

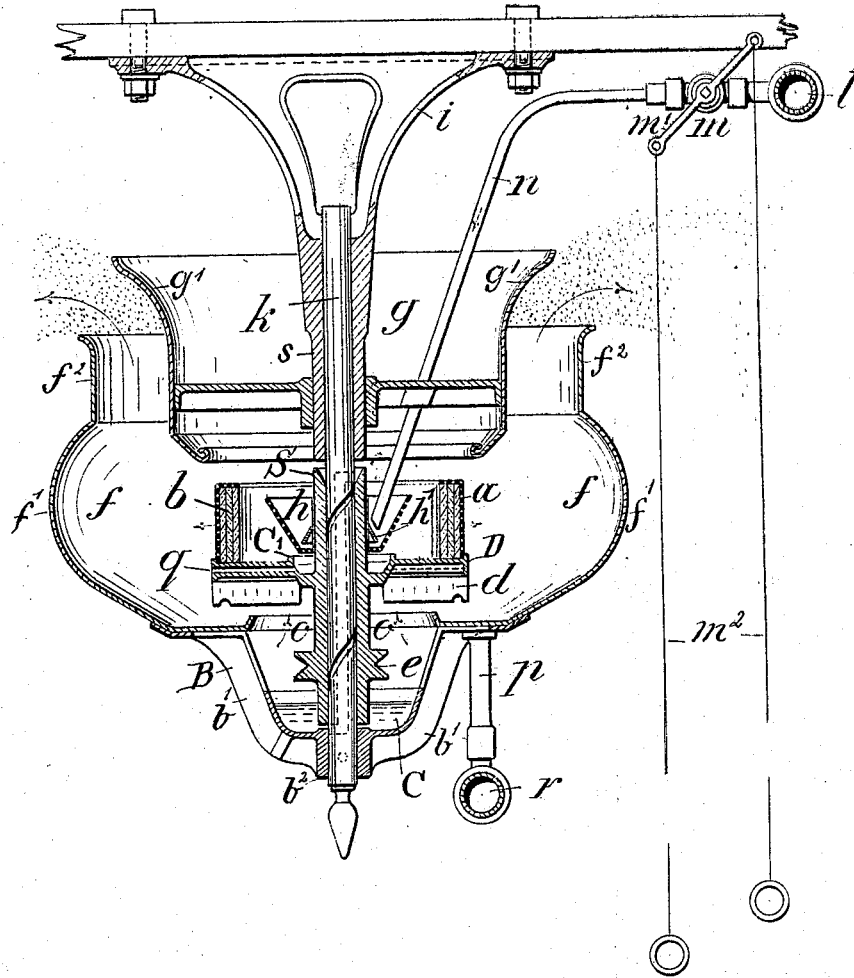
(No Model.)

G. JOSEPHY.

CENTRIFUGAL AIR MOISTENING APPARATUS.

No. 522,217.

Patented July 3, 1894.



Witnesses:
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UNITED STATES PATENT OFFICE.

GUSTAV JOSEPHY, OF BIELITZ, AUSTRIA-HUNGARY.

CENTRIFUGAL AIR-MOISTENING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 522,217, dated July 3, 1894.

Application filed August 29, 1893. Serial No. 484,307. (No model.) Patented in Switzerland January 21, 1893, No. 6,194; in France January 21, 1893, No. 227,325; in Belgium January 21, 1893, No. 103,058, and in England January 21, 1893, No. 1,381.

To all whom it may concern:

Be it known that I, GUSTAV JOSEPHY, manufacturer, a subject of the Emperor of Austria-Hungary, residing at Bielitz, in the Province of Silesia, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Centrifugal Air-Moistening Apparatus, (for which Letters Patent have been obtained in the following countries, viz: Switzerland, No. 6,194, dated January 21, 1893; France, No. 227,325, dated January 21, 1893; Belgium, No. 103,058, dated January 21, 1893, and in England, No. 1,381, dated January 21, 1893;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which forms a part of this specification.

My invention has relation to those appliances or apparatus by means of which air in more or less confined spaces may be supplied with moisture, and my said invention has for its object the provision of means whereby the water used is not only thoroughly sprayed or atomized, but also thoroughly disseminated throughout the ambient atmosphere and projected or carried to a considerable distance from the apparatus, and whereby the apparatus may also perform the function of a ventilator; my invention has for its further object the combination with the atomizing or spraying devices of filtering devices whereby the water disseminated is purified before it is atomized or converted into spray, and consequently before it is disseminated in the ambient air, as will now be fully described, reference being had to the accompanying drawing which illustrates an apparatus of the kind referred to and embodying my invention by a vertical central sectional elevation.

The apparatus is supported from a hanger bolted or otherwise secured to the ceiling of a room or other space the air in which is to be supplied with moisture. The hanger *i* is provided with a sleeve bearing *s* for a vertical spindle *k*, to the lower end of which is secured a supporting bracket *B*, between the

arms *b'* of which, at their point of junction with the bearing *b*² that is secured to the lower end of the vertical spindle *k* is formed a drip cup *C*. On the arms *b'* of the supporting bracket *B* is seated the outer shell or casing *f*, which is preferably of the shape shown, said shell having an outwardly bulging body *f'* and a tubular neck *f*² whose outlet end is made to flare outwardly for purposes hereinafter explained. In the bottom of the shell *f* is formed a central circular opening encompassed by an upwardly tapering or conical flange *o*. On the spindle *k* is mounted a sleeve *S*, that is provided near its lower end between the conical flange *o* and the drip cup *C*, with a cord pulley *e*, said sleeve *S* being mounted on spindle *k* so as to revolve freely thereon. Above the conical flange *o* the said sleeve *S* carries a cylindrical centrifugal filtering and atomizing or spraying device *a* that is seated on a disk *D* in which are formed radial channels *g* open at their outer ends and communicating at their inner ends with a drain cup *C'*. The centrifugal atomizer or spraying device proper consists of a cylinder *a* whose walls have numerous fine perforations, and said cylinder *a* is lined with a suitable filtering material, as for instance, several layers of wool felt *b*, which are loosely fitted within the cylinder so that they can be readily removed therefrom and freed from impurities filtered from the water.

Upon the sleeve *S*, above the drainage cup *C'* is arranged an inverted perforated distributing cone *h*, and within the same is arranged a deflecting cone *h'*. On the under side of the seat disk *D* for the centrifugal atomizer are arranged fan blades *d* for purposes hereinafter explained, and on the sleeve *s* of hanger *i* is secured a deflector *g*, the upper end, *g'* of which is made flaring outwardly, and said deflector *g* is so arranged on bearing *s* relatively to the outer shell or casing *f* that the outwardly flaring end *g'* of said deflector will project some distance above the corresponding end of the outer shell *f*, and inasmuch as the deflector is of less diameter than the said shell *f* an annular passage is formed between them for the atomized water.

The water is supplied to the apparatus from

a supply pipe *l*, and a branch pipe *n* whose discharge is in proximity to the deflecting cone *h'* within the distributing cone *h*, said branch pipe being provided with a suitable
 5 controlling valve or cock *m*, to the stem or plug of which is secured a two-armed lever *m'* having a chain or cord *m²* attached thereto at each end for the purpose of adjusting the
 10 valve or cock from the floor of the room, and therethrough the volume of water supplied to the apparatus.

In order to facilitate the lubrication of the bearing sleeve *S*, said sleeve is made to flare outwardly at its upper end and the spindle *k*
 15 is provided with a peripheral groove by means of which the lubricant supplied to the sleeve at its flaring upper end is uniformly distributed over the parts. If desired the spindle may also be provided with a central passage
 20 opening into the flaring end of the sleeve and into the drip cup respectively, for the purpose of draining off such water as may gain access to said sleeve at its upper end.

The operation of the apparatus is as follows: Power from any suitable motor being
 25 applied to the pulley *e* so as to revolve the centrifugal atomizer or spraying cylinder *a*, and water being supplied to the deflecting cone *h'* through pipe *n* by suitably adjusting
 30 the valve or cock *m* in said pipe, the water so supplied is projected by centrifugal action onto the inner walls of the perforated distributing cone *h* and by the latter in the form of spray onto the filter lining *b* of cylinder *a*.
 35 As the water is drawn through the filter lining *b* by centrifugal action it is freed from impurities held in suspension therein, and passing through the finely perforated walls of the cylinder *a* it is atomized or sprayed and
 40 projected in the form of mist into the outer shell or casing *f*. As the atomizer is revolved its four blades *d* act as suction and blast fan, drawing air into said casing *f* through its central opening, the current of air taking up the
 45 sprayed or atomized water and carrying the same out of the shell *f* through the annular passage formed between it and the deflector *g*, and as the end of the latter as well as the mouth of the shell *f* are made flaring out-
 50 wardly, the moisture laden air is projected in radial directions to a considerable distance from the apparatus.

It will be seen that the arrangement of devices is such that an open ended passage is
 55 formed into which the water is sprayed and through which a current of air is induced to carry the moisture along and disseminate the same.

Although it is not possible for the water to
 60 pass out of the centrifugal spraying cylinder in such volumes as to form drops so long as said cylinder is revolved at the proper speed and the supply of water thereto regulated accordingly, yet should this occur, these drops
 65 of water will not be carried out of the apparatus, as, owing to their greater specific gravity, they will be projected upon the inner surface

of the outwardly-bulging portion of the shell *f*, run down to the bottom of said shell, and thence through branch pipe *p* into drain pipe
 70 *r*, from which pipe *r* the drainage water is conducted either outside of the building or to a waste pipe.

If by inadvertence the supply of water to the apparatus is not cut off when said appa-
 75 ratus is not in operation, the water so supplied will flow into cup *C'* and through channels *q* in seat disk *D*, into shell *f*, and thence to drain pipe *r*. Such water as may run
 80 down along the sleeve *S* is collected in the cup *C* from which it can be removed from time to time.

Any solid impurities that may be carried into the apparatus by the upwardly flowing
 85 current of air induced by the suction and blast fan will be projected upon the outer surface of the deflector *g* and thence find their way to the bottom of the outer shell *f*, from which such impurities will or can be washed
 90 or flushed out into the drainage pipes.

Should any water find its way over the encompassing flange *o*, which is hardly possible,
 95 so long as the drain pipes are open, or should moisture collect on the spindle *k* above the centrifugal atomizer, such water or moisture
 100 will collect in cup *C*, so that all danger of water gaining access to the floor of the room in which the apparatus is located is effectually avoided.

It will readily be seen that the apparatus
 105 may be used as a ventilator only, and that instead of taking the air from within the room such air may be taken from without through the medium of a suitable duct connected with the air port formed by the conical flange *o*. Inasmuch as the sleeve *S* and
 110 parts connected thereto are the only revolvable elements in the apparatus there is comparatively little wear, and when once in proper operation said apparatus requires but little
 115 attention, while but little power is required to drive said sleeve.

The apparatus has the further advantage in that impure water may be used in supply-
 120 ing moisture even to inhabited rooms in view of the fact that no impurities held in suspension in the water can reach the room, such impurities being filtered out by the filtering medium within the centrifugal spraying or
 125 atomizing cylinder, nor can such impurities stop up or choke the fine perforations of said cylinder. The filtering medium being loosely arranged within the atomizer, it can be readily removed and cleansed, and as readily replaced.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In combination, an open ended passage, a deflector projecting into the outlet thereof,
 130 a water filtering and spraying device provided with fan blades on its bottom, said device revoluble in the passage between the inlet thereof and the deflector, and means for sup-

plying water to the filtering and spraying device, for the purposes set forth.

2. The combination with a casing open at both ends, a revoluble shaft arranged axially therein, and a combined spraying device, filter, and suction fan revoluble on said shaft and comprising a perforated cylinder open at its upper end, a lining of filtering material, and radial fan blades on the bottom of said cylinder, of the deflector and distributing cones h' and h and the supply pipe n arranged to deliver water onto said deflector cone, substantially as and for the purpose set forth.

3. The combination with a shell or casing provided in its bottom with a discharge pipe and with a central air inlet opening encompassed by an inwardly projecting flange, of a spraying device revoluble in said shell above its air inlet, comprising a perforated cylinder of greater diameter than the air inlet, said cylinder provided in its bottom with radial discharge ducts in communication with its interior, substantially as and for the purpose set forth.

4. The combination with a casing provided in its bottom with a discharge pipe and with a central air inlet port encompassed by an inwardly projecting flange, of a spraying device revoluble in said shell, comprising a perforated cylinder of greater diameter than the aforesaid air inlet, and provided with a central annular overflow and with radial discharge ducts in communication with said overflow, for the purpose set forth.

5. The combination with an open ended casing, of a combined spraying device and filter

revoluble in said casing and comprising a supporting disk provided with an encompassing retaining flange, a perforated cylinder, a , removably seated on said disk, and a lining of filtering material for and removable from said cylinder.

6. In combination, a hanger provided with a sleeve bearing, a spindle fast in said bearing, an open ended casing secured to the spindle at a point below the inlet of said casing, a spraying device provided with a bearing sleeve revoluble on the spindle and extending below the inlet of the casing and a driving pulley on said sleeve below said inlet of the casing, for the purpose set forth.

7. The combination with a hanger provided with a bearing, a spindle fast in said bearing, an open ended casing secured to the spindle at a point below the inlet of said casing, and a deflector on said spindle projecting into the outlet of the casing, of a water filtering and spraying device and a suction fan united to form a single element contained within the casing between its inlet and the deflector, said element provided with a bearing sleeve revoluble on the spindle and extending below the inlet of the casing, and a driving pulley on said sleeve below the aforesaid inlet, for the purpose set forth.

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

GUSTAV JOSEPHY.

Witnesses:

SAMUEL KLATSCHKE,
N. SCHLESSING.