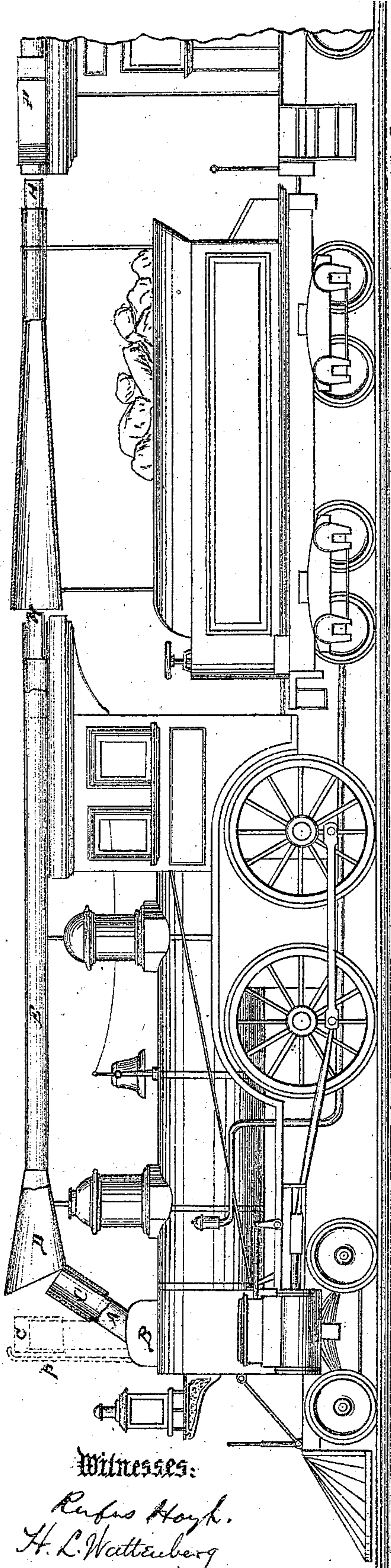


John Greacen Jr. & Stanley Greacen's Imp^d Smoke & Cinder
Tube for Locomotives.

2 Sheets--Sheet 1.

No. 120,059.

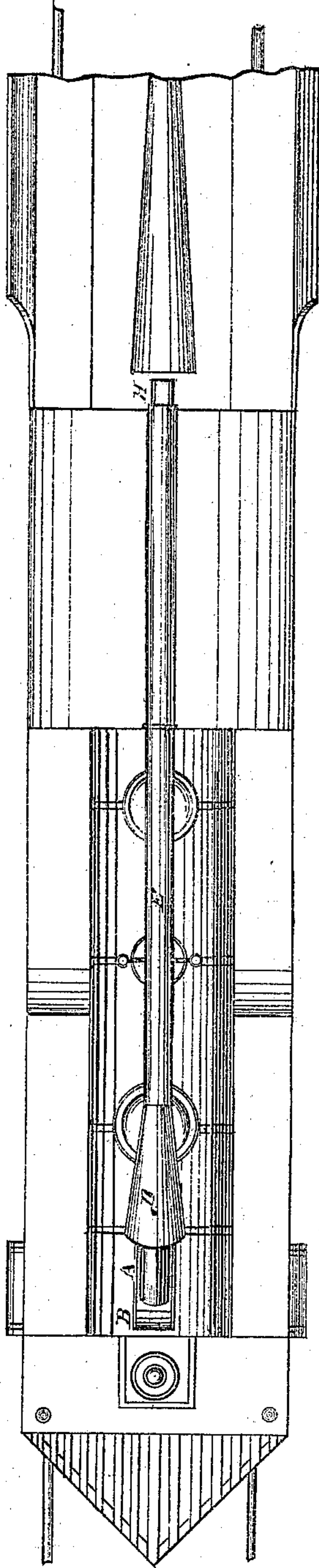
Patented Oct. 17, 1871.



Witnesses:
Rufus Hays.
H. L. Wattenberg

Tube for Locomotives.

Fig. 2.



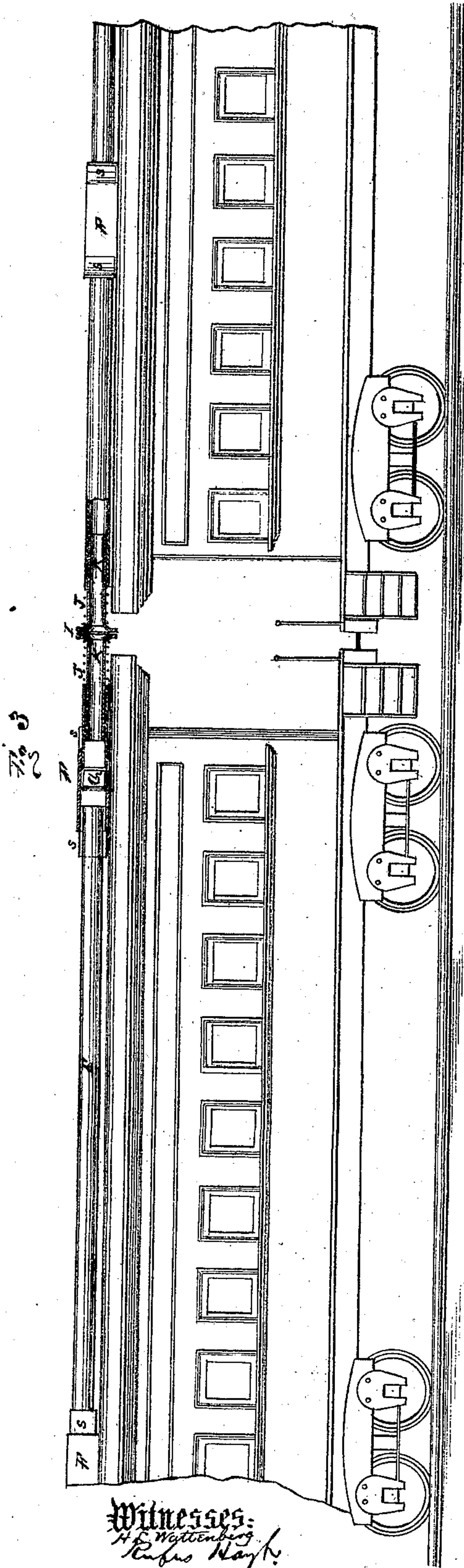
Inventors
John Greacen Jr. and Stanley Greacen
per
G. M. Lynton
att'y.

2 Sheets--Sheet 2.

John Creacen Jr. & Stanley Creacen's Imp^d Smoke & Cinder Tube for Locomotives.

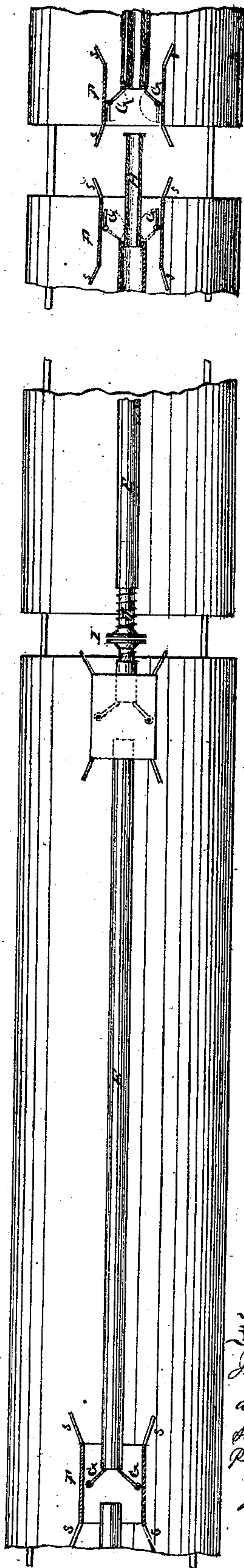
No. 120,059.

Patented Oct. 17, 1871.



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Fig. 4.



Inventors
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att'y

UNITED STATES PATENT OFFICE.

JOHN GREACEN, JR., AND STANLEY GREACEN, OF NEW YORK, N. Y.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. 120,059, dated October 17, 1871.

To all whom it may concern:

Be it known that we, JOHN GREACEN, Jr., and STANLEY GREACEN, of the city, county, and State of New York, have invented a new and Improved Smoke-and-Cinder Tube for Locomotives; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, making a part of this specification.

The object of this invention is to arrange and connect with the smoke-stacks of locomotives, a series of tubular smoke-passages extending over, under, or on the side of the cars, in such manner as will convey the smoke and cinders from the smoke-stacks of locomotives to the rear of the trains, and thus prevent it from entering the windows of the cars and annoying the passengers therein. The invention consists in the construction, arrangement, and combination of parts as hereinafter described and claimed.

In the accompanying drawing, Figure 1 represents a side view of a locomotive, tender, and car, showing my invention partly in section; Fig. 2, a top view of same; Fig. 3, a side view, showing draught-boxes, gates, telescopic tubes and flange-heads; and Fig. 4, a top view of same.

Similar letters of reference indicate like parts in the drawing.

A represents the smoke-stack. B, the smoke-box; C, sleeve; D, bell-mouth; E, tubes; F, draught-boxes; G, draught-gates; H, telescopic tube; I, flange-heads; J, spiral springs; K, telescopic tubes; s, flaring ends of draught-boxes; p, steam-pipe. The smoke-stack A is constructed so as to admit of its turning at its base in the smoke-box B, in any desirable manner, and thus enable it to be inclined from an upright to an angular slanting position. The advantage of hinging or inclining the smoke-stack is that, when in the slanting position shown, it conveys the smoke and cinders directly into the tubes without causing a change in the direction of the current. Thus, none of the smoke escapes at the stack, and no deflector or other auxiliary means is required for producing the desired result. Over the top of the locomotive extends a section of tube, E, the front ends of said tube having a flare or bell-mouth, D, so that when the smoke-stack A is inclined backward, the top of said stack will be on a line with the under surface of

said bell-mouth, and although the top of said stack-and-bell mouth are in no wise secured to each other, yet the smoke and cinders, following the direction of the inclined stack and the current of air entering said bell-mouth, induced by the motion of the train, will pass into and through the tube E. Over the tops of the tender and other cars making a train, are secured sections of tubes similar in construction to the first-mentioned tube, with the exception that the ends of said other tube-sections do not terminate in bell-mouths, but enter into draught-boxes F. These draught-boxes may be constructed of sheet metal or any other desirable material, and are secured to the roof at such distance from the end of the cars as to accommodate it to inequalities in the height of the cars composing the train, and allow of a joint in the pipe so that it can be raised or depressed. The sides, top, and bottom of said draught-boxes are closed; but the ends are open and flaring, as shown in Fig. 4. In the interior of said draught-boxes are pivoted the draught-gates G, in such manner that a current of air passing into said boxes will force said gates inward at an angle to the mouth of the tube, and thus convey the smoke and cinders into said tube, and at the same time the flaring ends s of said boxes will catch the air as the train moves, and thus increase and maintain the draught through the tube. It will be observed by reference to the drawing No. 2, Fig. 4, that the action of the draught-boxes and gates is precisely the same, in whichever direction the car is moved. If it is thought desirable to still further increase the draught in the tube-sections, they may be made in two parts, each part opening in a draught-box, as before described, placed in the center of the roof of the car; and in this way the draught will not only be created at the ends of the tubes, but also at the center, and increased velocity given to the draught of the locomotive, and the smoke and cinders be carried more rapidly from the front to the rear of the train. Sections of tubes constructed and arranged in precisely the same manner, as above described, are placed along the top of each car in the direction of its length, and while it is possible that the smoke and cinders would be carried from one tube or section to the other without in any way coupling the ends together, by force of the draught alone, yet if for any reason it should be desirable to

make a continuous passage from one section to the other throughout the length of the train, short telescopic tubes, H, (see Fig. 1) may be slipped through the draught-box in front, to or into the draught-box on the front of the adjoining car; or, if this be objectionable, a draught-box may be placed in the center of the car only, and the telescopic tubes K fitted with a spiral spring, J, and flange-head, I, as shown in Figs. 3 and 4, so that when the outer ends of said tubes are brought together between the cars, said spiral springs will enable them to maintain their position against any horizontal thrust and keep the flange-heads I in contact, and allow the faces of said flange-heads to chafe, the one against the other, and accommodate themselves to any swinging or other motion of the train, and at the same time preserve the continuity of the tubular passages. If it should be desired to increase the height of the smoke-stack so as to cause the head of said stack to enter into the bell-mouth D, or for any other reason, a sleeve, C, may be fitted to the stack and accomplish the purpose. As a further means of increasing the draught through the cinder-tubes, the locomotive may exhaust into them over the top of the stack, or a jet of steam may be used for this purpose, and thus the force of the steam and partial vacuum created will undoubtedly give all the draught that can

be desired. Our tubes may also be used as a means of ventilating the cars, by simply having openings made through the roof into the tubes, which will undoubtedly carry off the foul air from within the car. The smoke-stack A when in an upright position would, in a measure, lead the smoke above the mouth of the bell-mouth D. In order to obviate this, we run a small steam-pipe, p, up the front side of said stack, and, by turning the end of said pipe, direct a jet of steam in such manner as will force the smoke into the bell-mouth and thence through the tubes, as before described.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The hinged inclining stack A, in combination with the smoke-conveying tubes, whereby the smoke, cinders, steam, &c., are carried directly into the bell-mouth D without change of direction, for the purpose set forth.

2. The combination of automatic gates G G with the draught-boxes F, substantially as described, for the purpose specified.

JOHN GREACEN, JR.
STANLEY GREACEN.

Witnesses:

G. M. PLYMPTON,
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