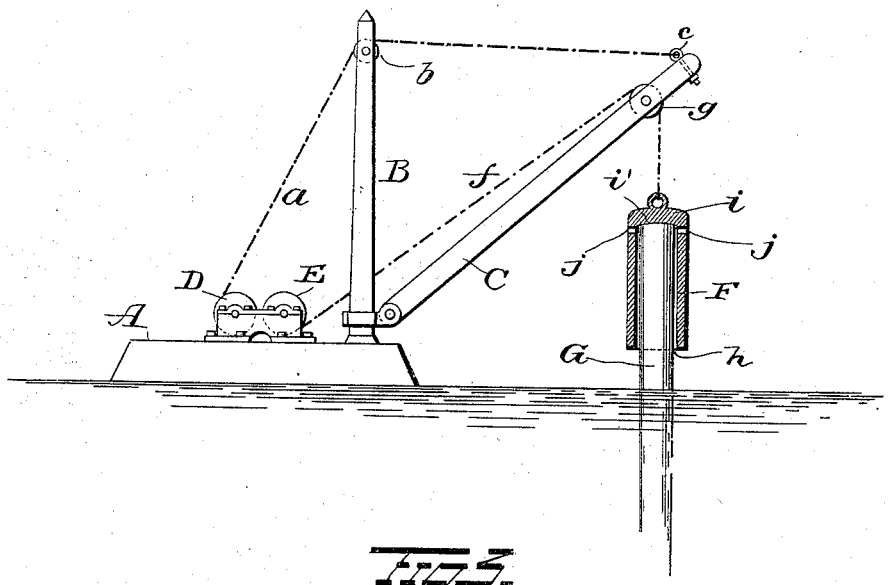
(No Model.)

# H. W. CROUCH.

## PILE DRIVER.

No. 533,118. Patented Jan. 29, 1895.

Fig. 1.




Figs.

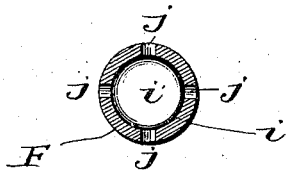
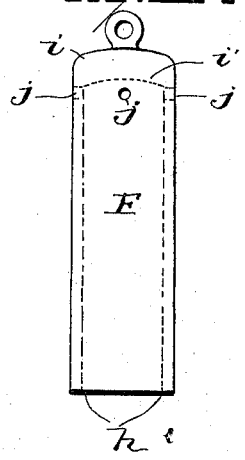



Fig. 2.




Witnesses
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# UNITED STATES PATENT OFFICE.

HASELL W. CROUCH, OF CHARLESTON, SOUTH CAROLINA.

## PILE-DRIVER.

SPECIFICATION forming part of Letters Patent No. 533,118, dated January 29, 1895.

Application filed October 12, 1894. Serial No. 525,690. (No model.)

*To all whom it may concern:*

Be it known that I, HASELL W. CROUCH, resident of Charleston, in the county of Charleston and State of South Carolina, have invented certain new and useful Improvements in Pile-Drivers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in pile drivers and is designed more particularly for use in repairing old wharves, trestles and work in places too weak to support the cumbersome pile driver now generally in use.

As pile drivers have been heretofore constructed, it has been necessary to move the entire apparatus and adjust it for each pile to be driven.

The time and labor expended in moving the apparatus have been the chief sources of expense and it is the object of my invention to so construct a pile driver that a number of piles can be driven without readjusting the position of the apparatus, so that the necessity of moving the entire apparatus from one pile to another will be obviated and much time and expense saved.

A further object is to so construct the driver or hammer that it will constitute, in itself, a guide to prevent its escape from the pile being driven.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings:—Figure 1 is a view showing the application of my invention. Fig. 2 is a detail view of the driver or hammer *per se*. Fig. 3 is a sectional view of the same.

A represents a boat or float, on which a mast B is mounted, and at the base of the mast a boom C is pivotally connected. A suitable drum D is mounted on the boat or float and is designed to be operated by means of any suitable machinery located on the boat or float. A cord or chain *a* is wound on the drum D and, after passing over a pulley *b* at the upper end of the mast, is carried forward and secured to the free end of the boom at *c*.

A drum E is also located on the boat or float and operated in any suitable manner. A cord or chain *f* is wound on the drum E and, after passing over a pulley *g* near the free end of the boom, is attached to the hammer or driver F. The hammer F is made in the form of a cylinder or other tube having its lower end *h* open and its upper end *i* closed, the end *i* preferably having a concave face *i'* and constituting the hammering face. The hammer F is placed on the pile G in a manner similar to that of a cap and said hammer being made of some length (preferably about eight feet) there will be no danger of its escape from the pile when it is moved up and down during operation. In order to prevent the formation of an air cushion between the top of the pile and the hammering face of the hammer, the cylinder or other tube is provided at its upper end with a series of air holes or outlets *j*. The hammer having been placed on the pile as shown in Fig. 1, it will be made to rise and drop by means of the apparatus on the boat or float. When it is desired to drive a pile located in front of or in rear of the one on which the driver has been operating, it is simply necessary to lower or raise the boom or to advance or back the float, whereupon the hammer will be disposed farther away from or nearer to the boat or float. When it is desired to drive a pile to one or the other side of the one on which the driver has been operating, the swinging of the boom to one side or the other will accomplish this purpose.

My improved hammer or driver can be used without a boom when employed for repairing trestle work, or it can be used with a fixed boom from a float which itself could be made to swing. The hammer or driver constitutes, in itself, a guide, and no bands to protect the pile are necessary. Piles driven by my improved device are not liable to be split or marred in any manner.

My improvements are exceedingly simple in construction, their use results in a great saving of time and labor, and they are effectual in every respect, in the performance of their functions, saving at least seventy-five per cent.

Various slight changes might be resorted to in the details of construction of my in-

vention without departing from the spirit thereof or limiting its scope and hence I do not wish to limit myself to the precise details of construction herein set forth, but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A tubular pile driver hammer adapted to receive the end of a pile and having a closed end to constitute a hammering surface, said tubular hammer having air outlets at its upper end, substantially as set forth.

2. In a pile driving apparatus, the combination with a pivotally supported swinging boom, of a tubular hammer suspended therefrom and adapted to receive the end of the pile and to be reciprocated vertically, substantially as set forth.

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

HASELL W. CROUCH.

Witnesses:
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