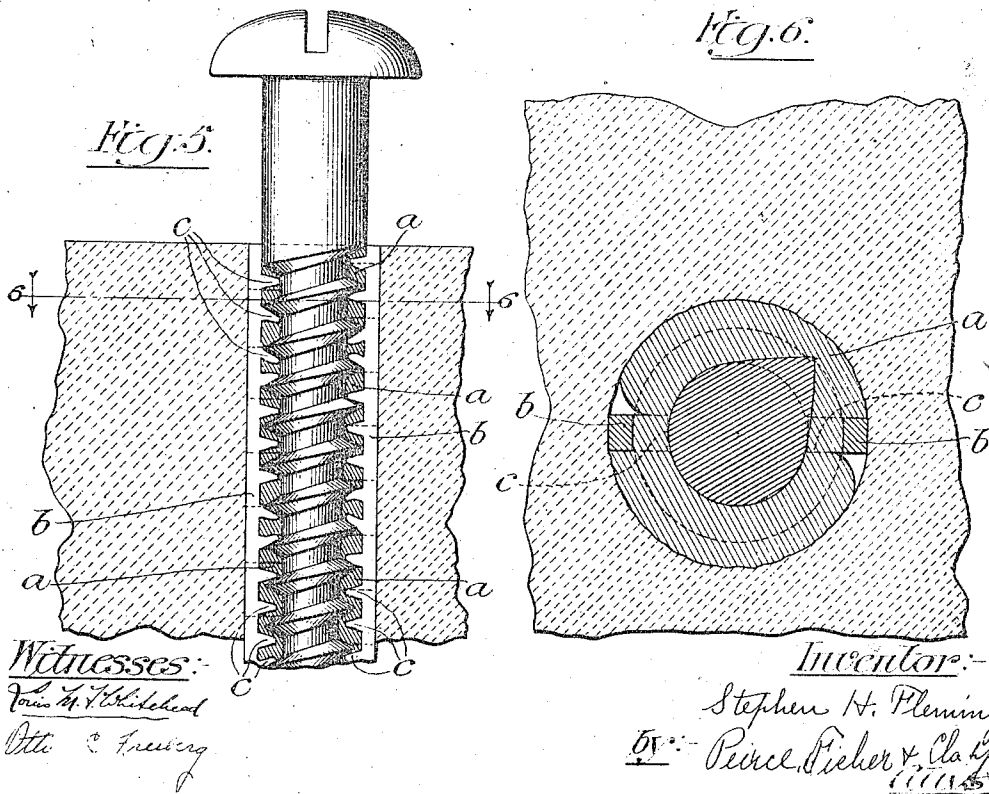
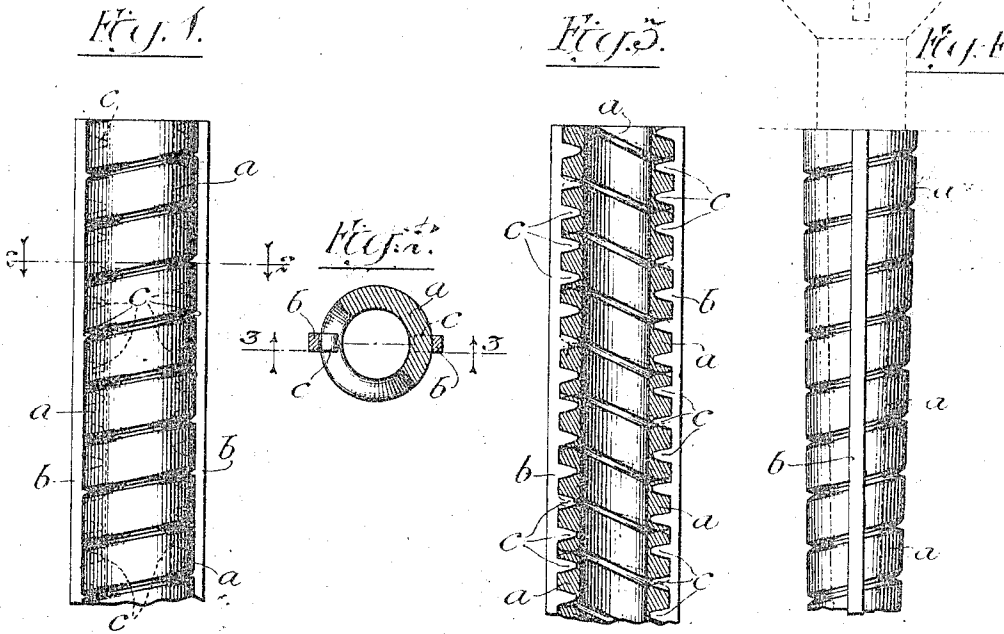


S. H. FLEMING.
SCREW ANCHOR.
APPLICATION FILED AUG. 3, 1910.

1,005,630.

Patented Oct. 10, 1911.



UNITED STATES PATENT OFFICE.

STEPHEN H. FLEMING, OF CHICAGO, ILLINOIS.

SCREW-ANCHOR.

1,005,630.

Specification of Letters Patent.

Patented Oct. 10, 1911.

Application filed August 3, 1910. Serial No. 575,367.

To all whom it may concern:

Be it known that I, STEPHEN H. FLEMING, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Screw-Anchors, of which the following is a full, clear, and exact description.

The invention relates to anchors for securing screws within sockets formed in brick work, cement, stone or the like, and seeks to provide a simple and effective construction which can be economically made in large quantities.

The invention consists in the features of improvement hereinafter set forth, illustrated in the preferred form in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in elevation of the improved screw anchor. Fig. 2 is a cross section thereof on the line 2—2 of Fig. 1. Fig. 3 is a longitudinal section on the line 3—3 of Fig. 2. Fig. 4 is a view partially in elevation and partially in section of a modified form. Fig. 5 is a longitudinal sectional view of the anchor shown in operative position for holding a screw within its socket. Fig. 6 is a section on an enlarged scale on the line 6—6 of Fig. 5.

The improved anchor comprises a sleeve formed of a coiled strip of soft metal, such as lead or an alloy of lead and tin or the like. The soft metal strip *a* is preferably of rectangular cross section and is coiled or wound upon a cylindrical forming rod. The cylindrical coil or sleeve thus formed can be readily and economically manufactured and then cut into pieces or lengths to form the separate screw anchors.

The coils of the anchor sleeves preferably abut against one another (see Figs. 1, 2, 3 and 4) and longitudinally extended stay pieces *b* are provided for sustaining the coils in proper relative position. These stay pieces are formed of brass or like metal and are provided with inwardly projecting teeth *c* which are forced into the coils of the soft metal strip *a*, as indicated in Figs. 1, 2 and 3. These strips extend longitudinally upon the exterior of the anchor sleeve and preferably project beyond the exterior surface, as most clearly shown in Fig. 2. Two of these strips are shown in the form illus-

trated, but more may be used, if necessary or desirable.

The thickness of the wall of the sleeve or anchor, that is to say, the thickness of the soft metal strip from which the sleeve or anchor is formed, should preferably be slightly greater than the depth of the thread of the screw for which the anchor is designed, it being understood, of course, that the improved anchor is made in different sizes in accordance with the different sizes of screws. The interior diameter of the sleeve or anchor is preferably slightly less than the shank or barrel of the screw for which it is designed. The coil is wound in the direction of the thread of the screw which is, of course, usually in right hand direction.

In using the improved anchor, a suitable hole or socket is formed in the brick, stone, cement or the like, and the anchor is placed therein with its inner end in engagement with the bottom of the hole or socket. The sharp end *a'* of the strip at the inner end of the sleeve or anchor catches on the bottom of the socket and, as the screw is threaded into the outer end of the sleeve the coils of the latter tend to unwind and thus expand into binding contact with the wall of the hole or socket, even though the latter is somewhat larger than the anchor sleeve. As the screw is driven into the sleeve, it expands the latter and its threads readily cut into the soft metal body of the coils. At the same time, the stay pieces *b* are driven into the sleeve, so that they tend to rupture the latter along longitudinal lines, as indicated in Fig. 6, and thus permit the further expansion of the soft metal body of the sleeve or coiled strip into binding contact with the walls of the hole to thereby firmly secure the anchor and screw within the socket.

The coils of the strip *a* which form the sleeve or anchor and the teeth *c* of the stay pieces *b* need have no particular relation to the threads of the screw. These threads embed themselves in the soft metal body of the sleeve and interlock in an irregular fashion with the teeth *c* of the stay pieces. The stay pieces *b* having the teeth *c* should be formed of metal which is considerably tougher than the soft metal strip *a*. The latter, as stated, is formed of lead or lead alloy or the like. The stay pieces are pref-

erably formed of brass, but may be formed of soft iron or steel. They should be formed of a metal that is tough but sufficiently yielding to prevent the teeth *c* on the stay pieces from breaking the threads of the screw. These stay pieces support the coils and serve to strengthen the anchor, so that it may be readily driven into the hole or socket formed to receive the same. As the screw is driven in it expands the soft metal body, as described, and the shank or barrel of the screw will bear upon the ends of the teeth *c* and force the stay pieces *b* into firm binding contact with the walls of the hole or socket to further aid in holding the anchor screw in position. The threads of the screw will not be broken by contacting with the teeth *c*, but the latter will be bent or deflected by the threads. Moreover, the irregular interlocking of the threads and teeth will further aid in holding the screw in position.

By forming the sleeve of a coiled strip of soft metal the coils are separately expandible, so that they will readily conform to the opening for the screw in spite of irregularities therein. The coils will thus be expanded into firm binding contact with all portions of the wall of the screw opening, even though this opening may not be uniform throughout. Furthermore, inasmuch as the coils are formed of a soft metal strip, they need not and preferably do not conform to the threads of the screw, the female thread being cut in the coils as the screw is threaded into the sleeve. Furthermore, inasmuch as the sleeve formed of a number of coils is readily expandible, the bore of the sleeve can be quite small, as compared to the shank of the screw with which it is used, without increasing the difficulty of threading the screw into position. For this reason the coiled anchor can not only be readily forced into snug binding contact with the walls of the screw opening, but will also snugly engage the shank and threads of the screw.

While the cylindrical form illustrated in Figs. 1, 3 and 5 is deemed preferable on account of economy in manufacture, the anchor may be made in conical form, as shown in Fig. 4. It is also obvious that the particular details set forth may be varied without departure from the essentials of the invention, as defined in the claims.

I claim as my invention:—

1. A screw anchor comprising a cylindrical, expandible sleeve of substantially uniform diameter formed of a coiled, soft metal strip, the coils of said sleeve being adapted to be separately expanded into snug binding contact with the wall of the opening for the screw and to be indented by the threads of the screw, substantially as described.

2. A screw anchor comprising a cylindrical, expandible sleeve of substantially uniform diameter throughout and having an internal diameter less than that of the shank of the screw for which it is designed, said sleeve being formed of a coiled soft metal strip of substantially rectangular cross-section, the coils of said strip being in contact and adapted to be expanded and indented by the threads of the screw, substantially as described.

3. A screw anchor comprising a cylindrical, expandible sleeve formed of a coiled, soft metal strip and a strengthening stay for the sleeve extending lengthwise thereof.

4. A screw anchor comprising an expandible sleeve formed of a coiled strip of soft metal and stay pieces extending lengthwise of the sleeve and engaging the coils, substantially as described.

5. A screw anchor comprising an expandible sleeve formed of a coiled strip of soft metal and stay pieces extending lengthwise of the sleeve, engaging the coils and projecting beyond the outer surface thereof, substantially as described.

6. A screw anchor comprising an expandible sleeve formed of a coiled strip of soft metal and longitudinally extending stay pieces having inwardly projecting teeth indenting the coils, substantially as described.

7. A screw anchor comprising a cylindrical, expandible sleeve formed of a coiled, soft metal strip of rectangular section and stay pieces extending longitudinally upon the exterior of the sleeve and having teeth indenting the coils thereof, substantially as described.

8. A screw anchor comprising an expandible sleeve formed of a coiled strip of lead alloy and longitudinally extending stay pieces of brass having inwardly projecting teeth indenting the coils, substantially as described.

STEPHEN H. FLEMING.

Witnesses:

ELEANOR H. HAGENOW,
KATHARINE GERLACH.