut 15 having a central internally threaded opening 16. The nut 15 is provided with a metal guide sleeve 17 coaxial with the threaded opening 16 and extending upwardly therefrom into the metal sleeve 13. The lower end of the guide sleeve 17 is secured to the square nut 15 by welding, as indicated at 18 in Figs. 1 and 2.

A complementary sheet metal cover plate 19 fits over the bottom of the base plate 11, said cover plate having upwardly-extending side walls 20 which extend between the ends of the end walls 12 of said base plate at each side thereof (see Figs. 3 and 4). As illustrated in Figs. 1 and 2, the assembly comprising the base plate 11, the square nut 15, and the cover plate 19 is embedded within the concrete flooring F while being poured, with the upper end of the metal sleeve 13 flush with the floor surface. The cover plate 19 prevents wet concrete entering the interior of the anchor bolt assembly.

After the concrete floor is dry, the bolt opening of the machine pedestal P or other member to be secured to the floor will be moved outwardly over the metal sleeve 13 and a machine bolt 21 fitted with a washer 22 will be dropped through the opening and through the guide sleeve 17 to engage with the threaded opening 16 in the square nut 15. When the bolt 21 is drawn tight, the upper surface will be pressed forcefully against the underside of the base plate 11 and the lower end of the metal sleeve 13. Since the upper end of the sleeve 13 will be flush against the underside of the machine pedestal P, the full strength of the machine bolt 21 can be developed without stress being applied to the concrete. The square nut 15 is of such size with respect to the interior size of the base plate 11, that it can only turn a few degrees without striking one or both of the end walls 12 of said base plate, thereby preventing loose turning of said square nut. The very much smaller outside diameter of the guide tube 17 as compared with the inner diameter of the sleeve 13 allows limited lateral movement of the square nut 15 in any direction necessary to overcome inaccuracies in layout of the anchor bolt assembly in the concrete flooring, for example.

The modification of the invention illustrated in Fig. 5 differs only from that described above in that the lower end of the guide sleeve 17a is flanged, as indicated at 17b, for securing to the metal base plate 11 by means of screws 17c, for example. In this modification of the invention, the guide sleeve 17 could be either of metal or a synthetic plastic.

While there are described and illustrated herein preferred embodiments of the invention, it is to be understood that these embodiments are presented by way of illustration only, and that various omissions or changes in the arrangements of parts as well as the substitution of equivalent elements for those herein shown and described, can be made without departing from the spirit and scope of the invention as defined by the appended claims.

The upper end of the pipe 13 may be closed by any suitable disc or covering 13a to keep concrete out of said pipe until the device is ready for assembly, at which time the disc is removed.

What I claim as new and desire to secure by Letters Patent is:

1. In an anchor bolt device, the combination comprising a base formed with an opening, a sleeve member fixed at one end to said base at said opening and extending upwardly therefrom, a nut at the underside of said base, said nut being of such dimension relative to the



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inner dimension of the sleeve member that the nut cannot pass through said sleeve member, a threaded bolt, said nut having an internally threaded opening receiving one end of said bolt, means extending from said nut and within said sleeve member for guiding said bolt to said threaded opening, and means on said base for limiting rotary motion of said nut upon turning said bolt said sleeve member and said limiting means on the base being dimensioned to permit side movement of said nut, guiding means and bolt in all directions.

2. The anchor bolt device as defined in claim 1, wherein said bolt guiding means comprises a guide tube having one end secured to said nut in surrounding relation with respect to the threaded opening therein.

3. The anchor bolt device as defined in claim 2, wherein said guide tube is of metal and fixed to said nut by welding.

4. The anchor bolt device as defined in claim 2, wherein said guide tube is formed at said one end with an outwardly extending flange, and means securing said flange to said nut.

5. The anchor bolt device as defined in claim 4, wherein said guide tube is formed of a synthetic plastic.

6. In an anchor bolt device for use in concrete or the like flooring or siding, the combination comprising, a metal base having a top wall and opposed, downwardly-turned side walls, said top wall being formed with a central opening, a cylindrical sleeve member fixed at one end to said top wall at said opening and extending upwardly at right angles from said top wall, a nut arranged between said side walls beneath said top wall, said nut being of such dimension relative to the inner dimension of the sleeve member that the nut cannot pass through said sleeve member, a threaded bolt, said nut having a central internally threaded opening receiving one end of said bolt, and a guide tube for said bolt, having one end secured to said nut at said threaded opening therein and extending within said sleeve member and being substantially smaller in transverse cross-section than said sleeve member so as to be movable sideways therein in all directions.

7. In an anchor bolt device for use in concrete or the like flooring or siding, the combination comprising, a metal base having a top wall and opposed, downwardly-turned side walls, a central opening in said top wall, a cylindrical sleeve member fixed at one end to said top wall at said opening and extending upwardly at right angles from said top wall, a nut arranged between said side walls beneath said top wall, said nut being of such dimension relative to the inner dimension of the sleeve member that the nut cannot pass through said sleeve member, a threaded bolt, said nut having a central internally threaded opening to receive said bolt, a guide tube having one end secured to said nut at said threaded opening therein and extending within said sleeve member and being substantially smaller in transverse cross-section than said sleeve member so as to be movable sideways therein, and a cover plate enclosing the space between said downwardly-turned side walls of said base.

8. In an anchor bolt device for use in concrete or the like flooring or siding, the combination comprising, a metal base having a top wall and opposed, downwardly-turned side walls, a central opening in said top wall, a cylindrical sleeve member fixed at one end to said top wall at said opening and extending upwardly at right angles from said top wall, a nut arranged between said side walls beneath said top wall, said nut being of such dimension relative to the inner dimension of the sleeve member that the nut cannot pass through said sleeve member, a threaded bolt, said nut having a central internally threaded opening to receive said bolt, and a guide tube having one end secured to said nut at said threaded opening therein and extending within said sleeve member and being substantially smaller in transverse

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cross-section than said sleeve member so as to be movable sideways therein, the internal diameter of said sleeve member being substantially greater than the outer diameter of said guide tube to allow lateral movement in all directions of said nut with respect to said base.

9. In an anchor bolt device for use in concrete or the like flooring or siding, the combination comprising, a metal base having a top wall and opposed, downwardly-turned side walls, a central opening in said top wall, a cylindrical sleeve member fixed at one end to said top wall at said opening and extending upwardly at right angles from said top wall, a nut arranged between said side walls beneath said top wall, said nut being of such dimension relative to the inner dimension of the sleeve member that the nut cannot pass through said sleeve member, a threaded bolt, said nut having a central internally threaded opening to receive said bolt, a guide tube having one end secured to said nut at said threaded opening therein and extending within said sleeve member and being substantially smaller in transverse cross-section than said sleeve member so as to be movable sideways therein, and a cover plate enclosing the space between said downwardly-turned side walls of said base, the size of said nut being large enough to prevent full axial turning thereof between said side walls.

10. In an anchor bolt device for use in concrete or the like flooring or siding, the combination comprising, a metal base having a top wall and opposed, downwardly-turned side walls, a central opening in said top wall, a cylindrical sleeve member fixed at one end to said top wall at said opening and extending upwardly at right angles from said top wall, a nut arranged between said side walls beneath said top wall, said nut being of such dimension relative to the inner dimension of the sleeve member that the nut cannot pass through said sleeve member, a threaded bolt, said nut having a central internally threaded opening to receive said bolt, a guide tube having one end secured to said nut at said threaded opening therein and extending within said sleeve member and being substantially smaller in transverse cross-section than said sleeve member so as to be movable sideways therein, and a cover plate enclosing the space between said downwardly-turned side walls of said base, the length of said guide tube being substantially equal to the length of said sleeve.

11. The anchor bolt device as defined in claim 6, wherein said guide tube is of metal and fixed to said nut by welding.

12. The anchor bolt device as defined in claim 6, wherein said guide tube is formed at said one end with an outwardly-extending flange, and screws securing said flange to said nut.

13. The anchor bolt device as defined in claim 12 wherein said guide tube is formed of a synthetic plastic.

14. In combination, a base having a chamber, a pipe extending up from the chamber and communicating therewith, a nut of larger dimension than the opening in the pipe, disposed within the chamber, cooperative means to limit rotation of the nut in said chamber, said nut having a threaded opening, a tube fixed to the nut, extending upwardly therefrom, and projecting into said pipe and surrounding said opening in said nut and being movable in said pipe sideways in a plurality of directions, and a bolt having a head at its upper end, and a shank extending downwardly from its upper end and being movable longitudinally through said tube and being threaded for engagement within the opening in said nut.

15. The combination of claim 14, said base having a bottom for said chamber, and when the nut rests on said bottom with the bolt unscrewed, the upper end of said tube will be located below the upper end of said pipe, the height of the chamber in the base being greater than the thickness of the nut so that upon screwing the bolt within the nut opening, the nut will be raised.

16. In combination, a chambered base, a pipe extend-



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ing up from the base and communicating therewith, a nut in the base, said nut being of larger dimension than the inside of the pipe, a guide tube fixed to said nut and projecting loosely up into said pipe and surrounding the nut opening, a bolt screwed in said nut opening and being snugly received in said guide tube, said base and nut having means to limit rotation of the nut in the base.

17. The combination of claim 1, in combination with means separate from the base, and forming therewith, a chamber at the underside thereof, enclosing said nut.

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