

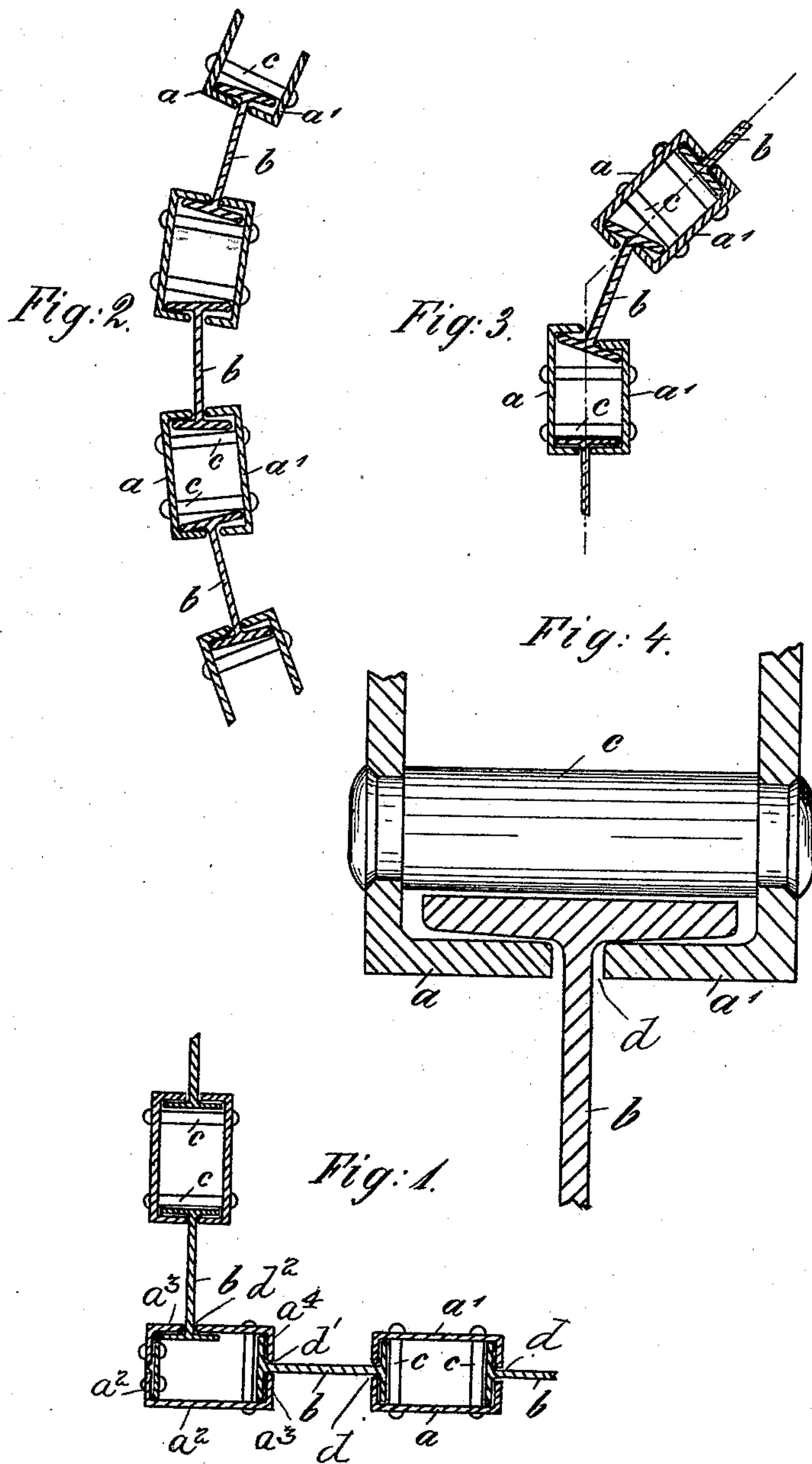
(No Model.)

2 Sheets—Sheet 1.

A. SIMON.  
PILE PLANTING.

No. 500,780.

Patented July 4, 1893.



Inventor:  
August Simon

Witnesses.  
E. B. Botton  
E. H. L. L. L.

By

Richardson & R.  
his Attorneys.

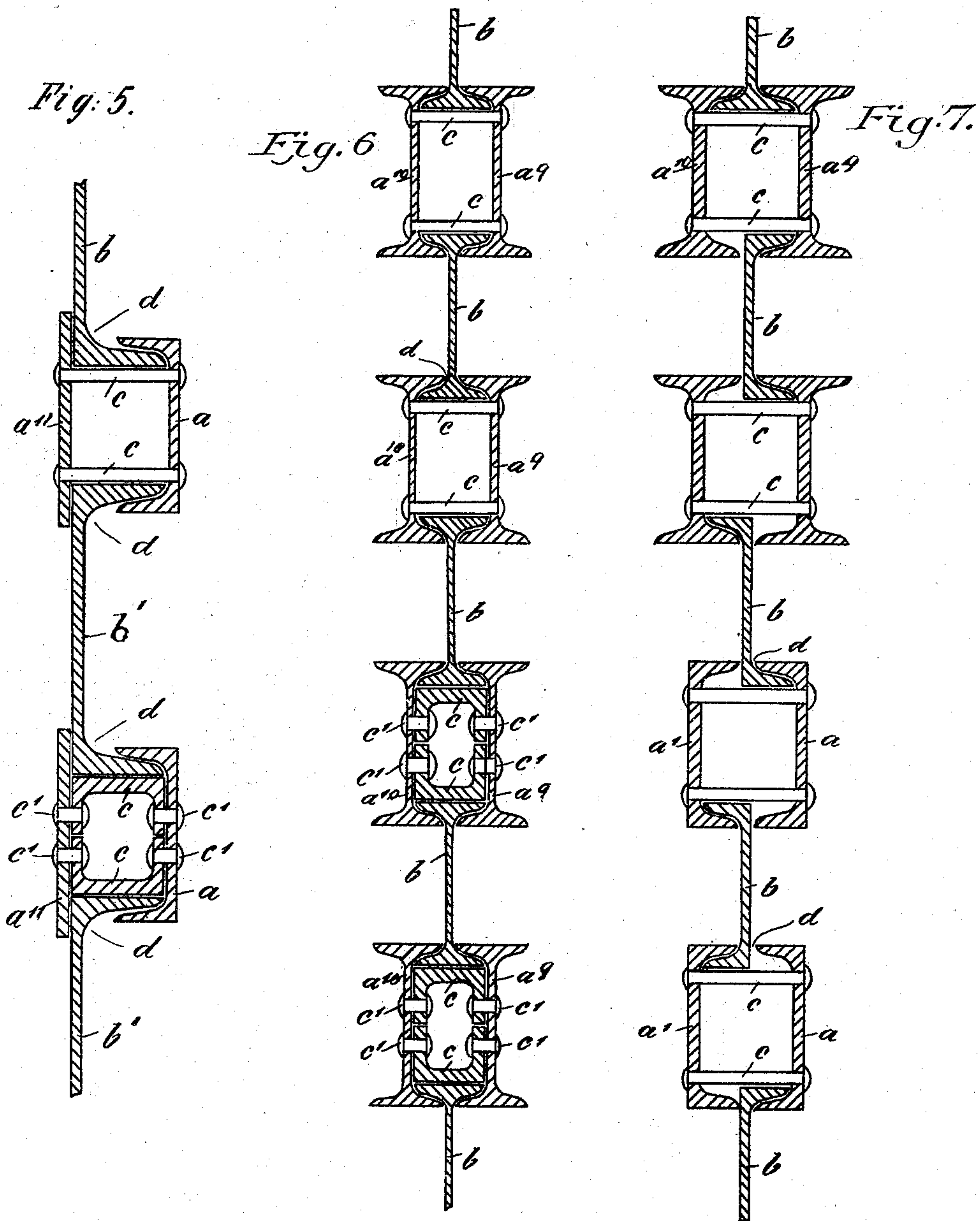
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His Attorneys.



# UNITED STATES PATENT OFFICE.

AUGUST SIMON, OF GNADAU, GERMANY.

## PILE-PLANTING.

SPECIFICATION forming part of Letters Patent No. 500,780, dated July 4, 1893.

Application filed March 3, 1893. Serial No. 464,629. (No model.) Patented in Germany July 30, 1891, No. 64,781, and in Belgium April 11, 1892, No. 99,180.

*To all whom it may concern:*


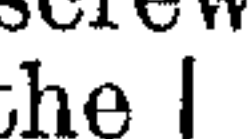

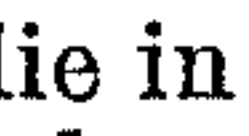
Be it known that I, AUGUST SIMON, a subject of the King of Saxony, residing at Gnadau, Saxony Germany, have invented certain new and useful Improvements in Pile-Planting, of which the following is a specification.

The invention has been patented in Germany, No. 64,781, July 30, 1891, and in Belgium, No. 99,180, April 11, 1892.

My invention comprises an improved form of beam or girder combined with special irons for connecting a series of such beams together, the beams with their connecting irons being employed as piles, or in the construction of any structure whatsoever in which metal girders and beams may be advantageously employed.

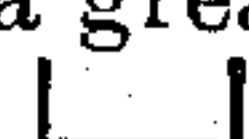

The pile consists of hollow iron beams with two longitudinal slots the one opposite the other and I or other shaped irons combined in such a way that the latter alternate with the beams, the flanged extremities of the irons fitting in the slots of the beams and having some play therein while being inclosed and held firmly by the said beams.



In the drawings:—Figure 1, is a sectional plan view of the corner of a square shaped column or pile formed of my improved hollow beams and connecting irons. Fig. 2, is a similar view of the beams and irons arranged for a cylindrical column. Fig. 3, is a similar view of the parts arranged for an octagonal pile or column. Fig. 4, represents on a larger scale the connection between the hollow beams, only a portion of said beam and its connecting iron being shown. Figs. 5, 6 and 7 represent sectional views of modifications.

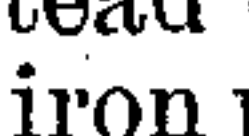



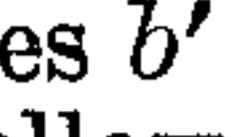
In Figs. 1 to 4 each of the hollow beams consists of two  shaped iron pieces *a* and *a'* united by screw bolts or rivets so that the flanges of the  shaped irons are turned toward each other leaving a longitudinal slot *d* between the free extremities of the same (Fig. 4) which is a little wider than the thickness of the stem of the I shaped iron *b*. The distance between the rivets or screw bolts *c* and the flanges of the  shaped iron pieces must be such that the flanges of the I shaped iron *b* can lie in the space between the arms of said  shaped iron pieces, and the rivets

or screw bolts *c* the main or stem portion of the I iron passing through the slots *d* and extending from beam to beam. When the I shaped irons *b* have been forced into the hollow beams *a, a'* in the described way all the parts fit each other in such a way that it is impossible to disconnect the same unless one of the parts break; they cannot move sideways but only in a perpendicular direction.






For square piles or columns adapted for sinking square shafts the hollow beams that constitute the corners of the shaft are constructed as can be seen in Fig. 1, of a right angular shaped piece of iron *a*<sup>2</sup> having right angular flanges *a*<sup>3</sup> and of an angle-iron *a*<sup>4</sup> leaving slots *d'* *d*<sup>2</sup> so that the two I shaped irons that are forced into each corner beam are at a right angle the one to the other.

For piles adapted for round shafts, Fig. 2, the rivets or bolts *c* must be at a greater distance from the flanges of the  shaped iron pieces *a, a'* in order that there may be play enough for the flanges of the I iron pieces that said I shaped irons can assume the required angle to the  shaped irons forming the hollow beams.

For octagonal shafts the exterior  shaped irons are broader than the interior  shaped irons and they are put together as in Fig. 3.

In Fig. 5, the hollow beams instead of being constructed of two  shaped iron pieces as shown in Fig. 1 to 4, are made of one  shaped iron *a* and of a flat iron piece *a''*. The two iron pieces are connected either by stay bolts *c* (upper part of Fig. 5) or by  shaped braces *c* (lower part of Fig. 5), in such a way that at the two sides of the beams that are opposite to each other longitudinal slots are left. The  shaped iron braces are short, and are riveted at each side of the irons *a, a''* by four rivets *c'*. The beams *a, a''* are made stronger by these braces than by the stay bolts. These braces are arranged at a certain distance from each other just as in the case of the stay bolts so that the longitudinal slots *d* communicate with the interior space of the hollow beam. These hollow beams are connected by  shaped iron pieces *b'* one flange of which fits in one of the hollow beams and the other in the other hollow beam



in such a way that the connecting  iron piece  $b'$  can move longitudinally of the beams. The beams can also be constructed of two I shaped iron pieces, as shown in Fig. 6. 5 These I shaped iron pieces  $a^9, a^{10}$  are connected by the means of stay bolts  $c$  or of  shaped iron braces  $c$  and rivets  $c'$  in the same way as has already been described. For connecting two such beams we use in this case an I 10 shaped piece, the cross piece of which fits in the beams. It is also possible to use  shaped or  shaped iron pieces, Fig. 7, instead of I shaped irons for connecting two beams composed of two  shaped iron 15 pieces, Fig. 1 to 4, or of I shaped iron pieces (Fig. 6.)

After the pile has been introduced into the fixed layer of ground that borders the quick-sand or moving ground, the hollow beams 20 must be filled with oakum or moss. By this a perfectly water proof pile may be constructed and consequently the water and the mud, silt or sand, will be perfectly shut off.

In brown coal mines it is often very desirable to drain the water bearing ground on top. 25 If this must be done the hollow beams must only be filled with moss. After completion of the shaft and after the pumps have been definitely disposed the moss is taken out again. By the number of the beams out of 30 which the moss is taken more or less water may be let in to the shaft according to the yielding of the pumps. It is also possible to sink the shaft in a dry state, by shutting off the water for a time and yet the moving 35 ground can be drained afterward. If there is any defect of the pumps or if too much is

exacted from the same in any other way, it is possible to shut off again the supply of water by putting some packing material in the hollow beams. 40

I may state further that the described pile can be used for the construction of sluices for bridge building, water works and other foundations. This is the case shown in Fig. 6, 45 where the construction consists entirely of I shaped iron pieces, as the I shaped irons, after the foundation has been made and said I shaped irons are taken out, can be better used for the further completion of the building. 50

I claim—

1. In combination the hollow beams having slots extending longitudinally thereof and the flanged connecting irons adapted to pass through said slots with their flanges inclosed 55 by the beams, substantially as described.

2. In combination the hollow beam comprising an angle iron and its opposing part arranged to leave longitudinal slots along its sides, the transverse connecting means to hold 60 the angle iron and its opposing part together to form the hollow slotted beam and the flanged connecting iron, the flanges of which are fitted to the space between the slotted side of the beams and the transverse connections, 65 substantially as described.

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

AUGUST SIMON.

Witnesses:

GERHARD KORTE,  
FRIEDRICH KORTE.