(No Model.)

E. NIVER.

CORE STRENGTHENING BAR.

No. 344,398. Patented June 29, 1886.

FIG. 1.

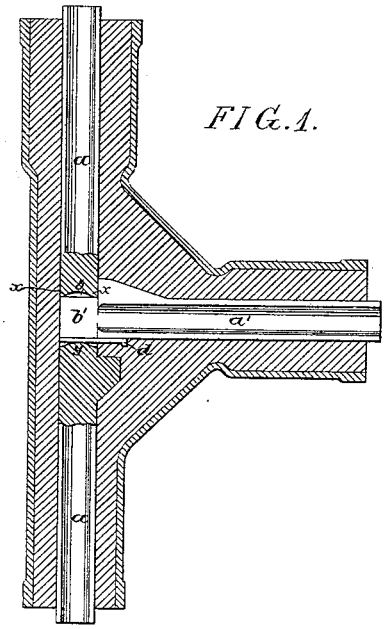


FIG. 2.

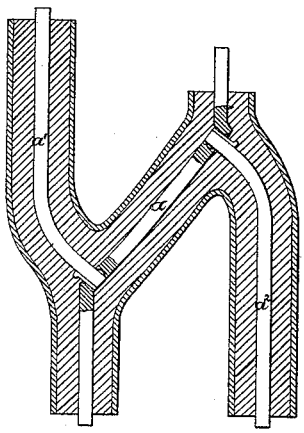


FIG. 3.

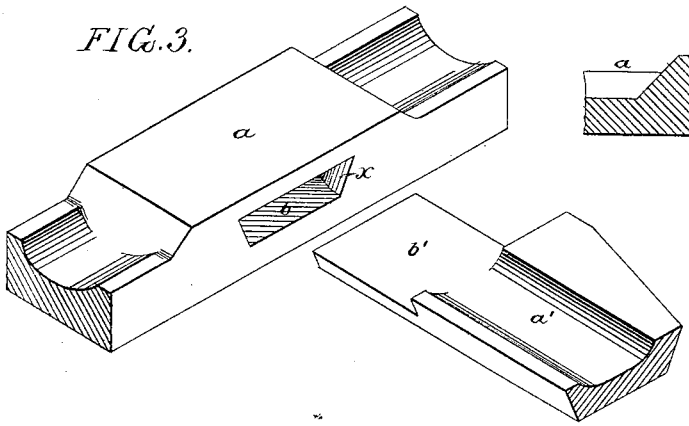


FIG. 5.

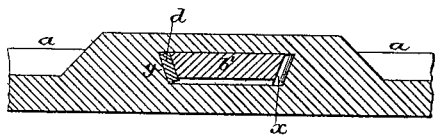


FIG. 4.

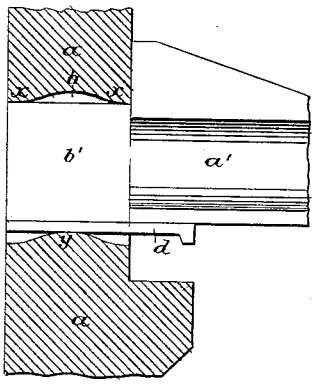
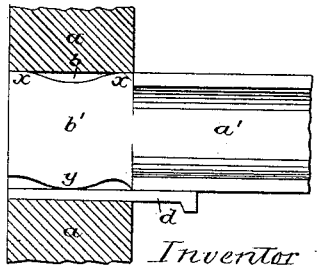


FIG. 6.



Witnesses:
John E. Parker
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Inventor
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UNITED STATES PATENT OFFICE.

EDWARD NIVER, OF MUSCATINE, IOWA.

CORE-STRENGTHENING BAR.

SPECIFICATION forming part of Letters Patent No. 344,398, dated June 29, 1886.

Application filed January 12, 1885. Serial No. 152,611. (No model.)

To all whom it may concern:

Be it known that I, EDWARD NIVER, a citizen of the United States, and a resident of Muscatine, Muscatine county, Iowa, have invented certain Improvements in Core-Strengthening Bars, of which the following is a specification.

My invention relates to improvements in the manufacture of green-sand cores having strengthening rods or bars embedded therein and made in sections, the objects of my improvements being to facilitate the manufacture of such cores, and to provide for the ready removal of the strengthening-bars therefrom when it is desired to remove the core from the casting.

In making a green-sand core with my sectional core-bars I use a core-box which may be parted, as usual, or hinged together at one side, and which has formed in it recesses of such a character that when the box is closed they will coincide with each other and form a mold of the desired shape for the core. The core-box forms no essential part of my invention, however, the latter relating to the method of constructing and fitting together the strengthening-bars which are embedded in the core.

In the accompanying drawings, Figure 1 is a section of a T-pipe having a core with strengthening-bars made in accordance with my invention. Fig. 2 is a view of an S-trap with a core provided with my improved bars. Fig. 3 is a perspective view of parts of the bars shown in Fig. 1; Figs. 4 and 5, enlarged sectional views of the joint between the bars, and Fig. 6 a sectional view showing another plan of constructing the joint.

The core shown in Fig. 1 of the drawings is for a T-pipe, and is strengthened by two bars, *a a'*, arranged at right angles to each other; but it should be understood that the bars may be arranged at different angles, as cores are of different shapes and the bars follow the general shape of the core. Thus, in Fig. 2 the core for an S-trap is strengthened by three bars, *a*, *a'*, and a^2.

In the bar *a* is a mortise, *b*, and on one end of the bar *a'* is a tenon, *b'*, adapted to fit loosely into this mortise, the joint being rendered secure by a key, *d*.

The mortise *b* and tenon *b'* are preferably beveled, as shown in Figs. 3 and 5, and either the mortise or tenon is recessed on one side and provided with a corresponding projection on the opposite side, so that the bearing upon one side of the mortise is at the two points *x x*, and upon the opposite side at the central point, *y*, which forms a bearing for the confining-key *d*.

In Figs. 1, 3, and 4 I have shown the mortise constructed to form the bearing-points, the tenon being made with straight sides; but the bearing-points may be made by a proper construction of the tenon, if desired, the mortise having opposite straight sides, as shown in Fig. 6, for instance.

When the core-strengthening bars are constructed and and fitted together in accordance with my invention, they are firmly braced and will retain their proper positions during the handling of the core, the removal of the same from the core-box, and the setting in the mold; but when it is desired to remove the bars from the core after the completion of the casting the keys *d* may be readily loosened by simply rapping upon the ends of the bars, which are exposed by cutting away portions of the ends of the core or by discontinuing the core some distance from the ends of the bars, as shown. This loosening of the keys is materially facilitated by the fact that said keys have a bearing of contracted area upon the mortise or tenon at the point *y*. When loosened, the bars can be readily withdrawn in the direction of their length, the keys leaving the mortises with the tenons as the bars are withdrawn.

Owing to the beveled edges of the tenon and mortise, the tenon has a bearing upon the broad side of the mortise when the key has been driven to its place, as will be understood on reference to Fig. 5.

I claim as my invention—

1. The combination of a core with strengthening-bars united by a tenon-and-mortise joint with binding-key extending lengthwise of the tenon, and bearing against a projection on one of the two elements of the joint, all substantially as specified.

2. The combination of core-strengthening bars, one having a mortise and the other a tenon adapted thereto, with a binding-key ex-

tending lengthwise of the tenon, said mortise and tenon being constructed, as described, so as to form bearing points *x x* on one side, and a bearing-point, *y*, on the opposite side, all substantially as specified.

3. The combination of core-strengthening bars connected by tenon-and-mortise joints having beveled edges with the binding-key extending lengthwise of the tenon, and bearing against a projection on one of the two elements of the joint, all substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD NIVER.

Witnesses:
THOS. G. TAYLOR,
J. E. STEVENSON.