# H. J. STEIN.
## Mechanical Medium.

**No. 212,870.** **Patented Mar. 4, 1879.**

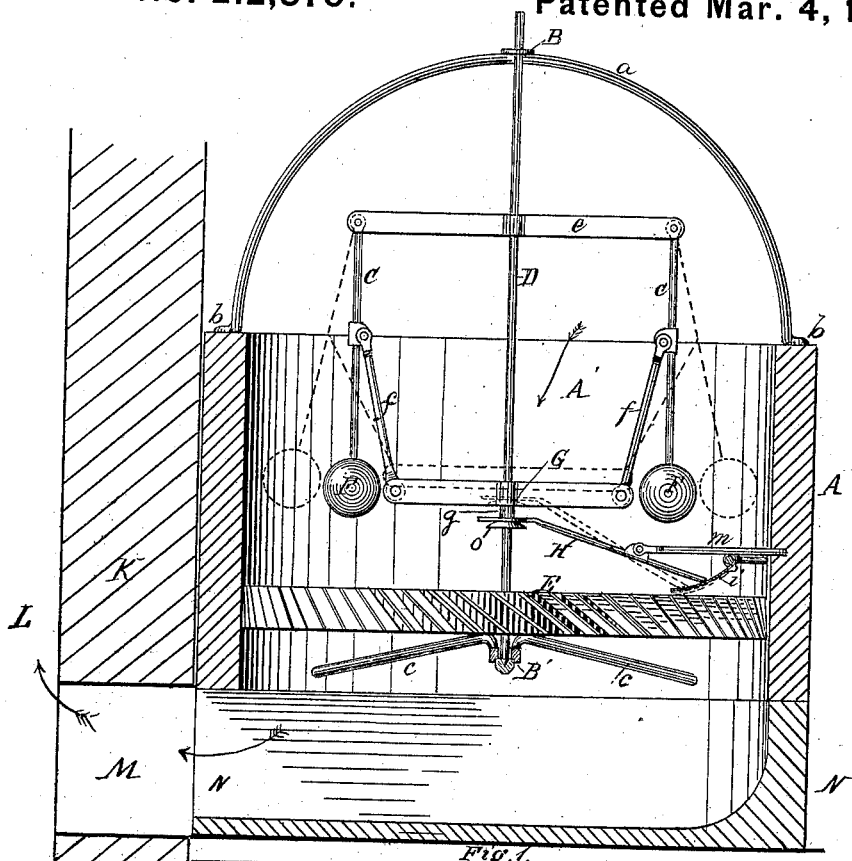


Fig. 1.

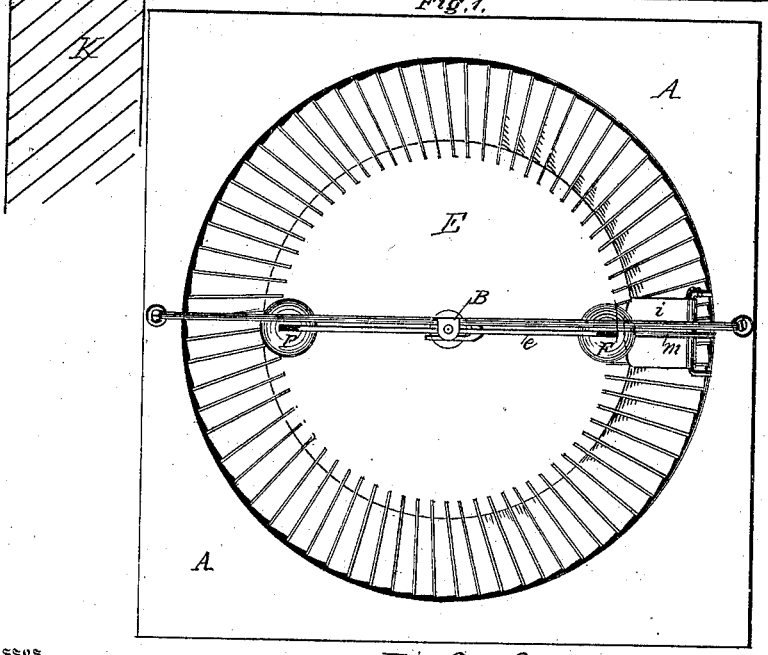


Fig. 2.

Witnesses
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# UNITED STATES PATENT OFFICE.

HENRY J. STEIN, OF PITTSBURG, PENNSYLVANIA.

## IMPROVEMENT IN MECHANICAL MEDIUMS.

Specification forming part of Letters Patent No. **212,870**, dated March 4, 1879; application filed May 17, 1878.

*To all whom it may concern:*

Be it known that I, HENRY JACOB STEIN, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful improvement in driving machinery and a mechanical device for the employment of a natural power for the purpose of imparting useful motion to machines, of which the following is a specification:

It is a well-known law of nature that the air in buildings moves upward, the force of its ascent depending upon the height of the structure, the size and proportions of the channel through which it ascends, and also the degree of its rarefaction.

Heretofore this natural power has only been used for the purpose of ventilation, and never for the purpose of driving useful machinery.

The invention relates to the utilizing of this natural power, which exists more or less in all structures of elevation, and also to the mechanical medium through which the said natural power can operate or be applied for useful purposes.

The object of the invention is to employ this natural power for driving useful machinery.

The invention consists in forming an opening into any ascending tube or flue in a building, or between a lower apartment and an upper one, for the passage of air, and a self-regulating mechanical medium in connection therewith, to which motion is imparted by the ascent of the air either on entering or leaving any such passage-way.

The invention is shown in detail in the accompanying drawings, forming part of this specification, in which similar letters of reference indicate like parts.

Figure 1 is a vertical section. Fig. 2 is a plan view.

A represents a short tube or block of wood, bored through the center, as shown by A′, the diameter being about six inches. This hole is spanned by the arch *a*, which is attached to the upper face of the block A. At the points *b b* at the zenith of this arch, and attached to and supported by it, is the journal-bearing B. C C are two rods attached to the under side or face of block A, which join in the center of the hole or circular chamber A and support the journal-bearing B′, this lower bearing, B′, being directly under the upper bearing, B. D is a vertical shaft, which journals in the bearings B B′, the upper end of which may extend above B for the attachment of a crank or pulley, as may be desired. Fast on this side, at its lower end and just above the journal B, is a screw-wheel, E, the diameter of which is such that it will fit in the circular hole or chamber in block A, and yet have clearance of the walls, that it can freely revolve therein.

On the shaft D, between wheel E, is situated a device for regulating the speed of wheel E and shaft D—to wit: an upper cross-bar, *e*, which is fast on the shaft, to the free ends of which are attached or pivoted the arms *c c*, having on their free ends the balls F F, and at a point a little above the center of their length the two rods *f f* pivoted to them, the lower ends of said rods being in turn pivoted to a cross-bar, G, which is a little shorter than the upper bar, *e*, through the center of which the shaft D passes freely.

Connected to the lower side of bar G and on the shaft is a short sleeve, *g*, provided with a collar, *o*. H is a lever, the upper end of which is bent on its shaft, and is perforated so that the sleeve *g* passes through it and can freely rotate in it, thus forming a swivel-connection. The main body of this lever extends downward at an angle to the shaft D, and has pivoted to it the horizontal rod *m*, the outer end of which enters and is fixed in the wall of the chamber A′. To the under side of this rod *m* is loosely hinged the curved plate *i*, the free end of which extends toward the shaft D and rests on the upper side of the wheel E, just inside of the blades. The free end of the lever H is received by and rests on the center portion of this plate.

It will be seen that this regulating device is similar to the governor device used on steam-engines.

N′ is a block or base, internally dished or hollowed out to correspond to the diameter of the chamber A′, to which it forms a bottom as well as a base to the block A. At its back it is perforated with the opening N. L is a flue or other ascending passage in a building—

such, for instance, as that formed by studding, and the lath and plaster in partition-walls, or in the outer walls of frame buildings, K being the inside wall or plaster which separates said flue or passage from the apartment in which the invention or motor is situated.

Operation: A hole is first cut through the wall K into the passage-way L, the size of which relates to the size of the opening N in the block N′. The mechanical medium or motor (the blocks A and N′ being connected) is then attached to the wall K, the two openings M N being brought into relation. The air in its passage into the flue L is thus compelled to pass down through the chamber A′ of the motor, and engages the blades of the wheel E, causing it to rotate by the power of its current through it. In case the speed of the wheel tends to increase beyond that to which the regulator may be set, the balls F F will assume the position shown by the dotted line in Fig. 1, depressing the bar G on the shaft D, and, by the action of the lever H on the plate *i*, force its lower face on the wheel E, and retard its movement. As the speed is decreased the balls F incline in toward the shaft D, and the plate is relieved of the action of the lever H, and so releases the wheel. Thus the machine will run at a regular rate of speed, as is proven in the case of a clock which has been driven for several months (with little or no variation in time) by means of the invention set forth, and without any attention whatever.

I do not wish to be understood as confining myself to the application of the mechanical device to the inlet passage-way of a flue or tube, as the motor will operate as well if connected to the outlet of such tube or flue; also that in some cases it may be found best to erect a tube for the passage of the air for the purpose of driving machinery in this way.

Having thus described my invention and its operation, what I claim, and desire Letters Patent for, is—

1. The motor herein described—that is to say, the shaft D, wheel E, and journals B B′, located inside of the chamber A′, and provided with the governor, operating on the shaft D, lever H, rod *m*, and curved plate *i*, all constructed, arranged, and operating as and for the object set forth.

2. In combination with the shaft D and wheel E, the regulating device herein described, to wit: the governor, operating on the shaft D, and the lever H, rod *m*, and curved plate *i*, all combined, constructed, and operating as and for the object set forth.

HENRY JACOB STEIN.

Witnesses:

GOTTLIEB NEU,

WILLIAM STAMM.