May 18, 1926. 1,584,766

F. E. GORDON ET AL

DIKE

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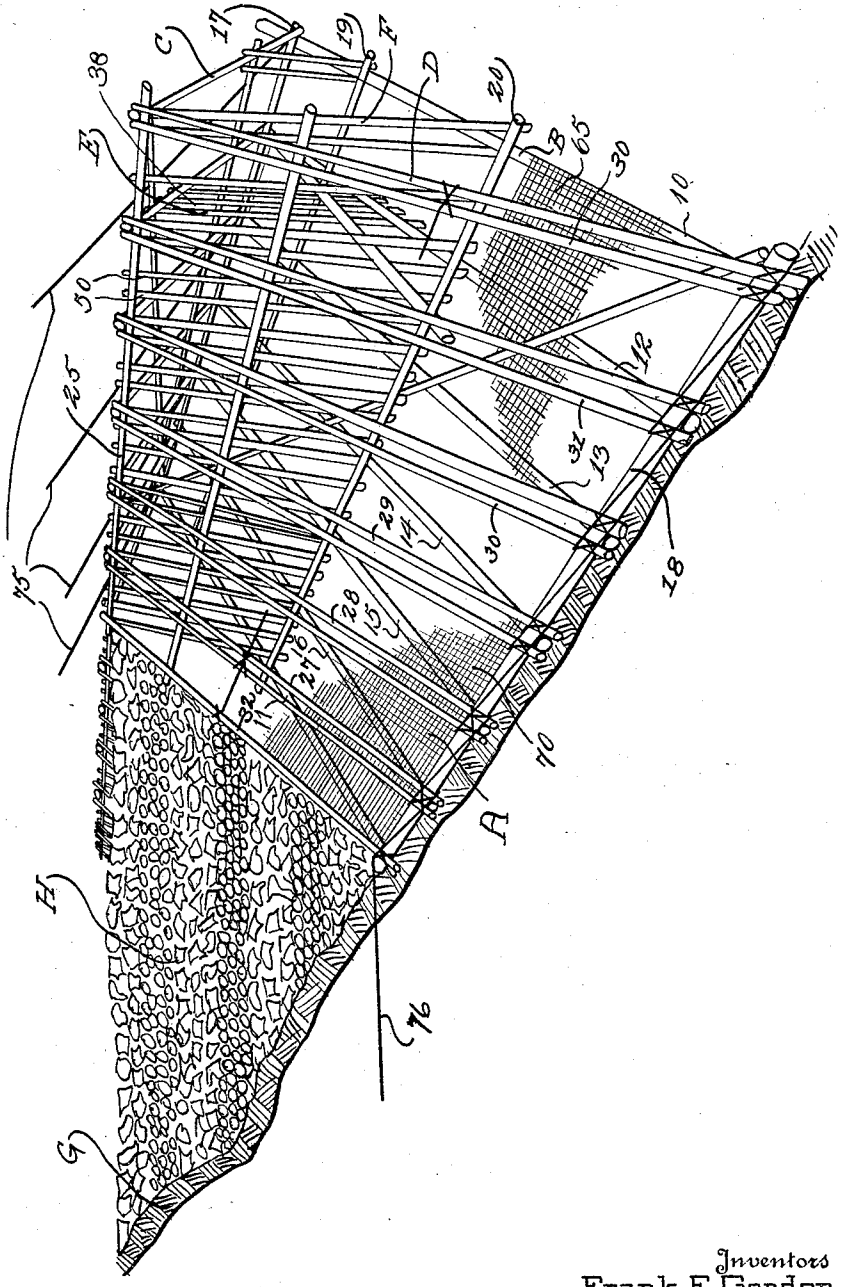


Fig. 1.

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6 Sheets-Sheet 2

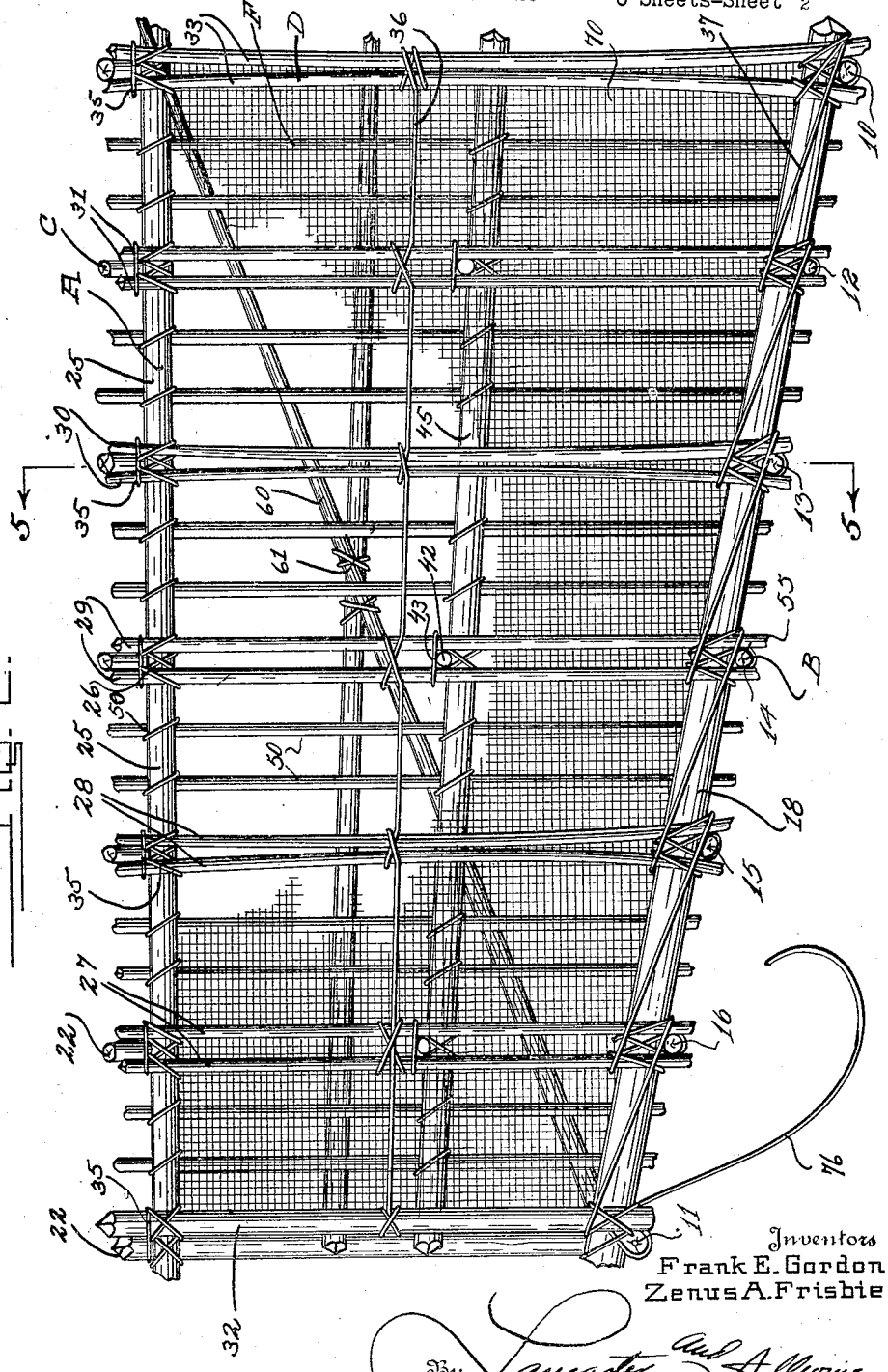


Fig. 2.

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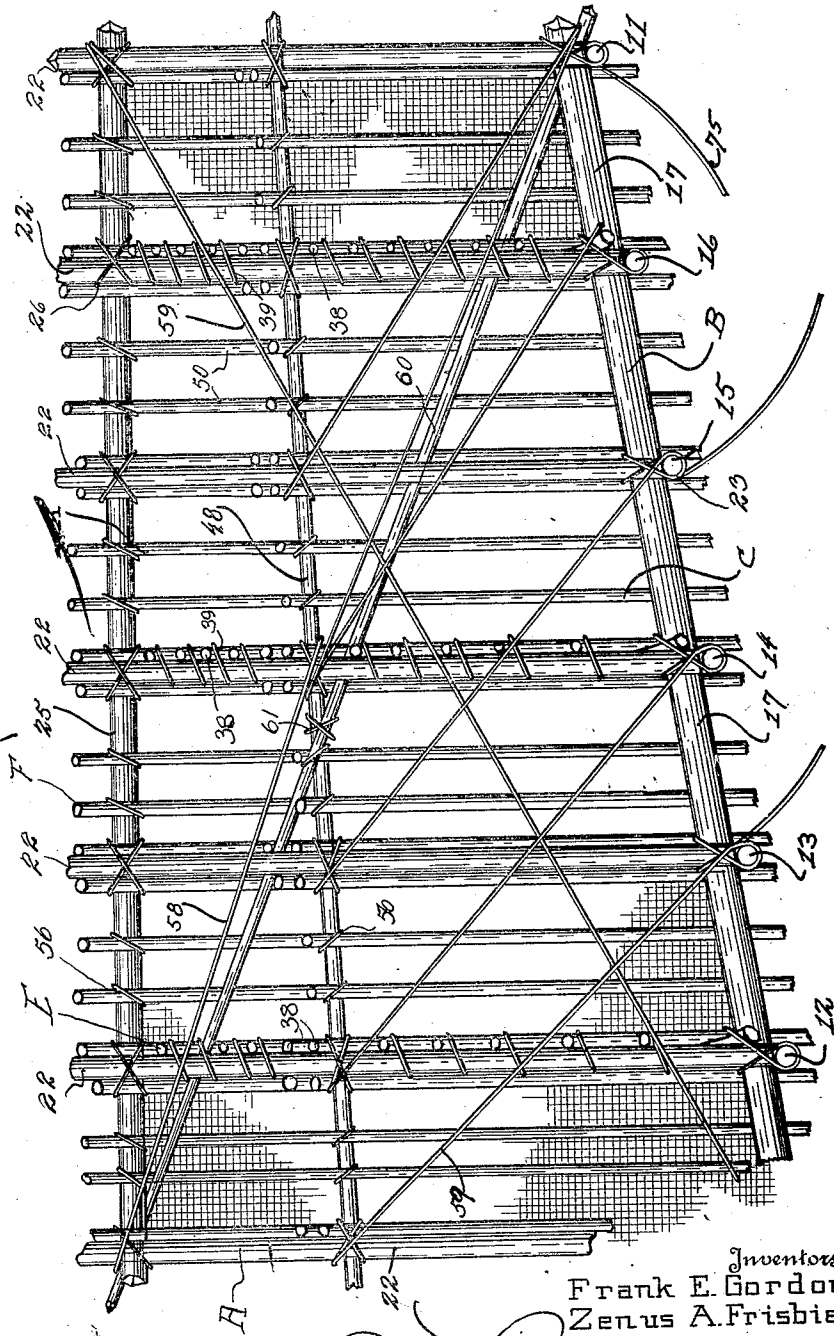
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Fig. 2.



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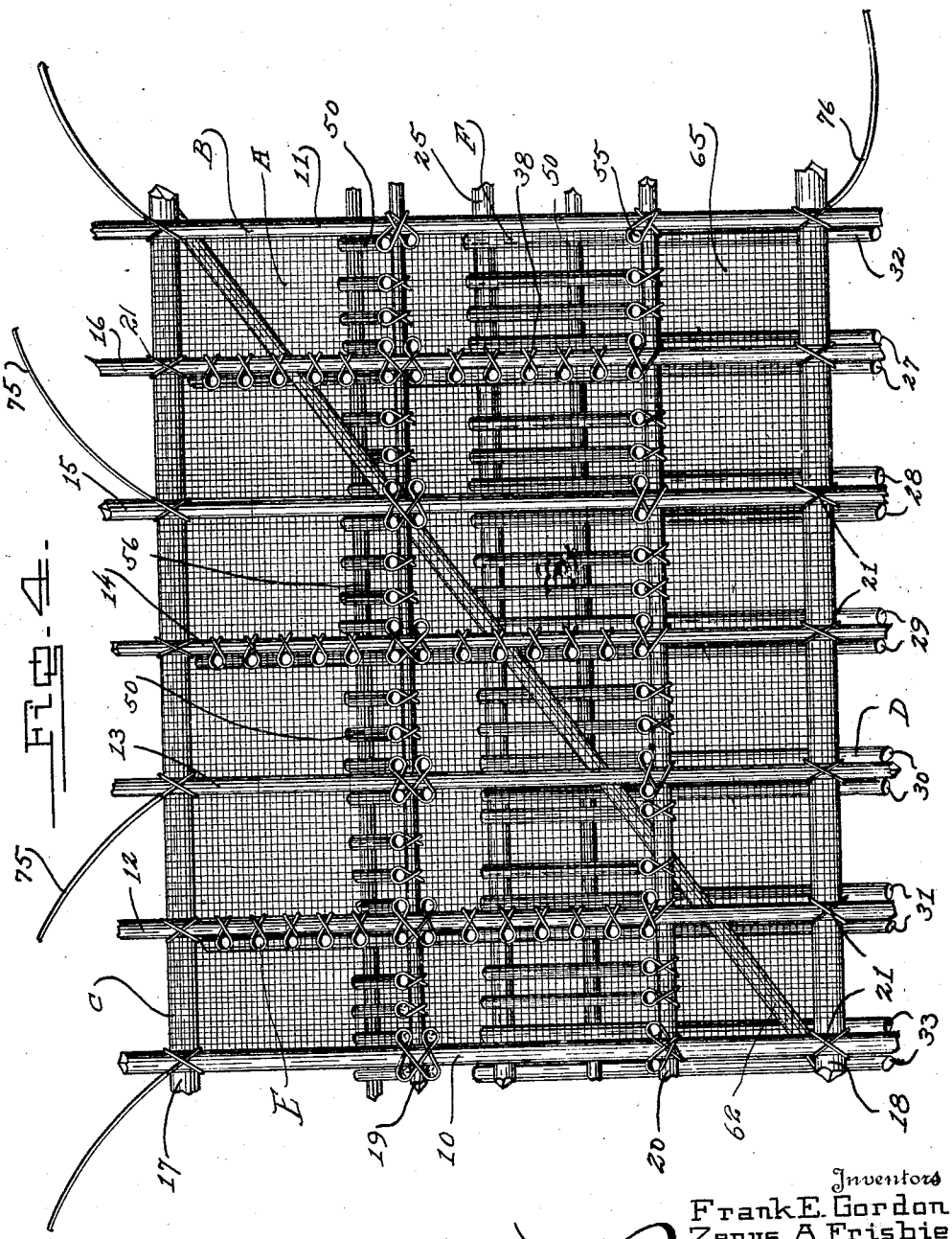


FIG. 4.

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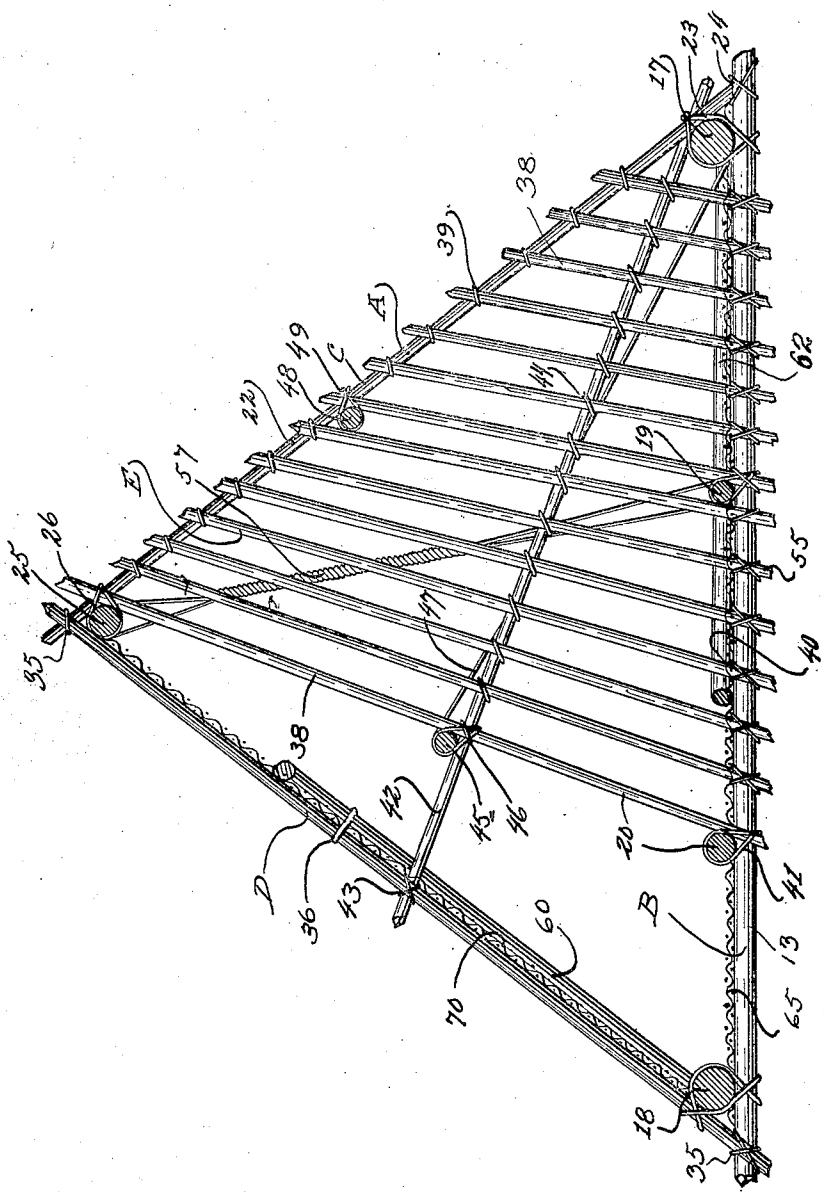
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Fig. 5.



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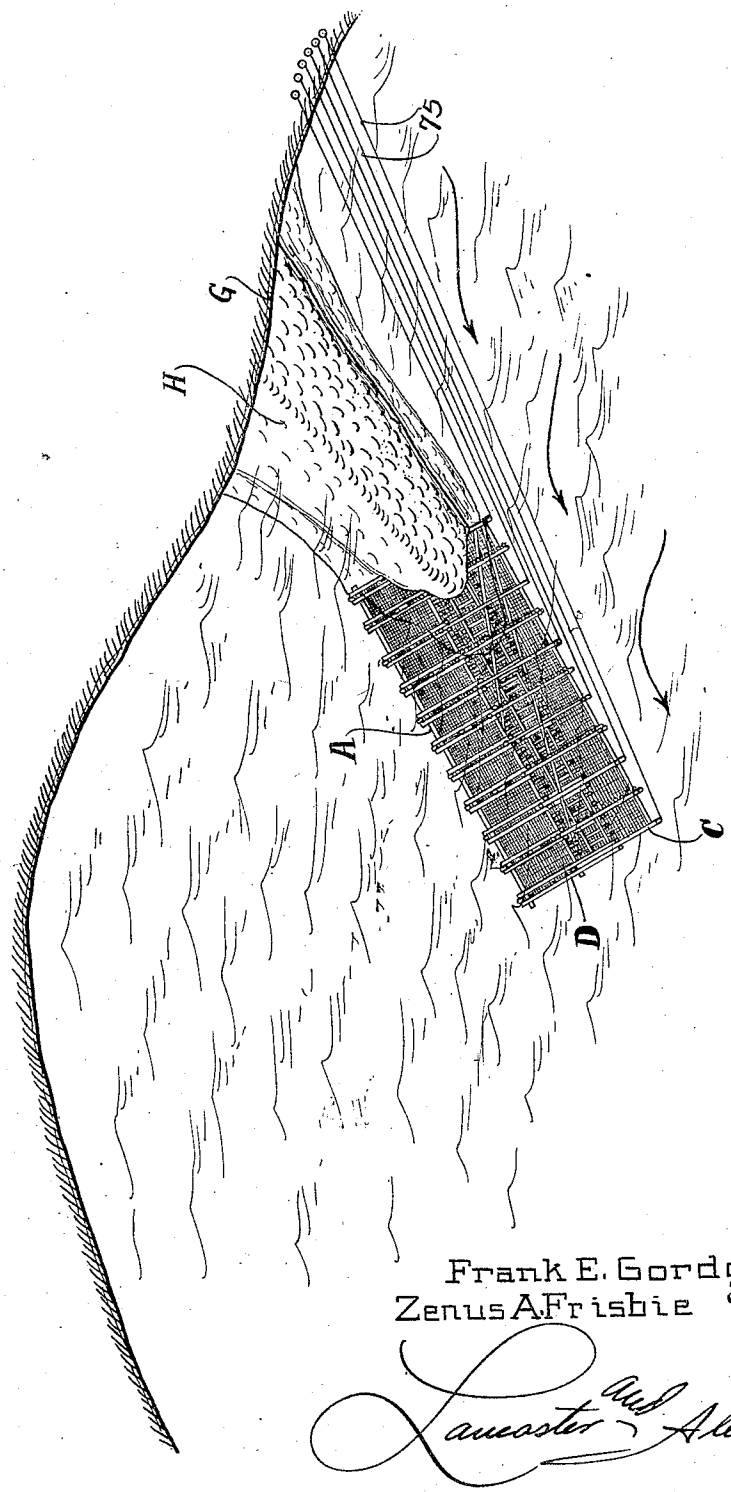


Fig. 6.

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Patented May 18, 1926. 1,584,766

UNITED STATES PATENT OFFICE.

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DIKE.

Application filed June 23, 1925. Serial No. 39,147.

This invention relates to dikes and the like, and the primary object of the present invention is to provide an improved device for protecting the banks of streams against the action of the current thereon, so as to prevent wash outs in the bank and to prevent the enlargement of washouts already formed in the river bank and permit the filling up thereof.

Another object of the invention is to provide a novel device for confining the channel of a river or stream, and for diverting the flow of a river or stream away from the river bank when the current tends to wash away the bank.

A further object of the invention is to provide a novel dike of this character, which entirely dispenses with the use of piling, thereby eliminating the cost thereof and the difficulties incident to the driving of the piles in position.

In the use of piling in the construction of dikes and the like, not only is the cost thereof prohibitive, but the river tends to wash under the piles causing the collapse of the dike, and if the bank shifts or slides the piles are sheared off, thus causing the ruining of the dike.

It is therefore a further object of the invention to provide an improved dike of the above character, which cannot be washed out by the action of the current, but which will become more firmly embedded in place by the current and which will only shift farther outward in the stream if the bank shifts or slides.

A further object of the invention is to provide a dike or breakwater of the above characters which can be built or assembled entirely on shore or on a barge and sunk in the stream.

A further object of the invention is to provide an improved dike constructed of suitable timber and of substantially triangular shape in cross section, the improved dike including an enlarged bearing surface for engaging the bottom of the river and a novel means for permitting the same to be filled with suitable material, such as stones and the like, so that the said dike can be readily sunk in position.

A still further object of the invention is to provide an improved dike constructed of spaced beams and having wire screening of the desired mesh and strength secured thereto for holding the river silt so that the said dike will form a bank or bar in the river.

A further object of the invention is to provide a novel dike which can be constructed upon a barge, so that the same can be readily sunk into the river at the desired point and which gradually flares outwardly toward the outer end thereof so that the dike can conform to the inclination of the river bottom, the outer end of the dike being adapted to extend below the normal level of the river, so as not to interfere with navigation.

A still further object of the invention is to provide a novel dike of the above character, which will be durable and efficient in use, one that will be simple and easy to construct, and one which can be built at a minimum cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, forming a part of this specification, in which drawings:

Figure 1 is a perspective view of the improved dike, showing the same in place on the left bank of the river looking upstream.

Figure 2 is an elevation of the down stream side of the improved dike, prior to being sunk into position.

Figure 3 is an elevation of the upstream side of the improved dike.

Figure 4 is a bottom plan view of the improved dike.

Figure 5 is a transverse section through the improved dike, taken on the line 5—5 of Figure 2, looking in the direction of the arrows.

Figure 6 is a plan view, showing by way of example, the dike in relative position to the river bank, the arrows indicating the direction of the river current and a suitable crib formed of sand bags, willows and the like between the dike and river bank.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved dike, which can be constructed of any preferred material, such as poles, beams and the like, and as shown the improved dike includes the base frame B; the front and rear or longitudinal side frames

C and D; the transverse partition frames E; and the longitudinal partition frames F.

The base frame B includes transverse end beams or mud sills 10 and 11, and the plurality of intermediate transverse mud sills 12, 13, 14, 15 and 16. These mud sills 10, 11, 12, 13, 14, 15 and 16 have resting thereon the longitudinally extending end mud sills 17 and 18 and the intermediate mud sills 19 and 20. The longitudinal beams 17, 18, 19 and 20 can be connected to the transverse mud sills 10, 11, 12, 13, 14, 15 and 16 by suitable bolts, nails, spikes or the like, and as shown they are bound together by wire cables or the like 21. The base frame B forms a relatively large flat surface for engaging the river bottom and the transverse beams or mud sills are adapted to be embedded in the bottom of the river to prevent creeping of the dike.

The front or upstream side frame C is formed of a plurality of inclined poles or posts 22, which are spaced the desired distances apart, and the lower ends of these poles or beams 22 are bolted, nailed or otherwise secured to the upper surface of the transverse mud sills, and as shown the same are securely connected to the longitudinal beams 17 and 18 and to the transverse beams 10, 11, 12, 13, 14, 15 and 16 by wire cables 23 and 24. The upper ends of these beams rest against a centrally disposed longitudinally extending ridge beam 25 and these poles 22 can be secured thereto by nails, bolts or the like, or by wire cables 26 as shown. These cables are twisted about the ridge beam 25 and the inclined side beams or poles 22 in such a manner that movement thereof is prevented.

The poles 22 gradually increase in length toward the outer end of the dike, so that the dike will conform to the inclination of the river bed.

The rear or down stream side D of the improved dike A consists of a plurality of spaced pairs of inclined intermediate beams or poles 27, 28, 29, 30 and 31, and an end beam or pole 32 which is formed relatively heavy, and a pair of end beams or poles 33 which are disposed at the opposite terminal of the dike, from the beam or pole 32. The pairs of poles 27, 28, 29, 30, 31 and 32 are disposed on opposite sides of the inclined beam 22 of the front or upstream side portion C of the dike, and on opposite sides of the beams or mud sills 12, 13, 14, 15, 16 and 10 and gradually increase in length toward the outer ends of the dike similar to the beams or poles 22. The beam 32 engages the inner side of one end beam 22 of the front or upstream side C. These pairs of beams or poles 27, 28, 29, 30, 31 and 33 and the single end beam 32 are connected by means of suitable wires 35 with the ridge pole 25 and the inclined beams or poles 22 and the longitudinal mud sill 18 and the transverse mud sills 10, 11, 12, 13, 14, 15, 16 and 11. The spaced pairs of beams or poles 27, 28, 29, 30, 31, and 33 and the single end beam 32 are also connected by a longitudinally extending wire 36 which is suitably wound about said pole and extends from one pole to the other. This longitudinally extending wire or cable 36 is disposed at substantially the intermediate portion of the side beams as can be clearly seen by referring to Figure 2 of the drawings. The lower terminals of the inclined beams or poles the side D are further connected at their lower end by a longitudinally extending lower cable 37 which is suitably coiled about said beams. These cables 36 and 37 act as tension members and suitably brace the structure.

The transverse partitions E are disposed at equi-distant points through the length of the dike and include a plurality of inclined poles or beams 38, which angle upwardly and outwardly from the base frame B toward the front or upstream frame C and these poles or beams 38 are suitably connected by means of a wire or steel cable or the like 39 and 40 to the beams 22 and the mud sills 12, 14 and 16. The innermost inclined pole or beam 38 is also secured to the ridge pole 25 by means of suitable wires as can be readily seen by referring to the drawings. The innermost inclined beams or poles 38 of the transverse partitions E are also secured to the intermediate longitudinally extending mud sill 20 by suitable wires 41, as can be readily seen by referring to Figure 5 of the drawings. Also by referring to Figure 5, it can be seen that these transverse partitions terminate short of the rear or down stream side D of the dike. These partitions E are also further braced by transversely extending inclined beams 42, which extend from the longitudinal mud sill 17 upwardly and inwardly toward the longitudinal center of the down stream or rear frame D of the dike and are secured to and arranged intermediate the pairs of poles or beams 27, 29 and 31 and held in place by wire or steel cables 43. The inclined transverse poles 42 are also secured by means of wires 44 to the inclined beams 38 of the partitions and to the inclined beams or poles 22 at the upstream side C of the dike, and to the longitudinally extending mud sill 17. These poles 42 are connected by a longitudinally extending beam 45 which is disposed intermediate the ridge pole 25 and the mud sill 20, and this beam or pole 45 is suitably connected in place by means of wires 46. A second cable 47 also extends downwardly from its longitudinally extending beam or pole 45 to the longitudinally extending mud sill 17. The side wall or upstream side portion C is also braced

by intermediate longitudinally extending beams 48, which is disposed above the longitudinally extending intermediate mud sill 19. This beam 48 is held in place by suitable wires 49.

The longitudinally extending partitions F are formed of inclined poles or beams 50 disposed at equi-distant spaced points throughout the length of the dike, and these beams are secured respectively to the mud sill 19 and the intermediate longitudinal brace beam 48 of the side C and to the mud sill 20, the intermediate longitudinally extending brace beam 45 and the ridge pole 25. These beams 50 are, of course, held in place, by suitable steel wire cables 56. These partitions incline toward the front or upstream side portion C of the dike.

As clearly shown by referring to Figure 4 of the drawings, these poles or beams are spaced relatively close together so as to catch débris and the like carried by the water when the dike is placed in the stream and thus build up a substantial embankment. The poles forming the transverse partitions E, and the poles forming the longitudinal extending partitions F and the poles or beams forming the side D of the dike, are extended preferably below the mud sills so as to provide bottom engaging points as indicated by the reference character 55, and it can be seen that these points will dig into the river bed and thus prevent creeping of the dike.

The whole dike can be braced in any preferred manner, and it is to be understood at different points the same is braced by wires or steel cables and the like. As clearly shown in Figure 5 of the drawings, the ridge pole 25 is connected with the mud sill 19 by suitable tension cables or wires 56. The front or upstream side is braced by tension cables which extend at an incline from the intermediate beam 46 to the lower mud sill 17. This side C is further braced by diagonally extending tension wires or cables 58 and 59 which extend upon the opposite terminals of the dike. The ends of the bank are also braced by suitable cables.

If so desired, the lower frame B can be further braced by a diagonally extending mud sill or beam 62, which can also be secured in place by suitable wires and the down stream side braced by a diagonally extending pole or beam 60 which can be held in place by wire.

While in the drawings I have shown the various parts and beams of the device connected by wire cables, it is to be understood that the same can be bolted or otherwise secured together as hereinbefore suggested.

The lower frame B also has secured thereto wire screening 65 of the desired mesh and gauge, and this wire screening 65 is disposed upon the transverse mud sills 10, 11, 12, 13, 14 and 15 and forms means by which the dike can be filled with suitable weights, such as stones, sand bags and the like, so that the said dike can be sunk in the river at the desired point. The rear frame D also has secured to its inner face wire screening 70 which forms means for catching the river silt, so as to permit the dike to fill up rapidly, after the same has been sunk into position.

In use of the improved dike, the same is constructed as upon a suitable barge, and conveyed to where the washout in the bank has occurred, or where the current of the river is tending to wash away the bank. The dike is then loaded with suitable weights as hereinbefore stated, such as rocks, sand bags and the like, and sunk into the river. The dike is placed in position in the following manner. The enlarged outer end of the dike, formed by increasing the length of the poles forming the sides C and D of the dike toward its outer ends, is disposed in the river inclining or angling down a stream, as shown in Figure 6 and the inner small end of the dike is placed relatively close to the river bank, indicated by the reference character G. The enlarged end of the dike of course conforms to the inclination of the river bank, and it is preferred that the outer end of the dike be disposed below low water level so as not to interfere with navigation.

It is apparent that the shifting of the weights placed in the dike is prevented owing to the transverse and longitudinal partitions E and F and thus the ballast or weights will effectively hold the dikes in position in the river. Between the bank G of the river and the inner end of the dike, a suitable crib H can be formed of willows, sand bags and the like, so that the said dike will form a true continuation of the bank of the river. It is obvious that the current striking the dike as indicated by arrows in Figure 6, will be diverted outwardly and thus effectively preventing the river from cutting farther into the bank below the dike.

It is also obvious that the river striking against the dike will push the dike farther into place owing to the inclined wall C, and thus farther embed the points 55 in the river bed.

The silt and other débris carried by the water will of course lodge in the dike and be retained by the longitudinal and transverse partitions F and E and the wire screens 70, and after the dike has been in position a short time a complete bank or abutment will be formed.

In order to firmly hold the dike in position, during the initial placing thereof in the river bottom and while the same is being filled up by the river silt, suitable head cables 75 are connected to the upstream side

C of the dike and a single cable 76 secured to the down stream side of the bank. These cables are left on shore and secured in suitable posts and the like.

From the foregoing description, it can be seen that an improved dike has been provided, which can be completely assembled before being placed in position and which will readily form a complete bank for diverting the flow of the current of the river from a bank of the river which is endangered by a washout.

Changes in details may be made without departing from the spirit or scope of this invention; but,

We claim:

1. A dike comprising a body including a base frame formed of longitudinally and transversely extending mud sills, a front and a rear longitudinally extending frame formed of spaced timbers, transverse and longitudinally extending partitions formed of spaced timbers, and wire screening secured to the lower frame and to the rear frame.

2. A dike section adapted to be sunk in a stream comprising an elongated body gradually increasing in height toward its outer end including an enlarged base frame, and an inwardly inclined front longitudinally extending frame and a rear longitudinally extending frame, the lower frame including longitudinally extending and transversely extending mud sills, the front and rear frames including spaced timbers, transverse and longitudinally extending partitions arranged intermediate the front and rear frames formed of spaced palings, forming means to catch the river débris, a wire netting secured to the base frame for permitting weights to be placed thereon to facilitate the sinking of the dike in the stream, and a wire netting secured to the rear frame arranged to catch the fine river silt, as and for the purpose set forth.

3. A dike section adapted to be sunk in a stream comprising an elongated body gradually increasing in height toward the outer end thereof including a base frame constructed of longitudinally extending sills and spaced transversely extending sills, a ridge beam disposed substantially at the longitudinal center of the base frame, inclined front and rear longitudinal frames including inclined beams secured to the base frame and to the ridge pole, longitudinally and transversely extending partition frames formed of spaced beams secured to the base frame and to the front frame, cables connecting and bracing the frames, wire screens secured to the base frame and to the rear frame, and head cables secured to the front and rear frames.

4. A dike comprising an elongated body including a base frame constructed of longitudinally and transversely extending mud sills, a ridge beam, inclined spaced side beams connecting the ridge beam and the end longitudinally extending mud sills, transverse and longitudinally extending partitions arranged between the last mentioned beams constructed of a plurality of equidistantly spaced poles, the poles and beams being adapted to extend below the lower surface of the base frame to form a river bottom engaging points.

5. A dike comprising an open frame including a base and a plurality of inclined poles with their lower end portions extending beyond said base to engage into the bottom of a stream, and wire screening carried by the frame for receiving weights to permit the frame to be sunk into a stream and for catching the river silt.

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