

Feb. 9, 1932.

L. B. SMITH

1,844,484

JETTY

Filed May 31, 1928

*Fig. 1.*

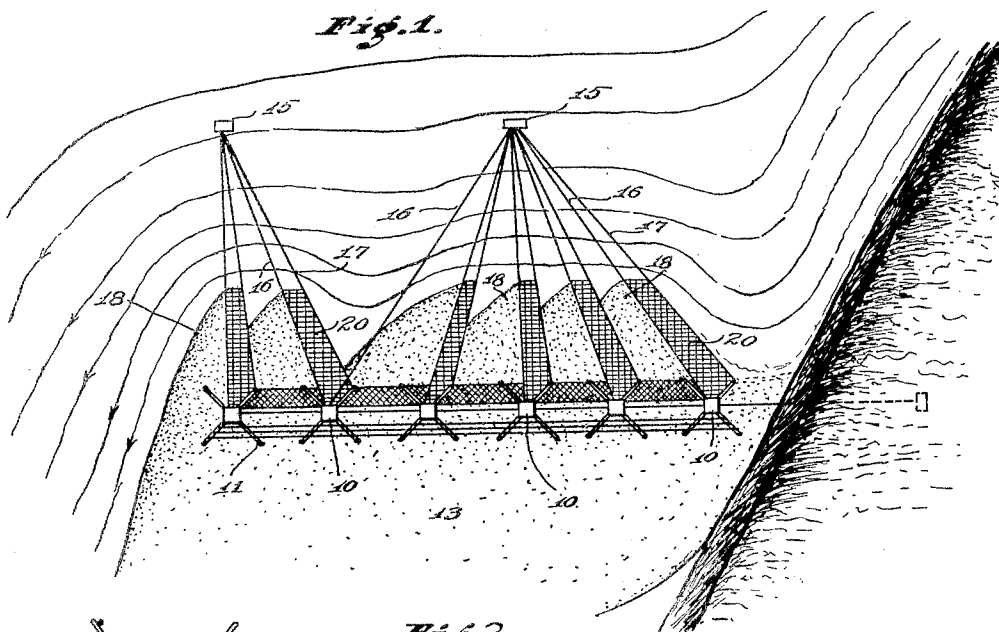


*Fig. 2.*

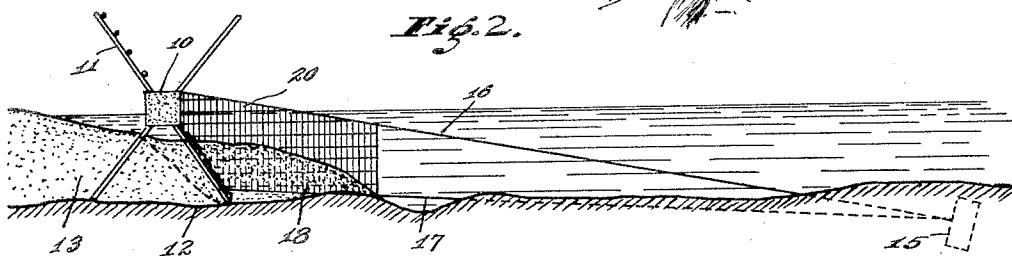


*Fig. 3.*

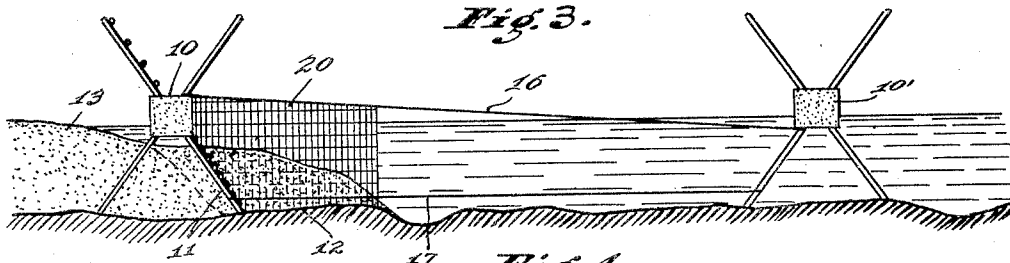
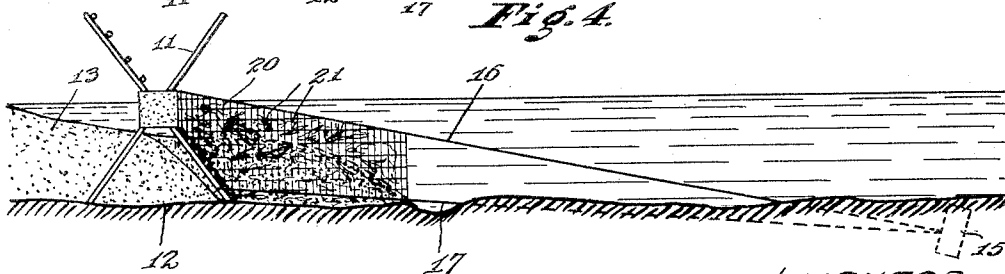


*Fig. 4.*



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## UNITED STATES PATENT OFFICE

LLOYD B. SMITH, OF TOPEKA, KANSAS

## JETTY

Application filed May 31, 1928. Serial No. 281,842.

My invention is concerned with jetties, and particularly with jetties of the type in which the jetty is formed of a plurality of spaced jetty-units which are interconnected by cables to form the complete jetty. My invention, however, is not limited, in its broader aspects, to this particular form of jetty.

When jetties are positioned to extend transversely of stream flow, and after a bar has been built up on the downstream side of the jetty, there develops an appreciable flow of water along the up-stream face of the jetty and generally parallel thereto. The current thus produced has a tendency to scour the stream bed at the up-stream face of the jetty; and in many instances the effect of this scouring is so great that the bed of the stream becomes washed away to such an extent that the jetty, or the individual units thereof, will tip in an up-stream direction. In some instances, this scouring action may proceed to such an extent that the entire jetty, as well as its up-stream face, is undermined; and the whole jetty settles downwardly, thus greatly decreasing its effectiveness.

It is the object of my invention to prevent this scouring action at the up-stream edge of the jetty base, and thus to prevent tipping of the jetty or its individual units.

I accomplish the above objects by providing on the up-stream face of the jetty smaller auxiliary jetties extending generally transversely of the flow which develops parallel to the main jetty. These auxiliary jetties form small sand bars on the up-stream face of the main jetty and prevent any scouring action at the up-stream face of the main jetty.

The accompanying drawings illustrate my invention: Fig. 1 is a plan view of my improved jetty; and Figs. 2, 3, and 4 are sections through the stream and transversely of the jetty illustrating various modifications or arrangements capable of accomplishing my objects.

The jetty illustrated in the drawings is built up of individual units 10 which are desirably though not necessarily constructed in accordance with my prior United States Letters Patent No. 1,554,605, issued September

22, 1925. The various jetty units 10 have obliquely extending arms 11 some of which extend downward and rest on the bed 12 of the stream to form a support for the jetty units. The individual jetty units are interconnected to form a complete jetty, one such method of connection being illustrated in my copending application Serial No. 51,956, filed August 24, 1925, which co-pending application has since resulted in Patent No. 1,716,509.

A jetty so constructed and placed to extend transversely of the stream as indicated in Fig. 1 will result in the formation of a bar 13 on the down-stream side of the jetty; and after such bar is formed there will develop immediately up-stream from the jetty a flow of water transverse to the normal direction of stream flow and approximately parallel to the jetty. The current thus produced on the up-stream side of the jetty results in a scouring of the stream bed along the up-stream of the jetty-base; and this scouring may become great enough to cause settling of the up-stream arms 11 where they rest on the bed 12, thus causing the jetty or its individual units to tip in an up-stream direction.

When the jetty units are originally put in place, they are usually anchored to prevent any down-stream movement. To this end, it is customary to bury in the bed of the stream at a distance up-stream from the jetty one or more anchors 15 to which are attached cables 16, the down-stream ends of which are secured to the jetty units 10. Instead of using buried anchors 15 to which the cables 16 are attached, I may employ jetty units as illustrated in Fig. 3. Each of the cables 16 is usually secured to a jetty unit of the main jetty at a point above the bottom thereof, usually about the middle, in order to prevent the jetty from tipping as a result of the pressure on its up-stream face. This arrangement of cables is illustrated in Figs. 2 to 4 inclusive.

To prevent the scouring which occurs at the up-stream edge of the jetty, I form bars which extend up-stream from the main jetty and which serve to prevent or reduce the velocity of any flow of water immediately adjacent the up-stream face of the main jetty.

These bars 18 are conveniently formed by means of auxiliary jetties, in the construction of which the cables 16 may be used. To this end, I may supplement the cables 16 with cables 17 which extend from the anchors 15 or upper jetty units 10' to the jetty units 10 of the main jetty, and between the cables 16 and 17 attached to each jetty unit 10 I may provide a screen 20 which extends a short distance up-stream from each jetty unit. These screens 20 reduce the speed of the current parallel to the face of the main jetty, create eddies, and result in the disposition of sediment which eventually forms the auxiliary bars 18.

In certain cases, particularly where the water is deep, I may stack against the up-stream face of the main jetty suitable brush wood 21 as illustrated in Fig. 4. This brush wood, which may or may not be used in conjunction with the screens 20, aids in the formation of the small bars 18.

After the bars 18 are formed, any current transverse to the normal direction of stream flow and generally parallel to the main jetty is greatly reduced in velocity at the face of the jetty; and as a result any scouring action, if there is any, occurs at a considerable distance up-stream from the main jetty and at a point where it will not result in the settling or tipping of the jetty units.

I claim as my invention:—

1. In combination, a diversion jetty extending generally transversely of a stream and adapted to retard the velocity of water flowing transversely through it to cause a deposit of silt on the down-stream side of the jetty, and one or more auxiliary jetties disposed on the up-stream side of said diversion jetty and extending at an angle thereto to retard stream-currents parallel to the diversion jetty and to cause a deposit of site on the up-stream side thereof.

2. In combination, a diversion jetty extending generally transversely of a stream and adapted to retard the velocity of water flowing transversely through it to cause a deposit of silt on the down-stream side of the jetty, said diversion jetty including a plurality of jetty units resting on the stream-bed, anchoring means located up-stream from said jetty, a pair of cables extending in vertically spaced relation from said anchoring means to each of said jetty-units to prevent displacement thereof, and a screen extending between the two cables of each pair of cables adjacent the up-stream face of the jetty to form one or more auxiliary jetties disposed at an angle to the diversion jetty to retard stream-currents parallel to the diversion jetty and to cause a deposit of silt on the up-stream side thereof.

3. In combination, a diversion jetty extending generally transversely of a stream, and adapted to retard the velocity of water

flowing transversely through it to cause a deposit of silt on the down-stream side of the jetty, said diversion jetty including a plurality of jetty units resting on the stream-bed, anchoring means located up-stream from said jetty, a pair of cables extending in vertically spaced relation from said anchoring means to each of said jetty-units to prevent displacement thereof, and current-retarding means supported upon the two cables of each pair of cables adjacent the up-stream face of the jetty to form one or more auxiliary jetties disposed at an angle to the diversion jetty to retard stream-currents parallel to the diversion jetty and to cause a deposit of silt on the up-stream side thereof.

In witness whereof, I have hereunto set my hand at Topeka, Kansas, this 25th day of May, A. D. one thousand nine hundred and twenty-eight.

LLOYD B. SMITH.

**CERTIFICATE OF CORRECTION.**

Patent No. 1,844,484.

Granted February 9, 1932, to

**LLOYD B. SMITH.**

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, line 72, after the word "stream" insert the word edge; page 2, line 36, claim 1, for "is" read to, and line 42, same claim, for "site" read silt; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22nd day of March, A. D. 1932.

(Seal)

**M. J. Moore,**  
Acting Commissioner of Patents.