

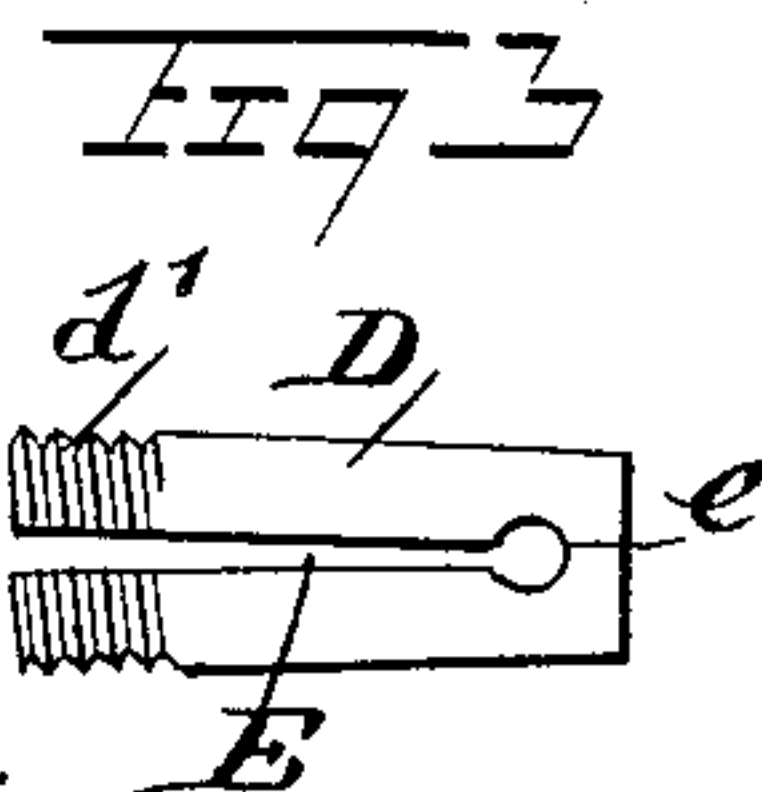
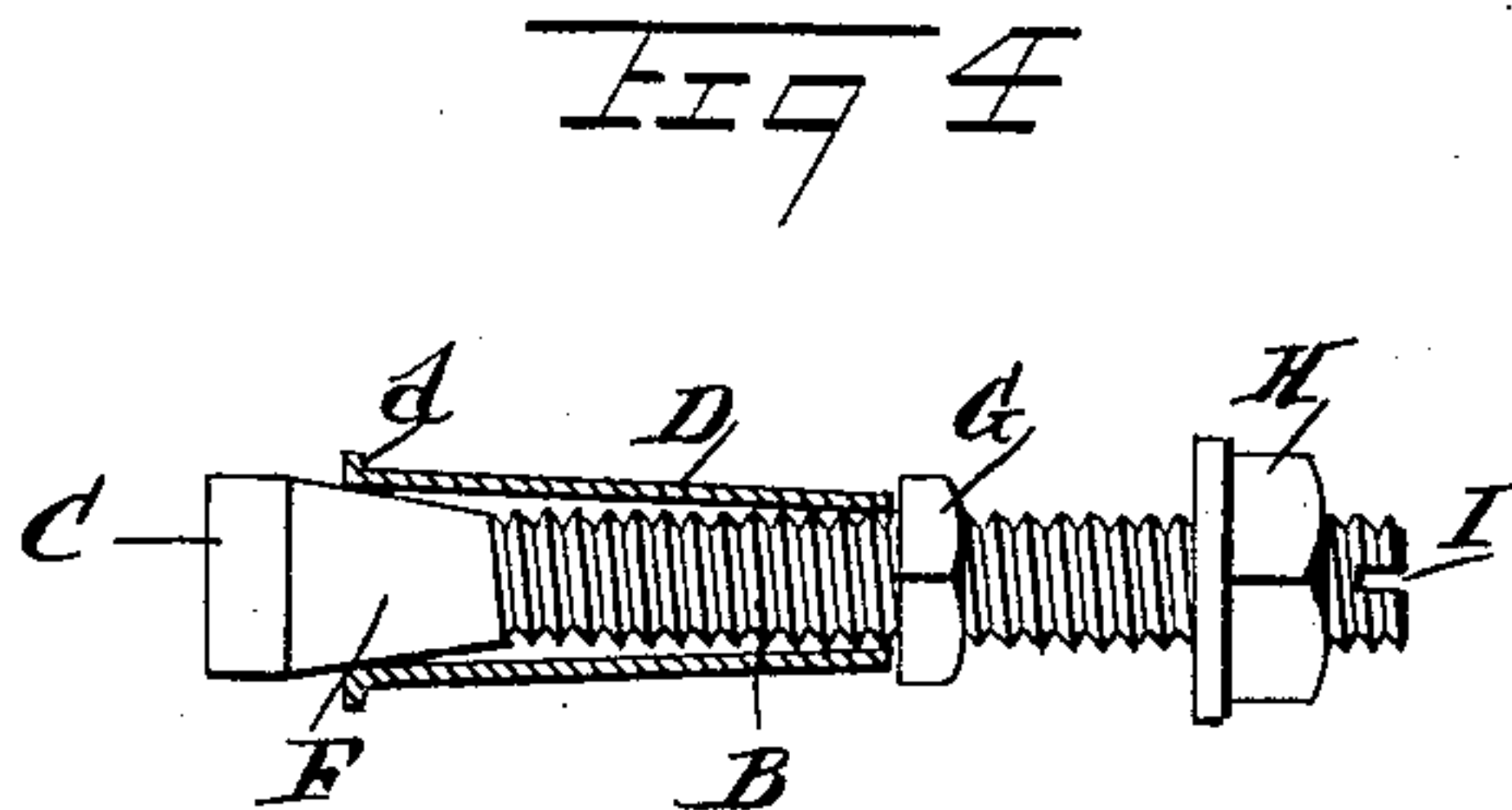
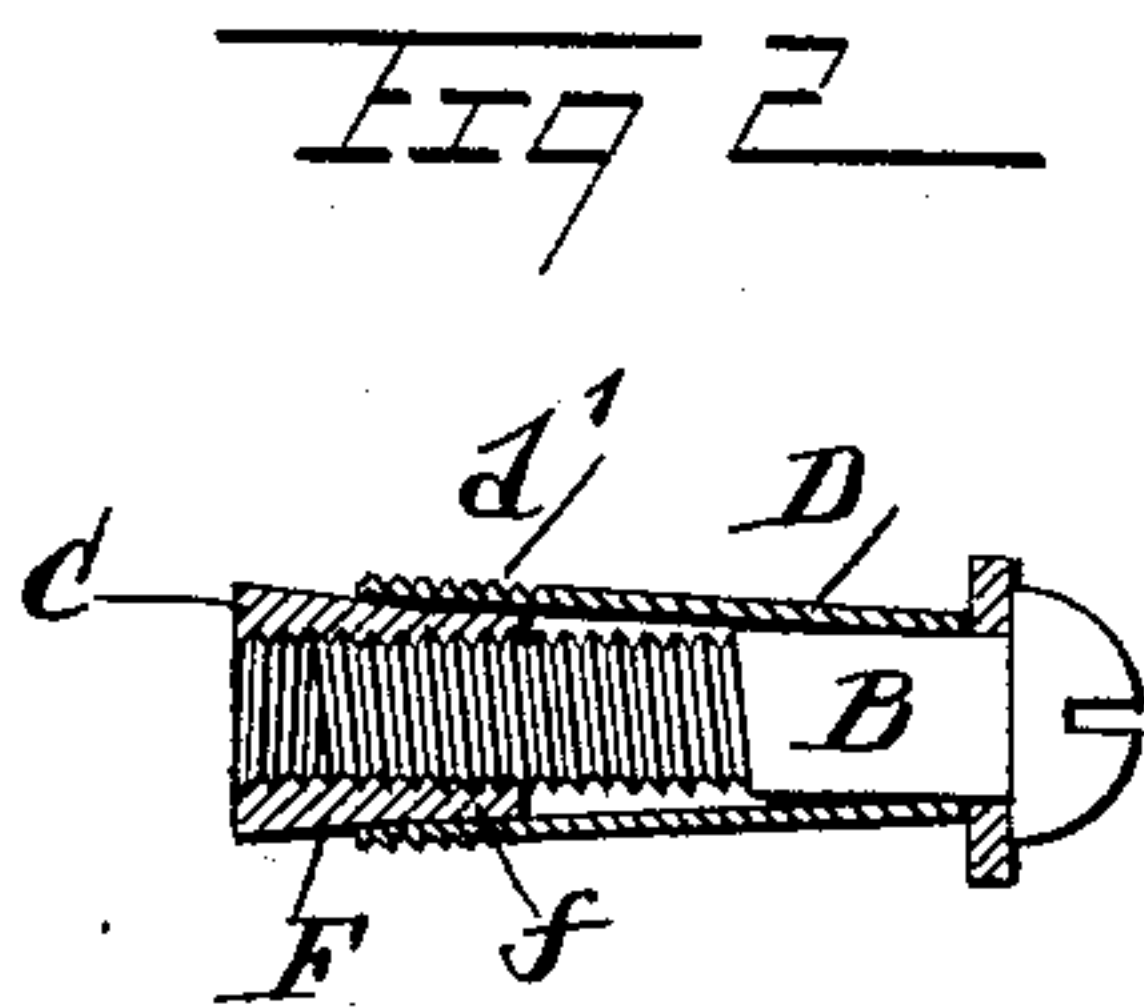
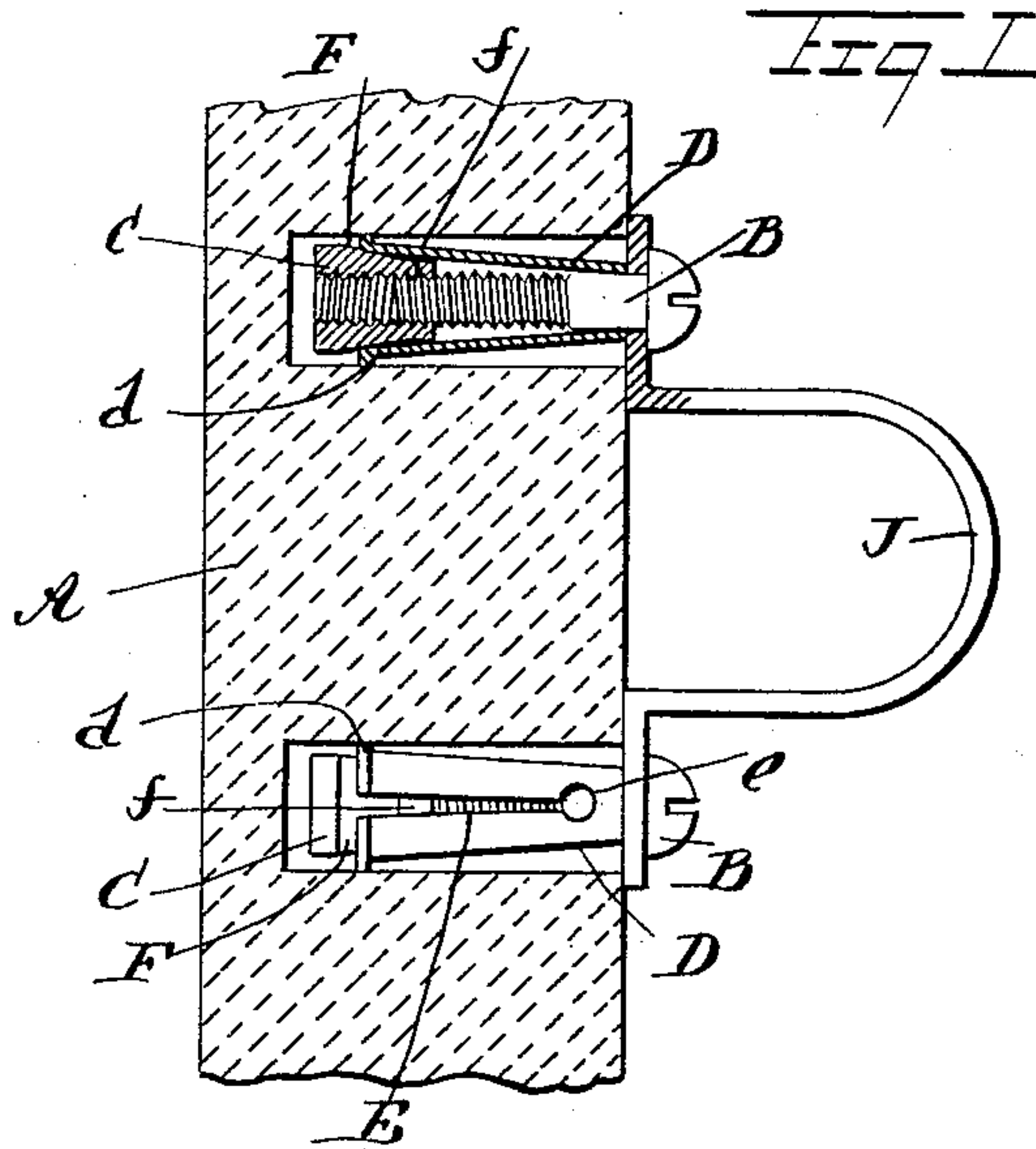
No. 612,316.

Patented Oct. 11, 1898.

J. F. DOWNES.  
EXPANSION BOLT.

(Application filed Nov. 26, 1897.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JAMES F. DOWNES, OF NEW YORK, N. Y.

## EXPANSION-BOLT.

SPECIFICATION forming part of Letters Patent No. 612,316, dated October 11, 1898.

Application filed November 26, 1897. Serial No. 659,866. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. DOWNES, of New York city, in the county and State of New York, have invented a new and Improved Expansion-Bolt, of which the following is a full, clear, and exact description.

My invention relates to an improvement in expansion-bolts, having for its object to make the same more convenient to use and so that they will afford a more secure hold in the holes drilled therefor in stone or other material than bolts of the class as heretofore constructed.

The invention comprises certain features of construction and combinations of parts, which will be hereinafter described, and particularly pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a cross-sectional view taken through a block having a couple of bolts inserted therein, one of the bolts being shown in partial section. Fig. 2 is a partial sectional view showing a bolt separately. Fig. 3 is a view showing the split sleeve; and Fig. 4 is a view in partial section, showing the manner of constructing the bolt in a slightly-different form.

The bolt comprises three separate members—the bolt proper, B, which is threaded and provided with means by which it may be turned, a split sleeve D, surrounding the bolt, and the cone C, which is drawn into the sleeve by turning the bolt.

In the drawings, A represents a block of any material and which is provided with holes adapted to receive the expansion-bolts. The holes are made of such a size that the bolts will easily slide therein and yet fit comparatively close. The split sleeve D is preferably made as a tube, and the slot E therein is extended to near the opposite end and terminates in a round hole e, the object of the hole e being to prevent the slot being extended by use and to make the sleeve more flexible. The inner end of the sleeve D is roughened externally, so that it may obtain a more secure hold upon the material A. As

shown in Figs. 1 and 4, this roughening is obtained by forming a bead d upon its inner end. As shown in Figs. 2 and 3, this roughening is secured by cutting threads d' upon the inner end of the sleeve or forming a series of peripheral grooves therein. This secures a firm hold upon the material A and prevents the sleeve from pulling out.

The cone C is provided with a sloping surface F, the inner or smaller end of which is approximately the size of the inner diameter of the sleeve. The cone is extended at its inner end in the form of a short cylinder f, the object of the same being to enable the sleeve to hold the cone more securely while it is being inserted in place. By this means the block C, having the sloping surface or cone F formed thereon, may be held by the inner end of the sleeve, so that it cannot fall out of the same, and yet without expanding the end of the sleeve. This block C is provided with a central threaded hole adapted to receive the bolt in those cases where the block is made separate from the bolt.

In Fig. 1 the bolt is shown as being used to secure a staple J to a wall, the staple being adapted to secure a pipe against the wall.

In Fig. 4 the block C and the cone F, forming a part thereof, are shown as constructed upon one end of the bolt B. In this case a nut G is placed upon the bolt outside of the sleeve D, the nut being placed at such a point that it may be flush with the surface of the stone or other material to which the bolt is to be secured. This bolt is shown as provided with an outer nut H, and is also provided at its outer end with a slot I, adapted to be engaged by a screw-driver to prevent turning of the bolt while the nut G is being tightened. This sort of bolt would be used where the bolt is to be secured to a slab and the article to be attached is to be applied thereafter and screwed down by a separate nut. This bolt is, however, exactly the same in principle as those shown in the other views.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

An expansion-bolt, comprising a sleeve formed as a short tube-section having longi-

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tudinal slots therein extending inward from one end and an exterior peripheral bead or flange at the split end, a cone adapted to enter the split end of said sleeve and having a  
5 cylindrical section at its small end whereby the sleeve is enabled to hold the cone without being itself expanded, and a threaded

bolt for drawing said cone into the sleeve, substantially as described.

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Witnesses:

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