

No. 611,588.

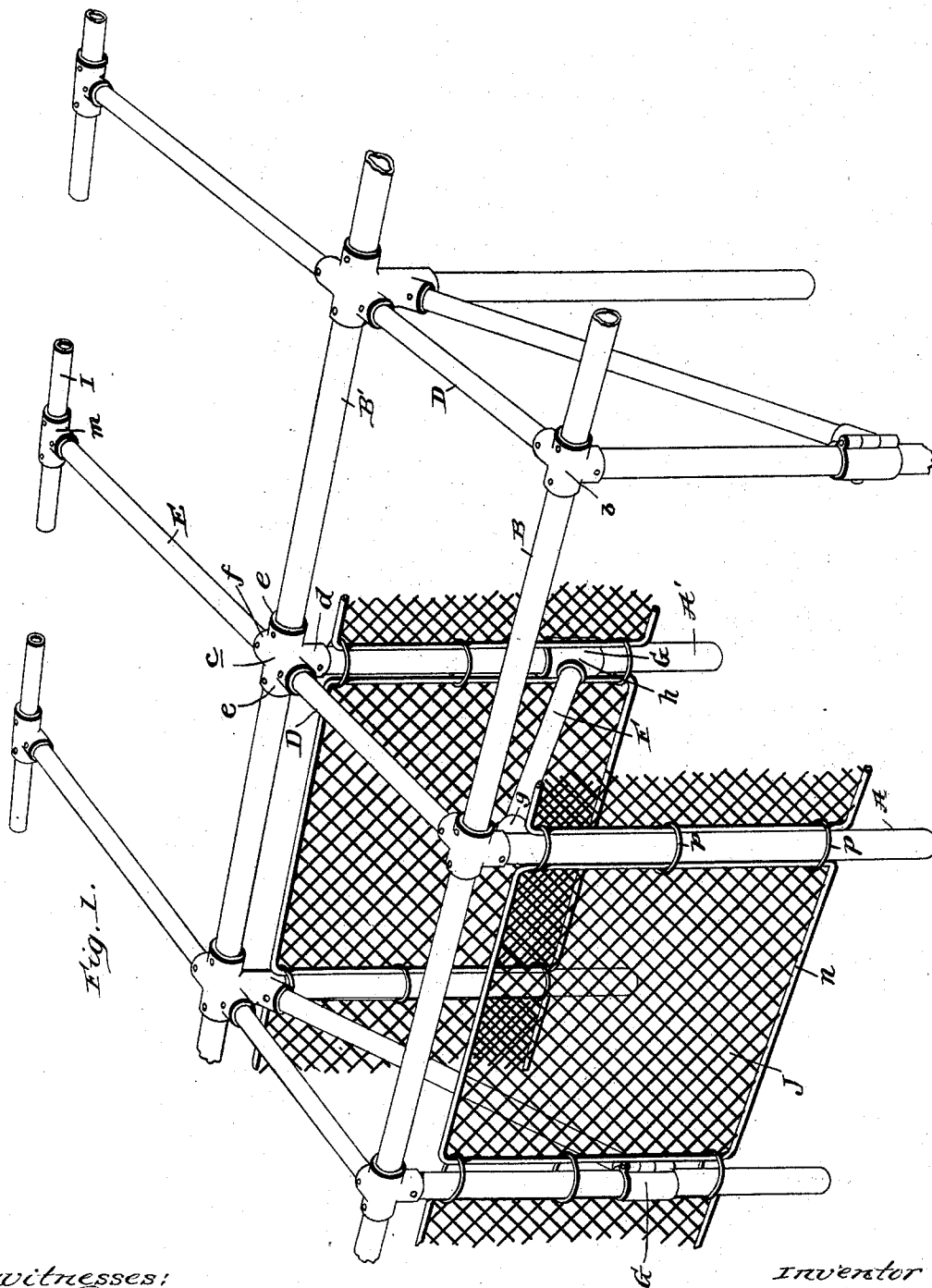
Patented Sept. 27, 1898.

S. W. BROOKS.
PROTECTING SHORES.

(Application filed Mar. 31, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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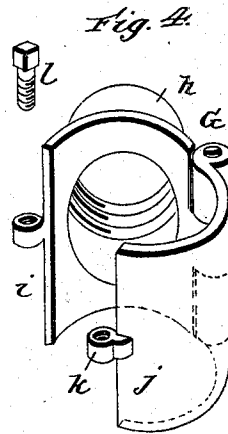
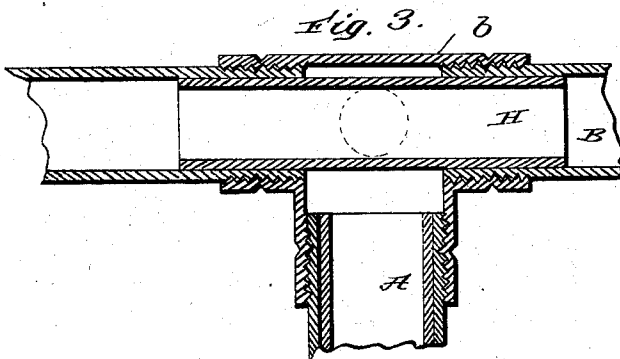
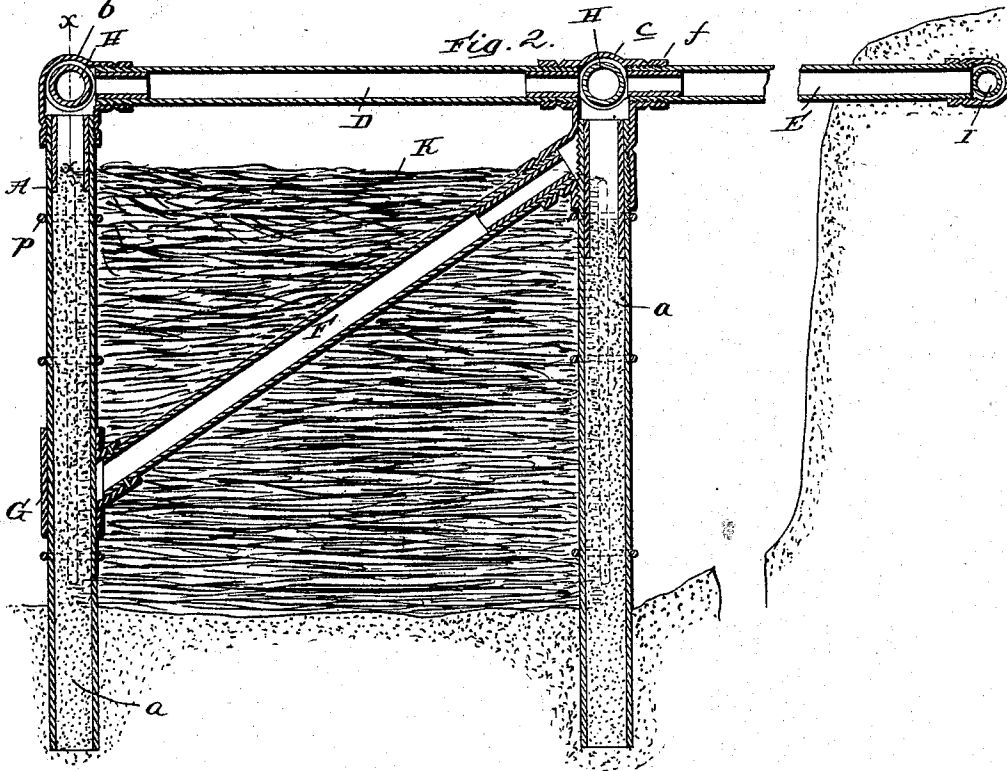
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witnesses:

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UNITED STATES PATENT OFFICE.

SAMUEL W. BROOKS, OF BROWNSVILLE, TEXAS.

PROTECTING SHORES.

SPECIFICATION forming part of Letters Patent No. 611,588, dated September 27, 1898.

Application filed March 31, 1898. Serial No. 675,949. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. BROOKS, a citizen of the United States, residing at Brownsville, in the county of Cameron and State of Texas, have invented new and useful Improvements in Protections for River-Banks and Coast-Washings, of which the following is a specification.

This invention relates to improvements in jetties or retaining-walls for the protection of river-banks and coast-washings; and the novelty and many advantages will appear from the following description and claims when taken in connection with the annexed drawings, in which—

Figure 1 is a perspective view of two sections of the framework and grills with parts broken away. Fig. 2 is a vertical cross-sectional view of my improvements, showing the same in position and anchored to a river-bank. Fig. 3 is an enlarged sectional detail view taken through one of the coupling-joints and in the plane indicated by the dotted line *x x* of Fig. 2, and Fig. 4 is a perspective view of the cuff which I employ for connecting the diagonal braces to the piles.

Referring by letter to said drawings, A indicates the piles, which are composed of pipe or tubing of sufficient diameter and length. In the construction these piles are first placed in the river-bed at suitable distances apart and may be either driven, screwed, or pumped, according to the kind and nature of the earth in which they are to be placed. After the piles have been inserted as described they are filled with cement *a* or other suitable material, so as to give them sufficient strength and stability.

B indicates a rail which is also composed of pipe or tubing of metal or the like and connects the upper ends of the piles by couplings *b*.

From the construction illustrated it will be seen that I employ a double row of piles A and A', which are of similar construction and set in the same manner, with a sufficient space between. Cross-ties D, which are also hollow, connect the rails B, and consequently the piles A, with the rails B' and the piles A'. The couplings for the rails and piles of the inner set are of a general cruciform shape, as shown at *c*, having a depending socket *d*

to receive the upper end of the pile, horizontally-disposed sockets *e* to receive the rails, and sockets *f*, which are also horizontally disposed and in a plane at right angles, or approximately so, to the sockets *e*, to receive the cross-ties D and also bank-braces E, as will be hereinafter more fully described.

As it is desirable in the construction of the framework that the piles should be held very firmly I employ diagonal braces F, which are preferably pitched in opposite directions alternately, as shown. These diagonal braces, which are also composed of pipe or tubing, are received at their upper ends in a socket *g*, disposed obliquely, as shown, and their opposite or lower ends take into a similarly-disposed socket *h* of a cuff G. This cuff, as better shown in Fig. 4 of the drawings, is formed in two hinged sections *i* and *j*, the section *i* carrying the socket *h*, which may or may not be internally screw-threaded. When the socket is provided with a screw-thread, the brace F must also be screw-threaded; but when the socket is left plain the brace may be received therein, and in order to prevent the brace from drawing out it may be secured in any suitable manner, a very convenient means being to displace the material of the socket and force it into the material of the brace by means of a chisel and hammer, the small circles on the couplings being intended to show where the chisel-point has been placed. Each section of the cuff carries a lug-eye *k*, which are designed to register when the cuff has been closed, and a bolt *l* or pin may be employed in the lug-eyes to secure the sections of the cuff upon the piles. It is obvious, however, that other suitable means might be employed for this purpose. For the purpose of rendering the connections strong and durable I prefer to insert a section of pipe or tubing H in each coupling, as better shown in Fig. 3 of the drawings, and these sections H may extend sufficiently beyond the joint of the coupling into the piles, cross ties, or braces, as the case may be.

The bank-braces E are anchored at their inner ends in the bank, as shown, and such anchors are illustrated as composed of short sections of pipe or tubing I and may be of a less diameter than the other tubing employed

in the construction of the frame. These pipes or tubes I are connected to the inner ends of the bank-braces by T-couplings *m* and in a manner similar to the couplings employed at the other joints of the frame. I would have it understood that I do not wish to limit myself to the form or construction of anchors employed, as any means which will hold the framework to the bank might be used for the purpose, although I prefer to use the means herein shown.

After the frame has been constructed as described I provide each row of piles with a grillage, which I preferably form of stout wire and in sections, as shown at J. These sections may have a stout binding-wire *n*, and after being placed in an upright position and longitudinally between the piles they are secured to such piles by wire loops *p* or other suitable fastening devices. The space between each row of piles provided with the grillage is then filled in with brush *K* or the like, as better shown in Fig. 2 of the drawings, when a very substantial jetty or protection will be formed for the bank.

While I have shown and described a construction using two sets or rows of piles, and such is very desirable, yet in some cases where the washings are not so great or the force of the stream so powerful a single row of piles might be employed, in which case the bank-braces would extend directly from the couplings at the upper ends of the piles to the anchors in the bank, and such piles would be placed at a sufficient distance from the bank to permit the filling of the brush or other material between the bank and the grillage secured to the piles.

By constructing the framework of pipe or tubing I not only get a very cheap construction, but a very strong, fireproof, and durable one and one that may be carried out without the employment of skilled labor. It is obvious that any number of sections might be employed, although under ordinary circumstances I have found that two rows of piles with the grillage are sufficient to protect the bank.

While I have described that either threaded couplings, or couplings indented, or the

material displaced might be used, yet in some cases I might indent the threaded couplings, so as to displace the material and thereby form an additionally secure joint.

Having thus described my invention, what I claim is—

1. A protection for river-banks and coast-washings comprising a frame made up of piles, rails connecting the piles and braces connected with the piles and having anchors, a grillage secured to the piles, and a suitable filling, substantially as specified.

2. A frame composed of pipe or tubing and comprising piles filled with cement or the like, rails connecting the piles at their upper ends, cross-ties connecting the rails and piles, diagonal braces also connecting said piles, bank-braces secured at one end to the rails and carrying anchors at their opposite ends, in combination with a grillage secured to the piles and a suitable filling on the inside of the grillage, substantially as specified.

3. The combination with two vertical rows of piles; of diagonal braces for said piles, and the hinged cuff adapted to clamp the piles and provided with an obliquely-disposed socket to receive the brace, substantially as specified.

4. A protection for river-banks and coast-washings, the combination with piles composed of pipe or tubing and having a filling of cement or the like; of a grillage formed in sections and secured to the piles, substantially as specified.

5. A protection for river-banks and coast-washings made up of piles, rails and cross-ties connecting the piles, and extended braces *E* connected with the piles and having anchors, grillage-sections interposed between and connected to the piles, and a suitable filling on the inside of the grillage, substantially as specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL W. BROOKS.

Witnesses:

LOUIS KOWALSKI,
STANLEY WELCH.