No. 645,885. Patented Mar. 20, 1900.

W. B. BONNELL & R. F. SMITH.

PILING.

(No Model.) (Application filed Apr. 25, 1899.)

2 Sheets—Sheet 1.

Fig. 1.

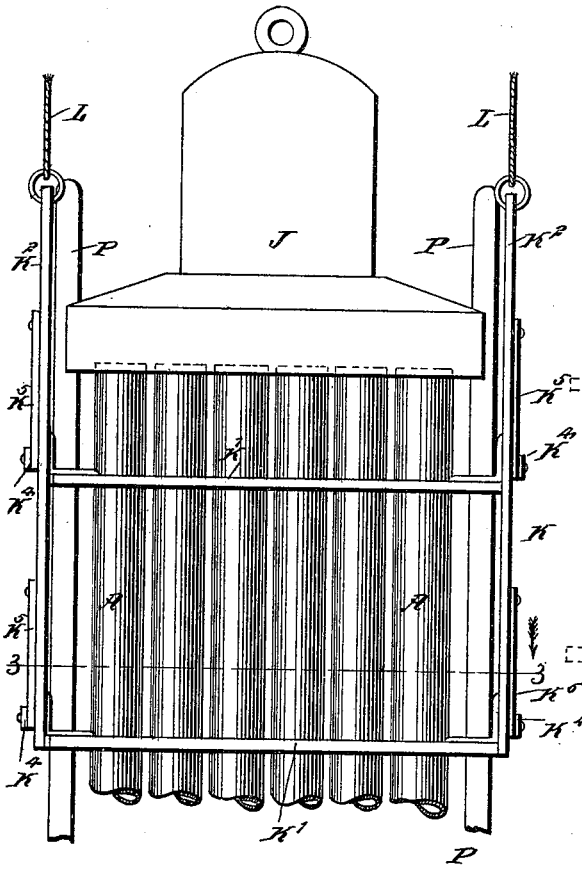

Fig. 2.

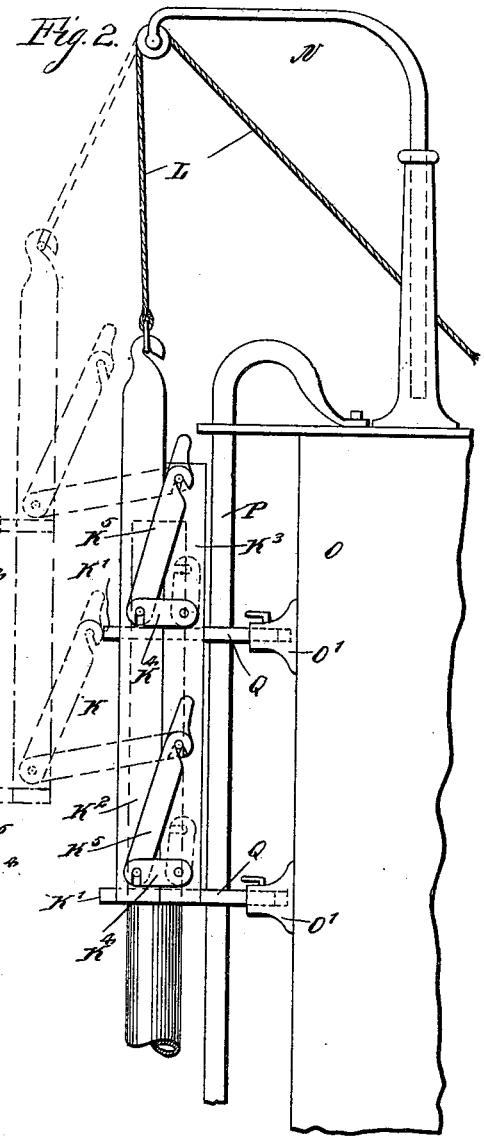

Fig. 3.

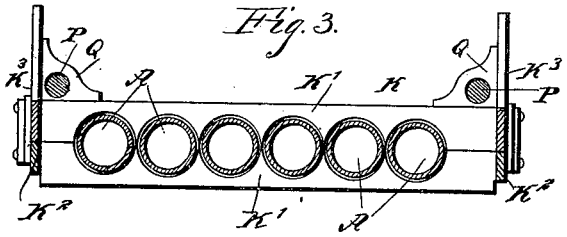

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Fig. 4.

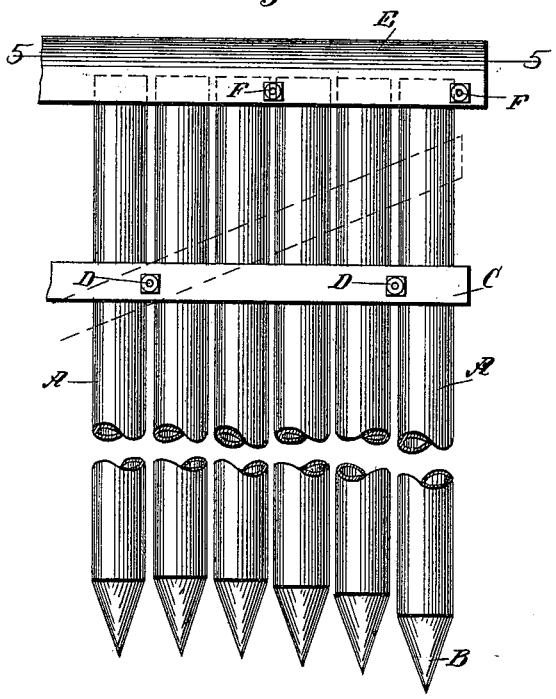


Fig. 6.

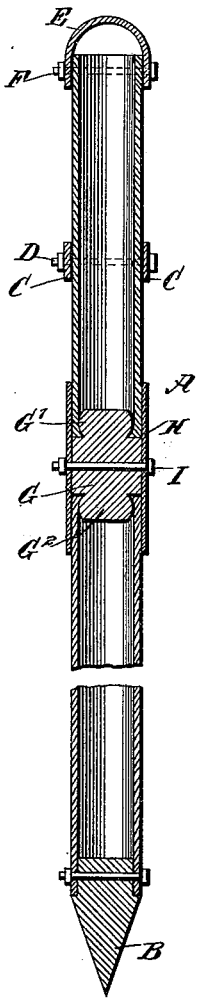
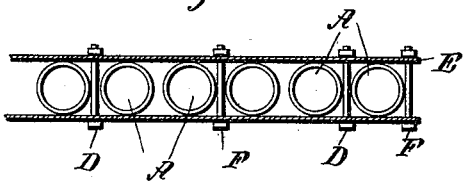


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM BRAMWELL BONNELL AND ROBERT FRANKLIN SMITH, OF MACON, GEORGIA.

PILING.

SPECIFICATION forming part of Letters Patent No. 645,885, dated March 20, 1900.

Application filed April 25, 1899. Serial No. 714,457. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM BRAMWELL BONNELL and ROBERT FRANKLIN SMITH, of Macon, in the county of Bibb and State of Georgia, have invented a new and Improved Piling, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved tubular metallic piling designed to take the place of the wood piling now generally used in the construction and foundations of breakwaters, barriers, levees, docks, &c., and which is very simple and durable in construction and not liable to decay by the destructive action of sea-water, mud, or other materials into which the piles are driven or liable to attacks of wood-boring or other insects.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of our invention is represented in 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 side elevation of the improvement, shown with a pile-driver and frame for driving the piles in position. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional plan view of the same on the line 3 3 in Fig. 1. Fig. 4 is a front elevation of the improvement. Fig. 5 is a sectional plan view of the same on the line 5 5 in Fig. 4, and Fig. 6 is an enlarged longitudinal section of one of the piles.

The improved piling is formed of piles A, made of iron or steel tubes, each having a steel point B at the lower end to permit of conveniently and readily driving the lower end of the pipe into the sustaining material. The piles are driven one alongside the other to form various structures, and the said piles are connected with each other near their upper ends by front and rear bars C, placed opposite each other and connected with each other by transverse bolts D, extending between adjacent piles, as is plainly indicated in Figs. 4 and 5. A cap E, preferably semicircular in cross-section, is fitted over the upper ends of the several piles, and the lower edges of the cap carry transverse bolts F, of which the end bolts engage the outermost piles and the intermediate bolts extend between adjacent piles to securely hold the cap in place and to stiffen the several piles in the series.

The piles A may be made of any desired length, and for this purpose several tubes can be readily joined to form a pile of a desired length. (See Fig. 6.) In order to readily unite two such tubes to form a sectional pile, a joint-block G is provided, formed at its top and bottom with offsets G' G^2 for engaging the adjacent ends of the tubes, the edges of the latter abutting on the top and bottom surfaces of the block, which preferably has a diameter corresponding to the outside diameter of the tubes. The offsets G' G^2 are preferably beveled, so that the edges of the tubes readily expand in the bevels to securely unite the block with the tubes. In addition a sleeve H is fitted over said block G, and a bolt I is passed through the sleeve and the block G to securely hold the sleeve in position.

In order to simultaneously drive a plurality of the tubular metallic piles A by means of the usual pile-driving block J, a frame K is provided, having apertured plates K' for engaging and holding the several piles the desired distance apart, as illustrated in Figs. 1, 2, and 3. The frame K is preferably made in sections K^2 and K^3, of which the section K^2 is hung on ropes L, extending upward and over a suitable support N, in the form of a davit or the like, attached to a vessel O, dock, or other structure near where the piles are to be driven. The sections K^2 and K^3 of the frame K are pivotally connected with each other by links K^4 K^5 to permit of opening the front section K^2 by swinging the same outward to the position shown in dotted lines in Fig. 2 to allow of conveniently placing the frame in position on the piles. When the several piles are in place on the rear section K^3, then the front section K^2 is again closed and locked in place by the links K^4 K^5. The frame K is further provided with transversely-extending guideways Q, held on supports O' of the structure O, and said guideways are

engaged by vertically-disposed guide-rods P, which also form guideways for the pile-driving block J, which when dropped strikes the upper ends of the several piles in the frame K to simultaneously drive the piles downward. The frame K is lowered from the structure O by the ropes L as the piles descend.

Before the piles are driven they may be coated to resist the corrosive action of seawater or other material into which the piles are driven, and the said piles may be filled with a suitable filling material to give additional weight and strength to the piles.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. A piling consisting of a number of metal tubes arranged side by side, a cap semicircular in cross-section fitted over the upper edges of the said piles, and transverse bolts extending through the lower edges of said cap and engaging the piles, as and for the purpose set forth.

2. A piling, consisting of a number of metal tubes arranged side by side, a cap fitted over the upper edges of the tubes and a series of bolts extending transversely through the lower edges of said cap and engaging sundry tubes whereby to hold the cap in place and stiffen the positions of the piles with respect to each other, as set forth.

3. A piling, consisting of a plurality of metal tubes arranged one alongside the other, blocks for joining adjacent ends of successive tubes, each block having top and bottom offsets for entering the tubes, and shoulders for the edges of the tubes to rest on, substantially as shown and described.

4. A piling, consisting of a plurality of metal tubes arranged one alongside the other, blocks for joining adjacent ends of successive tubes, each block having top and bottom offsets for entering the tubes, and shoulders for the edges of the tubes to rest on, said offsets being beveled for receiving the expanding ends of the tubes, as set forth.

5. A piling, consisting of a plurality of metal tubes arranged one alongside the other, blocks for joining adjacent ends of successive tubes, each block having top and bottom offsets for entering the tubes, shoulders for the edges of the tubes to rest on, said offsets being beveled for receiving the expanding ends of the tubes, and an encircling band or sleeve fitted upon the block and the adjacent ends of the tubes, substantially as shown and described.

6. A piling, consisting of a plurality of metal tubes arranged one alongside the other, blocks for joining adjacent ends of successive tubes, each block having top and bottom offsets for entering the tubes, shoulders for the edges of the tubes to rest on, said offsets being beveled for receiving the expanding ends of the tubes, an encircling band or sleeve fitted upon the block and the adjacent ends of the tubes, and a bolt for securing said sleeve to the block, as set forth.

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