

April 9, 1940.

F. JOHNSTON

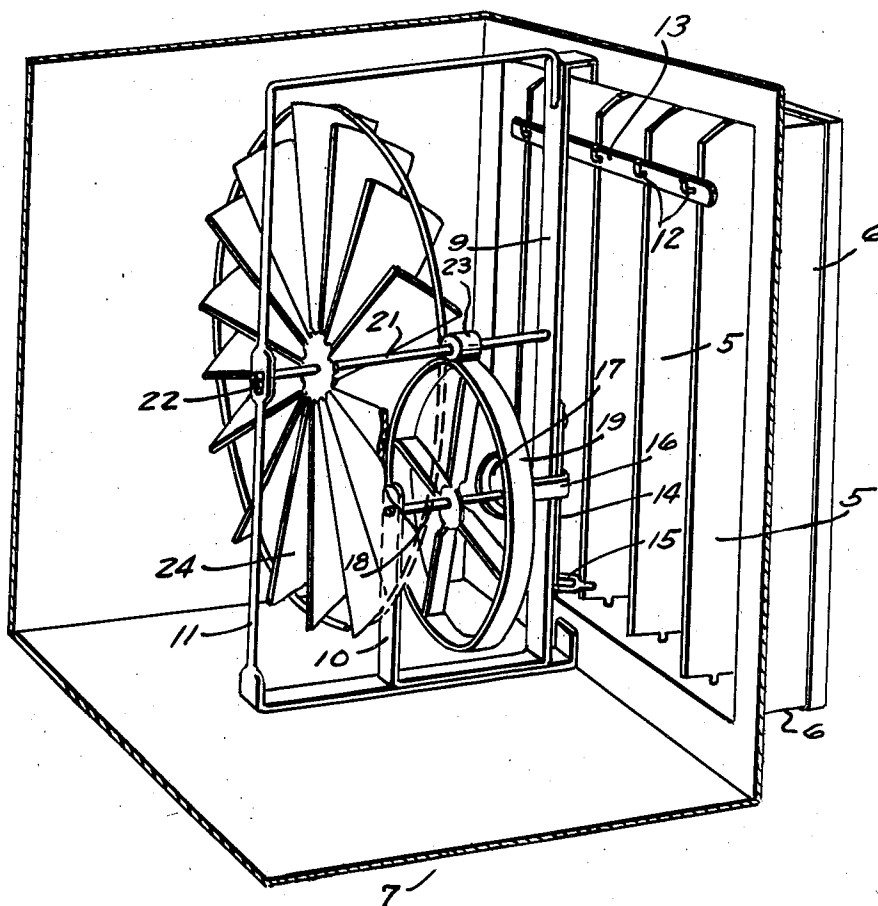
2,196,308

AUTOMATIC AIR DISTRIBUTING REGISTER

Filed March 15, 1939

2 Sheets-Sheet 1

Fig. 1



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Wheeler Wheeler

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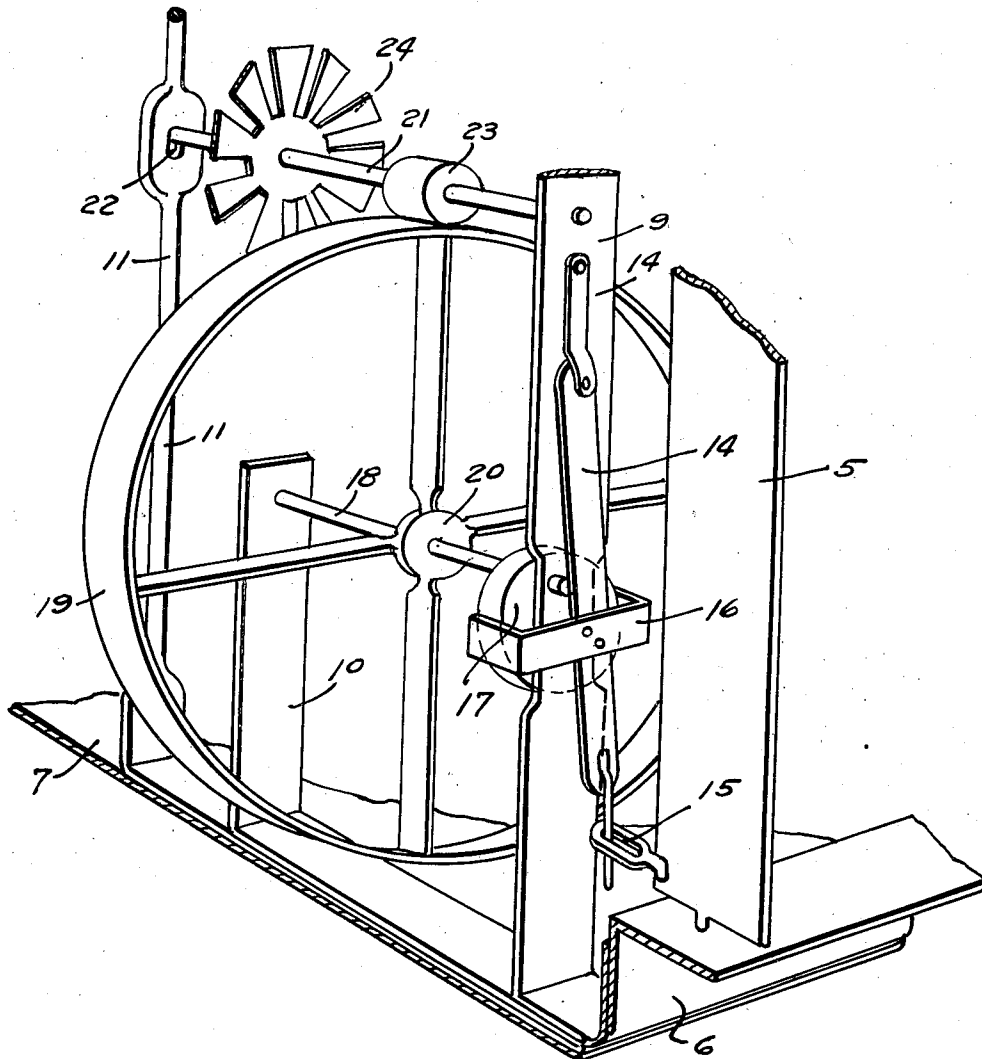
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2 Sheets-Sheet 2

Fig. 2



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UNITED STATES PATENT OFFICE

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AUTOMATIC AIR DISTRIBUTING REGISTER

Fred Johnston, Stillwater, Minn.

Application March 15, 1939, Serial No. 261,947

4 Claims. (Cl. 98-40)

My invention provides an extremely simple and efficient automatic air distributing register wherein louvers or oscillatory distributing blades are automatically oscillated under the action of an air-propelled fan wheel located in the air duct. The louvers are mounted for oscillatory movement in the frame of the register and are connected for common oscillatory movements. The air-propelled fan wheel is journaled in the register box that affords the air to be forced by convection or otherwise through the air duct.

Between the fan wheel and the louvers there is interposed a speed reducing mechanism involving a master friction wheel and a relatively small friction wheel, which latter is carried by the shaft of the fan wheel and is yieldingly held in driving contact with the master wheel, preferably by gravity. The master friction wheel has a crank or eccentric that oscillates a pendulum or vibratory member that transfers the oscillatory movement to the louvers.

The preferred embodiment of the invention is illustrated in the accompanying drawings wherein like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a perspective with some parts broken away and some parts sectioned showing the complete device; and

Fig. 2 is a perspective showing the mechanism of the device, some parts being broken away and some parts being removed.

The air distributing louvers 5 are pivoted for oscillatory movements in a rectangular frame 6 of a box-like casing 7 that constitutes a conduit from which the air, either hot or cold, will be forced either by convection, gravity or otherwise. Secured within the casing 7 is a rectangular frame having uprights 9, 10 and 11.

The louvers 5 at their inner edges are shown as provided with projecting hooks 12 that are connected by a tie bar 13 so that the said louvers will be given common oscillatory movements.

The numeral 14 indicates a pendulum or oscillatory bar which, at its upper end, is pivoted to the upright 9, and at its lower end has a finger-like projection that works in a slotted lug 15 secured to and projecting from the inner edge of one of the louvers 5. Obviously when the pendulum 14 is oscillated, the louvers will be oscillated.

The pendulum 14 has a U-shaped bracket 16, the ends of which are closely engaged by a crank-acting eccentric 17 carried by a shaft 18 journaled in the uprights 9 and 10. Secured on the shaft 18 is a large master friction wheel 19 made

up of a thin rim and spokes that radiate from a hub 20 directly secured to the shaft 18. The exterior of the rim of the master wheel 19 is either preferably faced with an abrasive material or material such as rubber that gives the same good frictional driving contact.

The numeral 21 indicates a driving shaft, one end of which is journaled in the upright 9, and the other end of which is loosely journaled in a vertically elongated hole or slot 22 formed in the intermediate portion of the upright 11. This shaft 21 carries a small driving wheel or roller 23 that bears directly on the exterior of the rim of wheel 19.

The air-propelled fan wheel 24 is secured to the shaft 16 between the driving wheel or pulley 23 and the upright 11. Thus the weight of the fan wheel 24, the shaft 21 and driving wheel 23, gravitationally holds the latter in frictional driving contact with the rim of wheel 19.

The operation of the device described is probably obvious from the foregoing statements, but may be summarized as follows.

Under the force of the air current, either hot or cold, delivered through the air conduit, the fan wheel 24 will be rotated at a relatively high velocity depending, of course, on the force of the air current; and a relatively slow oscillatory movement will be imparted to the louvers, and the louvers will thus be caused to continuously oscillate or sway the delivery air current first in one direction and then in the other. The fact that the speed of the oscillation of the louvers will vary with the speed of the air current is very desirable because, as is obvious, a rapidly flowing hot or cold air blast should be given more rapid motion than the more slowly moving air current to prevent an objectional period of distribution at any one particular point; and this is just the action that is given with the device described.

In the drawings I have illustrated a preferred embodiment of the invention, but it will be understood that the same is capable of modifications within the scope of the invention herein disclosed and claimed.

Means for continuously oscillating the louvers to distribute the air is considered broadly new. Also, it is evident that this device will be serviceable for distributing hot air in cold weather and also for distributing cold air from a refrigerating or cooling source in warm or hot weather.

What I claim is:

1. An air register provided with oscillatory air distributing louvers, an air propelled fan wheel

in the air duct of said register, an oscillatory pendulum connected to said louvers for oscillating the same, a crank-acting eccentric operative on said pendulum to oscillate the same, a relatively large master friction wheel connected to said crank-acting eccentric for rotating the same, a relatively small friction wheel frictionally engaging the said large friction wheel, and a common shaft carrying said last noted friction wheel and said fan wheel.

2. The structure defined in claim 1 in which the shaft carrying said small friction wheel and said fan wheel is capable of limited vertical movements are gravitationally pressed downward to gravity maintain frictional contact between said two friction wheels.

3. The structure defined in claim 1 in which said pendulum, pivoted at its upper end, is connected to said louvers at its lower end and at its

intermediate portion has a U-shaped bracket directly acted upon by said crank-acting eccentric.

4. An air register provided with oscillatory air deflecting means, an air propelled fan wheel in the air duct of said register, an oscillatory pendulum connected to said air deflecting means for oscillating the same, a crank-acting eccentric operative on said pendulum to operate the same, a relatively large master friction wheel connected to said crank-acting eccentric for rotating the same, a relatively small friction wheel engaging said large friction wheel, and a common shaft carrying said last noted friction wheel and said fan wheel, said relatively small friction wheel being mounted for vertical movements and gravitationally held against said relatively large friction wheel.

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