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F. GLOYSTEIN

1,963,301

HOLLOW DOWEL

Filed March 1, 1933

Fig. 1.

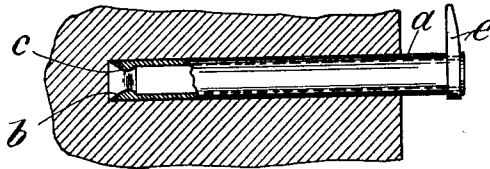


Fig. 2.

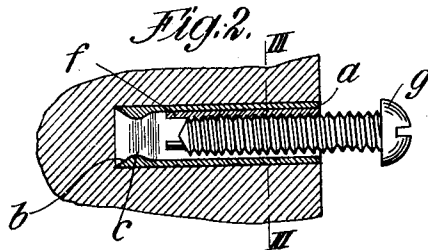


Fig. 3.



Fig. 4.

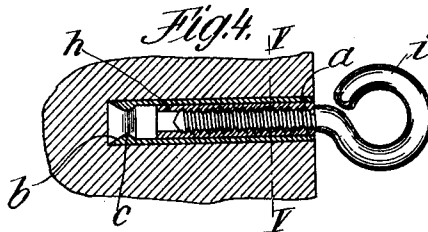


Fig. 5.



Fig. 6.

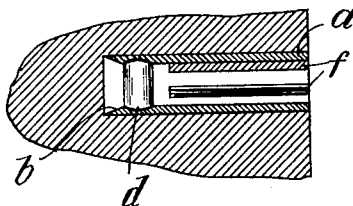


Fig. 7.



Inventor:

Friedrich Gloystein

by *[Signature]*
Attorney.

UNITED STATES PATENT OFFICE

1,963,301

HOLLOW DOWEL

Friedrich Gloystein, Bremen, Germany

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8 Claims. (Cl. 72-105)

This invention relates to a hollow wall dowel made of hard sheet metal and designed to be driven in walls and stone, for fixing or carrying articles directly on the wall or for accommodating a nail or a screw for fixing or carrying an article. The main object of the invention is to construct a dowel which on being driven into stone or masonry does not split or burst the same but cuts a hole and conducts off the powdered stone through its bore. The difficulties which are encountered when driving a sleeve into stone or masonry, are overcome particularly by the fact that the edge of the sleeve on the edge penetrating into the wall or stone is sharpened on the inner side and the cross sectional area of the sleeve is, in proximity to the cutting edge widened from this edge, so that the powdered stone tightly pressed and forced to the sleeve by the cutting edge suddenly passes into this widened portion and falls asunder and consequently offers no resistance to the further penetration of the dowel into the wall or stone. Further objects of the invention are hereinafter described.

Several embodiments of the invention are illustrated by way of example in the accompanying drawing in which:—

Fig. 1 shows in side elevation partly in longitudinal section a form of construction of the dowel as direct fixing means.

Fig. 2 shows in a longitudinal section a dowel with arrangement for accommodating a screw.

Fig. 3 is a cross section of Fig. 2.

Fig. 4 shows in longitudinal section a modified construction of the dowel with arrangement for accommodating a screw.

Fig. 5 is a cross section of Fig. 4.

Fig. 6 shows in longitudinal section a third modification of a dowel for accommodating a screw.

Fig. 7 is a cross section of Fig. 6.

Like characters designate corresponding parts in all the figures.

In all the forms of construction *a* is a hollow sleeve made of hard sheet metal, preferably sheet steel. The front end of the sleeve which penetrates into the stone or masonry is sharpened on its inner side so that a sharp cutting blade *b* is formed. The result of this sharpening is that the sleeve does not chip or burst the stone or masonry when being driven therein, but cuts a hole in the stone or masonry. The cut powdered stone passes into the bore of the sleeve and is gradually pushed outwards therethrough as the sleeve penetrates into the stone or masonry. This

conducting off of the powdered stone through the sleeve presents difficulties owing to the powdered stone binding in the dowel thereby considerably impeding the driving of the dowel into the stone or masonry. It is therefore necessary to pierce or loosen the powdered stone by introducing a wire or pin into the bore of the dowel. According to the invention this loosening of the powdered stone is automatically effected or considerably facilitated. This is effected by widening the internal space of the sleeve in proximity to the cutting blade *b*. The result of this widening is that the powdered stone tightly bound in the sharpened blade *b* of the sleeve suddenly passes into a larger space in which it loses its hold and falls asunder or is at least loosened by the hammer blows exerted on the dowel when driving the dowel into the wall. This widened portion can be formed in various ways. In the form of construction shown in Figs. 1, 2 and 4 a thickened portion or bead *c* is situated on the inner surface of the sleeve wall which bead narrows the cross-sectional area at this point, whereas posterior of this bead the tube again widens to its normal internal diameter. In the form of construction shown in Fig. 6 the cutting blade *b* extends into a cavity or annular groove *d* in the inner side of the sleeve wall, in which cavity the powdered stone falls asunder. This cavity then extends into the normal internal diameter of the tube.

The dowel may be directly provided with a head for fixing or carrying an article on the wall, or it may be provided in its interior with means for accommodating a nail or screw. In the form of construction shown in Fig. 1 the dowel is provided with a head *e* which is fixed on the end of the sleeve and may be constructed as a cap similar to a nail head or as a hook or the like. This head has a central bore of the same diameter as that of the dowel sleeve to enable the powdered stone to pass therethrough.

In the forms of construction shown in Figs. 2, 4 and 6 the sleeve is constructed for accommodating a screw. Several longitudinal ribs *f* made of soft metal are cast on the inner side of the sleeve wall, which ribs are preferably of triangular cross-section so that a screw *g* cuts a thread in the sharp edges of the ribs. With this construction of the ribs the least resistance is offered to the passage of the powdered stone through the sleeve. In the form of construction shown in Fig. 4 the inner surface of the sleeve wall is provided with a lining *h* of soft metal in which a screw thread is cut by the screw *i*.

I claim:—

1. A hollow dowel, comprising a hard metal sleeve cut away internally at one end to form a cutting edge, internally thickened adjacent the cutting edge and then again enlarging to the normal internal diameter of the sleeve.
2. A hollow dowel, comprising a hard metal sleeve cut away internally at one end to form a cutting edge and having a narrow cavity in the inner side of its wall at the inner end of the cutting edge.
3. A hollow dowel, comprising in combination a hard metal sleeve cut away internally at one end to form a cutting edge, a narrow thickened portion on the inner side of the sleeve wall at the inner end of said cutting edge, and a head on the end of said sleeve remote from said blade adapted to hold an article.
4. A hollow dowel, comprising in combination a hard metal sleeve cut away internally at one end to form a cutting edge, a narrow thickened portion on the inner side of the sleeve wall at the inner end of said cutting edge, longitudinal ribs of soft metal on the remaining portion of the inner side of the sleeve wall adapted to accommodate a screw.
5. A hollow dowel, comprising in combination a hard metal sleeve cut away internally at one end to form a cutting edge, a narrow thickened portion on the inner side of the sleeve wall at the inner end of said cutting edge, a soft metal lining on the remaining portion of the inner side of the sleeve wall adapted to accommodate a screw.
6. A hollow dowel, comprising in combination a hard metal sleeve cut away internally at one end to form a cutting edge and having a narrow cavity in the inner side of its wall at the inner end of the cutting edge, and a head rigidly fixed on the other end of said sleeve for holding the article to be fixed.
7. A hollow dowel, comprising a hard metal sleeve cut away internally at one end to form a cutting edge and having a narrow cavity in the inner side of its wall at the inner end of the cutting edge, and longitudinal ribs of soft metal on the remaining portion of the inner side of the sleeve wall adapted to accommodate a screw.
8. A hollow dowel, comprising a hard metal sleeve cut away internally at one end to form a cutting edge and having a narrow cavity in the inner side of its wall at the inner end of the cutting edge, and a soft metal lining on the remaining portion of the inner side of the sleeve wall adapted to accommodate a screw.

FRIEDRICH GLOYSTEIN.

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