

953,088.

Fig. 1.

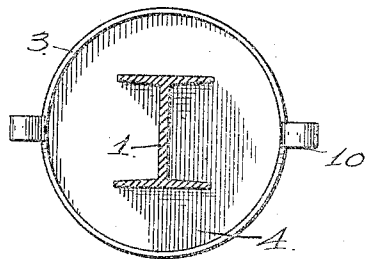
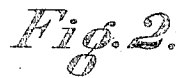


Fig. 3.

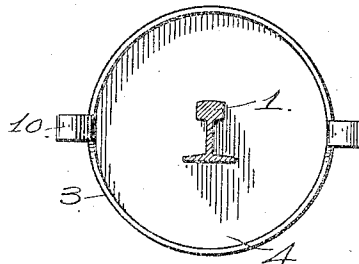
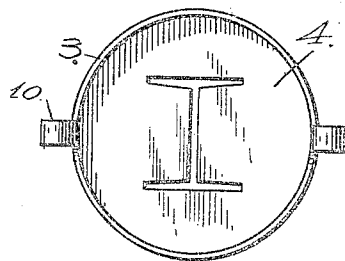


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SUPPORTING-COLUMN FOR WHARVES, PIERS, &c.

953,088.

Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed February 13, 1909. Serial No. 477,649.

To all whom it may concern:

Be it known that I, STETSON G. HINDES, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Supporting-Columns for Wharves, Piers, &c., of which the following is a specification.

The present invention relates to the construction of wharves, landings, piers and protecting the supporting columns thereof; the object being to reinforce and protect the submerged surface of the supporting columns by a composite covering wall or shell.

To comprehend the invention, reference should be had to the accompanying sheet of drawings, wherein—

Figure 1 is a broken view in elevation of a supporting column with the outer shell or casing applied thereto, the said shell or casing being partly sectioned to illustrate therein the composite covering for the supporting column. Figs. 2 and 3 are plan views of the casing applied to varying shaped supporting columns. Fig. 4 is a plan view disclosing the bottom of the casing applied to the supporting column illustrated in Fig. 2 of the drawings.

In the drawings the numeral 1 is used to indicate a suitable supporting column of uniform cross section throughout the entire length thereof, which may be of any form, such as a sawed timber, solid round or square steel, steel pipe, a T-rail or an I-beam. This supporting column is first driven into the hard bottom, and the exposed submerged surface thereof is then protected against the action of the water by means of the composite covering 2, held in position by the outer casing 3, which casing is slidable on the supporting column and descends thereon during the process of forming the said composite covering inclosed thereby. The bottom 4 of the casing 3 is closed, except as to the central opening therein through which extends the supporting column, which opening conforms in shape to the cross section of the said supporting column over which the bottom 4 works and makes a close or running joint therewith. The casing or outer shell 3 is preferably of a length slightly greater than the distance from the bed 5 into which it is driven to the upper end of the supporting column 1, and the diameter of the casing or shell is such as to leave an annular space between the inner wall there-

of and the face of the said column equal to the thickness of the protecting wall to be placed around the exposed surface thereof.

In the face of the outer casing or shell 3 is formed a vertical series of spaced feed or stoking openings 6, which are arranged a distance of about ten feet apart, more or less. These openings are closed from the inside of the casing by means of the cover plates 7, which are held in position by the pressure of the body of material composing the composite covering 2.

In carrying out the coating of the surface of the driven supporting column 1, the casing or shell 3 is fitted over the exposed end thereof and permitted to slip downwardly until the first feed or the lowermost stoking opening 6 is positioned relative to the support 8 to permit of the workmen feeding therethrough into the casing the concrete or material for forming the composite covering 2 for the column to be protected, the casing gradually descending until the second feed or stoking opening is positioned to receive therethrough the reinforcing material, which material as fed or delivered into the casing 3 spreads out and packs itself around the column 1, which constitutes an inner core. The casing is held in position and prevented from moving downwardly too rapidly by means of the cables 9, which engage with the lugs 10 projecting from the lower end portion of the casing, Fig. 1 of the drawings. As the first feed or stoking opening passes below the platform 8 on which the workmen are stationed, the same is closed by means of the plate 7, which may consist of a thin sheet of metal, the same being slightly larger than the opening and held against the inner surface of the casing by the pressure of the material thereagainst, each feed or stoking opening being closed as the same is carried beyond the feed station for the material to be delivered into the casing.

Where the supporting columns are of tapering form, such as the ordinary wooden pile, it is impossible at times to properly protect the exposed surface thereof, due to the fact that as the cross sections vary throughout the length thereof, it is required that the opening in the bottom of the casing conform to the largest cross section of the said supporting column, hence leaving a loose joint at reduced cross sections. Inasmuch as it frequently happens that the work of sinking the outer casing is delayed

for a considerable time, the concrete filling begins to harden or set at the point where the movement of the casing is arrested. The result is, where the supporting column is of tapering form, that as the casing is forced downward after remaining stationary for a time, the set composite covering remains a distance away from the surface of the column where the cross sections are less than the cross section at the point where the downward movement of the casing was arrested, an exposed surface being thus left. By employing supporting columns of a uniform cross section throughout the entire length thereof and providing an opening in the bottom of the casing conforming to the shape of the supporting column, this defect is obviated, for it is immaterial at what point the movement of the casing is suspended, inasmuch as when its movement is continued the composite covering will conform to any cross section of the column below the point at which the movement of the casing was arrested.

25 Having thus described the invention what is claimed as new and desired to be protected by Letters Patent is:—

1. In a wharf or pier construction the combination with a driven supporting column, of uniform cross section throughout the length thereof, an outer shell or casing fitted thereon to inclose the same, said casing having a closed bottom with a central opening therein shaped to conform to the cross section of the supporting column to make

a close joint therewith, and an inner composite covering interposed between the outer shell or casing and the surface of the supporting column.

2. In a wharf or pier construction, the combination with a driven supporting column of uniform cross section throughout the length thereof, an outer shell or casing fitted thereon to inclose the same, said casing extending continuously from the top of the column to the bed in which the latter is driven, a series of stoking openings spaced from one another longitudinally of the casing, and a filling interposed between the shell and the supporting column.

3. In a wharf or pier construction, the combination with a driven supporting column of uniform cross section throughout the length thereof, an outer shell or casing fitted thereon to inclose the same, said casing having at its lower end a closing cap member, which said cap member has an opening corresponding to the uniform cross section of the supporting column and said cap member being otherwise continuous and closed, and an inner composite filling interposed between the casing and the supporting column.

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

STETSON G. HINDES.

Witnesses:

N. A. ACKER,

D. B. RICHARDS.