No. 885,218. PATENTED APR. 21, 1908.

E. M. BASSLER.

DAM.

APPLICATION FILED MAR. 12, 1907.

Fig. 1

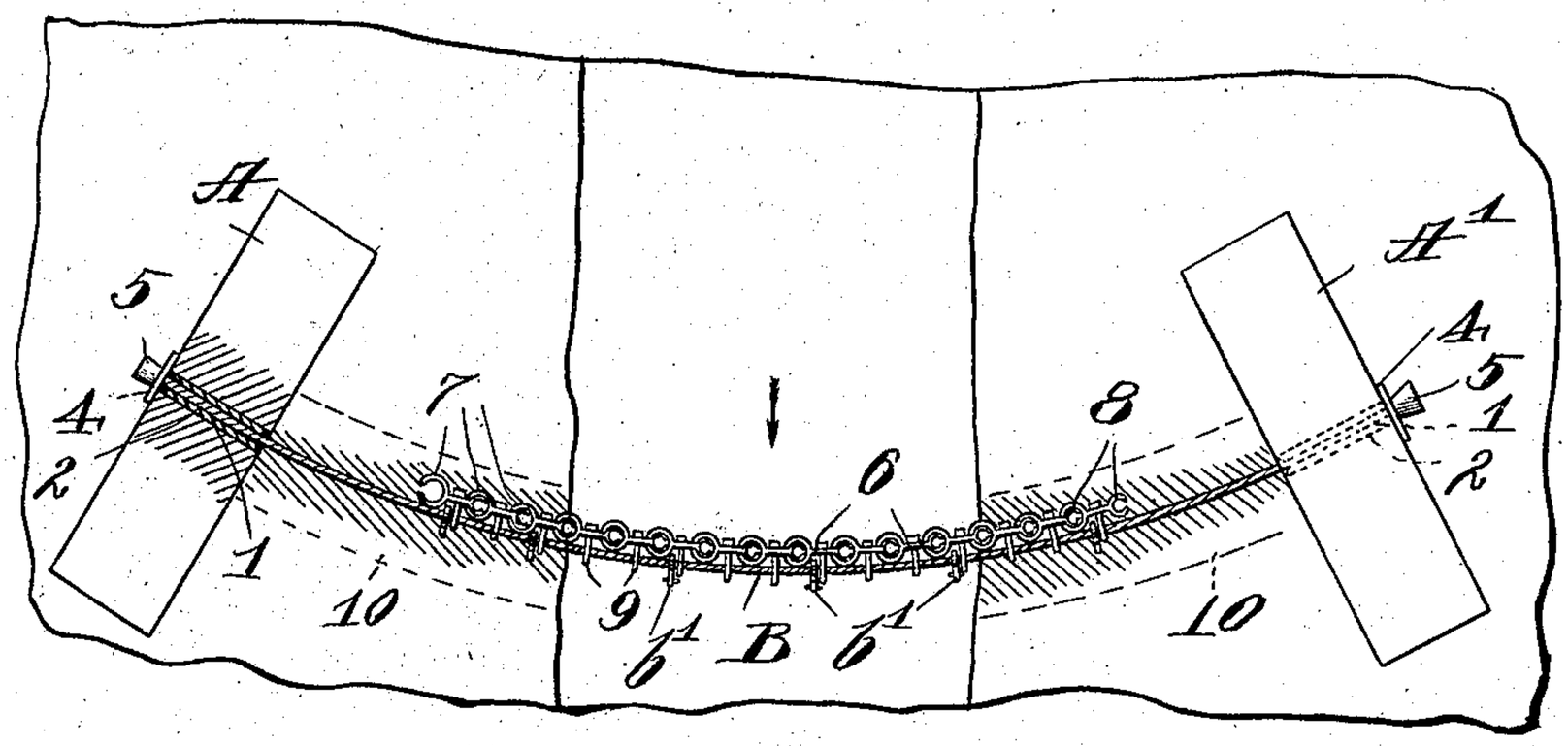


Fig. 2.

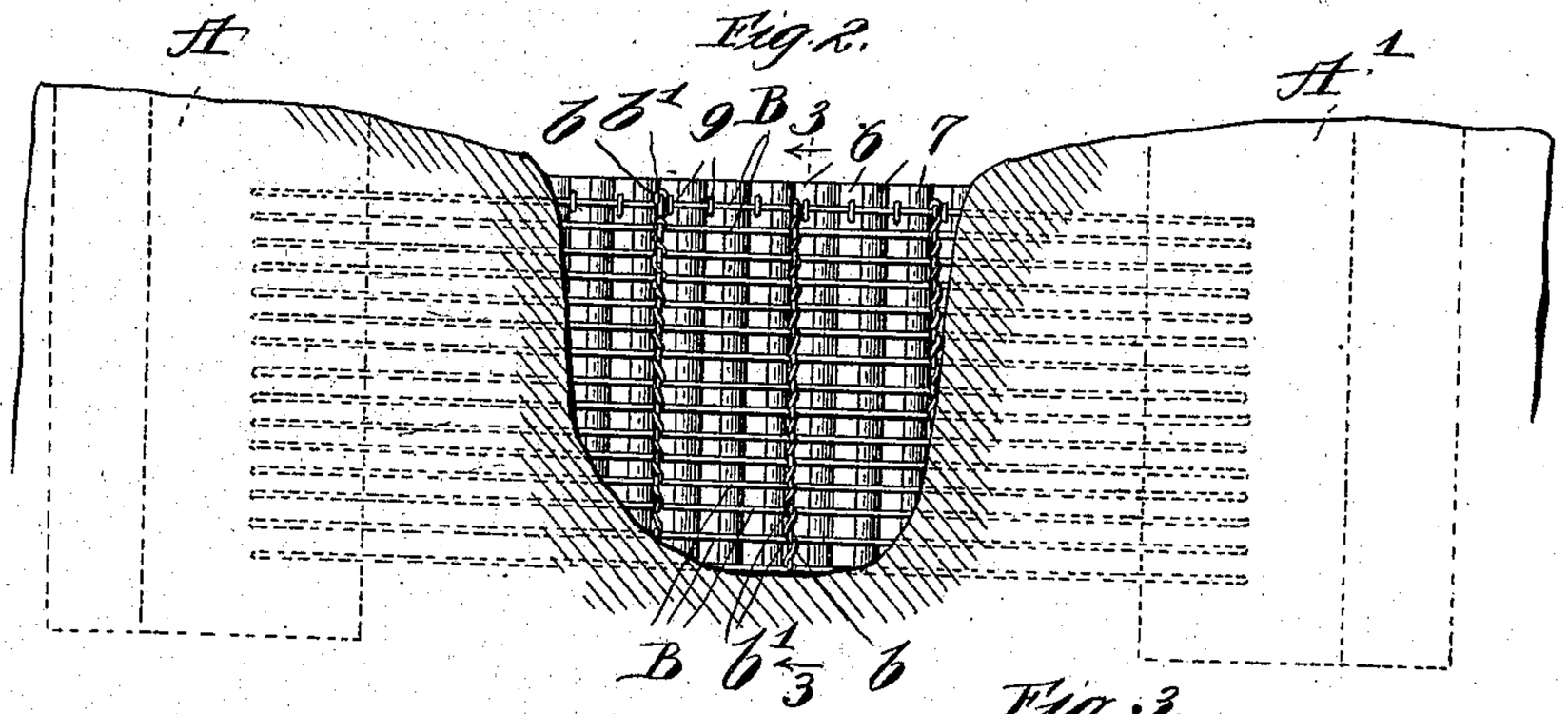
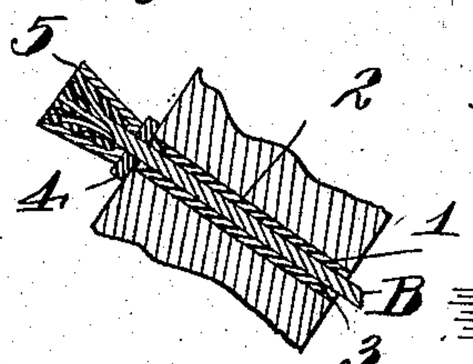


Fig. 3.

Fig. 4.



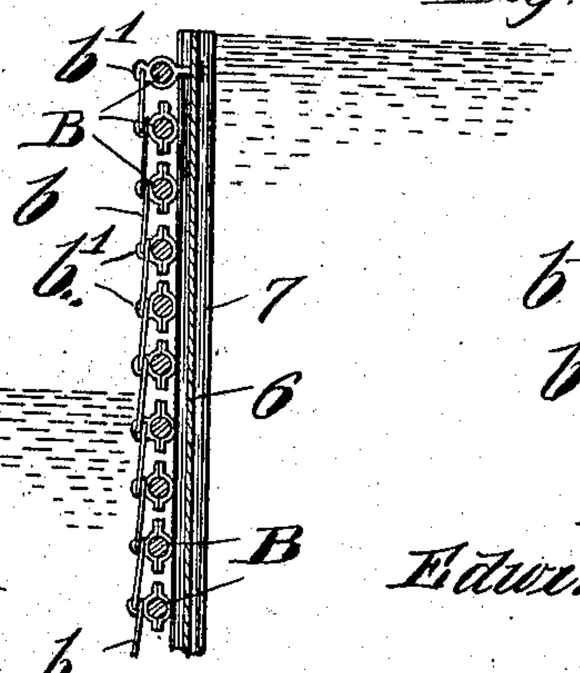
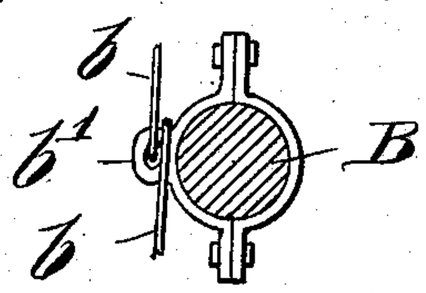


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWIN M. BASSLER, OF CHICAGO, ILLINOIS.

DAM.

No. 885,218. Specification of Letters Patent. Patented April 21, 1908.

Application filed March 12, 1907. Serial No. 361,972.

To all whom it may concern:

Be it known that I, EDWIN M. BASSLER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dams, of which the following is a specification.

This invention relates to dams.

Under certain conditions, as, where the current of the river is strong and the banks and bottom thereof unstable and easily erodible, as where they consist of sand, it is found to be practically impossible to construct ordinary dams consisting of masonry or timber structures for the reason that the current will scour out the bed and banks of the river, leaving the structure of the dam without support, thus permitting the same to settle and collapse and ultimately resulting in totally destroying and washing it out, thus involving great loss of both time and money. In constructing ordinary dams, it is also necessary to first construct coffer dams in order to expose the bottom of the river to provide for laying the same below the water level and for laying the foundations thereof.

The object of my invention is to provide a dam adaptable for use under any and all conditions, regardless of the strength of the current or the character of the banks and bottom, which will be simple, strong, durable and efficient and which may be constructed in a relatively short time and at, relatively, a very small cost.

A dam of my invention consists of the various features, combinations of features and details of construction hereinafter described and claimed.

In the accompanying drawings, in which my invention is fully illustrated,—Figure 1 is a top plan view, partly in section, of a dam of my invention, in connection with a section of a water course and its banks. Fig. 2 is a sectional view of the water course and its banks, showing the down-stream side of my improved dam in elevation and the anchors and the embedded portions of the cables being shown in dotted lines. Fig. 3 is a partial sectional view of my improved dam in connection with a water course, taken substantially on the line 3—3 of Fig. 2. Fig. 4 is an enlarged sectional view illustrating means for securing the cables to the anchors; and Fig. 5 is an enlarged sectional view of a cable showing the means for attaching the spacing cables thereto.

My improved dam is supported, independently of the bed of the river, by means of anchors or abutments A A^1 securely embedded in the banks of the river at such a distance from the shore line as will afford necessary support therefor. Said abutments or piers A A^1 will preferably be made of masonry, concrete, structural iron, or timber, or a combination of two or more of these materials.

Stretched between the piers or abutments A A^1 is a series of cables B, the ends of which are rigidly connected to said piers or abutments. In the preferable construction shown, the cables B extend through suitable holes or openings 1 formed in said piers or abutments, and are secured at the sides thereof remote from the river. As shown, the holes 1 are preferably formed by means of sections of pipe 2 secured in and which extend through said piers or abutments. To prevent the edges of said pipe sections 2 from chafing and cutting the cables, the ends thereof are rounded at the inner edges, as shown at 3.

In order to distribute the pull of the cables B on the anchors or abutments, they are preferably connected directly to a thick iron plate 4 which bears against the sides of said anchors or abutments remote from the river.

The ends of the cables may be secured to the piers in any desired manner, as by means of thimbles 5 placed over frayed portions of said cables and rigidly connected thereto by filling said thimbles with molten lead or the like and then allowing the same to harden. My invention, however, contemplates securing said cables to said piers in any other desired or approved manner.

The cables B form a substantially vertical series extending from a point a distance above the river level equal to the desired height of the dam or head of the water to the bottom of the river. The number and size of the cables in any given case will obviously depend upon the strength of the current and the desired head of the water. Knowing these, however, it is a simple engineering problem to figure out the necessary number and size of the cables to impart necessary strength to the structure.

The cables B are preferably maintained desired distances apart and in fixed relation to each other by suitable spacing devices which connect said cables at desired intervals transversely of the structure. As shown, said spacing devices consist of small vertically

disposed cables or wires *b* secured in rings or eyes b^1 on the cables B.

The dam proper preferably consists of suitable sheet piling secured to and supported by the cables B on the up-river side thereof. Any desired or approved form of sheet piling may be used and the same may be secured to the cables B in any desired manner. As shown, the sheet piling consists of what may be termed special I-beams 6 provided at their edges with what may be termed interlocking dovetails formed by suitably curved flanges 7 and 8, the slots or openings formed by the flanges 7 forming female members being adapted to receive the male members or tongues formed by the flanges 8 of the adjacent I-beam. As shown, said sheet piling is secured to the cables B by means of suitable eye-bolts 9 secured in the upper ends of the separate I-beams 6, through which the top cable passes which will operate to maintain said sheet piling in desired position.

With a dam constructed in this manner, it is obvious that adequate strength can be secured regardless of the conditions of the bottom and banks of the river as to being stable or otherwise, it only being necessary, in any given case, to locate the piers or abutments A A^1 at a sufficient distance back from the shore line to provide necessary resistance to the pull of the cables. It is also obvious that the scouring of the bed, due to the current, will not affect my improved dam, as, if the bottom is gouged out beneath the dam, the weight of the dam will cause the same to settle and close any opening formed in this manner. Likewise, there will be no tendency to erosion at the edges of the dam, as, in the first place, the sheet piling will be extended beyond the shore line at each side of the river, and, second, the sag of the cables will cause the up-river side of the dam to assume a concave shape so that in getting around the edges of the dam, it will be necessary for the current practically to run up hill, the tendency of the current, owing to the shape of the dam, being to converge into what may be referred to as the apex of the dam or the point thereof farthest down stream.

The piers or abutments A A^1 having been first laid or constructed, the cables B are stretched between the same, their ends inserted through the holes 1 formed by the pipe sections 2 and rigidly secured thereto. In order that the separate cables may extend substantially in the same plane, when subjected to the pressure of the water, said cables, between their points of attachment in the piers A A^1, are made as nearly as may be of the same length. Slight variations will, however, be taken care of by the stretch of the cables, which will bring said cables all in the same vertical plane, that is, the plane of the down-river side of the sheet piling supported thereby.

In installing the cables, it will be necessary to make temporary channels or ditches, leading from the piers or abutments A A^1 to the river and as deep as the river. In Fig. 1 I have indicated by dotted lines at 10, such temporary channels, the same preferably extending substantially on the curve of the cables B when in use. Prior to digging the channels 10 through to the river, excavations may be made adjacent to the piers or abutments A A^1 and the cables B permanently secured to one of said piers or abutments and temporarily secured to the other of said piers or abutments. In this way, all that will be necessary, after said channels have been cut through, will be to stretch said cables to the desired extent and to permanently secure them to the pier or abutment to which they were first temporarily secured. After this has been done and before the sheet piling is applied to said cables, the channels 10 will be filled in adjacent to said piers or abutments A A^1 in order to afford sufficient resistance to the pressure of the water. Ultimately, after the sheet piling has been applied, said channels 10 will be entirely refilled.

After the cables have been stretched, the sheet piling is applied. To avoid scouring and erosion of the banks of the river at the sides of the sheet piling, said sheet piling is preferably laid from both sides towards the middle of the river. Thus the flow of water will be through the gradually decreasing gap in said sheet piling at the middle of the river, thus relieving the banks from all scouring action.

While I contemplate applying the sheet piling in any desired or approved manner, I prefer to add the channel bars 6 at the inner or shore ends of the sections thereof at opposite sides of the river and, at intervals, to draw said sections towards each other, that is, towards, the middle of the river, which can be conveniently done by means of donkey engines or the like, located at opposite sides of the river and connected to the outer I-beams 6 of each section. In this manner the piling can be fully applied without the erection of any temporary structure.

When the outer edges of the two shore sections of sheet piling come together they may be readily connected to each other by means of a single I-beam which is caused to interlock with the adjacent edges thereof.

The sheet piling will preferably extend inwardly a considerable distance beyond the shore line and may be extended any desired distance.

I claim:—

1. A dam comprising cables, supports for the same and a dam proper supported by said cables, consisting of sheet piling which rests in contact with the up-river side of said cables.

2. A dam comprising cables, supports for

the same and a dam proper supported by said cables consisting of sheet piling which rests against the up-river side of said cables, and means for connecting members of said sheet piling to a cable.

3. A dam comprising cables connected between their ends, supports for the same and a dam proper supported by said cables consisting of sheet piling which rests against the up-river side of said cables, and means for connecting members of said sheet piling to a cable, whereby said dam will form a substantially unitary structure.

4. The process of constructing a dam which consists in first suspending cables across a waterway and then applying a facing to the up-river side thereof by constructing said facing in sections beginning at opposite sides of the waterway, building on to the shore ends thereof and drawing said sections towards each other.

5. The process of constructing a dam which consists in first suspending cables across a waterway and then applying a facing to the up-river side thereof by constructing said facing in sections beginning at opposite sides of the waterway, building on to the shore ends thereof, drawing said sections towards each other and in then connecting the adjacent edges of said sections.

In testimony, that I claim the foregoing as my invention, I fix my signature in presence of two subscribing witnesses, this 2nd day of March, A. D. 1907.

EDWIN M. BASSLER.

Witnesses:

CHARLES B. GILLSON,

E. M. KLATCHER.