(No Model.) 2 Sheets—Sheet 1.

E. A. TUTTLE.

HOT AIR REGISTER.

No. 526,848. Patented Oct. 2, 1894.

Fig. 1.

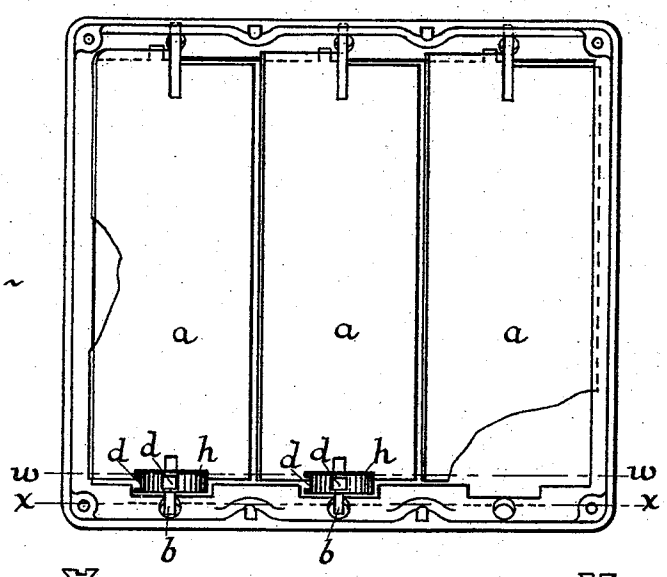


Fig. 2.

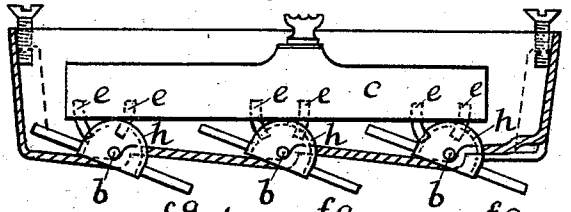


Fig. 3.

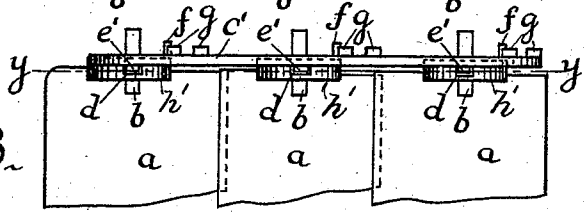
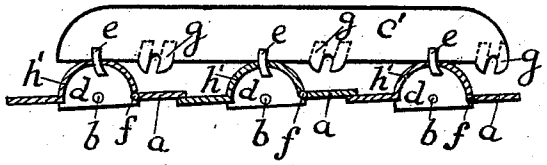


Fig. 4.



WITNESSES.

H. J. Morgan

S. H. Morgan

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E. A. Tuttle

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(No Model.) 2 Sheets—Sheet 2.

E. A. TUTTLE.

HOT AIR REGISTER.

No. 526,848. Patented Oct. 2, 1894.

Fig. 5.

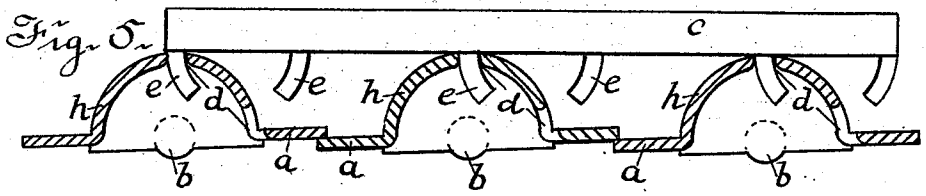


Fig. 6.

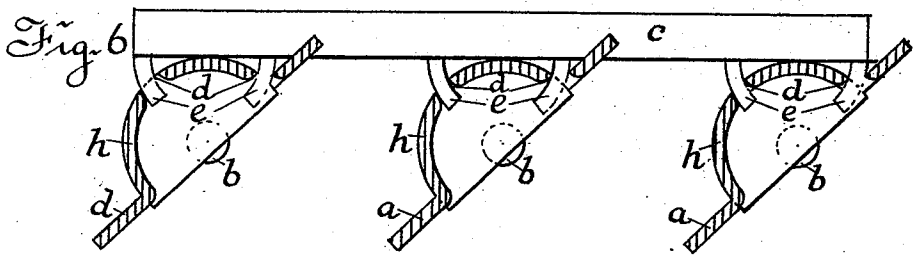


Fig. 7.

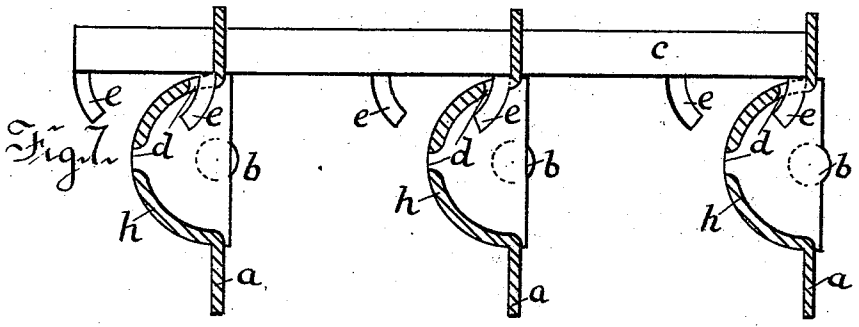


Fig. 8.

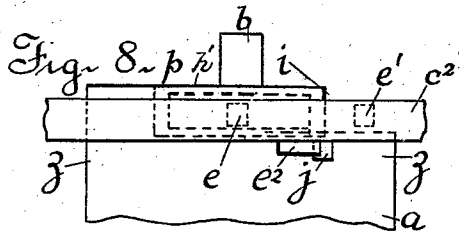


Fig. 9.

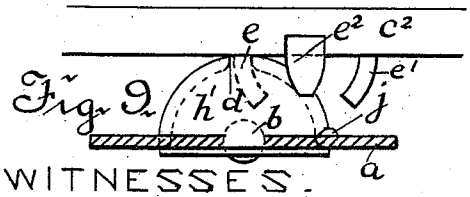
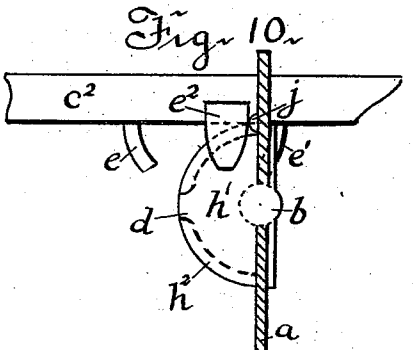


Fig. 10.



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C. H. Morgan

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Ed A Tuttle.

By A P Thayer.

atty.

UNITED STATES PATENT OFFICE.

EDWARD A. TUTTLE, OF NEW YORK, N. Y.

HOT-AIR REGISTER.

SPECIFICATION forming part of Letters Patent No. 526,848, dated October 2, 1894.

Application filed January 22, 1894. Serial No. 497,610. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. TUTTLE, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Hot-Air Registers, of which the following is a specification.

My invention relates to hot air or ventilating registers and consists of improved apparatus for operating the fans as hereinafter fully described reference being made to the accompanying drawings, in which—

Figure 1, is a plan view of a register having fan operating apparatus of my invention with the front plate and fan operating rod detached, and a part of one fan broken out. Fig. 2, is a transverse section of the register on the line *x—x* of Fig. 1, with the front plate removed. Fig. 3, is a plan view of the fan operating rod, and part of the fans showing a modified arrangement of some of the parts. Fig. 4, is a transverse section of the apparatus of Fig. 3 on line *y—y*. Figs. 5, 6 and 7 are transverse sections through the roller segments of the fans on line *w—w* Fig. 1, and side views of the connecting rod illustrating the operation of the apparatus, Fig. 5 showing the fans closed, Fig. 6, showing them partly open, and Fig. 7, showing them wide open. Fig. 8, is a plan view of part of a fan, and part of a connecting rod showing a modification of the apparatus of Figs. 3 and 4, the fan being closed. Fig. 9, is a transverse section of the fan on line *z—z* Fig 8, and a side view of the connecting rod, and Fig. 10 is also a transverse section of the fan on line *z—z* Fig. 9, and side view of the connecting rod showing the fan open.

In Figs. 1, 2, 5, 6 and 7, the fans *a*, are made with a hollow segment of a circle *h*, at one end concentric with the pivots *b*, and constituting rollers for carrying the fan connecting and operating rod *c*, which rests on them, and moves thereon forward and backward in its operations for turning the fans to open and close them. These rollers have two radial slots *d*, through the rim on which the rod rests distant from each other a quarter of the circumference from center to center, and the rod has two cycloid teeth *e* for each roller meshing with said slots to turn the fans, the teeth being arranged with their curves in reverse of each other whereby two teeth serve as well for turning the fans a quarter of a circle as more would serve, and the apparatus is simpler and more reliable than if a greater number of notches and teeth were made, and the run ways on the peripheries of the rollers for the rod are more uniform. Each tooth enters its slot as the other retires and turns the fan it is engaged with one eighth of a circle, the second tooth taking hold when the other leaves off which completes the distance the fan has to turn, said teeth always acting at or near the periphery of the roller and having much better leverage than when the rod connects with the fan by only one point of engagement as commonly arranged.

It will be seen that by the use of two teeth on the rod and two slots in the segment the friction is reduced to a minimum and by the arrangement of the rod on the rolling runways of the segments the apparatus works in the easiest manner.

In Figs. 3 and 4 I represent an equivalent arrangement of the same character practically, and included in the principle of my invention and in my claims. The rod *c'* in this case rests on like roller segments *h'* and has one tooth *e* to one slot *d* of each segment, the pin *f* projecting from one side of the segment, and the two prongs *g*, of the rod for embracing said pin being substituted for one tooth of the rod and one slot of the segment in the other arrangement, the operation is practically the same. This plan may also be varied somewhat in construction without departing from the spirit of my invention as I have represented in Figs. 8, 9 and 10, wherein the roller segment *h'*, is made with one slot *d* for a like tooth *e*, on the rod c^2, another tooth *e'* takes effect against the heel of the roller segment at *i*, after tooth *e* has done its work to turn the fan to the left, and a third tooth e^2 projecting downward from one side of the rod and by one side of the segment takes effect on a little rib *j* upon the surface of the fan to turn the fan in the fore part of its movement to the right hand. This plan is practically the same as the others. They all consist essentially of the rod having two points of connection with the segments between which the action is divided, half the

movement being communicated at one point and half at the other.

Although the two teeth e' and e^2 actually have two different points of contact as regards each other, and the prongs g and pin f of Figs. 3 and 4, they only constitute one point as regards the segment, and the point of contact of the tooth e. The essential advantage of the tooth e^2 located at the side of the rod and the tooth e' acting against the heel of the segment, as compared with the prongs g and, pin f of Figs. 3 and 4, is that the projecting pin, somewhat liable to break, is dispensed with and the rod is guided and controlled to better advantage.

The distinctive feature of my invention consists of the two points of engagements between the rod and the segments respectively turning the fans half their movement.

I do not claim the hollow segments broadly as these have been used before with rods having only one point of engagement with the segment.

I claim—

1. The combination with the fans having the roller segments, of the operating rod resting and moving thereon, and having reverse cycloid teeth or prongs engaging said segments at two points distant from each other about the length of the run-way of the rod on the segments, and each moving the fans about half of their arc of movement substantially as described.

2. The combination with the fans having the roller segments, of the operating rod resting and moving thereon, and having reversely arranged cycloid teeth engaging said segment at two points distant from each other about the length of the runway of the bar on the segment, one of said teeth acting against the heel of the segment, and said rod having another tooth working by the side of the segment in opposing relation to the tooth acting against the heel of the segment, all constituting two points of connection of the rod with the segments between which the action is divided substantially as described.

Signed at New York city, in the county and State of New York, this 5th day of January, A. D. 1894.

EDWARD A. TUTTLE.

Witnesses:
W. J. MORGAN,
S. H. MORGAN.