

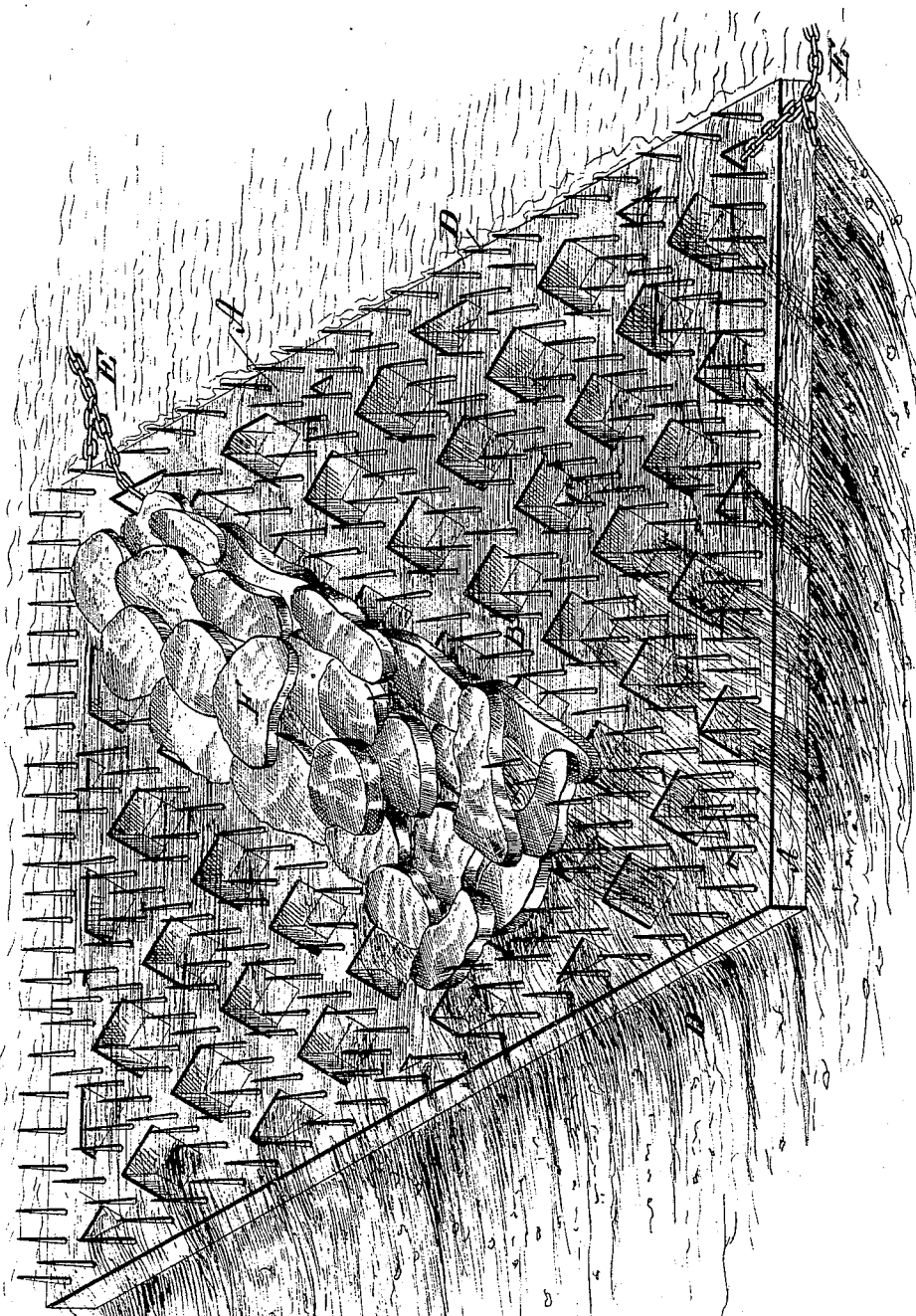
(No Model.)

C. BOECKH.

DEVICE FOR REGULATING THE FLOW OF STREAMS.

No. 473,205.

Patented Apr. 19, 1892.



WITNESSES
F. L. Ourand
L. N. Murphy

INVENTOR
Charles Boeckh
By *M. F. Chambliss*
his Attorney

UNITED STATES PATENT OFFICE.

CHARLES BOECKH, OF PORT ROYAL, SOUTH CAROLINA.

DEVICE FOR REGULATING THE FLOW OF STREAMS.

SPECIFICATION forming part of Letters Patent No. 473,205, dated April 19, 1892.

Application filed November 28, 1891. Serial No. 413,396. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BOECKH, a citizen of the United States, residing at Port Royal, in the county of Beaufort and State of South Carolina, have invented certain new and useful Improvements in Devices for Regulating the Flow, Deepening the Channels, and Removing Obstructions, &c., of Streams; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide a device which is simple in construction, effective in operation, and, when considered in conjunction with the means now generally used for the purposes aforesaid, is comparatively inexpensive. I attain said object by a certain combination, construction, and arrangement of parts fully described in this specification, and illustrated in the accompanying drawing, in which the figure is a perspective view of a section of my invention anchored and weighed down with rock at the bottom of the stream, and illustrating the action of the water washing through, over, and underneath the same.

Referring to the drawing, the letter A designates the frame of my invention, which can be made of any shape or form to correspond or suit the channel in which the same is designed to be placed. The interior space of this frame is interwoven or filled with the cross bars or pieces B and C, which preferably are made to cross each other at right angles. Said frame and bars are provided with the perpendicular bars or teeth D, which are located in the frame and cross-bars aforesaid and project above the same.

From the foregoing description it will be observed that my invention consists of a frame having any desired number of transverse bars located therein and crossing each other at any desired angle, and that said frame and bars are provided with upwardly-projecting teeth. In other words, the device resembles in construction a common harrow, with the exception that the teeth do not project below the frame. The length and size of these teeth and of the frame and cross-bars depend entirely upon the magnitude of the river in which the device is to be placed. This frame and the cross-bars thereof, as well as the teeth located therein, perform the function of an

obstruction to the flowing water, and they produce a violent suction or eddy in the current in proportion to the extent they resist or obstruct the same. In fact, the natural and secondary result of resisting or obstructing flowing water is that it acquires greater velocity. This increases the momentum or gravity of the water and causes it to force itself violently through the orifices between the transverse bars of the frame and to churn up or agitate and wash away the sediment underneath my device in the bed of the river. The teeth also prevent said orifices from clogging up, and when rocks or weights of any kind are piled on top of these teeth the current becomes stronger and in proportion to the obstruction occasioned thereby.

My device can and is to be made of any number of desired sections like the one illustrated in the figure. These sections may be of any width and length and of a size convenient for handling, all of which will depend more or less upon the width of the channel to be made and the volume of water in which they are to be located. Said sections can be joined together by chains or in any suitable way and anchored in the bottom of the river or stream.

E represents the chains, which may be attached to my device for the purpose of anchoring the same, and the letter F indicates the stones or weights for weighing down and securely holding the same in the bottom of the river's channel.

I attach special importance to my invention for the following reasons, namely: first, that the velocity of a stream is greatest at the surface, diminishing at the sides or slopes, and is the least at the bottom; second, that a river carrying a large quantity of silt or mud in suspension will invariably deposit it where the river has a chance to widen out and the velocity of the stream decreases; third, that whenever an obstruction is put into a stream, narrowing the channel to some extent, the water will invariably with acquired force overcome the obstruction in its way and wash out and carry away all sedimentary matter that may have been deposited in the bed of the river; fourth, that whenever more than one outlet exists into the sea one will be deeper and all the others will gradually fill up with sediment, and all this will change again as soon as all the outlets have been so far obstructed that

during a high flood the river will open up a new channel and afterward fill up gradually all the others. These well-known phenomena prove that the laws of nature act uniformly always the same and that a stream, no matter how large or small, will under certain conditions always do the same thing.

The remedies at present in use and proposed to deepen a channel where sediment has accumulated to an extent that impedes navigation and to confine the river to its natural bed (by this I mean to say to the bed where the main channel is) are dredging-machines, which, as it is well known, give only a temporary relief, after which revetment or brush-work is employed, and finally levees, which will undoubtedly regulate the flow of a stream, but will never entirely prevent the depositing of sediment where for long distances through lowland the river must naturally be more or less sluggish; and to build levees to the extent proposed will take an immense amount of time and the expenditure of untold millions of dollars. Hence I have endeavored upon scientific principles to provide an invention which will assist and cooperate with the aforesaid laws and natural facts; and I have demonstrated conclusively that my invention when anchored in the river-bed or on a bar or island formed of alluvial deposits when only covered by three feet of water will by the mere action of the force of the stream in a very short time deepen the channel or wash the submerged bar or island away, although acting on the principle of an obstruction (it may be one at low water) but for a very short time, as the water resisted by this device will, with acquired greater velocity, wash over it, through it, sidewise, and underneath, agitating the sediment to a degree that the stream is compelled to take it up in suspension, carry it off, and deposit it in places outside the main channel not obstructed by my device.

According to the well-known law of resistance of and obstruction in running streams my device, if put in the river-bed, will increase the velocity of the stream in the bottom of the river, and consequently not only prevent the depositing of sediment, but it will also remove the silt or mud already there.

With the deepening of the river-bed my device, which is flexible, owing to the same being made in sections and secured together, as aforesaid, will gradually sink to a lower and lower level, and in proportion to that the slopes, plastic as they are, will, with unerring certainty, adjust themselves to the natural angle of inclination—that is, the mud will slide down the slopes by its own weight and will be carried off by the currents. In that way a permanent deep channel for navigation can be maintained through all seasons of the year at the very least cost. Even during high floods when the current of the river changes, and as it is usually the case that vast volumes of sediment are deposited at

that time, obstructing the old channel, I can safely say that where my device has been placed (in the old channel) the velocity of the stream on that line will be always great enough to prevent the accumulation of sediment—in fact, it will work unceasingly all the same, and when the waters subside a deep channel will be found there for navigation, the same as before.

Having fully described my invention and tested the practical value of same, I deem it useless to further enlarge upon its merits.

What I claim is—

1. In a device for improving and regulating the flow of streams or rivers, deepening the channels thereof, and removing obstructions, &c., a suitable frame provided with any number of cross-bars crossing each other at any desired angle and secured together in any suitable way, in combination with the upwardly-projecting teeth located in said frame and cross-bars, and the weights or stones located on top of said teeth, all substantially as described, and for the purpose set forth.

2. In a device for improving and regulating the flow of rivers, deepening the channels thereof, and removing obstructions, &c., a suitable frame provided with any number of cross-bars crossing each other at any desired angle and secured together in any suitable way, in combination with the upwardly-projecting teeth inserted and fixed rigidly in said frame and cross-bars, and the weights and chains for holding down and anchoring the same in the bed of the river, substantially as described.

3. In a device for improving and regulating the flow of streams, deepening the channels thereof, and removing obstructions, &c., any number of suitable frames provided with any number of cross-bars crossing each other at any desired angle and secured together in any suitable way, said frames being made in sections and joined together by chains or in any practical way and anchored in the river's bed, in combination with the upwardly-projecting teeth inserted and fixed rigidly in said frames and cross-bars, and the weights and chains for holding down and anchoring and securing together said frames in the bottom of the river, substantially as described.

4. In a device for improving and regulating the flow of streams, deepening the channels thereof, and removing obstructions, &c., a suitable frame provided with any number of transverse bars crossing each other at any desired angle, in combination with the upwardly-projecting teeth inserted and fixed rigidly in said frame and transverse bars, substantially as described, and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES BOECKH.

Witnesses:

JAMES W. GREEN,
ROBT. E. JENKINS.