Jan. 6, 1925. 1,521,658

C. C. TOMKINSON

CONCRETE INSERT

Filed July 6, 1921 2 Sheets-Sheet 1

Fig. 1.

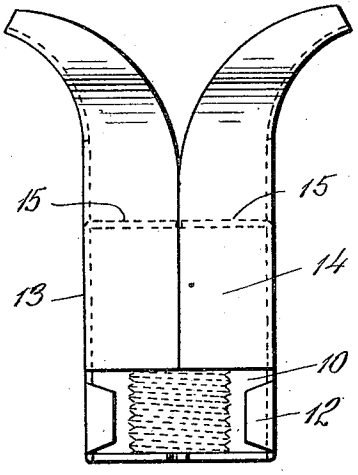


Fig. 2.

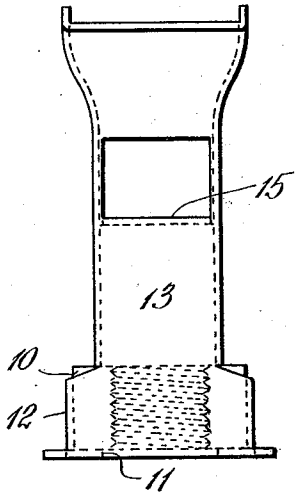


Fig. 3.

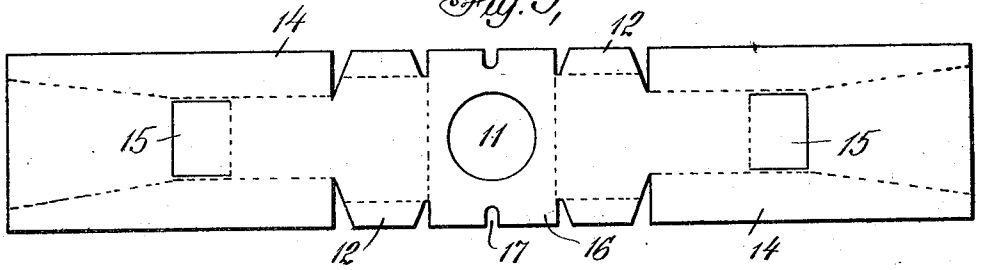
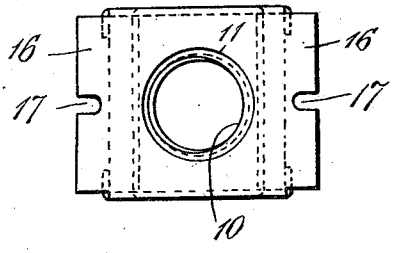


Fig. 4.



Inventor
Charles C. Tomkinson
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Filed July 6, 1921 2 Sheets-Sheet 2

Fig. 5,

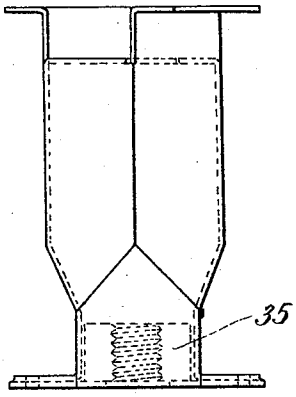


Fig. 6,

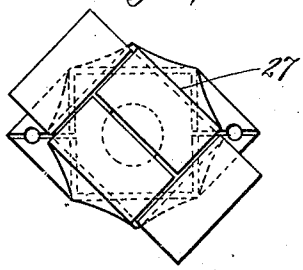


Fig. 7,

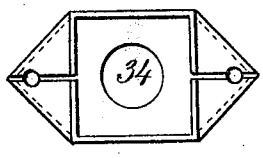


Fig. 8,

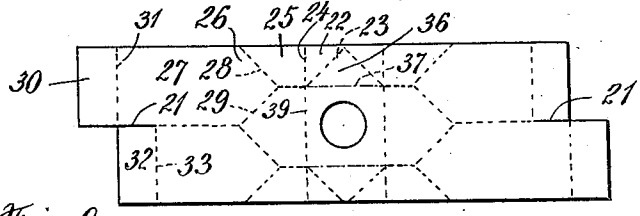


Fig. 9,

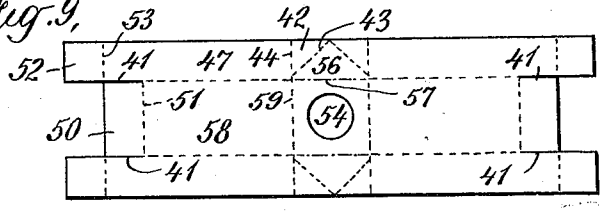


Fig. 10,

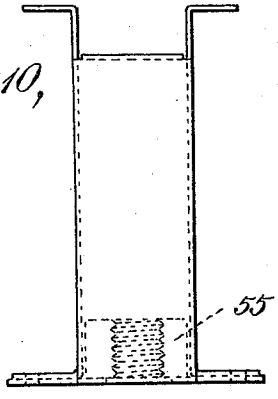
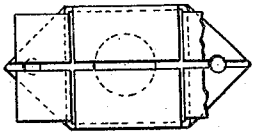


Fig. 11,



Inventor

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By his Attorney

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Patented Jan. 6, 1925. 1,521,658

UNITED STATES PATENT OFFICE.

CHARLES C. TOMKINSON, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO J. EDWARD OGDEN, OF MOUNTAINVILLE, NEW YORK.

CONCRETE INSERT.

Application filed July 6, 1921. Serial No. 482,722.

To all whom it may concern:

Be it known that I, CHARLES C. TOMKINSON, a citizen of the United States, and a resident of Plainfield, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Concrete Inserts (Case B), of which the following is a specification.

This invention relates to concrete inserts and has for its object the provision of a device of this character that shall be simple and rugged in construction and capable of manufacture at minimum cost.

The insert is made of a single piece of sheet metal of such a layout that a strap or stirrup is formed, at the bottom of which a nut is confined; a closed pocket being provided above the butt and the free ends of the strap being flared outwardly to provide an anchor portion.

The above and other features of novelty of the invention will appear from the detailed description thereof taken in connection with the accompanying drawing forming part of this specification.

Referring to the drawings:

Fig. 1 is a side elevation of a concrete insert embodying the preferred form of the invention.

Fig. 2 is an end elevation of the same.

Fig. 3 is a plan view of the sheet metal blank from which the concrete insert is made.

Fig. 4 is a bottom plan or face view of the device shown in Figs. 1 and 2.

Fig. 5 shows a side elevation of a modified form of concrete insert.

Fig. 6 shows a plan view of the same.

Fig. 7 is a sectional view showing the lower end portion or nut enclosing portion of the anchor illustrated in Fig. 5.

Fig. 8 shows a sheet metal blank from which may be formed the insert of Fig. 5.

Fig. 9 shows a blank from which may be formed another modification.

Fig. 10 shows a side elevation of a completed insert made from the blank of Fig. 9 and

Fig. 11 is a plan view of the structure shown in Fig. 10.

Like characters of reference indicate like parts throughout the several views.

The concrete insert of the present invention is formed from a strip of sheet metal which is bent to form a strap or stirrup at the bottom of which is supported a nut 10. The nut is maintained in axial alinement with an opening 11 in the bottom of the strap by means of fingers 12 which extend from the sides 13 of the strap. The nut is prevented from displacement away from the bottom or face of the strap by means of flanges 14 which overlie the nut. The flanges are brought into juxtaposition thus forming a pocket above the nut into which the end of a bolt may project after being threaded through the nut. The pocket is closed against the entrance of concrete by means of abutting shelf-like members 15 which are bent out of the sides of the strap.

In order to effectually secure the insert against withdrawal from the concrete, the ends of the strap flare outwardly as clearly shown in Figs. 1 and 2, the flanges 14 gradually becoming of less depth to permit of a widening of the sides 13 at the top.

The bottom or face of the strap is preferably somewhat wider than the nut to provide tabs 16 which are notched or cut as at 17 to provide means through which nails may pass for positioning the insert in the mold into which concrete is to be poured.

The manner of laying out and cutting the blank for forming the insert is clearly disclosed in Fig. 3. It will be noted that the blank is of uniform width throughout and that there is very little waste. While the insert is shown as made of a blank of sheet metal, it will be readily appreciated that the construction lends itself very readily to manufacture from commercial channel iron.

The invention provides an insert which can be made from sheet metal with a minimum wastage of material, which is rugged in construction, and which is efficient for the purpose intended. The flanges serve not only to provide a pocket for the reception of the projecting end of the bolt which cooperates with the nut but also serves to stiffen the sides of the stirrup.

When so made from sheet metal, the process is as follows: A sheet metal blank is selected of the form of Fig. 3 as previously set forth, or of any desired elongated form,

having an aperture 11 for receiving a bolt. A plurality of notches are provided along the longitudinal edges thereof. These notches are in oppositely disposed pairs, corresponding pairs being equally distant in a longitudinal direction from the aperture 11. A pair of U shaped slits is provided between the aperture 11 and the ends of the blank, and is arranged so that the open part of each U is towards the aperture, and the slits are spaced equally distant from the aperture. The longitudinal lengths of these U's are collectively substantially equal to the distance between the vertical dotted lines shown adjacent the aperture in Fig. 3. Assuming the blank to be in a horizontal plane, the end portions of the blank are upwardly bent through an angle of 90 degrees, the left hand portion along the vertical dotted line immediately to the left of aperture 11, and the right hand portion along the similar vertical dotted line immediately to the right of the aperture 11, as shown in Fig. 3.

The edgewise portions, designated 12, between intermediate notches are then each inwardly bent through an angle corresponding to the angular relation between lateral faces of the nut for which the insert is to be intended. The work up to this point may preferably be done by using a nut, or some similarly shaped member, in its ultimate position opposite the upper side of the aperture 11. Highly efficient results have been obtained by this process of forming concrete inserts, by which the blank is literally wrapped around the nut, and this new method constitutes an important step in the art to which the invention pertains.

The nut may now be withdrawn if desired, until the insert is finally installed. With the nut then in place, the edgewise portions 14 subtended between the notches most distant from the aperture 11, the adjacent lateral edge and a part of the end are bent inwardly until their edges meet, thus forming a casing.

The flaps subtended within the U shaped slits previously mentioned are now inwardly bent through an angle of 90 degrees so that edges of the horizontal members so formed cooperate with each other and with inner surfaces of the portions 14, 14 to form a chamber. This chamber is adjacent one end face of the nut and into it may protrude to a desired degree a bolt, thus providing convenient means of adjustment.

In the modified form shown in Figs. 5, 6, 7 and 8 the sheet metal blank of Fig. 8 is slotted longitudinally as shown at 21 for a relatively short distance from the ends. The length of each of these slits is determined by the shape desired in the completed structure, as will appear from the following description, and should extend inwardly from line 31 not less than one half the width of portion 27. An aperture 34 is provided for the bolt which is to enter the nut 35. Each quadrant of the blank is bent so that the portion 22 is folded over the diagonal line 23, in such manner that the obverse surface of portion 22 is immediately adjacent the obverse surface of the base portion 36. Simultaneously portion 25 is folded on line 24 so as to be in a plane perpendicular to base portion 36. The fold thereby formed on line 24 now lies along a longitudinal line 37 and portion 25 thus forms a side wall for the nut chamber, preventing the nut from turning. The portion 27 is now folded on lines 26, 28, 29 and 39, being rotated through an angle of 45°, as shown in Fig. 6, the portion 27 being in a plane perpendicular to the base 36. This forms the nut chamber complete, the fold on line 29 retaining the nut in position when the bolt is rotated. The four walls formed by portions 27 form a hollow chamber through which the bolt may protrude. This chamber is sealed against the entry of concrete by flaps formed by the portions 30 which are folded inwardly on the lines 31 through an angle until they meet. Each of the portions 32 is bent outwardly through an angle of 90 degrees, on the line 33 as shown in Fig. 5.

It will be seen that the body portion of the insert is adapted to be maintained securely in the concrete, great strength and rigidity being obtained.

It is obvious that the structure may be formed with the nut 35 in place, thus wrapping the blank around the nut.

In the modification shown in Figs. 9, 10 and 11, the sheet metal blank of Fig. 9 has a rectangular indentation at each of its ends, the longitudinal cuts forming each of the indentations being extended to form slits as shown at 41, 41. The length of each of these slits is determined by the shape desired in the completed structure and should extend inwardly from line 51 not less than one half the width of portion 47, as will appear from the following description. An aperture 54 is provided for the bolt which is to enter the nut 55. Each quadrant of the blank is bent so that the portion 42 is folded over the diagonal line 43 in such manner that the obverse surface of portion 42 is immediately adjacent the obverse surface of the base portion 56. Simultaneously portion 47 is folded on line 44, and portion 58 on line 59 so as to be in planes perpendicular to the base portion 56. The fold thereby formed on line 24 now line 57 and portions 47 thereby form opposite side walls for the nut chamber. The two portions 58 form the other side walls. The nut will be prevented from turning.

It is obvious that the structure may be formed with a nut 35 or a nut structure equivalent preferably to a nut having the

largest dimensions permissible, as determined by the manufacturing tolerances. The nut structure may now be withdrawn, the remaining operations described below being completed, in such a case, at the point of use.

The two walls formed by the four portions 47 and the two walls formed by portions 58 form a hollow chamber through which the bolt may protrude. After the nut is inserted, this chamber may be sealed against the entry of concrete by flaps formed by the portions 50 folded inwardly on the lines 51 through an angle until they meet. Each of the portions 52 is bent outwardly through an angle of 90 degrees on the line 53 as shown in Fig. 10.

What I claim is:

1. In a concrete insert, the combination with a nut, of a stirrup in which the nut is seated, means confining the nut against lateral displacement, flanges extending from the sides of the stirrup above the nut whereby a pocket is formed, and shelves extending from the sides of the stirrup in spaced relation to the nut to form a closed compartment.

2. In a concrete insert, the combination with a nut, of a stirrup in which the nut is seated, means confining the nut against lateral displacement, flanges projecting from the sides of the stirrup, said flanges extending across the nut and having their edges in juxtaposition whereby a pocket is formed above the nut, and means closing the pocket at a point spaced from the nut.

3. In a concrete insert, the combination with a nut, of a stirrup in which the nut is seated, means confining the nut against lateral displacement, flanges projecting from the sides of the stirrup, said flanges extending across the nut and having their edges in juxtaposition whereby a pocket is formed above the nut, and shelves extending from the sides of the stirrup in spaced relation to the nut to form a closed compartment.

4. A concrete insert formed from a single piece sheet metal blank and comprising a stirrup, a nut seated at the bottom of the stirrup, fingers extending from the sides of the stirrup into contiguous relation with opposite sides of the nut, and flanges extending from the sides of the stirrup and having their opposite edges in abutting relation, said flanges extending across and having their lower edges adjacent the nut.

5. A concrete insert formed from a single piece sheet metal blank and comprising a stirrup, a nut seated at the bottom of the stirrup, fingers extending from the sides of the stirrup into contiguous relation with opposite sides of the nut, and shelves extending from the sides of the stirrup and having their opposing edges in abutting relation and their side edges adjacent the flanges whereby a closed pocket is formed above the nut.

6. A concrete insert formed from a sheet metal blank and comprising a stirrup, a nut seated at the bottom of the stirrup, fingers extending from the sides of the stirrup into contiguous relation with opposite sides of the nut, and flanges extending from the sides of the stirrup and having their opposite edges in abutting relation, said flanges extending across and having their lower edges adjacent the nut, the free ends of the stirrup flaring outwardly with respect to its sides and flanges whereby a widened portion is provided, said portion serving to prevent withdrawal of the concrete-embedded insert.

7. A concrete insert formed from a sheet metal blank and comprising a stirrup, a nut seated at the bottom of the stirrup, fingers extending from the sides of the stirrup into contiguous relation with opposite sides of the nut, the free ends of the stirrup flaring outwardly with respect to its sides and flanges whereby a widened portion is provided, said portion serving to prevent withdrawal of the concrete-embedded insert, and shelves extending from the sides of the stirrup between the free ends of the same and the nut, said shelves having their opposing edges in abutting relation and their side edges contiguous the flanges whereby a closed pocket is formed above the nut.

8. A concrete insert comprising a sheet metal stirrup having a nut seated in the bottom thereof and having free ends flaring outwardly; stiffening flanges extending from the sides of the stirrup, their lower edges extending across the nut and their opposing edges being in abutting relation, whereby a pocket is formed above the nut; and means extending from the sides of the strap to close the pocket.

9. A hanger anchor for concrete structures comprising a capped nut, a strap formed from a rectangular blank of greater width than the diameter of said nut having a central flat portion apertured for access to the threads of the nut and having the laterally propecting portions thereon notched for nailing and arms projecting upward from said central portion embracing two of the sides of said nut, the upper ends of said arms being bent outwardly and flanges bent laterally from the lower ends of said arms to embrace the other two sides of the nut and to slightly overlap the same so as to prevent displacement in any direction.

10. A hanger anchor for concrete structures comprising a nut, a strap formed from a rectangular blank of greater width than the diameter of said nut having a central flat portion apertured for access to the

threads of the nut and having the laterally projecting portions thereon notched for nailing and arms projecting upward from said central portion embracing two of the sides of said nut, the upper ends of said arms being bent outwardly and flanges bent laterally from the lower ends of said arms to embrace the other two sides of the nut and to slightly overlap the same so as to prevent displacement in any direction.

In witness whereof, I have hereunto set my hand this 18th day of May, 1921.

CHARLES C. TOMKINSON.

Witness:
I. B. MOORE.