

No. 850,158.

PATENTED APR. 16, 1907.

D. HILL.
CAR VENTILATING APPARATUS.
APPLICATION FILED MAR. 8, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

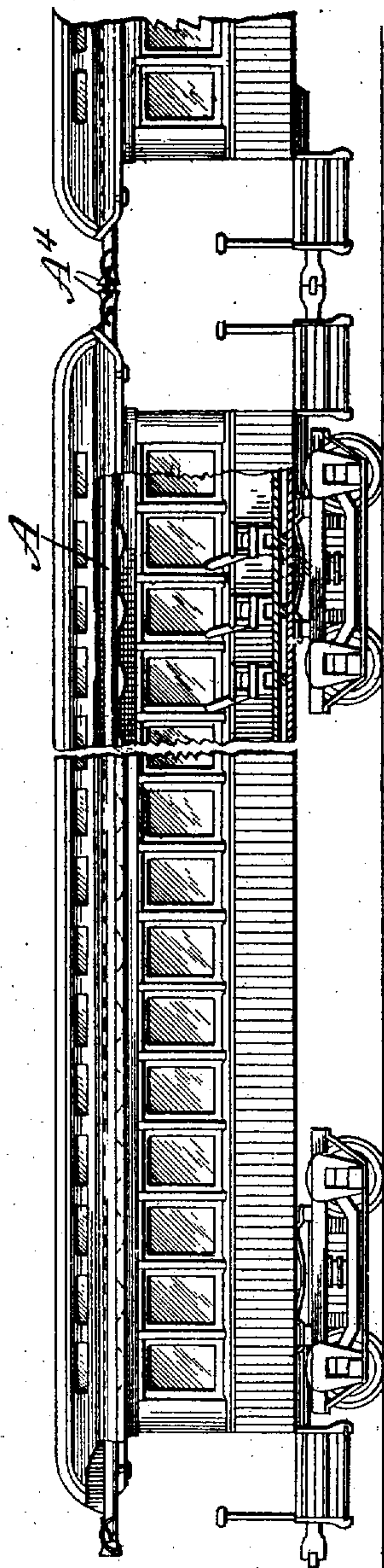
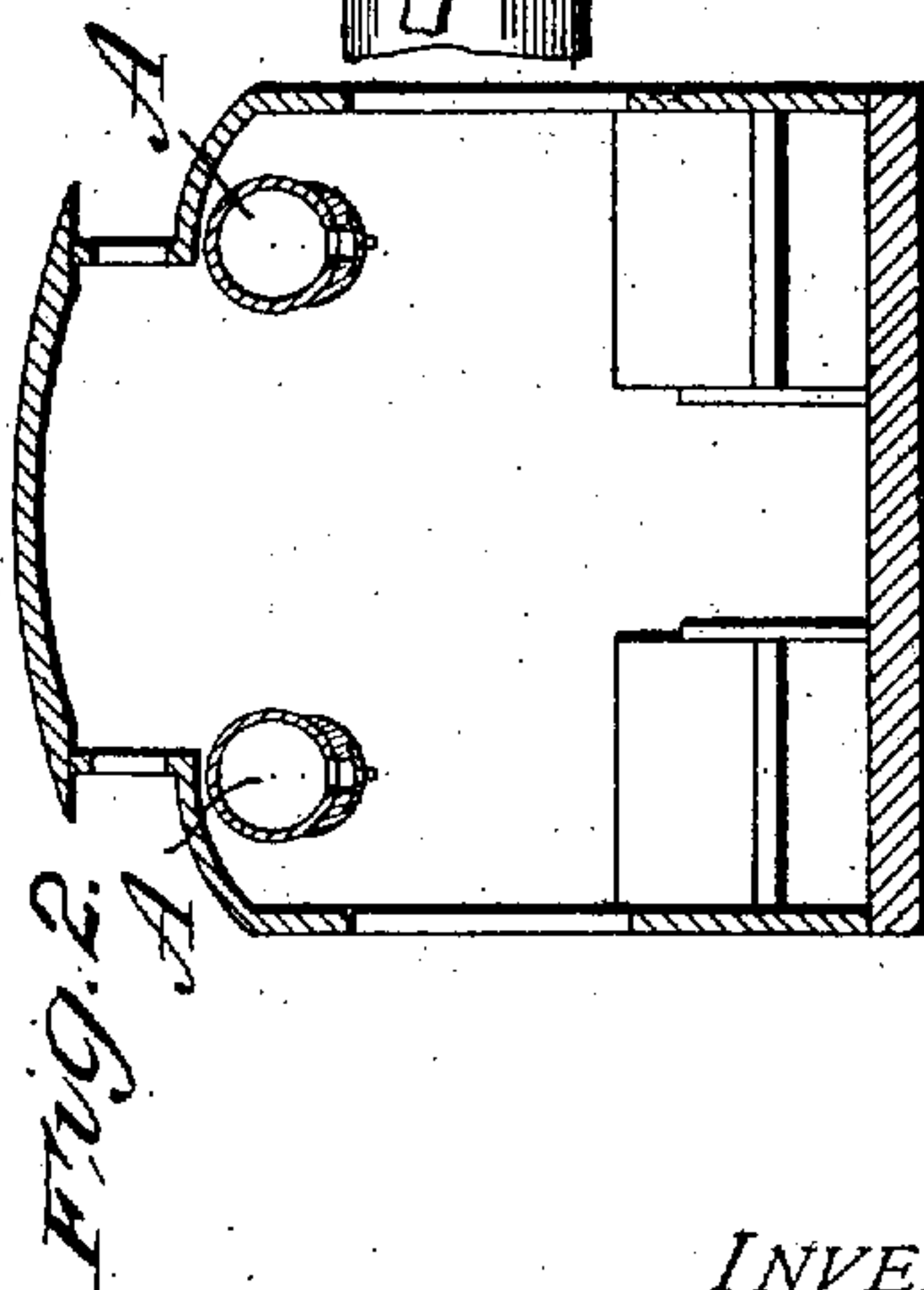
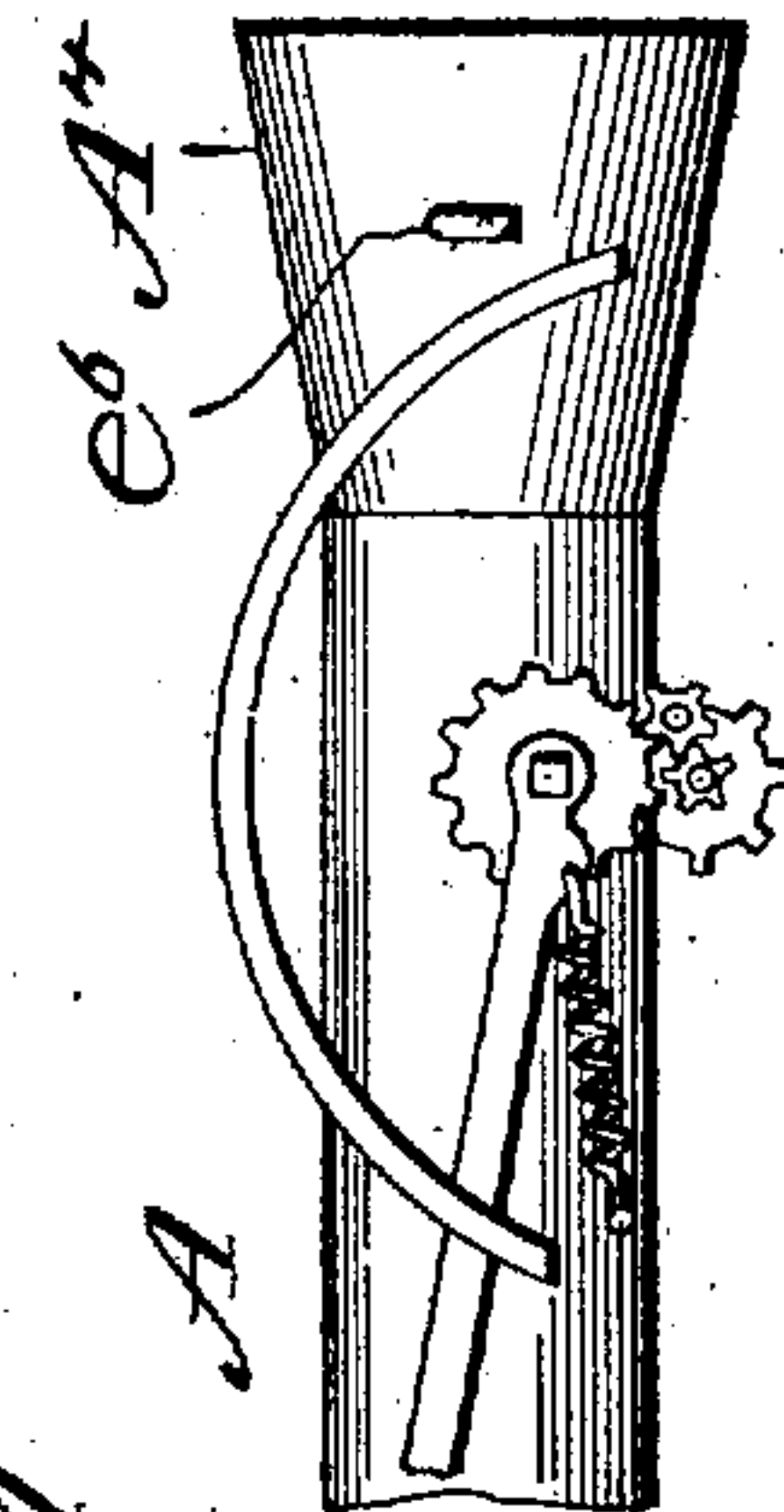
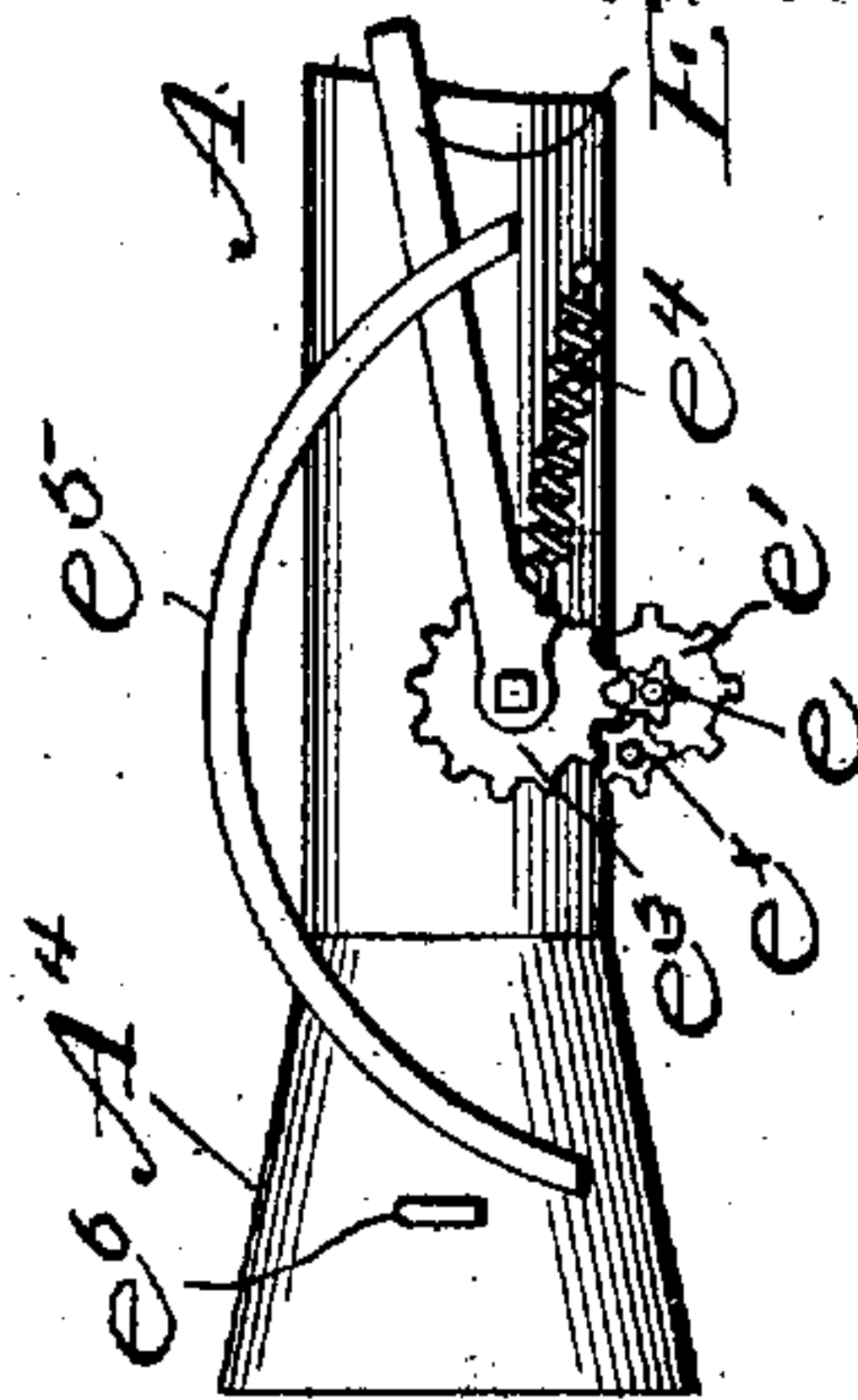


Fig. 6.



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3 SHEETS—SHEET 2.

Fig. 3.

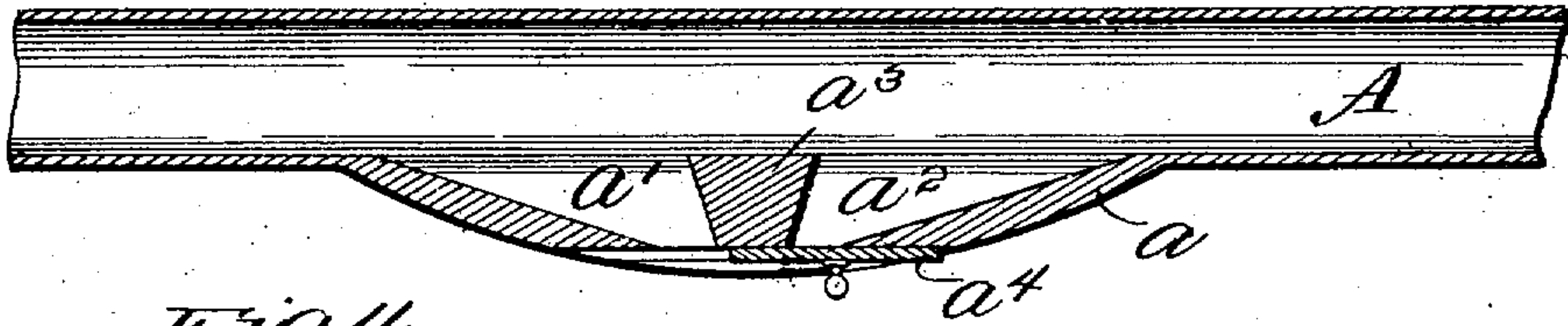


Fig. 4.

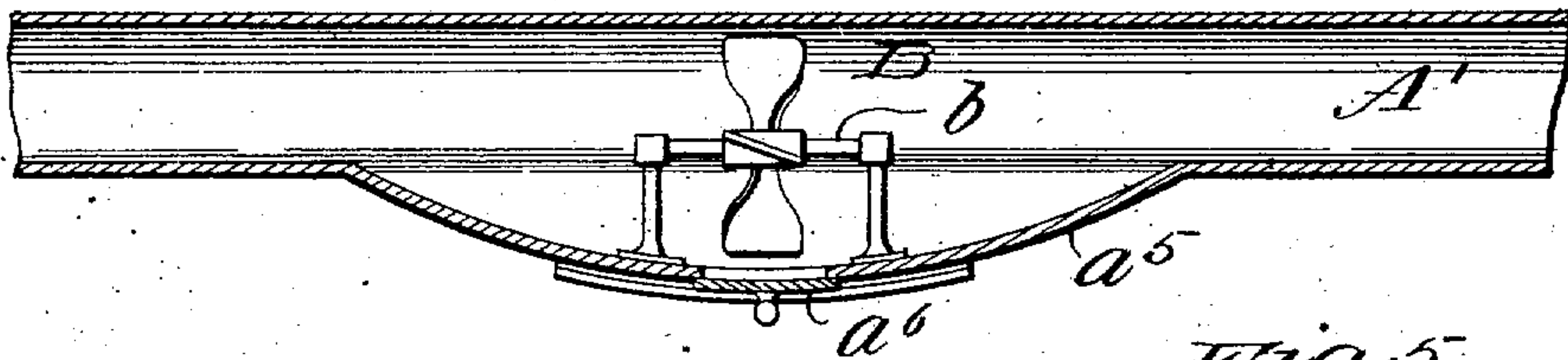


Fig. 5.

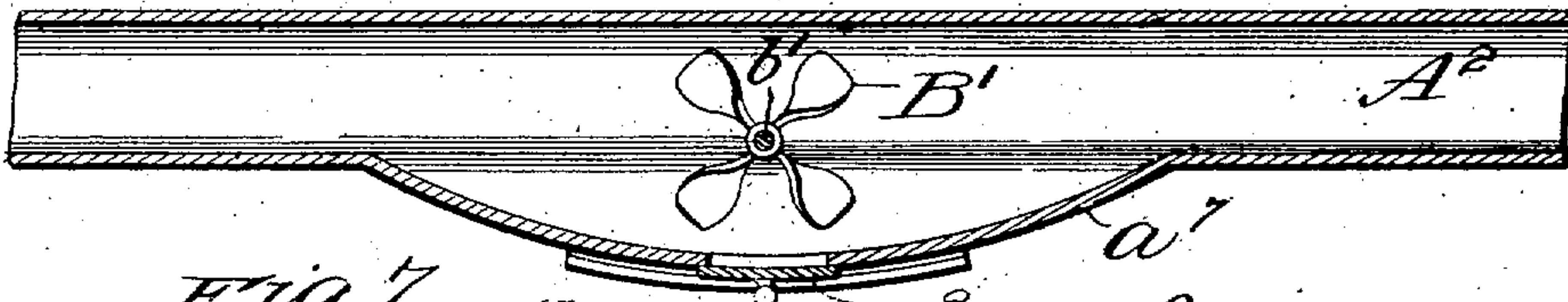


Fig. 7.

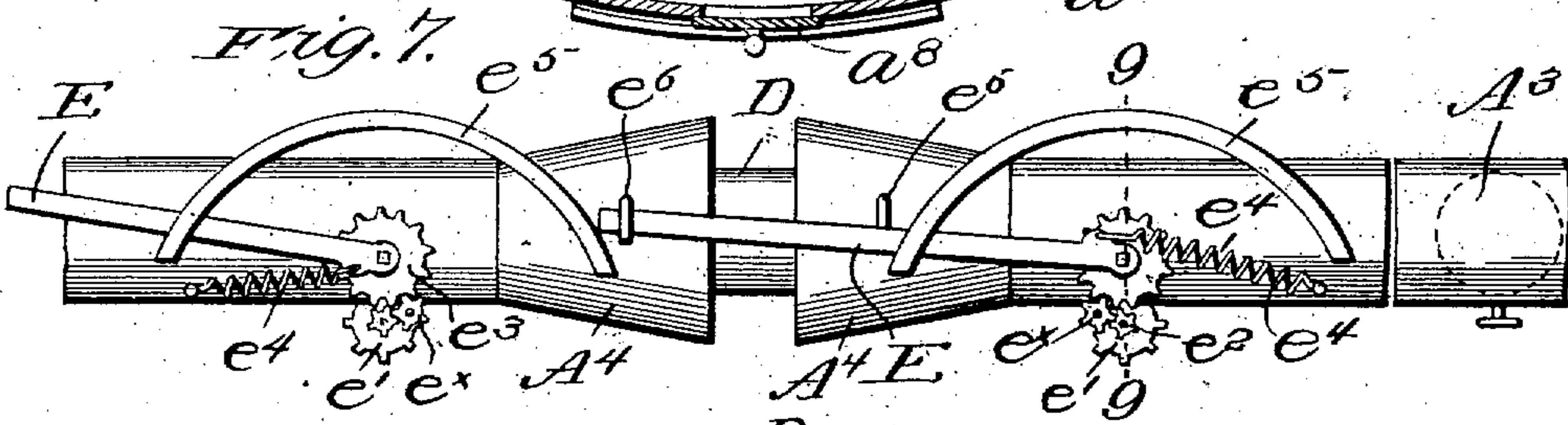
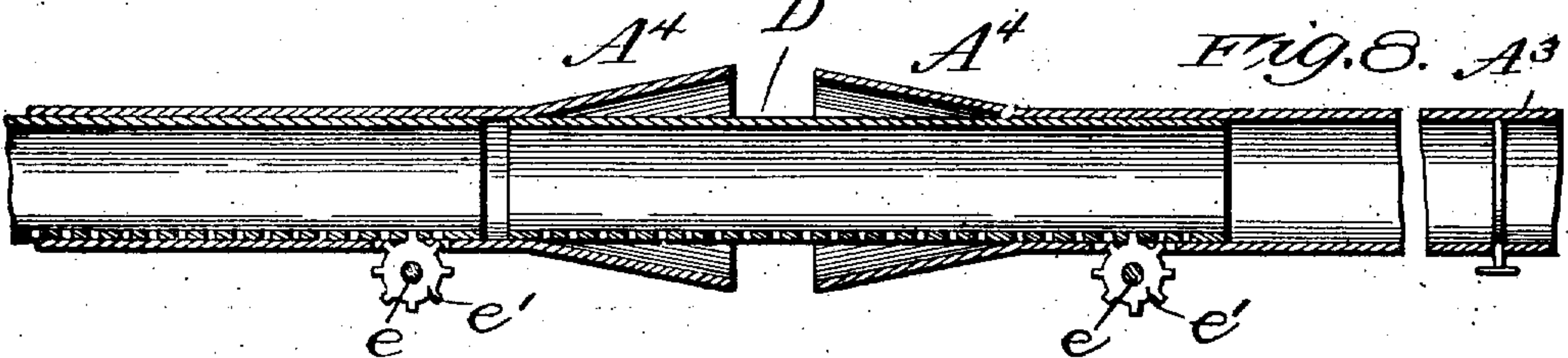
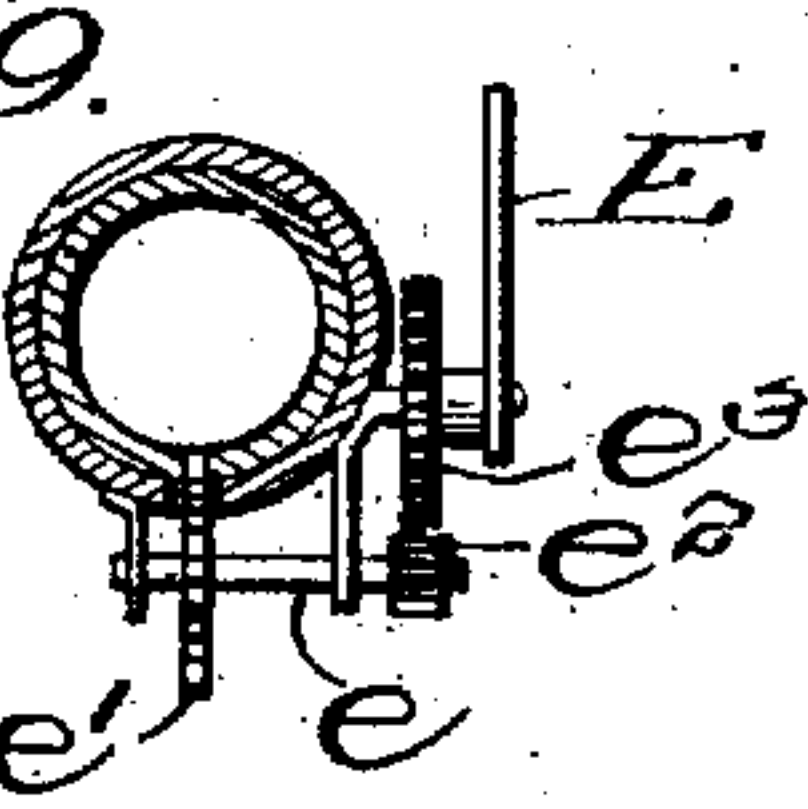


Fig. 8.



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CAR-VENTILATING APPARATUS.

No. 850,158.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed March 8, 1906. Serial No. 304,968.

To all whom it may concern:

Be it known that I, DAVID HILL, a citizen of the United States, residing at Washington, in the county of Beaufort and State of North Carolina, have invented certain new and useful Improvements in Car-Ventilating Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a portion of a railway-train, parts being shown in section, showing my improved apparatus installed therein. Fig. 2 represents a transverse sectional view, slightly enlarged, of a car-body, showing the location of the longitudinal ventilating conduits or tubes. Fig. 3 is an enlarged longitudinal sectional view of a portion of one of the conduits, showing means for distributing air therefrom in either direction, according to the direction of travel of the car. Fig. 4 is a view similar to Fig. 3, showing a slightly-modified construction. Fig. 5 is a view similar to Fig. 3, showing another modification. Fig. 6, Sheet 1, is an enlarged detail view of the meeting ends of two alined conduits of adjacent cars, showing the means for establishing connection from one to the other. Fig. 7 is a similar view showing the conduits connected. Fig. 8 is a longitudinal sectional view of Fig. 7. Fig. 9 is a transverse vertical section on line 9 9 of Fig. 7. Fig. 10 is a rear view of a car, showing it provided with a slightly-modified form of apparatus for extending and retracting the telescoping connecting tubes or sections. Fig. 11 is a perspective view of the apparatus for extending and retracting the telescoping tubes shown in Fig. 10. Fig. 12 is a side elevation of the same.

The object of my invention is to provide a train of cars with one or more (preferably two) longitudinal ventilating-conduits extending from the engine (at a point in advance of the smoke-stack) to the rear of the train, said conduits passing through the various cars of the train and being provided, preferably adjacent to each seat, with a dis-

charge-aperture having a suitable controlling device, so that fresh air can be supplied throughout the car and regulated as desired by the passengers thereof. It will be understood that the locomotive, which is not shown, will be provided with conduit-sections adapted to be connected with the conduit-sections of the cars and provided at their front ends with funnel-shaped orifices, which receive air as the train progresses, and the air is forced through the conduits and delivered in the various cars by the forward movement of the train.

In the drawings, C represents a car equipped with my improved apparatus, and as the apparatus is the same in all the cars of the train a description of one will suffice for all. Each car is provided with two longitudinally-arranged air-conduits A A, preferably located at opposite sides of the car and above the seats, although they may be disposed in other positions, if desired. Each conduit is provided on its lower side with a plurality of enlarged portions *a*, which are preferably arranged so that one will be over each seat, although they may be so located that each will supply two adjacent seats, if preferred.

In Figs. 3, 4, and 5 I have shown several ways in which the fresh air may be discharged into the car. In Fig. 3 the enlarged portions *a* of the conduit-tube are each provided with two oppositely-inclined discharge-passages *a'* *a''*, separated by a central partition *a'''*, and a slide valve or plate *a''''*, mounted in suitable guides and capable of being moved horizontally to close one or both of the outlet-passages. When the slide *a''''* covers both openings, no air will escape at this point in the conduit. If it is desired to admit air to the car, the slide is moved so as to expose the end of the discharge-passage nearest to the forward end of the car, so that the air will flow from the conduit through said passage and into the car, as in Fig. 3, the car being supposed to be moving leftward in said figure. The amount of air admitted may also be regulated by means of this slide, which can be made to partly or fully uncover the desired opening.

In some cases I prefer to discharge the air by means of a rotating device, such as a fan, arranged in the conduit and operated by the force of the air-current flowing there-through. Such a construction is illustrated in Fig. 4, in which A' represents the air-con-

duit and a^5 one of the enlarged portions thereof, in which a fan B is arranged on an axis b , disposed longitudinally of the conduit and supported in suitable bearings. In this instance the enlarged portion a^5 of the conduit is provided with a single discharge-opening controlled by a slide or valve a^6 . By opening this valve a portion of the air in the conduit will be forced out through the aperture by the fan B, which will be rotated by the air-current passing through the conduit, no matter in which direction the car is moving.

Fig. 5 is a view similar to Fig. 4, showing a conduit, here indicated as A^2 , having the enlarged portion a^7 , provided with a discharge-aperture controlled by a valve or slide a^8 and containing a fan B' , mounted on an axis b' , extending transversely of the conduit. Each of the conduits A (or A' A^2) is provided adjacent to each end of the car with a valve, (indicated at A^3), so that the valve A^3 at the rear of the rear car may be closed when a train is made up to prevent the escape of the air, and thus force the air forced in at the forward end of the train to escape into the cars. Each of the conduits A (or A' A^2) is provided at each end outside the car-body with means for establishing a connection with the corresponding conduit of the next adjacent car. I prefer to employ for this purpose the devices shown in Figs. 6, 7, 8, and 9. The conduit is provided at each end with a slightly-flared portion A^4 , within which is located a sliding flexible tubular section D, (see Figs. 7, 8, and 9,) preferably composed of rubber hose or tubing of any preferred type. This flexible inclosed section is normally maintained in a retracted position, but is capable of being pushed out, so as to engage the flaring end of the next adjacent conduit and make a connection therewith, the flexibility of these inclosed tubes permitting the ordinary movements of the cars without injury to the apparatus.

In the drawings I have shown the following means for projecting and retracting the flexible sections: Each conduit end is provided with a transversely-disposed shaft e , carrying a toothed wheel e' , the teeth of which project into the conduit through a suitable slot and engage a series of small holes in the bottom of the flexible section D, which thus form the equivalent of a rack. The shaft e is also provided at one side with a pinion e^2 , meshing with an intermediate pinion e^x , which engages with a gear e^3 on a stud secured to the conduit-wall and having an operating arm or lever E. This lever is ordinarily held in a rearward position, as shown in Fig. 6 and at the left in Fig. 7, by a suitable spring e^4 , and each conduit end is also provided with a segment or guide e^5 for said lever and a hook or catch e^6 to engage and lock the lever of the adjacent car.

When two cars are coupled together and it is desired to connect the opposed ends of their respective ventilating-conduits, one of the levers E is thrown forward, and its end is placed under the hook e^6 of the adjacent conduit. This projects the flexible connection D into the mouth of the adjacent conduit, as shown in Figs. 7 and 8, and places them in communication. When the cars are disconnected, the lever E, which is in forward position, will be drawn out of engagement with the catch e^6 as the cars separate, and the spring e^4 will draw back the lever and retract the flexible connecting-section D.

In Figs 10, 11, and 12 I have shown a slightly-modified form of apparatus for simultaneously extending and retracting the telescoping or sliding flexible connecting-sections of both the ventilating-pipes, (where two pipes are employed,) such apparatus being applied at each end of each car of the train. In these figures, F represents a shaft extending across the car and supported from the roof outside the body of the car by suitable hangers f . This shaft F carries two toothed wheels f' , each of which engages one of the sliding flexible connecting-sections in the same manner as the toothed wheel e' in Fig. 8. f^2 represents a ratchet-wheel secured to shaft F near its center, and G is a lever corresponding to the lever E, loosely mounted on shaft F and provided with a pawl g normally out of engagement with the ratchet-wheel f^2 , but capable of engaging and operating the same when the lever G is pulled down. The pawl g is provided with a cam-face g' , which engages a cam-face h on a retaining-pawl H, which is also adapted to engage the ratchet-wheel. The construction of these pawls H and g is such that when the lever G is in its highest position, in which it is normally maintained by a retracting-spring g^2 , the inclined or cam face g' of said pawl g engages the cam-face h of pawl H and throws the pawl g out of engagement with the ratchet-wheel f^2 , and the upper end of pawl g engages pawl H and also lifts it off of the ratchet-wheel, this entirely disengaging the latter from the pawls. The shaft F is provided with a torsional retracting-spring f^3 , surrounding the same, one end being secured to the ratchet-wheel or to the shaft and the other end being secured to one of the bearings f , and this spring normally holds the connecting-sections D' in their retracted positions. The lever G is also provided with a handle g^3 , depending therefrom to facilitate operating the same. The parts being in the positions shown in Fig. 11, if it is desired to extend the flexible connecting-sections the operator grasps the handle g^3 and draws down the lever G, thus placing both pawls g and H in engagement with the ratchet-wheel f^2 as they fall into engagement therewith by gravity. The lever G can then be reciprocated to project the ex-

tensible connecting-sections as far as possible, care being taken not to allow the lever to rise to its highest position, and when the connecting-sections are sufficiently extended to fit within the pipes of the next car the lever G is secured in a position below its normal or highest position by placing it in engagement with a hook I on the next car. The levers G and hooks I of adjacent cars are so arranged as to permit the foregoing operation on either car. If the cars are drawn apart, the lever G will pull out from hook I and the spring g^2 will cause it to fly upward, carrying the pawl g into engagement with pawl H and simultaneously disengaging both pawls, when the spring f^3 will retract both of the extensible connecting-sections, as will be readily understood.

What I claim, and desire to secure by Letters Patent, is—

1. In a car-ventilating apparatus, the combination with a ventilating-conduit extending through the car from one end to the other, and provided at intervals within the car with discharge-apertures, of rotary devices located in the said conduit adjacent to said discharge-apertures for forcing portions of the air out through said apertures, substantially as described.

2. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other and provided within the car with a series of discharge-apertures, of a rotary fan mounted in said conduit adjacent to each of said apertures, and operated by the current of air passing therethrough for forcing portions of the air through said discharge-apertures, substantially as described.

3. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other and provided within the car with a series of discharge-apertures, of a rotary fan mounted in said conduit adjacent to each of said apertures, and operated by the current of air passing therethrough for forcing portions of the air through said discharge-apertures, and a controlling-valve located in each end of said conduit, substantially as described.

4. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other, and provided within the car with a series of enlarged portions, each having a discharge-aperture therein, of a freely-rotating fan located in said conduit adjacent to each of said apertures and having portions extending into the main portion of the conduit for driving the fan by means of the air-current flowing there-through, and valves controlling said discharge-apertures, substantially as described.

5. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other and having

discharge-apertures within the car, said conduit being provided at each end with a longitudinally-movable connecting-piece of elastic material adapted to telescope within the conduit, and to be projected therefrom to connect said conduit with a conduit of an adjacent car, substantially as described.

6. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other, and having discharge-apertures within the car, said conduit being provided at each end with a longitudinally-movable connecting-piece of elastic material and means for projecting said connecting-piece, substantially as described.

7. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other, and having discharge-apertures within the car, said conduit being provided at each end with a longitudinally-movable connecting-piece of elastic material, means for projecting said connecting-pieces including operating-levers, a catch located on each end of the conduit or car for engaging the operating-lever of an adjacent car, and springs for returning said connecting-pieces, substantially as described.

8. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other, and having discharge-apertures within the car, said conduit being provided at each end with a longitudinally-movable connecting-piece of elastic material, means for projecting said connecting-pieces, and springs for automatically returning said connecting-pieces, substantially as described.

9. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other, and provided at each end with an extensible connecting-section, of means for extending and retracting said connecting-section including among their members, a ratchet-wheel, a pivoted lever carrying a pawl engaging said wheel, a spring operatively connected to said ratchet-wheel, for retracting said extensible section, a retaining-pawl, and means for disengaging said pawls when the lever is moved to its highest position, substantially as described.

10. In a car-ventilating apparatus, the combination with a conduit extending through the car from one end to the other, and provided at each end with an extensible connecting-section, of means for extending and retracting said connecting-section including among their members, a ratchet-wheel, a pivoted lever carrying a pawl engaging said wheel, a spring operatively connected to said ratchet-wheel, for retracting said extensible section, a retaining-pawl, a retracting-spring for said lever, said pawls being provided with engaging surfaces for simultaneously disengaging both pawls from

the ratchet when the lever is in its highest position, substantially as described.

11. In a car-ventilating apparatus, the combination with two conduits extending
5 through the car from one end to the other and provided at each end with extensible connecting-sections, of means at each end of the car for simultaneously extending and re-
tracting the adjacent connecting-sections, in-
10 cluding a shaft operatively connected with both of said extensible sections, a retracting-spring connected with said shaft for retract-
ing said sections, a ratchet-wheel on said

shaft, a lever pivoted on said shaft, a pawl connected with said lever, a retaining-pawl, a
15 retracting-spring for said lever and means for disengaging said pawls when the lever is drawn into its highest position, substantially as described.

In testimony whereof I affix my signature 20
in the presence of two witnesses.

DAVID HILL.

Witnesses:

GEO. A. PAUL,
GILBERT RUMLEY.