

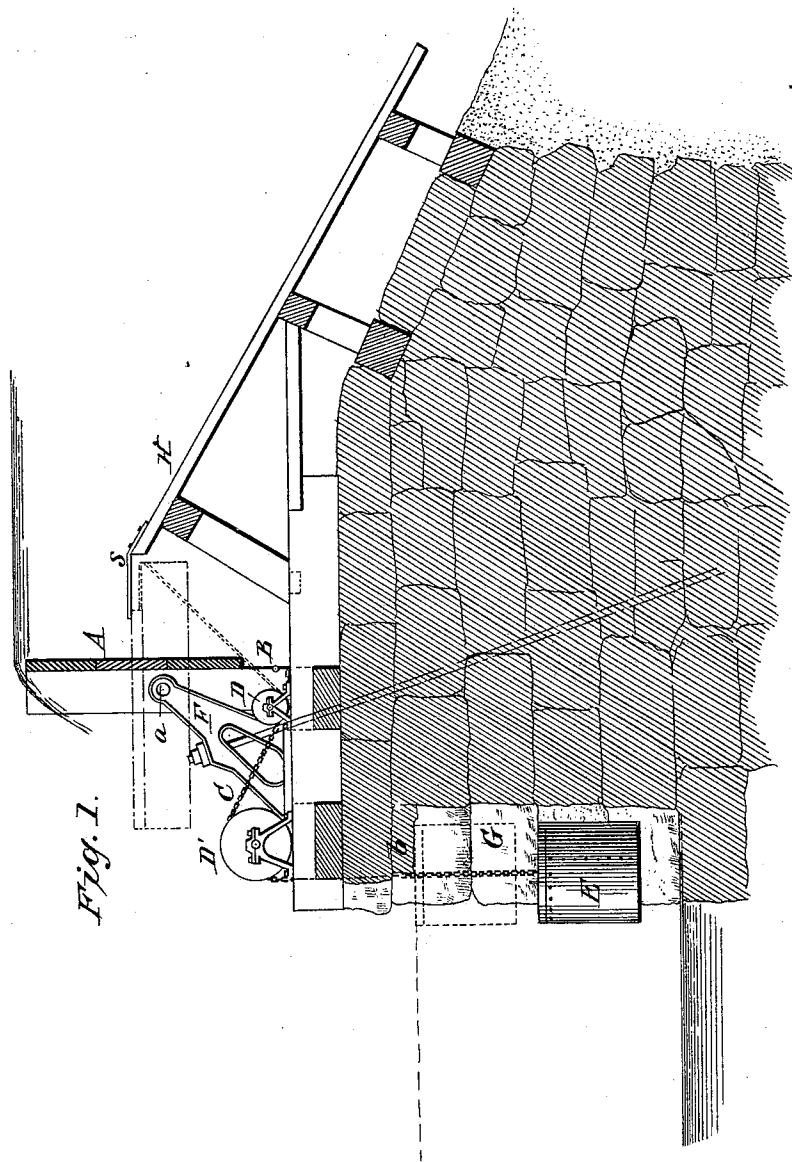
(No Model.)

2 Sheets—Sheet 1.

H. HARDING.
AUTOMATIC DAM.

No. 367,038.

Patented July 26, 1887.



WITNESSES:
Fred G. Dieterich
Edw. W. Byrn

INVENTOR:
H. Harding
BY *Munn & Co*
ATTORNEYS.

(No Model.)

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Fig. 3.

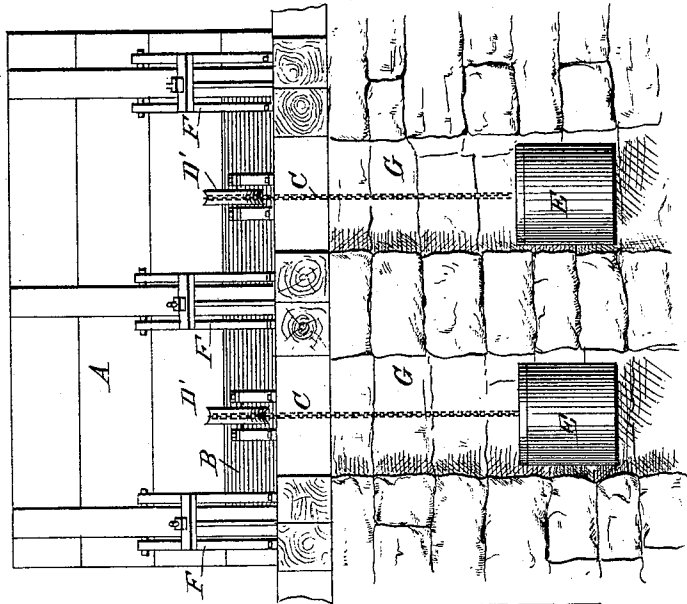
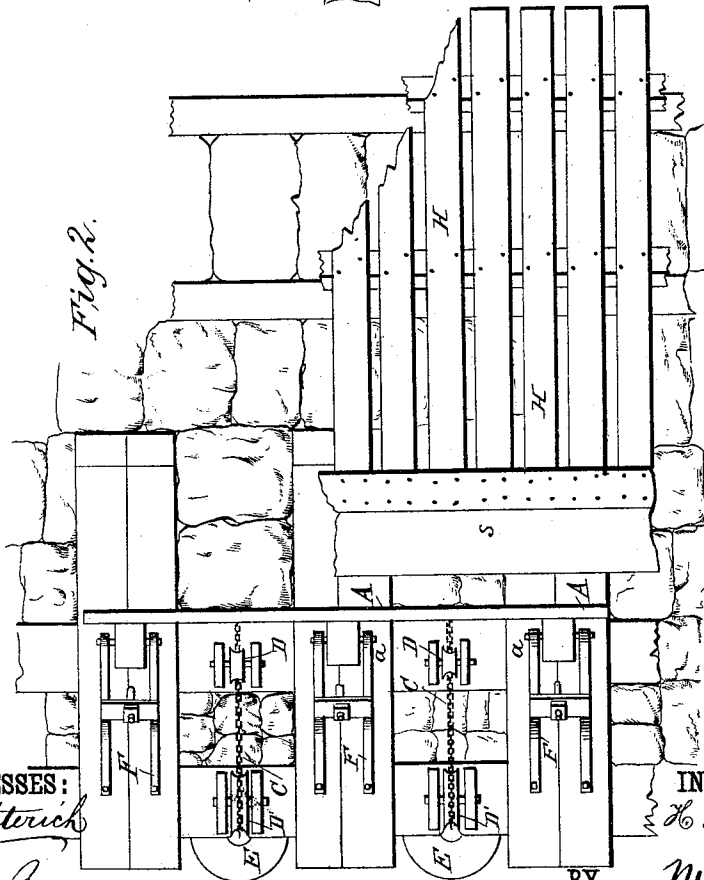


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HORACE HARDING, OF TUSCALOOSA, ALABAMA.

AUTOMATIC DAM.

SPECIFICATION forming part of Letters Patent No. 367,038, dated July 26, 1887.

Application filed October 2, 1886. Serial No. 215,173. (No model.)

To all whom it may concern:

Be it known that I, HORACE HARDING, of Tuscaloosa, in the county of Tuscaloosa and State of Alabama, have invented a new and useful Improvement in Automatic Dams, of which the following is a specification.

The object of this invention is to give, automatically, increased water-way over dams in time of freshets, so as to reduce the height of floods above them. The advantages will be, first, to diminish the amount of overflowed lands above the dam; second, to reduce the height of lock-walls where the dam is used in connection with a lock, and, third, to give (in the latter case) open-river navigation with a less rise than would be possible with a permanent dam.

Figure 1 is a vertical section through the dam; Fig. 2, a plan view, partly broken away; and Fig. 3 is a view from the lower level of the dam.

The swinging crest is pivoted at *a* to a supporting-frame, *F*, and is composed of wickets *A*, about eight feet long by four feet high. They are hung about two inches below the center, so that until fully immersed the center of pressure will be below the axis. Along the bottom of the wickets are hung valves *B*, about nine inches by two and three-fourths feet. The axes of the valves are placed below the center sufficiently to give an excess of pressure above, causing the upper limb of the valve, when free to move, to swing outward (downstream) and the lower limb inward. To the bottom edge of the valve is attached a chain, *C*, which, passing under a roller, *D*, and over a pulley, *D'*, placed near the lower edge of the permanent dam, carries a hollow cylinder, *E*, that plays up and down in a recessed chamber, *G*, in the breast-wall of the dam. The cylinder is water-tight, but open at the bottom, and so weighted that when immersed its buoyancy slightly exceeds its weight.

The action of the swinging crest is as follows: When the water below the dam rises and reaches the top of the cylinder, the latter, through its buoyancy, loses its weight. The valve is then free to open by excess of pressure at the top, and being open the center of pressure on the wicket passes above its axis

and the wicket begins to swing. It can only swing, however, as fast as the water rises below, for the moment the swinging tightens the chain the valve closes and stops the movement. The valve, when free, remains always horizontal, from the action of the current on its unequal limbs, and when the wicket also becomes horizontal the valve, of course, is closed, and the wicket keeps its position, because the upper (downstream) leg is the longer.

When the cylinder has risen sufficiently to allow the wicket to become horizontal, it is prevented from rising farther by the roof *b* of the recessed chamber. As the water falls the cylinder descends, keeping the valve closed and drawing the wicket down until it resumes its erect position.

To prevent injury from drift, a false apron, *H*, is secured to the true apron, as shown in the drawings, which, being open at the bottom and having three inches intervals between its slats, does not reduce the water-way on the dam. The top of the false apron is on a level with the top of the wicket when swung open, and a plate-iron shield, *s*, extends from it over the valve, so that drift may pass freely over the wicket.

In distinguishing my invention from the "automatic dam," for which Patent No. 332,895 was granted to me December 22, 1885, I would state in that case a buoy above the dam, acting through a shaft with pulleys, in rising lifted the valves and allowed the dam to swing. In this invention the valve is prevented from opening by a weight hung below the dam, which weight is neutralized by submergence, and the valve then flies open. Moreover, instead of one buoy acting (through its long shaft) on all the valves, each valve has its own weight.

Having thus described my invention, what I claim as new is—

1. The combination, with the hinged wickets *A* and supporting-frame and the hinged valve *B* at the lower edge of the wicket, located above the lower level of the dam, of the chain *C*, connected to the short limb of the valve and passing around pulleys and the weighted float *E*, attached to the chain and arranged to be immersed in the lower level

of the dam, and means for stopping the upward movement of the float, substantially as shown and described.

2. The combination, with the hinged wicket
- 5 A, of the false apron H, substantially as and for the purpose described.
3. The combination, with the hinged wicket

A, of the false apron H and shield s, substantially as and for the purpose described.

HORACE HARDING.

Witnesses:

W. F. FITTS,

FESTUS FITTS.