Feb. 13, 1962 F. W. MARPE 3,020,616

STEEL BAND FORM TIE INSERT

Filed Sept. 25, 1959

FIG. 1.

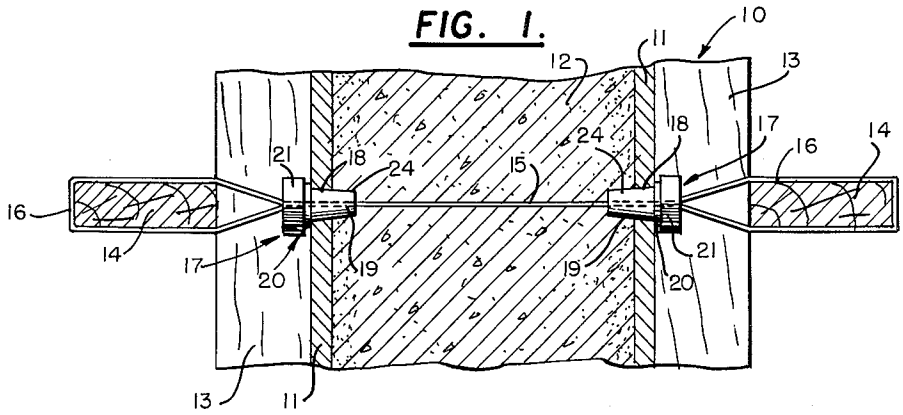


FIG. 2.

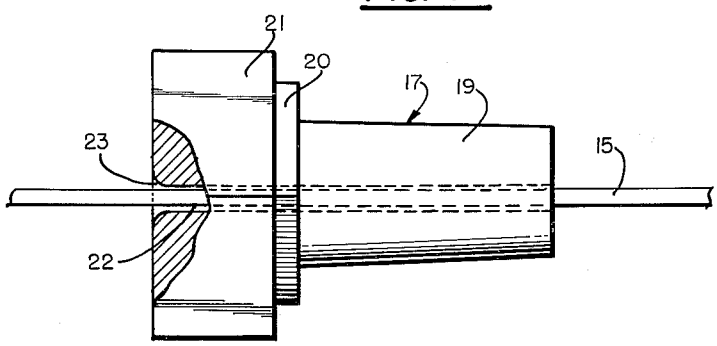


FIG. 3.

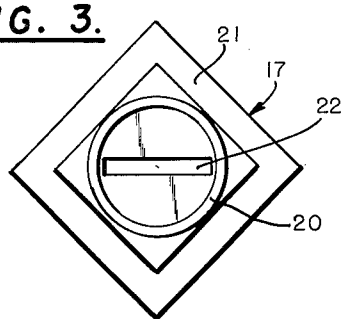
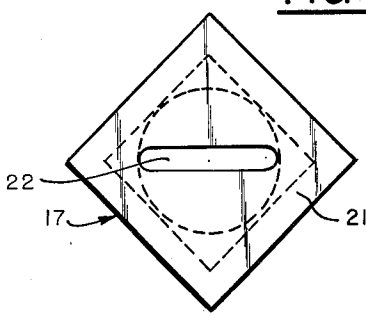


FIG. 4.



INVENTOR.
Frederick W. Marpe

BY Victor J. Evans & Co.

ATTORNEYS

United States Patent Office 3,020,616
Patented Feb. 13, 1962

3,020,616

STEEL BAND FORM TIE INSERT

Fredrick W. Marpe, 762 Griswold Road, Covina, Calif.

Filed Sept. 25, 1959, Ser. No. 842,446
1 Claim. (Cl. 25—131)

This invention relates to a steel band form the insert for use in concrete construction.

The object of the invention is to provide an insert for use with steel bands, wherein a means is provided for breaking the steel bands back inside the exterior surface of the concrete.

Another object of the invention is to provide a steel band form tie insert wherein the insert can be rotated after the concrete sets, so that the insert and form can then be removed and whereby a hole which is left by the insert can be patched with concrete.

A further object of the invention is to provide a steel band form tie insert which is extremely simple and inexpensive to manufacture.

Other features and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

FIGURE 1 is a sectional view illustrating the present invention.

FIGURE 2 is an enlarged elevational view with parts broken away and in section, illustrating one of the inserts.

FIGURE 3 is an end elevational view of the insert.

FIGURE 4 is a view looking at the opposite end from that shown in FIGURE 3.

Referring in detail to the drawings, the numeral **10** indicates a form which includes a sheeting **11**, and studs **13** are arranged adjacent the outer surface of the sheeting **11**, while the numeral **12** indicates concrete which is positioned between the spaced apart sheeting **11**. The numeral **14** indicates a wale, and the numeral **15** indicates a steel band which extends through the concrete **12** and the steel band **15** has looped end portions **16** through which extend the wales **14**.

The sheeting **11** is provided with an opening **18**, and the numeral **17** designates each of the steel band form tie inserts of the present invention. A pair of the inserts **17** are adapted to be arranged in opposed relation with respect to each other, and each of the inserts **17** is fabricated so that it has a unitary or one piece construction and is shaped to include a first tapered portion **19** which extends through an opening **18**, and the portion **19** has a frusto-conical formation. An enlarged second portion **20** of cylindrical formation is arranged contiguous to the larger end of the portion **19**, and each insert **17** further includes an enlarged head or third portion **21** which is of rectangular formation, FIGURE 3.

Extending longitudinally through each insert is a slot or opening **22** for the passage therethrough of a portion of the band **15**, and as shown in FIGURE 2, the outer end portion of the slot **22** is of flaring formation as indicated by the numeral **23**.

From the foregoing, it is apparent that there has been provided a steel band form tie insert which is especially suitable for use in concrete construction work. According to the present invention, the inserts **17** are arranged so that their tapered portions **19** extend through the openings **18** in the sheeting **11** and extend into the concrete **12**. After the concrete **12** hardens or sets, the inserts can be twisted so as to break the steel band and then the inserts are removed and the form is removed and the holes **24** left in the concrete **12** can be filled in or patched up with concrete. The inserts **17** include the tapered portions **19** which facilitate the removal of the inserts, and the

inserts also include the enlarged portions **20** which define shoulders, and the diameter of the shoulder **20** is greater than the diameter of the opening **18** so as to limit inward movement of the inserts through the openings.

The flaring formation **23** facilitates the insertion of the band through the opening **22**.

The parts can be made of any suitable material and in different shapes or sizes.

The form system or construction of the form may be varied as desired.

The purpose of the steel band form tie insert of the present invention is to break the steel band back inside the exterior surface of the concrete and this is done by rotating the inserts after the concrete has set. The inserts and forms can then be removed and the holes left by the inserts are packed with concrete. The dimensions of the inserts can vary with the size of steel bands used and the depth of break back required. The head of the insert can be of any angle which the band as required by the tool used for rotating the insert and the shape can vary as long as the insert can be rotated while the band on the concrete side of the insert is held stationary by the concrete.

The insert is of one piece construction and is adapted to be used with a steel band in making concrete form ties. The purpose of the insert is to break the band after the concrete has set and it also serves to break the band back inside the face of the concrete surface and the band is broken by rotating the insert after the concrete has set.

Other types of form ties are composed of threaded or weakened rods. Steel bands have been used as form ties but previous to the present invention no means has been provided for breaking the bands back inside the face of the concrete as does the insert of the present invention. The reason for breaking the band back inside the concrete is that many specifications call for no metal showing after the concrete has been poured and the form removed. For example in the California Division of Highways, specifications call for the form ties to be completely removed or any portion that is left in the concrete shall be at least one inch from the surface of the concrete.

It is believed that the present invention will increase the sale of steel banding and will cut construction costs.

Minor changes in shape, design and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

I claim:

A device of the character described comprising a form embodying spaced apart sheeting adapted to have concrete therebetween, studs adjacent to the outer surface of said sheeting, a steel band projecting through the sheeting and said band having looped end portions, wales projecting through said looped end portions, there being opposed openings in said sheeting, opposed inserts extending through said openings and said inserts having said band extending therethrough, each of said inserts embodying a one piece construction and being shaped to include a tapered first portion having a frusto-conical shape, said tapered portion facilitating the removal of the inserts, a cylindrical section portion arranged contiguous to the large end of the first portion and defining a shoulder, the diameter of said shoulder being greater than the diameter of the opening in the sheeting so as to limit inward movement of the inserts through the opening, a third portion of rectangular formation adjacent the second portion, there being a longitudinally extending slot in the insert for the projection therethrough of said band, the outer end portion of the slot being of flaring formation.

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