J. L. MAUCH.

FLUID JET FLOAT.

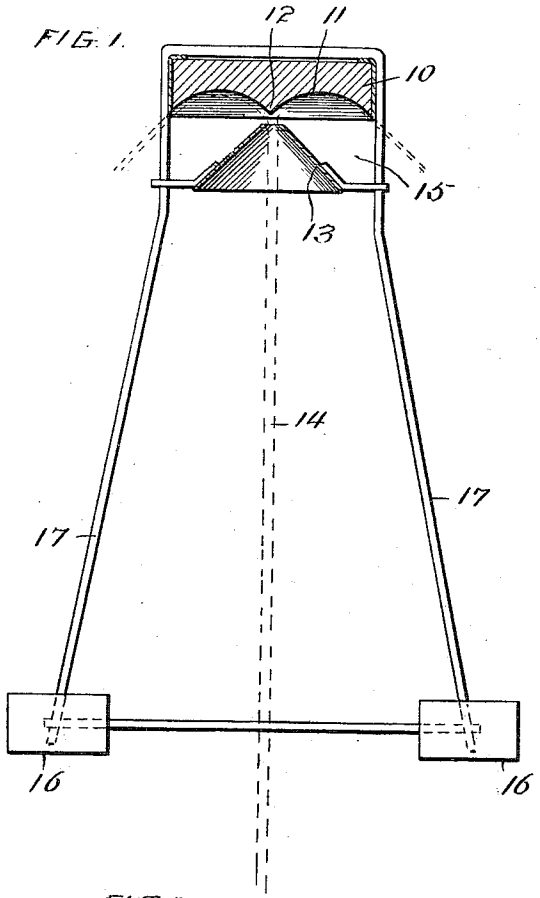
APPLICATION FILED SEPT. 17, 1910.

979,681.

Patented Dec. 27, 1910

2 SHEETS—SHEET 1.

FIG. 1.



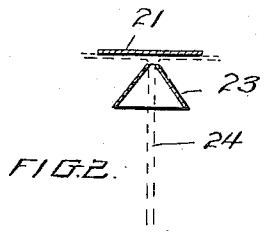


FIG. 2.

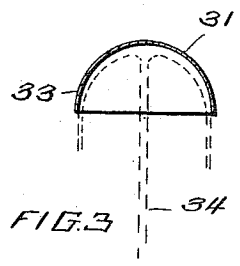


FIG. 3.

FIG. 4.

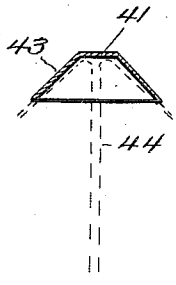


FIG. 5.

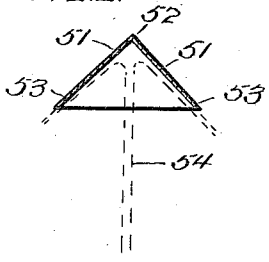
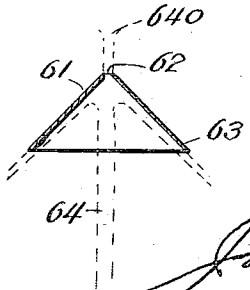


FIG. 6.



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FLUID JET FLOAT.

APLICATION FILED SEPT. 17, 1910.

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2 SHEETS—SHEET 2.

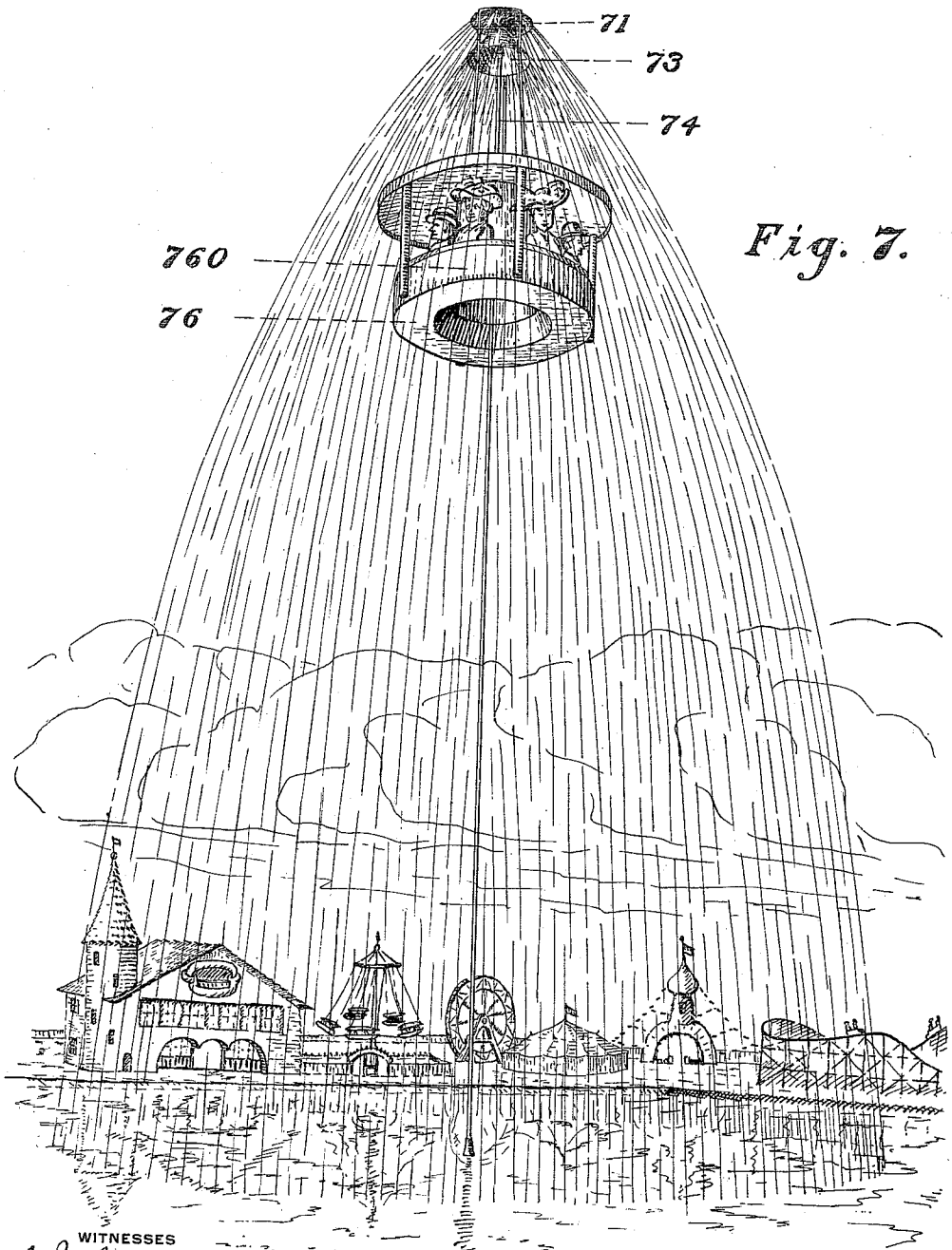

Fig. 7.

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UNITED STATES PATENT OFFICE.

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FLUID-JET FLOAT.

979,681. Specification of Letters Patent. **Patented Dec. 27, 1910.**

Application filed September 17, 1910. Serial No. 582,574.

To all whom it may concern:

Be it known that I, JOHN L. MAUCH, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented or discovered certain new and useful Improvements in Fluid-Jet Floats, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a device adapted to be supported by an upwardly directed jet of water or other fluid, and has for its object to provide a device of this character which will be automatically maintained in proper position relative to the jet, and will be supported thereby in a substantially stable condition, and in a position depending upon the relation between the weight of the device and the force of the jet.

To these ends the invention contemplates the production of a device of this character having a supporting surface arranged transverse to the direction of flow of the jet and adapted to receive the impact of the same and change the said direction of flow, and an alining surface adapted to coöperate with the jet to hold the device with its supporting surface in the proper position relative to said jet to be supported thereby.

The more particular object of the invention, together with means whereby the same may be carried into effect, will best be understood from the following description of certain forms or embodiments thereof illustrated in the accompanying drawings. It is to be understood, however, that the constructions described and shown have been chosen for illustrative purposes merely and that the invention may be embodied in many other forms without departing from the spirit and scope therof.

In said drawings, Figure 1 is a vertical sectional view of a simple form of a device of this character. Figs. 2, 3, 4, 5 and 6 are diagrammatic views illustrating modified arrangements of the supporting and alining surfaces with respect to the jet. Fig. 7 is a perspective view illustrating one of the uses of the invention.

Referring first to Fig. 1, the device 10 is formed with a supporting surface 11 which, in the form shown, is a concave surface of revolution having a central apex 12 arranged to occupy a position substantially in the axis of the jet. The alining surface 13 in this instance is provided by a separate part and is of a frusto-conical form surrounding the jet, and having its axis coincident with the axis of the jet, said part having an opening of a sufficient size to permit the jet to pass therethrough and to strike the supporting surface 11. It will be observed that, inasmuch as the annular surface 13 surrounds the jet and is angularly disposed with respect to the direction of flow thereof, this surface coöperates with the jet to maintain the device 10 with central portion of its supporting surface 11 substantially in alinement with the jet. Any tendency to lateral movement on the part of the device 10 with respect to the jet 14 will be resisted by a horizontal component of the reaction between the jet and the surface 13 at the point of contact, which will tend to return the device laterally into its normal alined position. In order to obtain the full supporting effect of the jet, it is desirable that after said jet has been deflected by the supporting surface, a free escape of fluid from the device be provided for. Such escape, in the construction shown in Fig. 1, is provided by the space 15 between the supporting surface 11 and alining surface 13. Also in order to maintain the device in a state of stable equilibrium it is desirable that the center of gravity of the device as a whole be below the point of impact of the jet upon the supporting surface, and preferably also below the alining surface. This, in the construction shown in Fig. 1, is provided for by weights 16 suitably supported from the device 10 as by rods 17.

In the arrangement shown in Fig. 2 the supporting surface 21 is arranged in the form of a plane disposed at right angles to the axis of the jet 24. The alining surface 23 is frusto-conical in form similar to the surface 13 in the form of the device last described, and is also arranged with respect to the supporting surface 21 substantially the same as said surface 13 with respeect to the surface 11.

In Fig. 3 the supporting surface 31 and alining surface 33 are arranged as continuations of one another, the whole forming a substantially hemi-spherical surface whose central portion 31 is arranged substantially normal to the direction of flow of the jet 34, and whose side portions 33 are arranged to surround the jet and to provide alining surfaces inclined in varying angles with re-

spect to said direction of flow. In this form of the device it will be observed that the direction of flow is entirely reversed so that the full action and reaction of the jet are utilized.

In Fig. 4 the supporting surface 41 and alining surface 43 are substantially the same in form as in Fig. 2, but are arranged as continuations of one another, and may therefore, as in the case of the form shown in Fig. 3, be formed upon a single member. The coöperation of these surfaces 41 and 43 with the jet 44 will, it is believed, be obvious from the descriptions heretofore given.

In Fig. 5 the supporting surface 51 and alining surface 53 are also arranged as continuations of one another, the alining surface 53 being of a conical form, of which the surface 51 is a continuation, the whole coöperating to retain the device with the apex 52 of the supporting surface substantially in alinement with the axis of the jet 54.

In Fig. 6 is illustrated an arrangement similar to that shown in Fig. 5, but having an aperture 62 at the apex of the supporting surface 61 which, as in the form last described is a continuation of the alining surface 63. In this form of the device the full force of the jet 64 is not utilized to support the device, a portion 640 thereof being allowed to escape through the aperture 62.

A device constructed on the general principles above described may be used for any purposes where it is desired to support a device of any character upon a fluid jet, or where it is desired to break up such a jet or deflect its normal direction of flow. By way of example, I have illustrated in Fig. 7 my invention as applied to an amusement apparatus. As therein shown the form of supporting and alining surfaces are substantially as shown in Fig. 1, and comprise a supporting portion 71 adapted to receive the impact of a jet 74, and an alining portion 73, which are connected by any suitable means, to a supporting platform 76 adapted to carry passengers. The platform 76 will preferably be provided with raised sides 760 thereby adapting the device as a whole to be floated upon a body of water into a position in which a jet of water may be directed upon the supporting surface 71 and the device as a whole elevated. It will be understood, of course, that the discharge of the jets from the supporting surfaces may occur in any direction. In the construction shown in Figs. 1, 4, 5, and 6 the discharge is oblique to the direction of the jet; in the construction shown in Fig. 2 the discharge is substantially at right angles to the jet, while in the construction shown in Fig. 3 the discharge is in a direction which is a tangent at the extreme ends of the curved surface.

The invention is not to be understood as being limited to the particular constructions shown, in that the supporting or alining surface, either or both, may be more or less broken or segmental, instead of being continuous; and the said surfaces, instead of being smooth, may be constructed with vanes, riffles, or other projections which would have a tendency to deflect or guide a stream of fluid in any manner desired while passing over these surfaces, as for example, to cause rotation of the device concentrically about the axis of the jet by which it may be supported.

Having thus described my invention I claim and desire to secure by Letters Patent:

1. A device adapted to be supported by a fluid jet having a supporting surface arranged transverse to the direction of flow of said jet and an annular alining surface angularly disposed with respect to said direction of flow.

2. A device adapted to be supported by a fluid jet having a supporting surface arranged below said supporting surface and said jet and an annular alining surface arranged below said supporting surface and angularly disposed with respect to said direction of flow.

3. A device adapted to be supported by a fluid jet having a supporting surface arranged transverse to the direction of flow of said jet and an annular alining surface angularly disposed with respect to said direction of flow, said parts being constructed and arranged to permit a free escape of fluid after striking said supporting surface.

4. A device adapted to be supported by a fluid jet having a supporting surface arranged transverse to the direction of flow of said jet and an annular alining surface angularly disposed with respect to said direction of flow, the center of gravity of said device being below said surfaces.

5. A device adapted to be supported by a fluid jet having a supporting surface arranged transverse to the direction of flow of said jet and an annular alining surface angularly disposed with respect to said direction of flow, and a supporting platform carried by said device.

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

JOHN L. MAUCH.

Witnesses:

LAWRENCE L. MAYRE,

J. L. PERKES.

Correction in Letters Patent No. 979,681.

It is hereby certified that in Letters Patent No. 979,681, granted December 27, 1910, upon the application of John L. Mauch, of Salt Lake City, Utah, for an improvement in "Fluid-Jet Floats," an error appears in the printed specification requiring correction as follows: Page 2, line 88, the words "below said supporting surface and" should be stricken out and the words *transverse to the direction of the flow of* inserted instead; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 31st day of January, A. D., 1911.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.