May 24, 1932. O. V. HOUGH 1,859,923

METHOD AND APPARATUS FOR ANCHORAGE OF MATTRESSES TO SCREEN POLES

Filed March 11, 1929

Fig. 1.

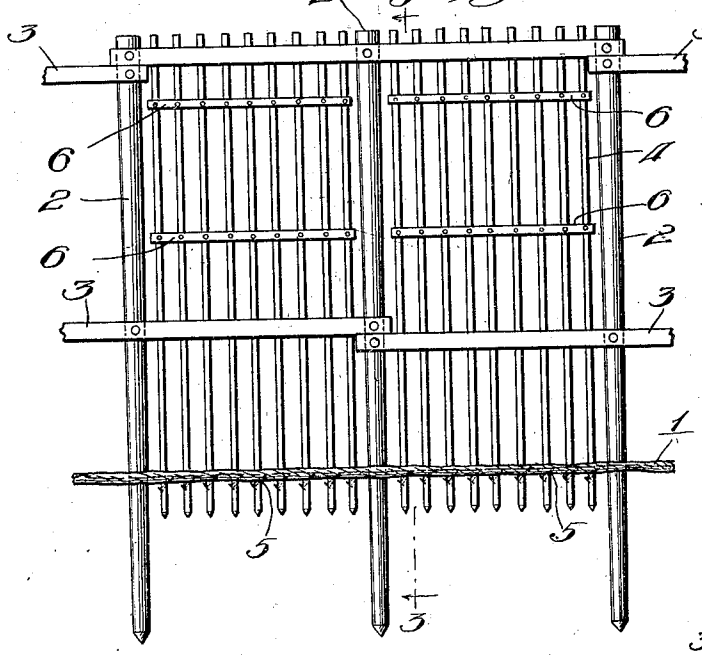


Fig. 3.

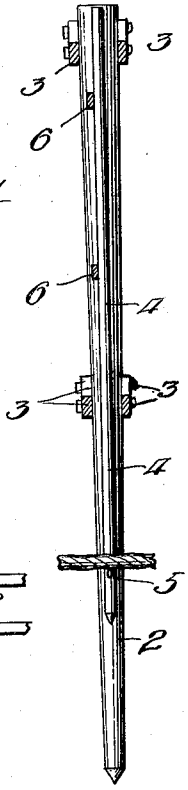


Fig. 2.

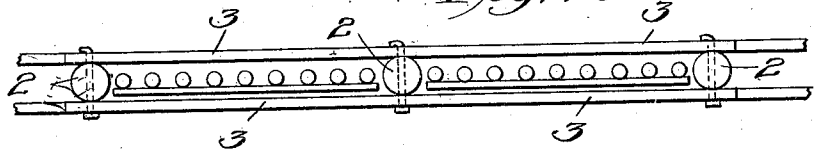
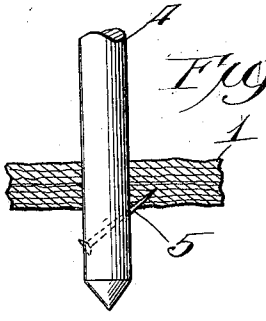


Fig. 4.



Inventor:
Otto V. Hough
by Wallace R Lane
Atty

Patented May 24, 1932 1,859,923

UNITED STATES PATENT OFFICE

OTTO V. HOUGH, OF LINCOLN, NEBRASKA, ASSIGNOR TO WOODS BROTHERS CONSTRUCTION COMPANY, OF LINCOLN, NEBRASKA, A CORPORATION OF NEBRASKA

METHOD AND APPARATUS FOR ANCHORAGE OF MATTRESSES TO SCREEN POLES

Application filed March 11, 1929. Serial No. 346,040.

This invention relates to dike or revetment constructions, but more in particular to the method of fastening willow or lumber mattresses to the screen poles, of such a construction.

Among the objects of my invention are to provide a novel means of anchoring mattresses to the screen poles in a dike or revetment construction; to provide a novel fastening means which will prevent the separation of the mattress from the screen poles in a dike construction; to provide a novel means of fastening the mattress to the screen poles so that when the mattress settles in the bed of the screen, the screen poles attached to the mattress will likewise settle thus preventing an accumulated current between the bottom of the screen pole and the top of the mattress; thus preventing the tendency of the mattress to settle; to provide a novel construction wherein the mattress and screen poles may be placed in position at any desired point on the screen, and under all conditions; to provide a novel construction and method of making the same, in which the mattress is positively placed in position without fear of having accumulation of grit and débris lodged underneath; further to provide a novel method of constructing a dike different from the ways heretofore used in a construction of this kind, and which may be constructed under all conditions which consists in the weaving of the mattress, towing and placing it in position by the use of ballast, then driving the piled structure, then driving the screen poles through which a barb or spike is driven on a slant through each of the screen poles near the base so that a portion of the same projects outside of the pole, and as the screen pole is driven through the mattress this barb or spike engages the mattress and is securely anchored thereto to prevent the separation of the screen poles from the mattress; further to provide a dike or revetment of maximum simplicity, efficiency, economy and ease of operation, and such further objects, advantages and capabilities as will later more fully appear, and are inherently possessed by the invention.

My invention further resides in the combination, construction and arrangement of parts illustrated in the accompanying drawings, and while I have shown therein a preferred embodiment, I desire it to be understood that the the same is susceptible of modification and change, without departing from the spirit of my invention.

In the drawings:

Fig. 1 is a view in front elevation showing the method of constructing the pile structure with the mattress, and disclosing my new and novel construction of screen poles and their anchorage to the mattress.

Fig. 2 is a top plan view disclosing the method in which my screen poles are retained in position and how they are slidable within the wales whenever the mattress tends to settle.

Fig. 3 is a view in cross section taken on the line 3—3 of Fig. 1.

Fig. 4 is an enlarged cross sectional view of the bottom end of a screen pole showing my particular method of fastening the screen pole to the mattress.

Referring now more in particular to the drawings, 1 designates a mattress of willow or lumber woven together to form a protective covering for the bed of streams to prevent the scouring of the banks, piers, or any foundation structure at or near the screen. This mat or mattress may be of any desired construction of willow or any other suitable wood, lumber or other material, which when woven together will provide a strong yet permeable structure. The mattress 1 may be constructed on the banks of the stream, and when finished towed into position and sunk to the bottom or bed of the stream by using ballast. The piles 2 are then driven through the mattress 1 and into the bed of the stream a sufficient depth to be retained rigidly in position thereby. These piles may be of any desired construction, either wood, concrete, structural steel or the like. These piles are usually spaced apart a distance of ten or fifteen feet, depending on the depth and velocity of the stream, and may be placed in a single row transverse of the bed of the stream, or they may be placed in two or more rows transverse of the thread of the

stream. The wale-pieces 3 are provided to securely hold the upper portions of the piles 2 in position. These wale-pieces are secured to the piles 2 by any suitable means as by bolts, nails or the like. The wale-pieces 3 are horizontally disposed and located on both sides of the piles 2. Any desired number of wale-pieces may be used and may be spaced apart any distance to insure the proper strengthening of the structure. These wale-pieces are attached to the poles with overlapped joints, these joints being staggered and lapped as clearly shown in Fig. 1 of the drawings. It will be seen that the construction of this dike and the location and positioning of the wale-pieces provide the sliding means for the screen poles.

After the wale-pieces have been connected to the piles, the screen poles 4 may be inserted between the wale-pieces and dropped or forced through the mattress on the bed of the stream.

At the lower end of these screen poles 4, a barb or spike is driven through the screen pole at an angle or on a slant, so that a portion of the same projects outside of the poles. These barbs or spikes are driven on a slant so that the screen pole is easily pushed or forced through the mattress 1. After the screen pole has been pushed or forced through the mattress 1, the barb or spike 5 will prevent the screen pole 4 from becoming disengaged from the mat 1, whenever there is a tendency for the mat 1 to settle. The screen poles are slidably mounted or positioned between the wale-pieces, so that if the mattress 1 does settle, the screen poles will settle an equal amount and slide on these wale-pieces. It may be desired to have wale-pieces on one side of the dike, in which case the screen poles should be placed against them on the up-stream side of the dike.

In the drawings, I have shown the wale-pieces 6 which hold the screen poles in a substantially vertical position, and which prevent the lateral tipping of the poles within the wale members 3. However, any means may be used to sufficiently attach or secure the screen poles in a vertical and upright position, without departing from the spirit of my invention.

Heretofore, in the construction of a dike or revetment, the screen poles were anchored to the mattress by the use of iron toggles or bolts, or by wiring or tying, which necessitated the anchoring being done on a floating mattress. That is, the dike piling were driven, the mattress then woven in and about the piling, the screen poles placed and fastened to the mattress, and then the entire mattress with the screen poles were sunk to their respective positions on the bottom of the river.

These methods, however, were never wholly successful, inasmuch as the construction of the dike could not be carried on whenever there was high water, and also at times the mattress failed to reach a secured position on the bottom of the river on account of dirt and débris that was lodged underneath.

By the use of the method as covered in the specification, however, it is possible to reverse these operations that are customary and weave the mattress first on the bank of the stream, then tow the mattress to its final position on the bed of the river, then drive the dike piling, place the wale-pieces and other framing in position, then finally drive the screen poles with the barb therethrough through the mattresses, where, due to the retaining action of the barb or spike, they will be firmly embedded and settle with the mattress, in case any further scouring occurs.

Having thus disclosed my invention, I claim:

1. In a method of producing a dike or revetment in a stream, the step of interlocking the lower portions of a plurality of screen poles to the under side of a mattress while said mattress is positioned on the bed of a stream.

2. The method of producing anchorage in a dike comprising sinking a mattress to the bed of a stream, anchoring the mattress to said bed, and while the mattress is so anchored driving screen poles therethrough and interlocking them to the under side thereof.

3. The method of producing anchorage in a dike comprising sinking a mattress to the bed of a stream, sinking piles through the mattress to a sufficient depth in the bed of the stream to anchor said mattress, driving screen poles through the mattress and interlocking the lower ends of said screen poles to the under side of the mattress while said mattress rests upon the bed of the stream, and connecting wale pieces to said poles.

4. The method of producing anchorage in a dike comprising sinking a mattress into position on the bed of a stream, sinking piles into said bed and through said mattress, connecting said piles by wale pieces, driving screen poles through said mattress in vertical positions adjacent the wale pieces, so as to be slidable relative to said wale pieces, and connecting other wale pieces to said screen poles so as to retain said screen poles in relatively spaced vertical relation.

5. The method of producing anchorage in a dike comprising sinking a mattress into position on the bed of a stream, sinking piles through said mattress to a sufficient depth to anchor it, connecting said piles by wale pieces extending on both sides of the piles, driving screen poles through said mattress while anchored to the stream bed, said screen poles being driven in vertical positions adjacent the wale pieces so as to be slidable rela-

tive thereto, interlocking said screen poles to the under side of the mattress while so anchored, and connecting wale pieces to the screen poles so as to retain them in relatively spaced vertical relation.

6. A dike or revetment comprising a mattress to be placed upon the bed of a stream, piling extended through the mattress into the bed of the stream, so as to anchor the mattress, and screen poles projected through the mattress, said screen poles having normally fixed means to automatically interlock with the underside of the mattress as they pass through the same, so as to prevent withdrawal of said poles.

7. A dike or revetment comprising a mattress to be placed upon the bed of a stream, piling extended through the mattress into the bed of the stream, bracing means connecting said piling, screen poles arranged to slide upon said bracing means, said poles having portions projected through said mattress, said projected portions having rigidly fixed means operable to interlock with the underside of the mattress as the poles are projected therethrough, so that said screen poles may be positioned while the mattress is anchored in said stream.

8. A dike or revetment comprising a mattress to be placed upon the bed of a stream, piling extended through the mattress into the stream, screen poles having portions projected through said mattress, said projected portions having relatively fixed projections thereon positioned to prevent withdrawal of said poles, so that said screen poles may be interlocked with the underside of the mattress while said mattress rests upon the bed of the stream.

9. A dike or revetment comprising a mattress to be placed upon the bed of a stream, piling extended through the mattress into the bed of the stream, screen poles having their lower ends projected through the mattress, the projected portions of said screen poles having rigid barb-like members cooperating with the underside of the mattress to prevent withdrawal of said poles, so that the screen poles may be anchored to the mattress while it rests upon the stream bed.

10. A dike or revetment comprising a mattress to be placed upon the bed of a stream, piling extended through the mattress into the bed of the stream, screen poles projecting through said mattress, the projected portions of said screen poles having spikes driven diametrically therethrough and in an inclined position, so that they will readily pass downwardly through the mattress and will interlock with the underside thereof to prevent withdrawal of the poles.

11. A screen pole for a dike or revetment which is provided with a mattress comprising an elongated member having a rigid radially projected member positioned to permit penetration of said mattress by the pole and to prevent withdrawal of the pole from the mattress, so that said screen pole may be applied while the mattress rests upon the bed of a stream.

12. A screen pole for a dike or revetment which is provided with a mattress comprising an elongated member having a rigid barb-like member extended diametrically through the pole and having a portion projecting radially from a periphery of said pole, said barb member being inclined so as to permit penetration of said mattress member by the pole and to engage the underside of the mattress to prevent withdrawal of the pole.

In witness whereof, I hereunto subscribe my name to this specification.

OTTO V. HOUGH.