

(No Model.)

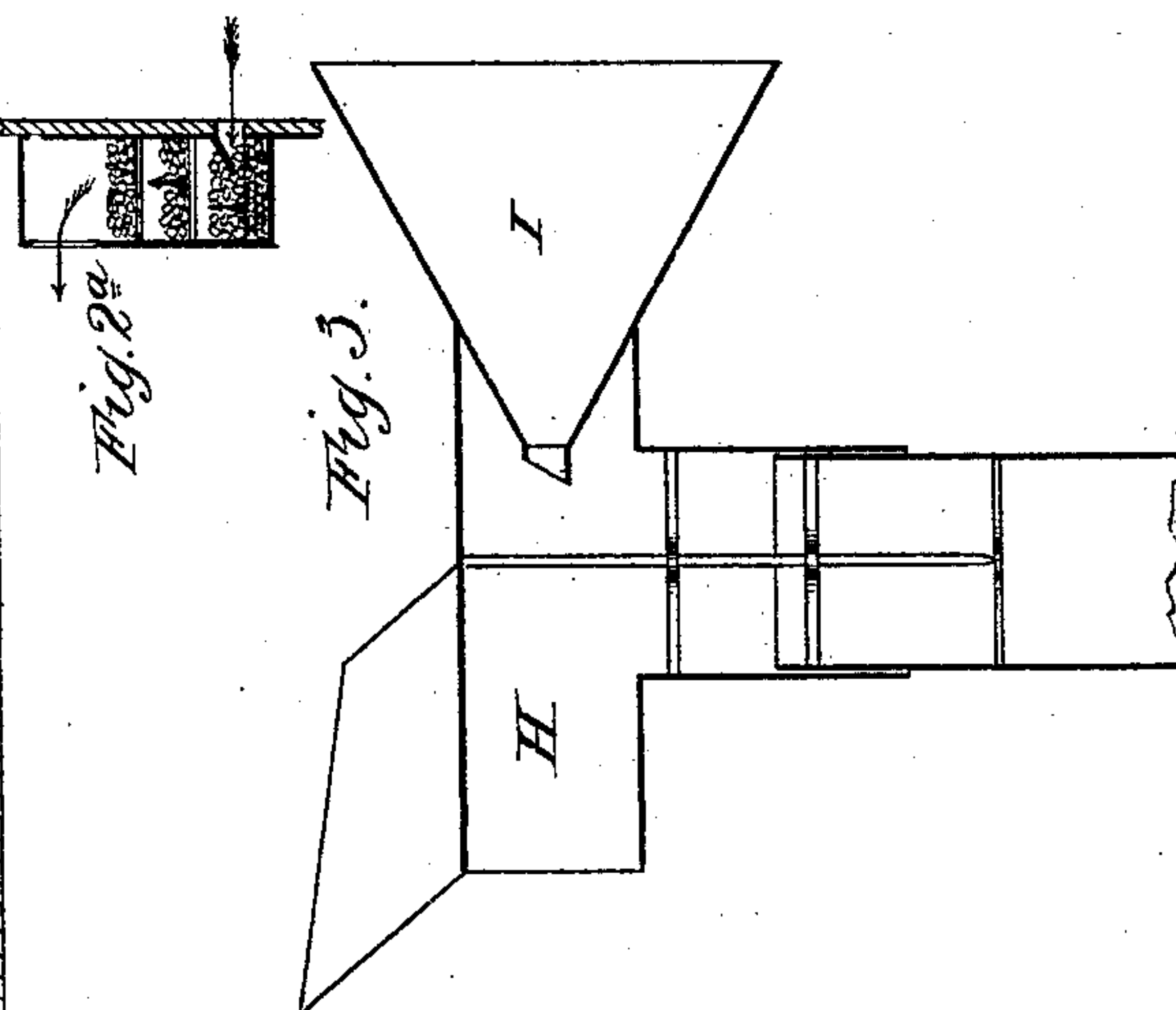
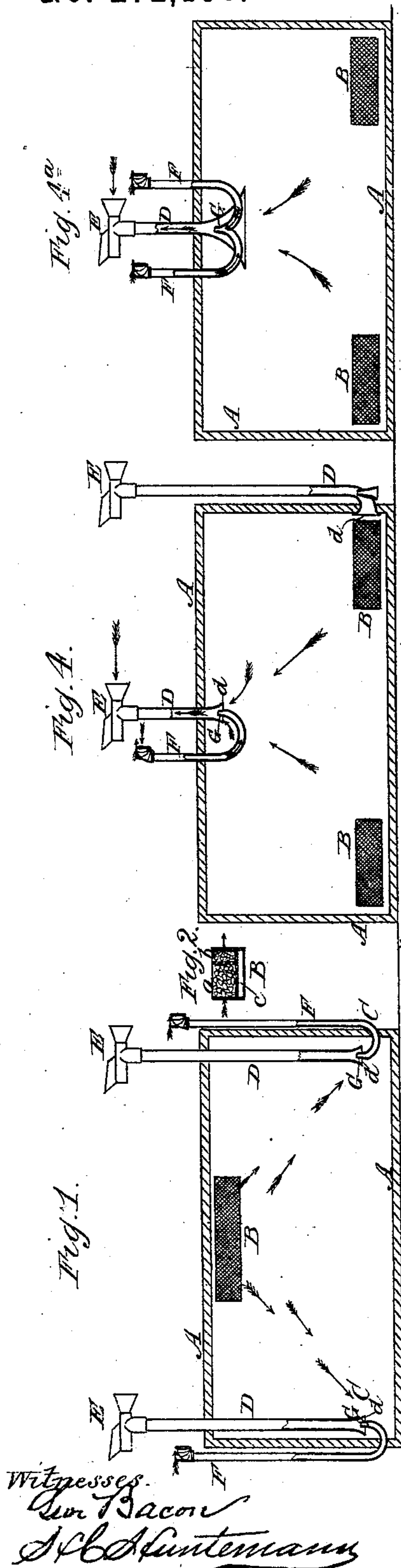
2 Sheets—Sheet 1.

T. ROWAN.

METHOD OF AND APPARATUS FOR VENTILATING BUILDINGS, SHIPS,
VESSELS, RAILWAY CARRIAGES, AND THE LIKE.

No. 272,158.

Patented Feb. 13, 1883.



Thomas Rowan Inventor.
By John F. Hallett & Son
his Attys.

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Fig. 1.

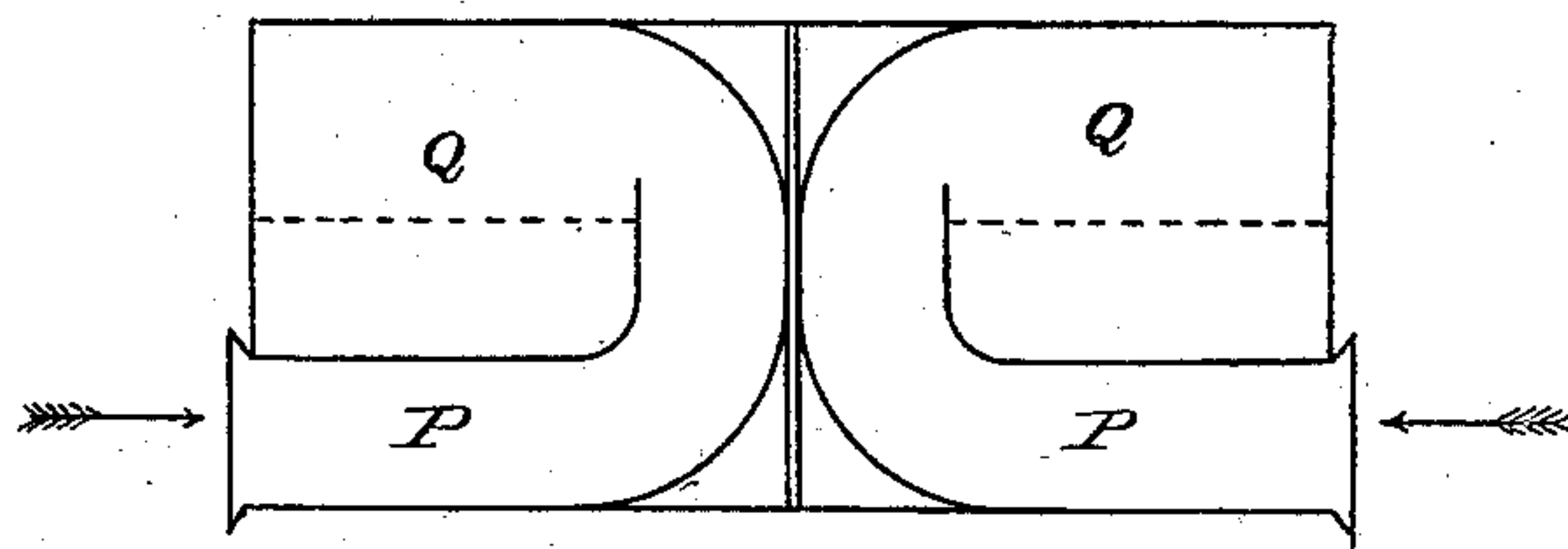
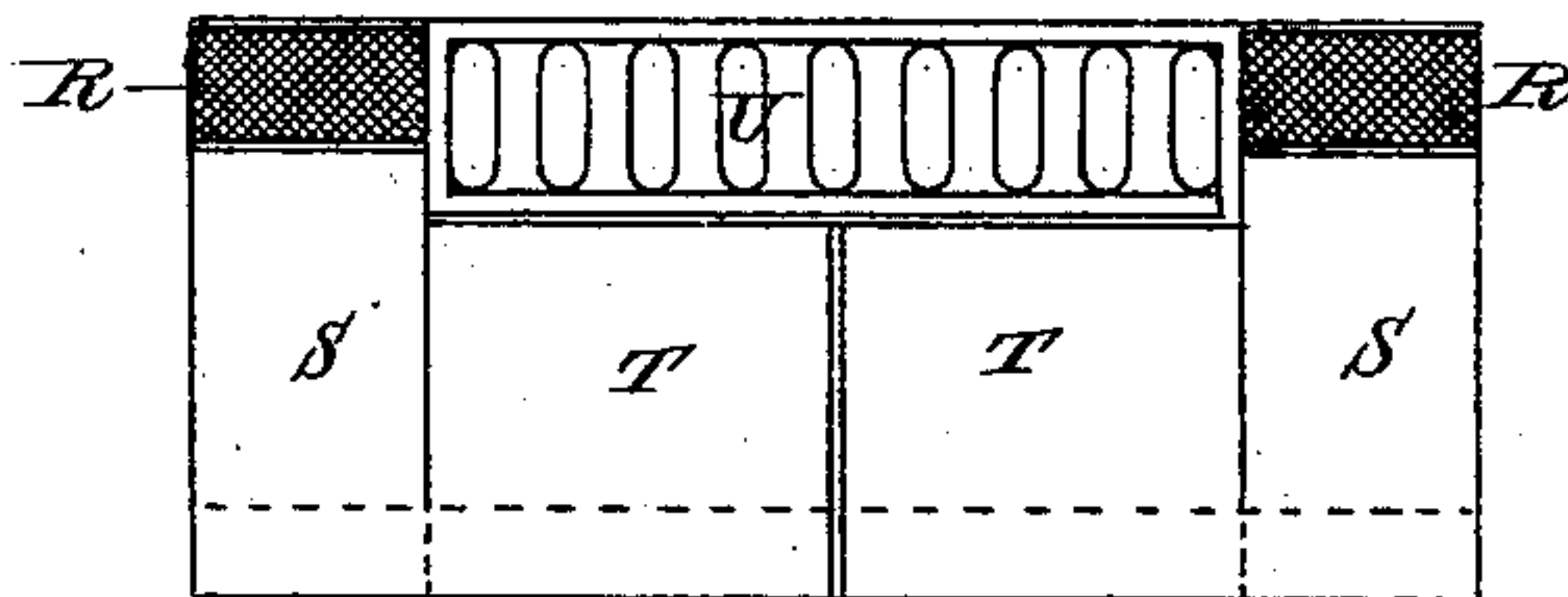


Fig. 2.



Witnesses.

Geo. Bacon
J. H. Santemary

Thomas Rowan, Inventor.
by
John J. Halsted & Sons
his Attys.

UNITED STATES PATENT OFFICE.

THOMAS ROWAN, OF LONDON, ENGLAND.

METHOD OF AND APPARATUS FOR VENTILATING BUILDINGS, SHIPS, VESSELS, RAILWAY-CARRIAGES, AND THE LIKE.

SPECIFICATION forming part of Letters Patent No. 272,158, dated February 13, 1883.

Application filed November 3, 1882. (No model.) Patented in England January 13, 1881, No. 162.

To all whom it may concern:

Be it known that I, THOMAS ROWAN, a subject of the Queen of Great Britain, residing at London, England, have invented new and useful Improvements in Apparatus for Ventilating Buildings, Ships, Vessels, Railway-Carriages, and the like, (for which I have obtained a patent in England, No. 162, bearing date the 13th day of January, 1881, and sealed July 12, 1881,) of which the following is a specification.

This invention relates to improvements in apparatus for ventilating buildings, ships, vessels, railway-carriages, and the like, and is designed to insure a constant and regular supply of fresh, dry, and purified or disinfected (or otherwise heated) air, with means for ejecting the vitiated or impure air.

To make my invention better understood, I will proceed to describe the same by reference to the accompanying drawings.

Figure 1 is a sectional elevation of an apparatus for ventilating buildings, chambers, &c.; Fig. 2, a transverse section of the air-inlet box; Fig. 2^a, a transverse section of an air-inlet box for holding coke, &c., on shelves; Fig. 3, a vertical section (enlarged) of ejection-pipe and its cowl; and Figs. 4, 4^a, sectional elevations showing the pipes and air-inlets differently disposed. Figs. 5 and 6 show two opposite fixed cowls.

In Sheet 2, Figs. 1 and 2 show an arrangement for purifying the air admitted to railway-carriages.

Fig. 1, Sheet 1, is a sectional elevation showing the arrangement for carrying out my invention for ventilating a building, hall, chamber, or the like. In this figure, A represents a building. An air-inlet is provided in any suitable position near the roof or ceiling. This inlet opens into what I call an "air-inlet box," B. (Shown also in detached transverse section at Fig. 2, Sheet 1.) This air-inlet box has two divisions, the outer and larger division, *a*, containing coke saturated with any suitable solution, and serving either to absorb moisture or to destroy infusoria. The other and smaller division, *b*, of the box may be filled with dry charcoal, limestone, or other suitable material

which will absorb moisture, the box being provided with a tray, *c*, for collecting any solution which may drain from the coke or other saturated material, the bottom being perforated for this purpose. The sides of the box B are also partly perforated, as shown, to allow of the free passage of the air; or the air-inlet box may be constructed as shown in Fig. 2^a, in which the coke and other reagents may be placed on perforated shelves or trays, the air passing through the box before entering the building in the direction shown by the arrows. From any suitable position—such as at C, near the floor of the building or chamber—passes a shaft or pipe, D, (which I call the "ejecting shaft or pipe,") extending above the roof, where it is provided with a cowl, E, preferably one constructed as hereinafter described, and shown in section at Fig. 3, for producing an induced current up the shaft or pipe D; or in some cases the cowl may be dispensed with. An air-inlet shaft, F, is also provided, the lower end of which passes into the building just under the lower open end, *d*, of the hereinbefore-described ejecting shaft or pipe D, a nozzle, G, at the end of the said air-inlet pipe F opening into the lower end of the ejecting shaft or pipe D, as shown, the upper end of the same being provided or not with a cowl.

The cowl which I prefer to employ for the ejecting shaft or pipe D is shown in section in Fig. 3, and is constructed of a horizontal tube, H, into one end of which is fitted a hollow truncated cone, I, with the base outward, it being essential that the inner end of the cone shall only extend partially across the upshaft, the cowl being constructed to allow it to revolve in the usual manner, so that the base of the cone shall always be presented to the wind.

By my improved arrangement, hereinbefore described, and represented in Figs. 1, 2, and 3, Sheet 1 of the drawings, it will be understood that the outer air entering the building or room through the air-inlet box B will be purified and dried in passing through the chambers *a* and *b* by the coke and charcoal, (or other materials respectively contained therein, as hereinbefore described,) and the vitiated air will be ejected through the air-ejecting shaft or pipe D by the

combined action of the air-inlet pipe F and cowl E, or by the action of the air-inlet pipe alone when no cowl is employed.

In some cases the air-ejecting shaft or pipe may pass from near the roof of the building, as represented in Fig. 4, in which the letters refer to corresponding parts to those shown in Figs. 1 and 2, Sheet 1, and it therefore needs no further description. In all cases more than one nozzle air-inlet pipe may be employed where it is desirable to increase the current and injecting force up the ejecting-shaft. Such an arrangement is shown in Fig. 4^a; or air may be mechanically forced or blown through the air-injection pipe with or without an induced current in the ejection-shaft.

My improvements may be applied to compartments of ships or vessels, railway-cars, provision chambers, dairies, slaughter-houses and the like, and the air being caused to pass through suitable antiseptics in the air-inlet box will allow of meat and other perishable articles being carried or stored for a comparatively long period of time without deterioration. The ventilation of ships' cargoes may be readily effected by placing my improved ventilating-shafts and air-injectors at various intervals and depths in the cargo, and they may be provided with a suitable cowl; or the air may be forced through the injector by means of a fan or blower, or otherwise.

My improvements are also specially applicable to hospitals, where the air is sometimes required to be rendered moist or otherwise treated, in which case the air-inlet box is provided with a steam-jet, or suitably charged to produce the required medicinal or other effect. The air from the interior of the hospital may be likewise disinfected or treated by a number of ejecting-shafts being led from the building into a chamber similar to that described in the specification of improvements in the method of and apparatus for ventilating sewers and drains and for treating the gases therefrom, for which I have applied for Letters Patent, when it may be treated similarly to sewer-gas to destroy the infectious germs. By this arrangement one cowl may be employed for several shafts, instead of one cowl being required for each shaft. Further, to dissipate fog, or in cold weather, the air, before

entering the air-inlet box, may be caused to pass through suitably-heated pipes, and in hot weather the pipes may be cooled.

Fig. 5 is an end view, and Fig. 6 is a section, of a suitable construction of apparatus for ventilating railway-carriages. A is the roof of the railway-carriage, and D is the air-ejecting shaft, which in this case is not provided with revolving cowls; but the cowl is fixed, and is open at each end, so as to produce an upward current of air in either direction of travel of the carriage. F F are the air-injectors, two in number, opening in opposite directions one to the other, so that a downward current will be produced while the carriage is traveling in either direction; or the apparatus may be placed near the bottom of the carriage, in which case the pipe D would be turned upward into the carriage.

Figs. 1 and 2, Sheet 2, show an arrangement of air-inlet box suitable for purifying the air admitted to railway-carriages. The air is forced by the onward motion of the carriage into the air-channels P, and passes into the chamber Q, containing coke or other porous material, which is kept saturated with water or other liquid. From thence the air passes through the grating R down through the chamber S, which is filled with coke or other suitable porous material, and through the perforated bottom into the chamber T, provided with any suitable purifying or absorbing agent, and thence the purified air passes into the carriage U.

Having thus described the nature of the said invention and the best means with which I am acquainted for carrying the same into effect, what I claim is—

In combination, the ejection-pipe D, open at its lower end, the air-inlet shaft F, with its tapering nozzle G, discharging into the lower end of said ejection pipe D, and one or more perforated boxes, B, provided with a partition and supplied with a saturated reagent, and also with an absorbent of moisture, all substantially as and for the purpose set forth.

THOMAS ROWAN.

Witnesses:

A. ALBUTT,
B. BRADY.