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2 SHEETS—SHEET 1.

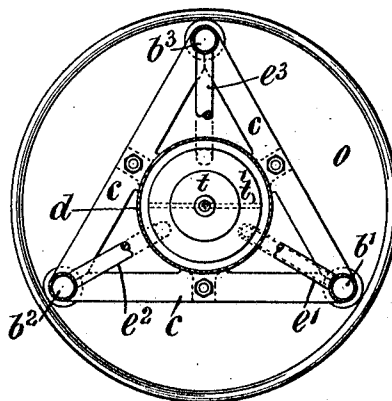
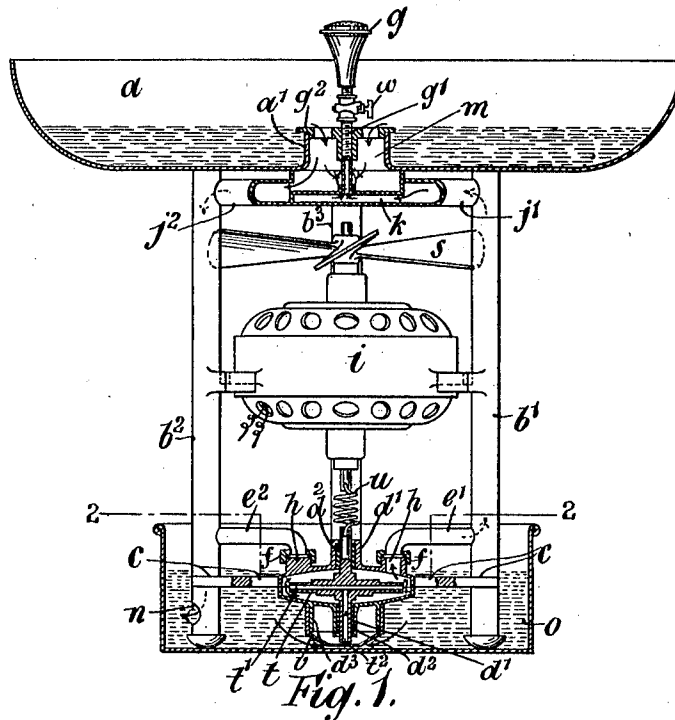


Fig. 2.

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A. J. & W. C. NEEDHAM.
 FOUNTAIN AND CENTRIFUGAL PUMP FOR USE THEREWITH.
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Patented Mar. 19, 1912.

2 SHEETS—SHEET 2.

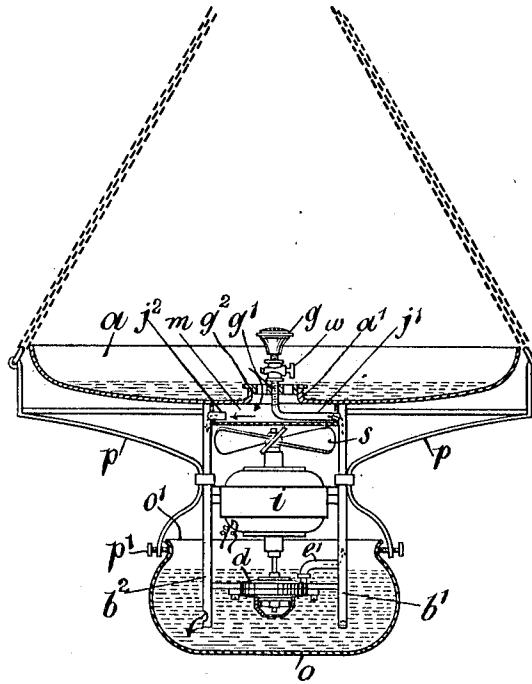


Fig. 3.

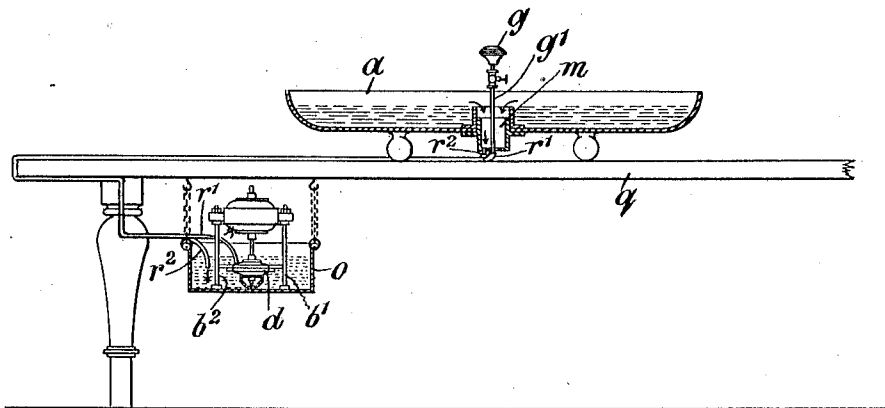


Fig. 4.

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UNITED STATES PATENT OFFICE.

ARTHUR JOSEPH NEEDHAM AND WALTER CECIL NEEDHAM, OF LONDON, ENGLAND.

FOUNTAIN AND CENTRIFUGAL PUMP FOR USE THEREWITH.

1,020,569.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed June 10, 1911. Serial No. 632,374.

To all whom it may concern:

Be it known that we, ARTHUR JOSEPH NEEDHAM and WALTER CECIL NEEDHAM, subjects of the King of Great Britain, residing at No. 6 Hammersmith Terrace, London, England, have invented new and useful Improvements in Fountains and Centrifugal Pumps for Use Therewith, of which the following is a specification.

10 This invention relates to fountains for decorative purposes of the kind operated by an electro-motor and a centrifugal pump driven thereby, the axes of the motor and pump being arranged vertically.

15 According to the present invention, the combination of electro-motor and pump is so mounted and arranged that the motor is situated above the reservoir from which the water for the fountain jet is drawn, so that
20 any shallow expanse of water may serve as the reservoir, such as for example water contained in a wide bowl, which may be suspended. The motor is arranged vertically above the pump, and the two are mounted
25 between a frame comprising a plurality of vertical tubes, preferably three, of which one may serve to convey water from the pump to a nozzle situated above, while one or more of the remainder serve as waste
30 pipes to return to the reservoir water, collected from the jet by a basin supported on the frame.

A further and important feature of the invention consists in the arrangement of a
35 fan on the motor shaft immediately beneath the basin, the object being to cause a draft of air to impinge upon the basin and thereby cool the water contained therein, thus enabling the jet of the fountain, which
40 is eventually supplied by the water so cooled, to cool the atmosphere of the apartment in which the fountain is situated, a function which is of considerable merit in hot climates. The fan being mounted directly
45 above the motor will also draw a current of air through the latter and prevent same overheating.

Another feature of the invention consists in a very simple construction of centrifugal
50 pump for operating the fountain.

Several constructional forms of fountains

according to the present invention are illustrated on the drawings, in which:—

Figure 1 is a sectional elevation, and Fig. 2 a sectional plan, taken along the line 2—2 55 of Fig. 1, showing a fountain adapted to stand in a shallow body of water. Fig. 3 is a sectional elevation of a suspended fountain. Fig. 4 is a sectional elevation of a table fountain, the reservoir of which is 60 suspended beneath the table.

Referring more especially to Figs. 1 and 2, *a* is a basin, preferably of glass, for catching the water falling from the fountain jet, supported upon a frame the principal members of which are three vertical tubes *b*¹ *b*² *b*³. The three tubes are arranged in plan at the corners of an equilateral triangle, as shown in Fig. 2. Near their lower ends, the vertical tubes *b*¹, *b*², *b*³ are secured together 70 by a triangular frame *c*, at the middle of which the pump casing *d* is secured. Protruding radially inward from each of the three tubes is an arm *e*¹, *e*², *e*³ respectively. These arms are attached to the pump casing 75 *d* by screw unions *f*. The arm *e*¹, which extends from the vertical tube *b*¹ which conveys the water from the pump to the nozzle *g*, is hollow and communicates by means of a nipple *h* with the interior of the pump 80 casing *d* and interior of the vertical tube *b*¹, the lower end of which is closed. The two other arms *e*², *e*³ are dummies and are attached to dummy nipples on the pump casing. *i* is the motor, which is supported on 85 inwardly directed lugs provided approximately at the mid-length of the tubes *b*¹, *b*², *b*³. At the upper end of the three tubes, a hollow arm extends radially inward from each. Only two of these arms *j*¹ and *j*² are 90 shown in Fig. 1, the third being hidden from view. The arms are secured to an open-topped cylindrical vessel provided with double bottom. The arm *j*¹, extending from the delivery tube *b*¹, communicates 95 with the space *k* between the two bottoms of the cylindrical vessel, from which space a pipe *g*¹, terminating in the nozzle *g* of the fountain, protrudes upward. The arm *j*² and the third arm communicate with the 100 open-topped space or chamber *m* above the false bottom and convey the waste water,

which enters the chamber *m* from the basin *a*, to their respective vertical tubes *b*² *b*³, by which latter, through apertures *n* in the lower ends thereof, the water is returned to the reservoir *o*. The basin *a* rests upon the open-topped chamber *m*, and is formed with a central aperture bordered by an upstanding flange *a*¹, which acts as a weir over which the water escapes into the chamber *m* beneath. The basin is clamped down on the supporting frame by a perforated collar nut *g*² which is screwed along a screw-threaded portion of the nozzle pipe *g*¹, into clamping contact with the upstanding flange *a*¹ of the basin.

Instead of or in addition to the central overflow, the basin may be provided with a number of lateral discharge spouts or the water may simply cascade over its outer edge directly into the reservoir *o* beneath or from the spouts into shell-shaped extensions of the reservoir.

In Fig. 3 is shown an arrangement of fountain, which has a very decorative effect. According to this arrangement, the tubular frame of the fountain is secured at the middle of an ornamental frame *p* similar to and suspended like a hanging lamp frame. The collecting basin *a* occupies the upper portion of the ornamental frame *p* and suspended from the lower end thereof is a bowl *o* which constitutes the reservoir and into which the suction pipe of the pump dips. The bowl *o* is secured to the frame *p* by means of set-screws *p*¹ which are mounted in depending members of the frame and engage with their points beneath the outstanding rim *o*¹ of the bowl.

According to the arrangement shown in Fig. 4, the reservoir vessel *o* with the fountain frame *b*¹, *b*² standing therein, is suspended beneath a table *g*, and the basin *a* with the nozzle *g*, stands upon the table.

Although a fountain frame, as above described, comprising vertical tubes *b*¹, *b*², *b*³ through which the water for the jet and the waste from the basin respectively may be conveyed through the additional medium of appropriately connected pipes *r*¹, *r*², in Fig. 4 these pipes, which may be flexible, lead directly from the pump casing *d* and to the reservoir *o*. The two pipes *r*¹, *r*² are preferably united in the manner of twin electric wires.

If desired, several basins and nozzles may be arranged on the table, all supplied from one and the same fountain mechanism and reservoir.

s is a fan, detachably secured on the motor spindle beneath the basin *a*, for creating a draft of air for cooling the water contained in the basin *a*, as above described.

The manner in which the rotor of the centrifugal pump is mounted and the con-

struction of the latter, are as follows:—In order that the centrifugal pump shall operate in a practically noiseless manner, the rotor *t* thereof, the axis of which is vertical and co-axial with the motor spindle, is so mounted as to rotate within its casing *d* without end contact therewith, this being effected either by initially adjusting the rotor *t* in such position by means of a rigid connection between its spindle and the motor spindle, or, as shown, by suspending the rotor *t* from the motor spindle by means of a helical spring *u*, which transmits the torque and is of such strength as to relieve the rotor *t* of the influence of its weight, the rotor being thus free to float, as it were, in the pump-casing. The spindle of the rotor *t* extends on each side through bosses *d*¹ on the pump casing *d*, lined with vulcanite bushes *d*², this substance having been found to be friction reducing without the aid of a lubricant. The rotor *t* consists of a flat metal disk provided with a diametral passage *t*¹, communicating with the mid-length of which passage *t*¹ is a vertical passage *t*², extending through the lower portion of the rotor spindle, constituting the suction passage.

The casing *d* of the pump is lenticular and is provided on its upper side with the before mentioned nipple and dummy nipples *h*. The under side of the casing *d* is provided with an annular flange *d*³ over which a perforated guard *v* for the hollow rotor spindle is fitted.

With a pump having a disk-rotor as above described, the nozzle-pipe *g*¹ of the fountain may be closed by a plug-cock *w* while the motor and pump are running, without rupturing the supply passages.

We claim:

1. In a fountain, a frame comprising a plurality of vertical tubes, a centrifugal pump arranged with its axis vertically mounted between said tubes, means connecting the interior of the casing of said pump with the interior of one of said tubes, an electro-motor arranged coaxially above and connected to said pump, an open topped chamber above said motor, a nozzle above said chamber, means connecting said pump-connected tube with said nozzle, a basin above said chamber, an upstanding flange around a central aperture of said basin and means connecting said chamber to another of said tubes, said tube having an outlet aperture.

2. In a fountain, a frame comprising a plurality of vertical tubes, a centrifugal pump arranged with its axis vertically mounted between said tubes, means connecting the interior of the casing of said pump with the interior of one of said tubes, an electro-motor arranged coaxially above and

connected to said pump, an open topped
chamber above said motor, a nozzle above
said chamber, means connecting said pump-
connected tube with said nozzle, a basin
5 above said chamber, an upstanding flange
around a central aperture of said basin,
means connecting said chamber to another
of said tubes said tube having an outlet
aperture, an ornamental suspension frame
10 secured around said tubular frame and

means for suspending a bowl from said or-
namental frame.

In testimony whereof we have signed our
names to this specification in the presence
of two subscribing witnesses.

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WALTER CECIL NEEDHAM.

Witnesses:

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C. P. LIDDON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
