

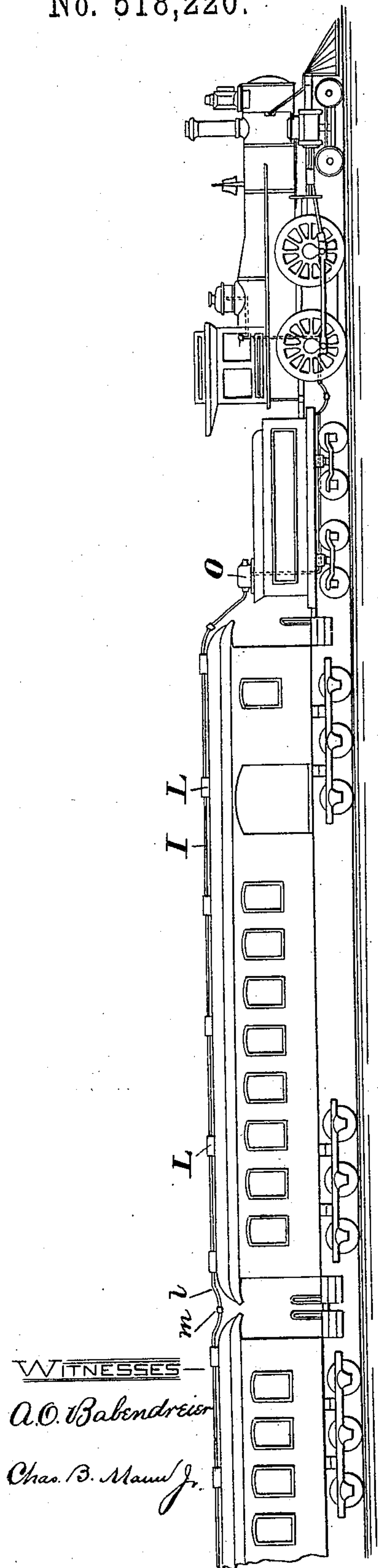
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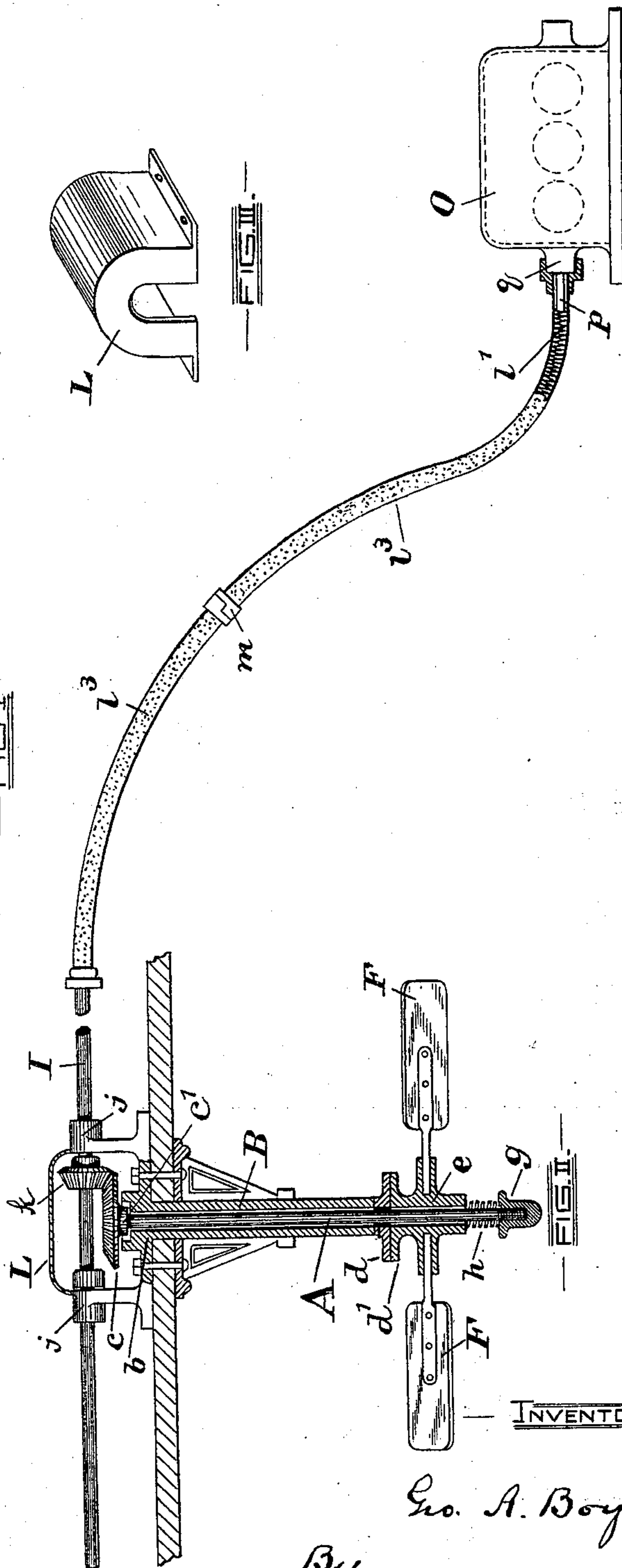
G. A. BOYDEN.  
CAR VENTILATOR.

No. 518,220.

Patented Apr. 17, 1894.



WITNESSES  
A. C. Babendreier  
Chas. B. Mann Jr.



INVENTOR  
Geo. A. Boyden  
By Chas. B. Mann  
atty

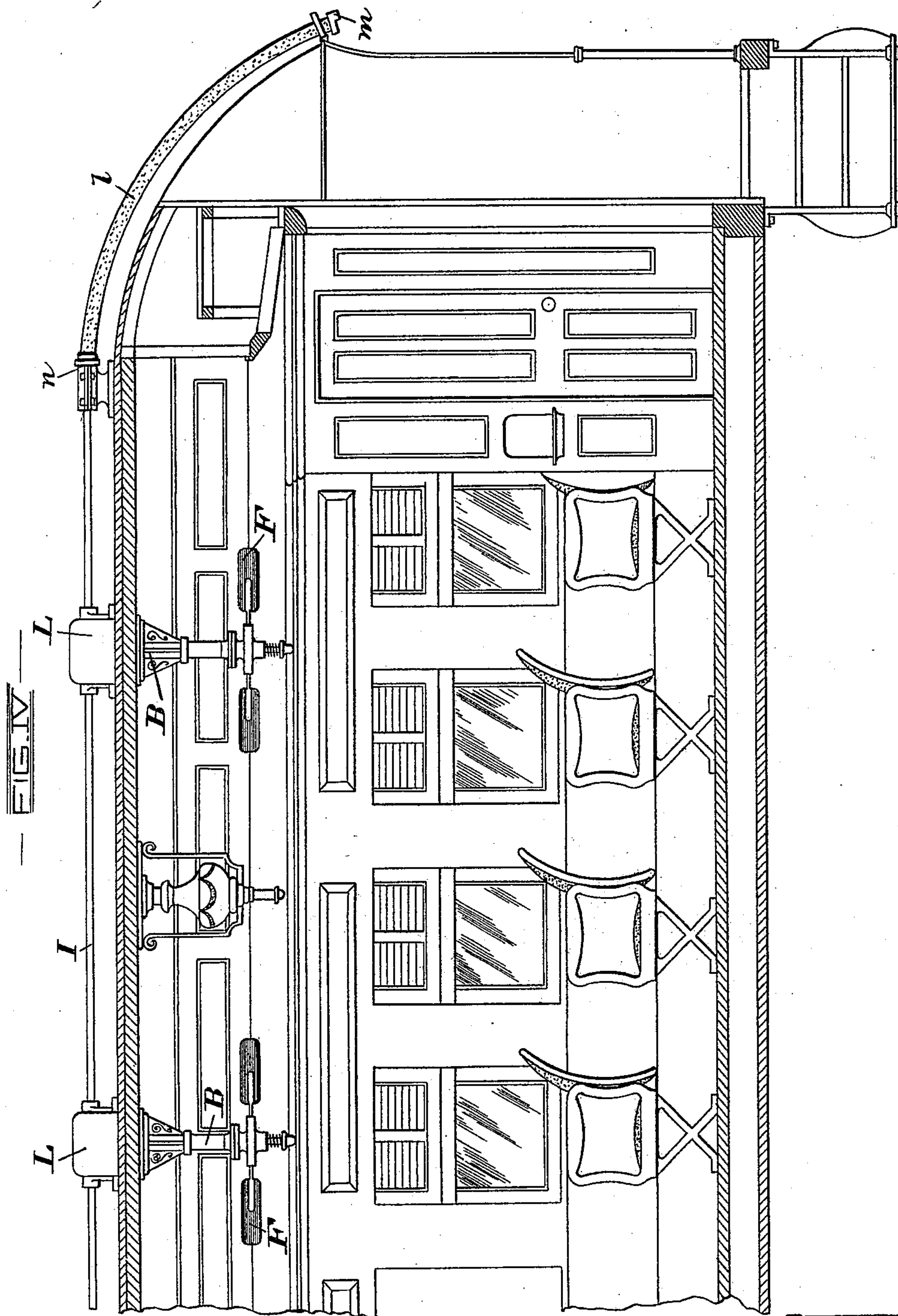
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# UNITED STATES PATENT OFFICE.

GEORGE A. BOYDEN, OF BALTIMORE, MARYLAND.

## CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 518,220, dated April 17, 1894.

Application filed March 27, 1893. Serial No. 467,743. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. BOYDEN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Car-Ventilators, of which the following is a specification.

This invention relates to a ventilator system for passenger cars, and the object of the invention is to provide a motor or engine to furnish power; fans mounted in the several cars; and means to transmit the said power from car to car and drive the fans therein, whereby the air in the cars may be agitated and cooled whether the cars are moving or standing.

By my invention cars may be kept pleasant in summer weather; all the windows and doors may be closed to exclude the dust and smoke and the fans kept in constant motion thus the air will be free of dust impurities and at the same time a cool temperature maintained.

In order to make the improvements more clearly understood I have shown in the accompanying drawings means for carrying the same into practical effect, without however intending to limit my invention to the particular construction which, for the sake of illustration, I have set forth.

In the drawings, Figure 1. shows a side view of a train of cars and locomotive equipped with my improved fan-driving mechanism. Fig. 2. is a view showing the mechanical parts of my invention, to wit: the fan, the motor, and the means connecting the fan and motor. Fig. 3. is a perspective view of the housing or shell. Fig. 4. is a vertical longitudinal section of one end of a passenger car showing the fans applied in the preferred position.

The fans are preferably of the revoluble type and comprise a vertical shaft, A, mounted in a pendent bearing, B, secured to the roof of the car, or in the upper part of the car. Each vertical shaft, A, has at its upper end a miter wheel *c*, and a collar, *c'*, which rests on a bearing, *b*; below the pendent bearing the shaft has a clutch-disk, *d*, keyed fast to it, the fan blades or wings, F, are carried on a hub, *e*, which is loose on the vertical shaft, A, and is provided with a clutch-disk, *d'*, which

makes a friction engagement with the disk, *d*, that is fast on the shaft. The lower end of the shaft is screw-threaded and has a cap-nut, *g*, and a spiral-spring, *h*, around the shaft is interposed between the fan-hub, *e*, and cap-nut. By this construction and combination of parts the fan can be started or stopped or made to go faster or slower as desired. Suppose the shaft to be running, if the cap-nut, *g*, is then screwed up tight the fan will revolve at the same speed as the shaft because the friction disk, *d'*, on the hub will be hard in contact with the disk, *d*, on the shaft. If the cap-nut is unscrewed so as to leave the spring, *h*, quite loose, then the fan will stop.

The speed of the revolution of the fan will be determined by the amount of slip that exists between the two disks and this slip may be regulated by the cap-nut.

A line-shaft, I, extends longitudinally of the car, in the present instance the shaft is on the exterior or upon the roof, and is mounted in suitable bearings, *j*, arranged in pairs which are located so that the two members of each pair are on opposite sides of each miter-wheel, *c*, on the fan-shafts; the line-shaft carries miter-pinions, *k*, one of which is for engagement with each miter-wheel, *c*. A housing or case, L, is provided to completely inclose the miter-wheels, and top bearings and thereby exclude the weather and dust from the same.

The housing comprises an inclosing shell, L, which is attached to the two members which make up each pair of bearings, *j*, and incloses the short length of shaft between the said two members, also the two miter-wheels, *c*, *k*, and the top collar, *c'*.

The line shaft, I, of one car is connected with the line shaft of another car by a flexible shaft, *l*, and coupling, *m*. The two ends of each line shaft, I, are provided with a flexible shaft of the spiral-wire type; a hose or sheath, *l*, is employed and the spiral wire, *l'*, revolves in said sheath. The sheath does not revolve, but instead of revolving one end is made fast to a suitable stationary holder, *n*, on the car to keep it from revolving. The other end of the sheath and the spiral wire have suitable couplings, indicated at, *m*, by means of which the two sheaths are coupled



so as not to revolve and also the two spiral wires are coupled so that the motion of the line shaft on one car is communicated to the line shaft on the next car.

- 5 The driving power is supplied by a suitable engine or motor, O, carried on the locomotive or tender; in the present instance it is on the tender and steam to run the motor is supplied by the boiler of the locomotive.
- 10 Any approved form of motor or engine as a driving power may be employed.

A flexible shaft, *l'*, of the same kind as that connected with the line shaft, is attached to the revoluble drive-shaft, *p*, of the motor or engine, and a sheath, *l*<sup>3</sup>, covers the flexible shaft and is attached to a nozzle, *p*, on the engine and through which nozzle the drive-shaft projects.

It is obvious that the several parts of the invention may have a different construction from that shown, and also that some of the parts may be differently located or arranged.

I have shown and described means for transmitting power from a given location on a railway train, as the locomotive or tender, to fans which are mounted in the several cars of said train, so that the movement of the fans is independent of the movement of the train; my invention of said means is not restricted to the kind or construction shown; nor is the invention limited to the use of fans that revolve, as they may be of a different type.

35 Having described my invention, I claim and desire to secure by Letters Patent—

1. The combination in a fan of a vertical shaft having a clutch-disk secured to it; and provided on its end with a screw thread; a hub  
40 loose on said shaft and provided with a clutch-disk; fan-blades secured to said loose hub; a regulating nut on the threaded end of said shaft; and a suitable spring between the said hub and nut, whereby the yielding effect of the spring is always maintained with reference to the disks in every stage of adjustment of the nut.

2. In a fan system for cars the combination of a line-shaft extending longitudinally of the  
50 car; vertical fan-shafts pendent in the car; miter-wheels connecting the line-shaft and vertical shafts; and a housing or case inclos-

ing the said miter-wheels and bearings, as set forth.

3. In a fan system for cars the combination 55 of a line-shaft extending longitudinally of the car; bearings on the car to support said shaft; fans mounted on the car and connected with the line-shaft; an engine or motor; and a flexible-shaft connecting the said engine or  
60 motor and the said line-shaft.

4. In a fan system for cars the combination of the line-shaft extending longitudinally of the car; bearings on the car to support said shaft; fans mounted in each car and each fan  
65 connected with the line-shaft of its car; an engine or motor to impart motion to one of the line-shafts; a flexible shaft attached at the end of each line-shaft, and couplings which connect the two flexible shafts at the  
70 ends of adjoining cars.

5. In a ventilating system for rail-way cars, the combination of a motor or engine; fans located in the cars, and a line shaft provided with a flexible connection between adjoining  
75 cars, by which the power is transmitted from car to car to drive the said fans.

6. In a ventilating system for rail-way cars, the combination of a locomotive boiler; a motor or engine; pipe-connections between the  
80 said boiler and motor; fans located in the several cars, and means to transmit the power from the motor to the said fans in the several cars.

7. In a ventilating system for rail-way cars, 85 the combination of a motor or engine; a number of fans located in the several cars, and all the fans in each car suitably connected; and a flexible power-transmitter between adjoining cars, whereby all the fans in a train of cars  
90 may be driven by power transmitted from one prime motor.

8. The combination in a ventilator system for rail-way cars, of a motor or engine to provide power; a fan or fans mounted in the sev-  
95 eral cars, and means to transmit the said power from car to car to drive the fans therein.

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

GEORGE A. BOYDEN.

Witnesses:

ARTHUR O. BABENDREIER,  
CHAS. B. MANN, Jr.