This invention relates to a machine for conditioning air and includes a rotating cylinder having a moisture retaining medium, and a motor driven fan for pulling the air through said cylinder containing said medium.

Another object of the invention is to provide equipment for washing and cooling air that may be manufactured in sizes suitable for use in an automobile, in residences or in commercial establishments.

Other objects will appear throughout the specification.

In the drawings:

Figure 1 is a front perspective view of a device embodying our invention.

Figure 2 is a transverse vertical section of the device shown in Figure 1.

Figure 3 is a rear view of the device shown in Figure 1.

Figure 4 is a longitudinal vertical section transverse to that of Figure 2.

Figure 5 is a detailed view of the lower end of the water reservoir showing the valve forming part thereof.

Figure 6 is a fragmentary perspective view of part of the cylinder.

Figure 7 is a fragmentary plan of one end of the casing top.

Figure 8 is a modified form of the device to adapt it for use in an automobile.

In the drawings the numeral 1 indicates a casing preferably constructed of metal such as galvanized sheet metal having four sides and a bottom and top portion. The top portion is provided with trimming comprising sections of angle iron 2, which surrounds the top on three sides as shown. The fourth side is provided with a sheet metal strip 3 having struck down portions that are welded to the side shown at the left in Figure 2.

The front portion 4 of the casing is provided with a circular opening 5 within which may be seen the fan 6 and motor 7 for driving the same. As shown in Figures 2 and 4 the motor is supported by a pair of upper and lower brackets 10 and 11, which brackets are each provided with a pair of legs 12 and 13 respectively. At the juncture of each leg with its bracket there is a slot 14, through which is threaded a metal band 15 having ears 16 through which a bolt 17 may be passed, which latter has a nut 18 threaded thereon, to thereby tighten the band. The extremities of each of the legs may be welded to four cross pieces of L cross-section mounted on the sides of the casing.

The bottom of the casing forms a pan member 19 and has an extension 20 which extends beyond the left hand sides of the casing as viewed in Figure 2 and is further provided with an end 21. This extension forms a socket or container for the lower end of the rectangularly shaped water reservoir 22. The upper end of the water reservoir is held removably in place by the U-shaped frame-work 23, the ends of which are provided with hinges 24, which are mounted on the angle iron trimming sections 2. When the framework is swung up to a vertical or near-vertical position the water reservoir may be removed and refilled. The reservoir has a U-shaped strap 26 which slantly houses the stem 27 of the valve 28. A bridge member 29 connects the legs of the U-shaped strap and provides an abutment for one end of the spring 30 which surrounds the stem 27 and has its opposite end in abutting relation with the nut or washer 31 mounted on the stem 27, so as to force the valve 28 downwardly and thus close the valve 28 against the bottom 32 of the reservoir 22.

The reservoir is provided with an opening 33 (Figure 5), which is ordinarily closed by the valve 28. The end 34 of the stem 27 bears against the bottom of the casing when the reservoir is in position and thus unseats the valve permitting water to flow out of the reservoir into the space there beneath. This space is formed by the supplemental reservoir 35, the walls of which are composed of the extension 26, the pan end 21 and the partition wall 36. The supplemental reservoir is formed into a plurality of water compartments by the partition 35, and these compartments communicate with each other by means of one or more apertures 37 which permits water to slowly pass from one compartment to the other. The right-hand compartment forms a pan 15 previously referred to.

The lower portion of the cylinder 38 dips into the water located in the water compartment directly beneath the same. This water has found its way through the aperture 37 from the water compartment located directly beneath the reservoir 22. The cylinder surrounds the fan and motor and is provided with a pair of rings 39 and 40 located side by side and spaced apart by inner and outer meshed wire rings 41 and 42 respectively. Provided the filling material is somewhat light, additional netting similar to mosquito netting (not shown), may be placed against the inner and outer cylinder rings 41 and 42. The filling material which is located between the four walls defined by the rings 39 and
48 and cylinder rings 41 and 42 is indicated by the numeral 43, and this may be any suitable water absorbing material such as excelsior, spun rubber excelsior or spun metal, in fact any substance that will permit liquid to evaporate from the said substance when air is passed through or around it. The meshed wire rings are attached to the cylinder rings by soldering, welding or other suitable means of attachment, although we prefer to make the external meshed wire ring 42 removable so that the filling material 43 may be removed or replaced at suitable intervals. The outer peripheries 44 and 45 of the rings extend beyond, or are of greater diameters than the meshed wire ring 42 to form the support of the cylinder 33 whereby the cylinder may be rotated by the means hereinafter described. The cylinder surrounds the motor and fan, and the rings 39 and 40 are located fairly closely adjacent the front wall 4 and the rear wall of the casing when in position so as to prevent the passage of any great amount of air between the rings and casing walls. They are held from rubbing contact with the said walls by the rubber anti-rattlers 45 which are mounted on both rings and serve to slightly space them from the said walls.

The motor shaft 47 is provided with a pulley 48 of general V-type construction. This pulley is located outside of the back portion of the casing as shown in Figure 3. Extending through the back of the casing are two other shafts, 49 and 50. (Figure 2), which are driven by pulleys 51 and 52 respectively (Figure 9). These pulleys are also of V-type construction. These shafts 49 and 50 extend entirely across the casing from front to back and are provided with bearing supports 55 and 56. Mounted on each shaft 49 and 50 are a pair of rollers having grooves 55 and 56 respectively. The said rollers are fixed to the shafts by any suitable means not shown. The four rollers form driving surfaces for driving the cylinder 38. The outer peripheries 44 and 45 of the rings seat in the grooves 55 and 56.

58 is a belt which seats in the V-grooves of the pulleys 48, 51 and 52. This belt serves to drive the shafts 49 and 50 through the said pulleys when the motor 1 is running. Any suitable means may be provided for reducing the speed of the shafts 49 and 50 below that of the speed of the shaft 47. One means, as shown, includes the provision of a comparatively small pulley 48 and large pulleys 51 and 52 which are driven by the smaller pulley 48. When these shafts 49 and 50 are driven by the motor 1, the cylinder 38 is rotated by means of the shafts 49 and 50 to cause the lower portion of the cylinder to dip into the water which has seeped into the can 19 from the supplementary reservoir 35, by means of the openings 37 in the partition wall 38.

The form shown in Figures 1 to 8 is that usually employed for air conditioning the interiors of buildings and supplying them with the proper amount of moisture laden cool air. The air enters through the meshed top 5, passes through the cylinder 39 and into contact with the material therein, and is then drawn into the fan, after which it is forced by the fan through the opening 5 into the interior of the room. In the form shown in Figure 8 the flexible conduit or rubber or other suitable material is attached to the vent opening of an automobile. This vent is usually located at the cowl or dash of the automobile. The air is conducted through the flexible conduit, thence into the interior of the casing 53. This casing is constructed in a similar manner to the casing shown in Figure 1. What we claim is:

1. An apparatus for cooling, purifying and air-conditioning air comprising in combination, a casing, a motor and fan, means for attaching said motor and fan in said casing, said last named means comprising a plurality of horizontal members connected at their ends to said casing, and upper and lower brackets attached to said motor and to said horizontal members, each of said brackets having a plurality of receptacles, a motor strap encircling portions of said brackets, and threaded through said slots to retain said motor in fixed position, a cylinder surrounding said motor and fan, means for driving said cylinder from said motor.

2. An apparatus for cooling, purifying and air-conditioning air comprising in combination, an apparatus for freeing a gas from small particles therein suspended, and for moistening said gas including a casing, a water reservoir mounted in the bottom portion of said casing, said casing having a partition wall forming a plurality of water compartments, at least one aperture in said wall, means in the bottom of said reservoir for permitting the exit of water from said reservoir by gravity into one of said water compartments whereby the liquid from said last named compartment gradually finds its way through said aperture to the other of said water compartments on the opposite side of said partition, and a rotary driven cylinder mounted in said receptacle and adaptable to dip into the water located in said other compartment of said receptacle, a motor, means for driving said cylinder from said motor, and means for attaching said members to said oppositely disposed walls.

3. An apparatus for cooling, purifying and air-conditioning air comprising in combination, a casing having inlet and outlet openings, said casing having oppositely disposed walls, a rotary foraminous cylinder, a fan, means for driving said fan and cylinder comprising a motor, and means for supporting said motor and fan including a plurality of members extending within said cylinder and means for attaching said members to said oppositely disposed walls.

4. An apparatus for cooling, purifying and air-conditioning air comprising in combination a casing having inlet and exit openings, said casing having oppositely disposed walls, a rotary foraminous cylinder, a fan, means for driving said fan and cylinder comprising a motor, means for supporting said fan and motor within said cylinder including a plurality of members extending within said cylinder and pairs of brackets connected to the opposite ends of said motor and to said members, means for connecting each one of each pair of brackets to the other one of said pairs, and means for attaching the ends of said members to said oppositely disposed walls.

RAYMOND L. BURTON.
WALTER D. ROGERS.