2 Sheets—Sheet 1.

H. D. MERRILL.

Flood-Fence.

No. 208,255. **Patented Sept. 24, 1878.**

Fig. 1.

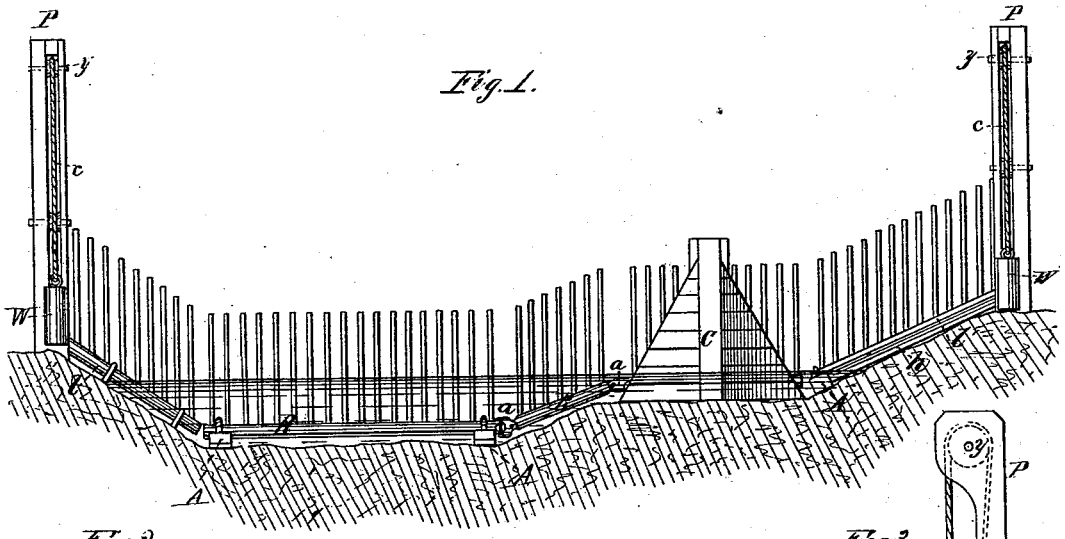


Fig. 2.

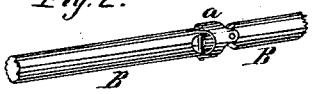


Fig. 3.

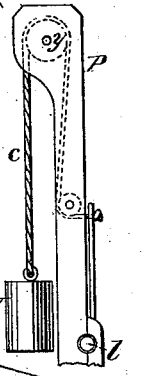


Fig. 4.

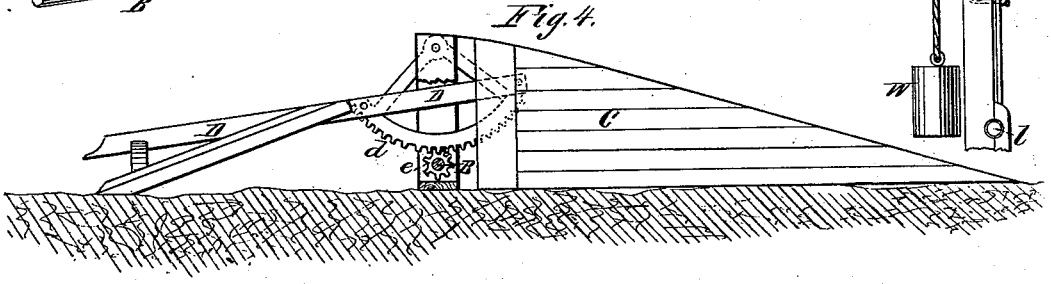
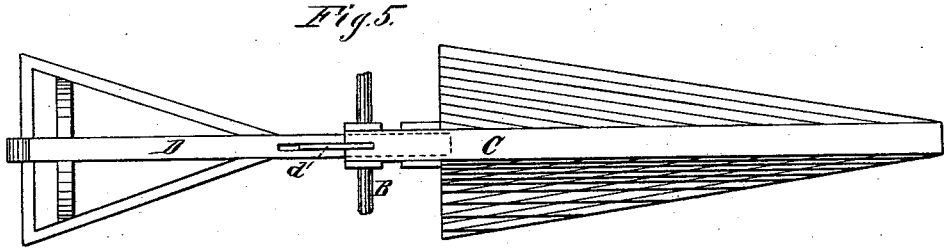


Fig. 5.



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H. D. MERRILL.
Flood-Fence.

No. 208,255. Patented Sept. 24, 1878.

Fig. 6.

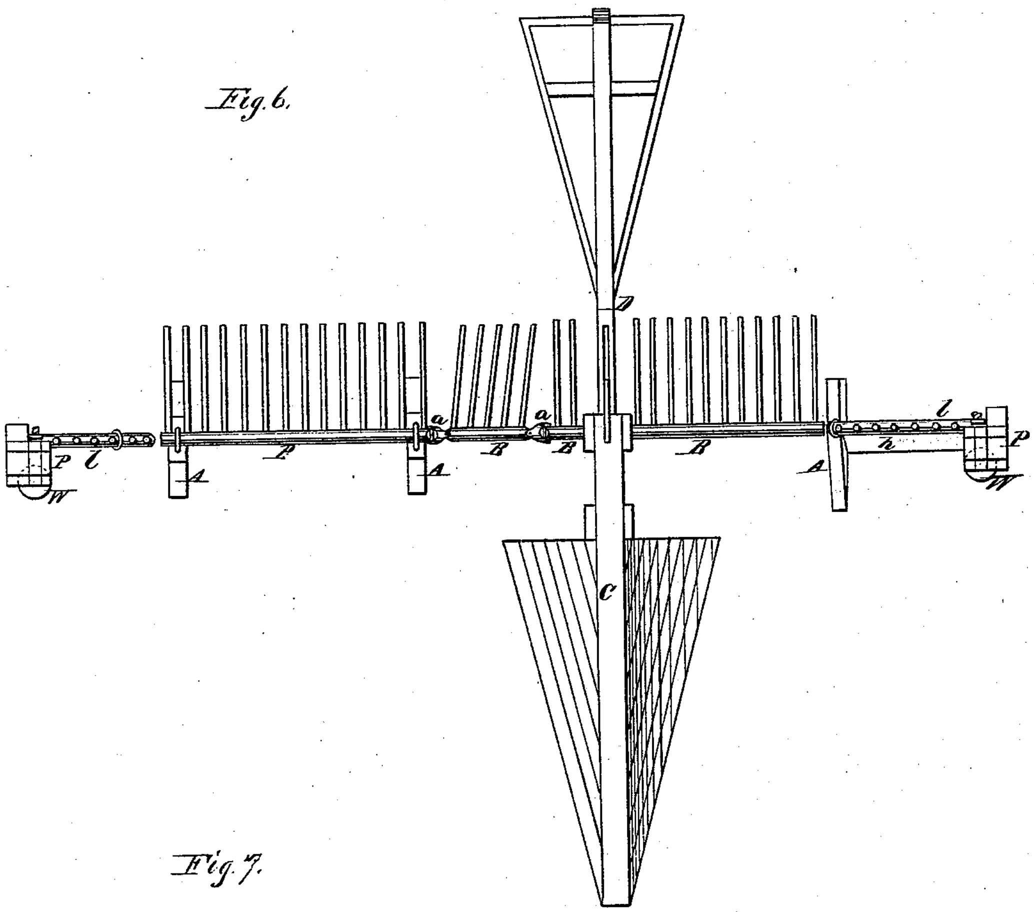
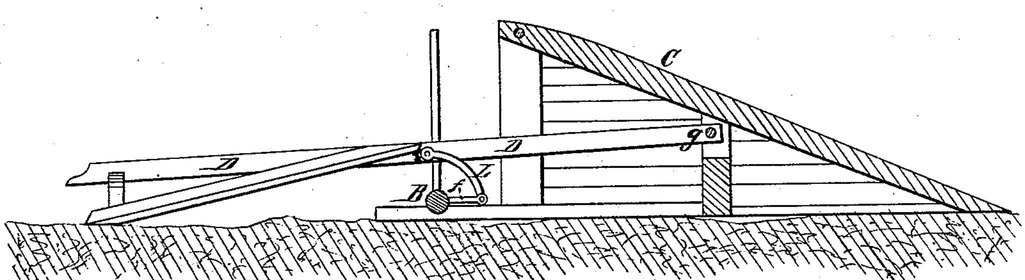


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY D. MERRILL, OF SHELBINA, MISSOURI.

IMPROVEMENT IN FLOOD-FENCES.

Specification forming part of Letters Patent No. **208,255**, dated September 24, 1878; application filed April 15, 1878.

To all whom it may concern:

Be it known that I, HENRY D. MERRILL, of Shelbina, county of Shelby, and State of Missouri, have invented certain new and useful Improvements in Fences, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is an elevation of my improved fence looking from a point up stream. Fig. 2 is a perspective view of a fragment of the gate-shaft, showing the construction of the coupling. Fig. 3 is an elevation of one of the posts and its connected pulley employed in connection with one of the bank-sections of the fence. Fig. 4 is a side view of the buoy and ice-break, a portion of the timbers of the latter being broken out to show the rack and pinion connecting the buoy with the gate-shaft. Fig. 5 is a plan of the devices shown in Fig. 4. Fig. 6 is a plan view of the improved fence, the bed portion thereof being turned down as when the water in the stream is high, the bank-sections being elevated. Fig. 7 is a section of the buoy and the ice-break, showing a modified means of connecting said buoy with the axle of the fence.

Like letters in all the figures refer to corresponding parts.

This invention has relation to that class of fences intended to be placed across streams, or in situations where the water is subject or liable to rise and fall; and the object of the invention is to so construct the fence as that during any considerable rise of water the fence shall be forced down out of the way of passing ice or débris, and so that it will maintain its upright position in order to bar the passage of stock, &c., while the water is at its usual height, or when below such usual height.

To accomplish this the invention consists in certain novel assemblages or combinations of parts, as will be hereinafter first fully described, and then pointed out in the claims.

A suitable number of mud-sills, A A, are anchored to the bottom of the stream, and serve as bearings for the fence to rest upon. The articulated shaft B, which is at the bottom of the fence, is preferably made round, either of metal or of wood, (metal piping would be best,) so that it will easily turn upon its bearings on the sills. That this shaft may conform in a measure to the irregularities of the bottom of the stream, and yet be capable of turning in its bearings, I propose to place any number of joints therein, as indicated at *a a*. For all purposes of the invention these joints may be of any desired form; but I prefer to make them substantially as shown, so that they will be simple and durable and easily coupled under water.

The shaft has suitable pickets or bars connected with it, of such length, strength, and distance apart as to be capable of turning stock, and these are preferably not united by the usual top string-piece, which might intercept materials running with the water, and thus interfere with the proper working of the fence. The pickets should therefore be united with the shaft in a substantial manner.

An ice-break, C, is located upon the up-stream side of the fence, and serves to protect the buoy and its connections (to be hereinafter mentioned) from ice and branches or other débris, and may be employed as an anchor for the fence, thereby adding to its stability.

Upon some convenient part of the structure forming the ice-break, I axle the arm D of the buoy, which extends beyond the fence. As in Figs. 4 and 5, this arm is provided with a curved rack, *d*, which engages with a pinion, *e*, upon the shaft B. The buoy, being of the proper weight, will, when the water rises, float up with it, and, through the medium of its rack *d*, will force the fence downwardly or under water. When the water recedes the weight of the buoy will bring the fence back to its normal position, thus ice and other moving matters may pass over and beyond the fence without damage thereto, while the fence is automatically operated both as to its rising and falling movements.

The same effects will be produced if the construction be such as that the buoy can be placed upon the up-stream side of the fence, and instead of employing the rack and pinion to form the connection between the shaft and the buoy, these two parts may be equivalently connected by other means. For instance, I propose in some cases to connect the arm D with shaft B by means of a link, L, coupled with a

bar, *f*, located substantially at right angles with the pickets. Under this modification the arm D should be pivoted at some distance from the axle, as at *g*, and it is apparent that the rise and fall of the buoy must produce opposite movements in the fence.

The fence-sections which ascend the banks of the stream upon either side should also be made movable, so as to permit the passage of débris. If the axles of these sections were connected with that upon the bed of the stream, a moderate flow of water would turn them down. To avoid this difficulty I make the axles *l* of these sections independent of that upon the bed of the stream, and I also preferably make them round, so that they will not be damaged by floating matters. If necessary to protect them further, I place timbers, as at *h*, (on the right of Fig. 1,) upon their up-stream sides, so as to deflect ice, &c., over them. Whenever ice or timber floats against either of these side bank-sections they will be turned down, and to provide for their automatic return I employ a simple weight, W, which is connected to any convenient portion of the fence through the medium of a cord or chain, *c*, passing over a pulley, *y*, located at or near the top of any permanent post P. Whenever one of these sections is inclined it must elevate the weight, and when the cause of the inclination is removed, the weight will return the fence to its upright position.

As thus constructed and arranged, the fence is simple and cheap, and being automatic in character, its several advantages will recommend it for use in situations where any one or all of them may be desirable.

Fenders similar to those at *h* may be placed upon the up-stream sides of all the axles, thus protecting them from roots of floating trees, &c.

The materials to be used in building the fence may be of any preferred kind, due regard being had for the requisite stability and durability.

The particular or special forms shown are in no way essential to the successful operation of the improved fence; but these may be modified as convenience may dictate so long as the principles of operation are observed.

Having thus fully described my invention, I will add that I am aware of numerous forms of fences or gates hinged at bottom and intended to permit the passage of ice and débris over them. To this feature alone I desire it understood that I lay no claim; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. A sectional or jointed axis for a fence, composed of two or more parts coupled together, the same being adapted to conform to the contour of the bottom of the stream, and to compel the attached sections of fence to rise and fall simultaneously under the action of a buoy, substantially as shown and described.

2. In combination with a fence hinged at bottom, a buoy or float adapted to drag the fence under water when the water rises, and to control the upward movement of the fence when the water falls, substantially as and for the purposes set forth.

3. In combination with a fence hinged at bottom, a buoy or float hinged to the ice-break, and provided with a rack which engages with a pinion upon the fence-shaft, the whole being adapted to operate substantially in the manner explained.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

HENRY D. MERRILL.

Witnesses:

C. H. SIMMONS,

W. A. BIRD.