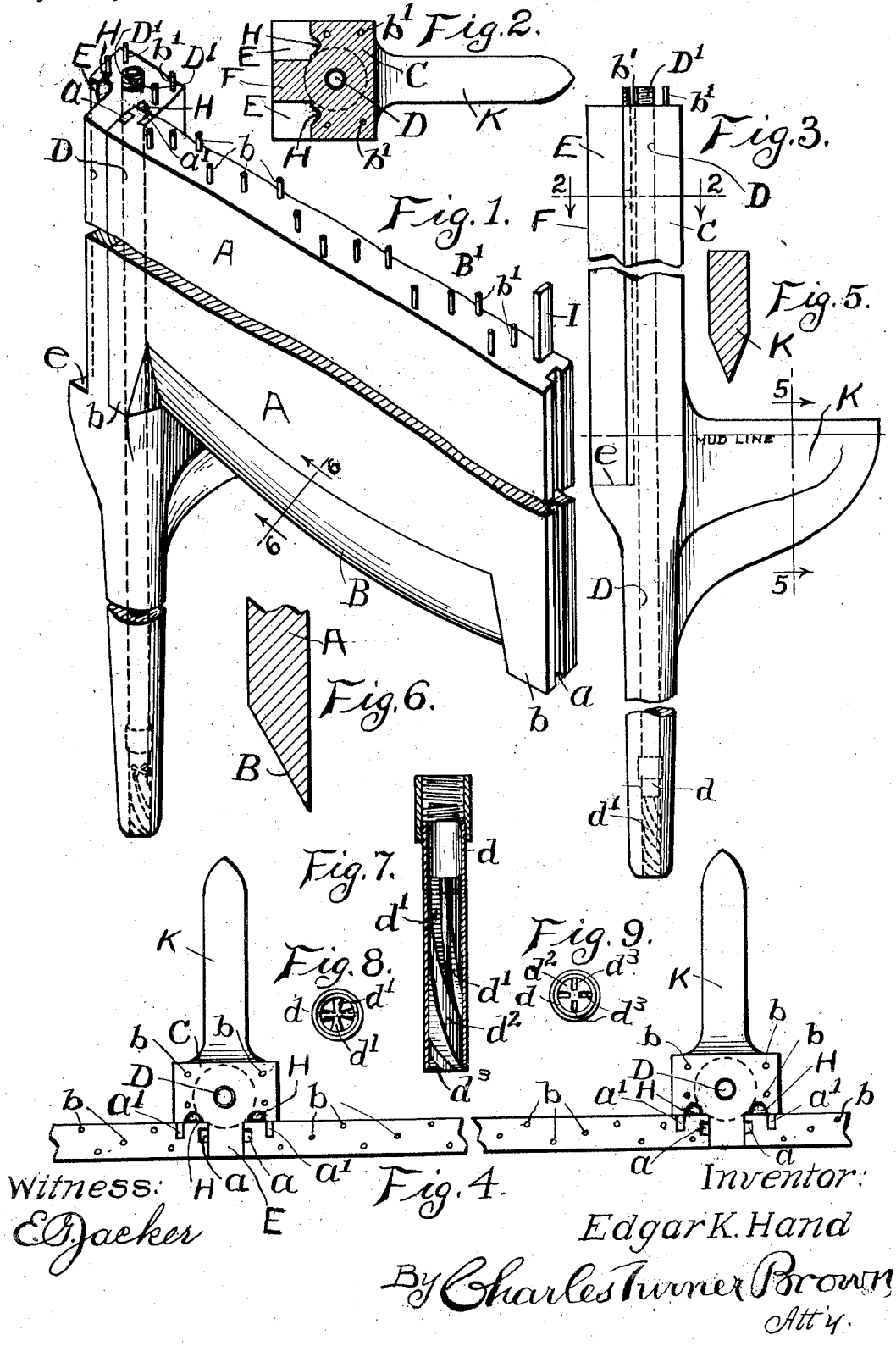
E. K. HAND.

REINFORCED CONCRETE PILE AND PANEL.

APPLICATION FILED SEPT. 22, 1919.

1,338,503. Patented Apr. 27, 1920.



Witness: E. G. Jaeker

Inventor: Edgar K. Hand

By Charles Turner Brown

Att'y.

UNITED STATES PATENT OFFICE.

EDGAR K. HAND, OF CHICAGO, ILLINOIS.

REINFORCED-CONCRETE PILE AND PANEL.

1,338,503. Specification of Letters Patent. Patented Apr. 27, 1920.

Original application filed September 2, 1919, Serial No. 321,164. Divided and this application filed September 22, 1919. Serial No. 325,448.

To all whom it may concern:

Be it known that I, EDGAR K. HAND, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Reinforced-Concrete Piles and Panels, of which the following is a specification.

This invention relates to reinforced concrete piles and panels, said piles adapted to be used separately, and also to be used with said and other panels to form a water wall.

To those skilled in the art of building water walls of reinforced concrete for breakwaters, piers, hollow bridge abutments or wells for the installation of pumps and other machinery, it is well known that it is at all times advisable and at some times necessary to make said water walls water tight, either to prevent the washing away of the backing of the land side of said walls, or to prevent the entrance of water to an open space or spaces in a bridge abutment or wall.

Among the objects of this invention are to obtain a pile which is made of reinforced concrete and which is adapted to be used with panels of stone or granite, and particularly adapted to be used with the herein illustrated, described and claimed panel to build up a pilastered water wall, a pier, an abutment, or the like, and to obtain a panel adapted to be used in combination with the herein described and illustrated pile, for the hereinabove named purpose. Further objects are to make said piles and said panels, in an economical manner, to make piles and panels which are durable, easily installed, separately and in a co-acting position, and not easily broken.

In the drawing accompanying and forming a part hereof

Figure 1 is a perspective view representing a panel and a pile embodying this invention.

Fig. 2 is a horizontal section, on line 2—2 of Fig. 3, of a pile embodying the invention, viewed in the direction indicated by the arrows.

Fig. 3 is a side elevation of the pile illustrated in Fig. 1.

Fig. 4 is a top plan view of the upper end or top of a portion of a wall embodying the invention.

Figs. 5 and 6, respectively, are sections on line 5—5 of Fig. 3, and line 6—6 of Fig. 1, viewed in the direction indicated by the arrows.

Fig. 7 is a vertical section of a nozzle forming a member of the lower end of the pile.

Fig. 8 is a top plan view, (looking down), of the nozzle illustrated in Fig. 7; and

Fig. 9 is a bottom plan view of said nozzle, looking up.

A reference character applied to designate a given part indicates said part throughout the several figures of the drawing, wherever the same appears.

A represents a panel made of reinforced concrete, and provided with a groove a at each end thereof, and the groove a^1 adjacent to each end, on the front face thereof. Panel A is also provided with the beveled face B, on the lower edge thereof. Beveled face B does not extend to the ends of the panel, to leave the panel of uniform thickness at said ends, as at b, b, Fig. 1. The upper edge, or side, of the panel is represented as unfinished, as at B^1, with the reinforcing members b^1, b^1, extending upward beyond said upper edge to permit a cap or coping to be joined thereto after said panel and piles C, C, are installed.

The reinforced concrete pile C is also illustrated with reinforcing members b^1, b^1, extending above and beyond the upper end thereof, for the same reason assigned to the similar construction of the upper edge of panel A.

D illustrates a pipe which extends longitudinally in pile C, and d a nozzle which is attached to the lower end of pipe D. d^1 represents a member which is inserted in nozzle d. Member d^1 is provided with radial blades which are directed spirally as they extend downward. Said blades are made thicker, as at d^2, d^2, from near their lower ends to said ends, and thereby the outlets d^3, d^3, restricted. The object of the member d^1 is to give a whirling motion to water forced therethrough as said water is discharged from the restricted outlets d^3, d^3, against an obstruction, as water, dirt, or mud.

D^1 represents screw threads on the upper end of pipe D, by means of which a hose or other pipe is attachable thereto. As said members form no part of this invention they are not illustrated.

Pile C is also provided with longitudinally extending rabbets E, E, from the upper end of the pile to the steps *e*, *e*; on which steps the ends *b*, *b*, of the several panels which form members of a wall rest, and by which steps the position of said panels relative to said piles are determined.

The pile is also provided with the longitudinally extending rib or tongue F, which is formed by rabbets E, E. H, H, represent recesses which extend longitudinally from the upper end of the pile to the steps *e*, *e*. Tongue F, forms a member against which the ends of the panels A, A, abut when the wall is installed.

K represents a jetty or mud sill which, when used, is made of reinforced concrete integral with the body part of the pile. Jetty or mud sill K is used when a water wall comprising a plurality of said piles and panels is positioned where said wall is subjected to currents of water on the water front thereof, and a consequent liability exists that scouring or washing away of the water bed will occur at the lower edges of said panels.

After the piles and panels are put in place the passage ways formed by grooves H, H, are grouted, and said grouting is made integral with the walls of said piles and panels.

I, Fig. 1, is a strip or batten, preferably of wood, which is represented as partially forced into one of the grooves a^1, on the front face of panel A, adjacent to one end thereof. A similar strip or batten may be forced into groove *a*. These strips or battens are forced into the respective grooves after piles in spaced relation have been properly set and the panels mounted in place thereon, resting on steps *e*, *e*. The purpose of said strips or battens is to seal the passage ways which are formed by grooves H, H, in case the fit of the panels to the piles is so loose as to interfere with the grouting of said grooves H, by admitting water thereinto faster than can be driven therefrom while said grouting is being deposited therein.

I claim:

1. A pile of reinforced concrete, comprising in combination, a body provided with reinforcing members, a pipe extending longitudinally through said body, and a nozzle at the lower end of said pipe, said nozzle provided with means to impart a whirling motion to water discharged therefrom, and said pile provided with steps adapted to form supports for a horizontally disposed co-acting member.

2. A pile of reinforced concrete comprising in combination, a body, reinforcing members throughout said body, a pipe open at its ends extending longitudinally in said body, a nozzle at the lower end of said pipe and in said body, said pile provided with steps midway of the ends thereof, and provided with longitudinally extending rabbets and grooves, said rabbets and grooves extending from said step to one end of the pile.

3. A pile consisting of reinforced concrete, and comprising in combination, a body portion, reinforcing members in said body, a pipe extending longitudinally in said body, and a nozzle at the lower end of said pipe, said nozzle provided with means to impart a whirling motion to water discharged therefrom, and said pile provided between its ends with a projecting arm adapted to form a horizontally disposed jetty integral with said body.

4. A pile consisting of reinforced concrete and comprising in combination, a body, reinforcing members throughout said body, a pipe open at its ends extending longitudinally through said body, a nozzle at the lower end of said pipe, and in said body, said nozzle provided with means to impart a whirling motion to water discharged therefrom, steps, and a laterally extending arm on said pile, between the ends thereof, said step being on one side of said pile and said arm on the opposite side thereof, and said pile provided with longitudinally extending rabbets and grooves, extending from said steps to one end of the pile.

5. In a retaining wall a pile consisting of reinforced concrete and comprising a body, reinforcing members throughout said body, a pipe extending longitudinally of the said body, a nozzle at the lower end of said pipe, said nozzle provided with means to impart a whirling motion to water discharged therefrom, steps between the ends of said pile, said steps being on one side of said pile, longitudinally extending rabbets and recesses extending from said steps to one end of the pile, in combination with a panel provided with recesses in the ends thereof, and said panel adapted to rest on said steps to be supported thereby, said recesses adapted to form passage ways when said pile and panel are assembled, and grouting in said passage ways.

6. In a retaining wall, piles respectively consisting of reinforced concrete, and comprising a body, reinforcing members throughout said body, a pipe extending longitudinally of the said body, a nozzle at the lower end of said pipe, and in said body, said nozzle provided with means to impart a whirling motion to water discharged therefrom, steps, and an arm between the ends of said pile, said steps being on one side of said pile and said arm on the opposite side thereof, and said pile provided with longitudi-

nally extending rabbets and recesses from said steps to one end of said pile, in combination with a panel provided with recesses at the ends thereof, and adapted to rest on said steps, said rabbets and recesses adapted to form, when said panels and piles are assembled, passage ways, said passage ways which are formed by the recesses in said panels being adapted to receive packing, and the passage ways formed by the recesses in said piles adapted to be grouted.

Chicago, Ill., Sept. 15., 1919.

EDGAR K. HAND.

Witnesses:

CHARLES TURNER BROWN,

B. S. BROWN.