

J. H. STAPLES.  
GATES FOR TURBINES.

No. 195,460.

Patented Sept. 25, 1877.

Fig. 1.

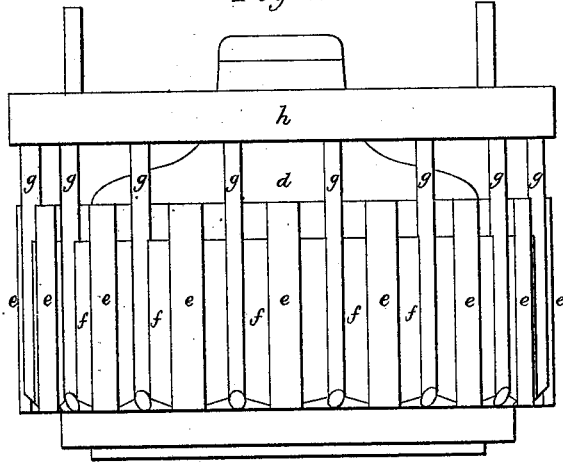


Fig. 2.

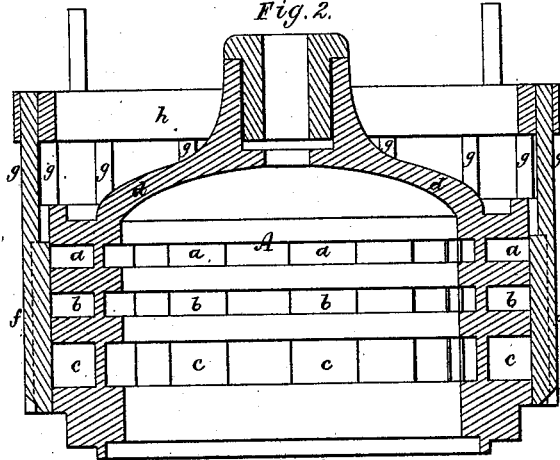
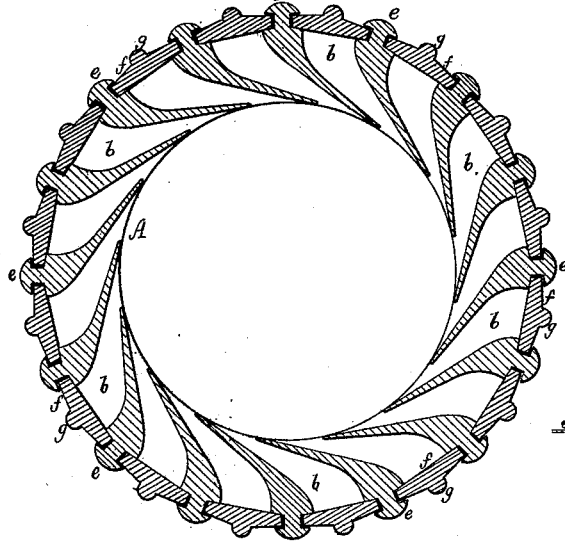


Fig. 3.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN GATES FOR TURBINES.

Specification forming part of Letters Patent No. **195,460**, dated September 25, 1877; application filed March 9, 1877.

*To all whom it may concern:*

Be it known that I, JOHN H. STAPLES, of Boston, of the county of Suffolk and State of Massachusetts, have made a new and useful invention having reference to the Circumscribing Inducts and Gates of Turbines; and do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a side view, Fig. 2 a transverse section, and Fig. 3 a horizontal section, of my improved induction-ring and gates of a turbine.

My invention consists in the combination of a turbine induction-ring provided with flanged guides, and one or more series of inducts, with a series of separate gates, their supporting arms and ring, all being arranged and to operate essentially in manner as shown and described.

In the drawings, the ring A is represented as provided with three series of inducts, *a b c*, formed and arranged as shown, such ring having a dome-shaped cap or cover, *d*.

Projecting from the periphery of the ring is a series of flanged guides, *e e*, arranged vertically and parallel to each other and at equal distances apart, such guides being disposed between the mouths of the inducts, in manner as shown.

The said guides serve to support and guide in their vertical movements a series of gates, *f*, disposed about the ring and between the guides, in manner as represented. Each gate is fixed to one of a series of arms, *g*, extending down from an annulus, *h*. The distance between the gates and the annulus is greater

than the distance between the top of the ring A and the bottoms of the upper series of inducts, such being to enable the gates to be forced down below and far enough to uncover the mouths of the said upper series of inducts, and at the same time close the two other series of inducts. This enables the wheel or turbine, when within the ring A, to be revolved by water discharged upon it through the upper series of inducts, and at the same time to have the other inducts closed.

By raising the gates sufficiently the three series of inducts may be opened successively, as circumstances may require.

By having the series of gates arranged and applied to the ring A and its inducts, as set forth, each gate, as it or its seat may become worn, will be pressed tightly against its seat by the water, so as to preserve water-tight joints, whereas, were one gate in the form of a ring used to encompass the ring A, such a result cannot take place, as the more the rings may become worn the greater would be the liability of leakage.

I claim—

The combination of the turbine induction-ring A, provided with flanged guides, and one or more series of inducts, as set forth, with the series of separate gates *f*, and their supporting-arms *g* and ring *h*, arranged with said ring A and its inducts and guides, substantially in manner and to operate therewith, as set forth.

JOHN H. STAPLES.

Witnesses:

R. H. EDDY,  
J. R. SNOW.