

(No Model.)

J. W. DUNCAN & T. B. QUINBY.
SMOKE STACK AND CONDUCTOR.

No. 485,535.

Patented Nov. 1, 1892.

Fig. 1

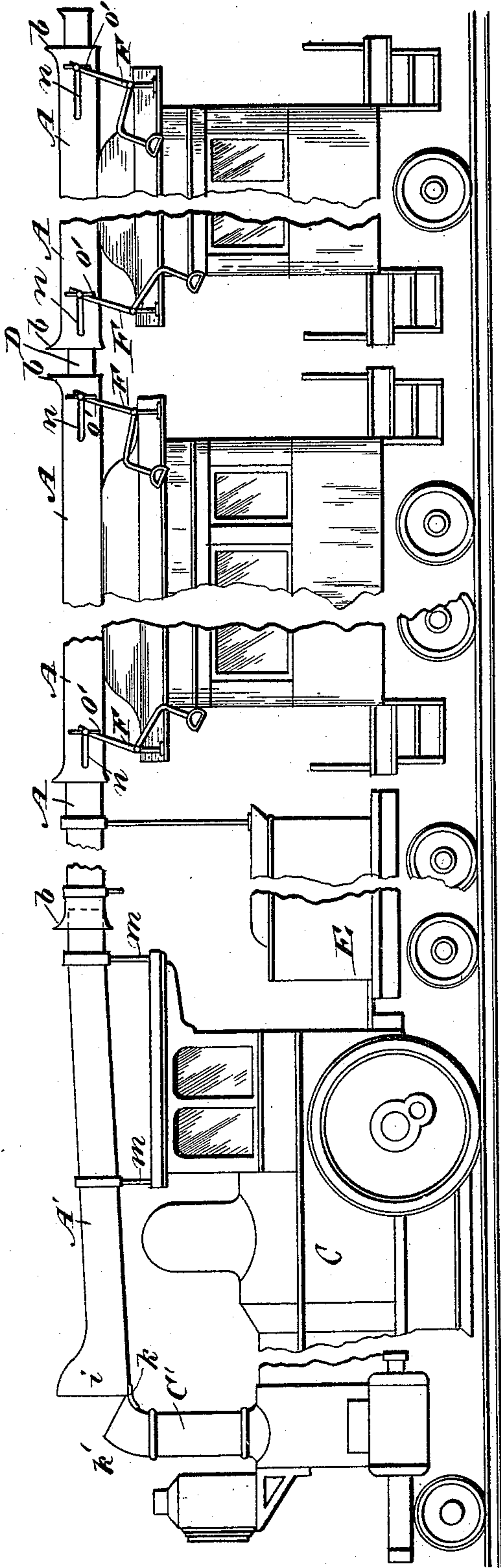
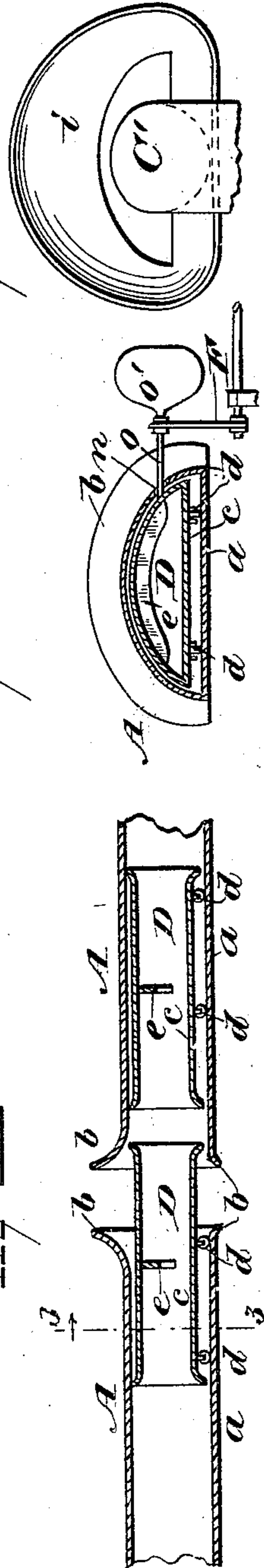


Fig. 2

Fig. 3

Fig. 4



WITNESSES:

H. Walker
C. Sedgwick

INVENTORS:

J. W. Duncan
T. B. Quinby
BY Munn & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN W. DUNCAN AND THOMAS B. QUINBY, OF ONANCOCK, VIRGINIA.

SMOKE STACK AND CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 485,535, dated November 1, 1892.

Application filed February 13, 1892. Serial No. 421,400. (No model.)

To all whom it may concern:

Be it known that we, JOHN W. DUNCAN and THOMAS B. QUINBY, of Onancock, in the county of Accomack and State of Virginia, have invented a new and useful Improvement in Smoke Stacks and Conductors, of which the following is a full, clear, and exact description.

Our invention relates to improvements in devices to convey cinders, dust, and smoke from a locomotive to the rear end of an attached train and discharge it; and it consists in the peculiar construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a broken side view of a locomotive and attached cars having the improvement combined therewith. Fig. 2 is an enlarged broken longitudinal section of two adjacent portions of the smoke-conductor, showing interior parts. Fig. 3 is a transverse section on the line 3 3 in Fig. 2, and Fig. 4 is a front view of the device and the upper portion of a locomotive smoke-stack in connection with it.

The improvement consists of a peculiarly-formed smoke-stack and a semicylindrical tubular conduit A, provided for each car B, and also a similar conduit A' for a locomotive C. These conduit-pipes are preferably given a semielliptical form in cross-section, having a flat base-wall *a*, this construction of the conduits being advantageous in that it permits the conductor-sections to be made of suitable capacity and avoids undesirable projection above the car-roofs whereon they are located. The ends of the conduits A are flared a proper degree, as at *b* in Figs. 2 and 3, and the length of each conduit is so proportioned to that of the car sustaining it that the ends of conduit-sections on two coupled cars will not impinge upon each other, yet will be adapted to provide draft at the flared ends of the several sections. Within each conduit-section A at opposing ends a junction-pipe D is loosely inserted, said pipes being of similar form to the conduits and so reduced in dimensions, transversely considered, that their ends may be

flared, also, and loosely engage with the inner surface of the conduits. Preferably the flat lower wall *c* of each junction-pipe D is sufficiently removed from the similar base-walls *a* of the conduit-sections A so that antifriction-rollers *d*, which are secured to rotate upon the lower surfaces of the walls *c*, will have proper space for travel, as indicated in Figs. 2 and 3, whereby the pipes are supported free to move longitudinally with but little frictional resistance; or the rollers may be journaled in slots in the bottom wall of the conduit-sections. There is a depending curtain *e* formed on or secured to the inner surface of the curved wall of each junction-pipe D, which curtain projects toward the lower wall *c*, so that a sufficient space intervenes between its lower edge and said bottom wall to permit a free passage through the junction-pipes and yet afford a proper area for the curtains to adapt them to receive the impact of air-currents that will cause the pipes to move endwise, as will be further mentioned.

The conduit-section A', provided for the locomotive C, is furnished at its front end with a hood *i*, that is arched and so increased in dimensions as compared with the diameter of the conduit it is part of as to be well adapted to receive the sparks, dust, and smoke exhaled from the top of the smoke-stack C' of the locomotive to which it is attached, as at *k*. The smoke-stack is preferably made cylindrical and is curved at *k'* near the upper end rearwardly, so that its open terminal above may freely discharge the smoke and other products of combustion into the hood of the conduit-section A', the latter being inclined downwardly a proper degree to locate the hood directly opposite the open end of the stack, which is constructed as low as efficiency of service will permit, and thus locate the upper edge of the hood nearly in the same horizontal plane with the flared flanges on the conduit-sections A.

The conduit-section A' is supported upon the roof of the engine-cab by standards *m* or other means, so as to align it with a conduit-section A on the tender E, that is similarly sustained in a horizontal plane, so that its rear end and junction-pipe therein will be opposite and near to a car conduit-section when the tender and car are coupled. The rear end

of the conduit-section A' is not flared, but is designed to freely enter the forward flared end of the conduit-section on the tender E, as shown by dotted lines in Fig. 1.

5 Upon one side of the conduit-sections A, near each end of the same, a longitudinal slot *n* is cut in each to permit the end of an upright limb of a bell-crank lever F to be pivotally attached to the junction-pipe D with-
10 in by a short bar *o*, that projects through the slot, having its inner end secured firmly to the pipe named and loosely to the bell-crank limb at its outer end. (See Fig. 3.) The other limb of the bell-crank lever F is bent
15 to adapt it for manipulation from a car-window or other suitable point, and the bell-crank is pivotally sustained in a proper position on the car to allow it to work freely, and thus enable a trainman to slide the junction-pipe
20 at each or either end of a conduit-pipe and enter it within an adjacent conduit-section or remove it therefrom, as occasion may require. It will be seen that the lateral extension of the bars *o* through the slots *n*, as de-
25 scribed, will afford means to limit the longitudinal movement of the junction-pipes D by reason of their impinging upon the terminal ends of the slots they engage, which will prevent a complete removal of the pipes
30 from the conduits they are located in and also determine their inward movement. Should it be found necessary, an upright wing *o'* is secured upon the bar *o* of each junction-pipe D, which will supplement the action of the
35 curtains *e* to cause the pipes to slide endwise by impact of air-currents on the same.

In operation, it being understood that the cars of a train are all provided with conduit-sections A and the locomotive with a conduit-
40 section A', the forward motion of the train will cause a rearward current of air, which will cause the junction-pipes D, that are on the rear ends of the conduit-sections A, to slide toward and within the nearest conduit-
45 section, the pipe D in the receiving-section A being slid away or inward simultaneously, the impact of the atmosphere upon the flared ends of the junction-pipes and the curtains *e* causing such a movement, the wings *o'* con-
50 tributing to the desired result, if these are employed. In case there should be an impediment to automatic action of the junction-pipes D, occurring from any cause, the levers F may be used to properly adjust said pipes
55 for service. It will be evident that by provision of a junction-pipe D at opposing ends of the conduit-sections A these latter may be automatically connected in either direction of travel, and, furthermore, that by reason of
60 the freedom from constraint afforded to the pipes D within the conduit-sections no obstruction will be presented to the progressive movement of a train of cars and an attached locomotive on curves or heavy grades, the
65 connection of parts being maintained and the products of combustion from the locomotive being received, conveyed, and discharged by

the continuous smoke-conductor, so as to protect the cars from sparks, dust, or smoke in an efficient manner.

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

1. The combination, with the smoke-conductor section, of a pneumatically-operated junction-pipe constructed with a portion or connection to receive the impact of the air and slide said pipe, substantially as set forth.

2. The combination, with the smoke-conductor section and its pneumatically-operated junction-pipe constructed with a portion or connection to receive the impact of the air and slide said pipe, of a lever mechanism for positively operating said junction-pipe, substantially as set forth.

3. The combination, with the smoke-conductor section, of a junction-pipe having internal and external wings or projections to receive the impact of the air and slide the junction-pipe, substantially as set forth.

4. The combination, with the smoke-conductor section, of the pneumatically-operated junction-pipe constructed with a portion or connection to receive the impact of the air and slide said pipe and interposed antifric-
95 tion devices between the two, substantially as set forth.

5. A smoke-conducting apparatus comprising a rearward-curved stack-section *k'*, a section A', having an upward-flared end *i* adjacent to section *k'*, a section for the tender, and a car-section having a pneumatically-operated sliding junction-pipe for each end, constructed with a portion or connection to receive the impact of the air and slide said
105 pipe, substantially as set forth.

6. A smoke-conducting section having flared ends and a sliding junction-pipe in each end of the said section and having flared ends and an impact portion or connection to slide it by
110 the impact of the air, substantially as set forth.

7. In a smoke-conductor for cars, the combination, with a semielliptical conduit-section, of a semielliptical junction-pipe in the
115 conduit-section, having flared ends and an interior depending curtain, and antifriction-rollers beneath its bottom wall, substantially as described.

8. In a smoke-conductor for cars, the combination, with a semicylindrical conduit-section flared at its ends, of a semicylindrical junction-pipe in the conduit-section, also flared at its ends and having antifriction-rollers beneath its bottom wall, and means for manu-
125 ally moving the junction-pipe longitudinally, substantially as described.

9. In a smoke-conductor for cars, the combination, with a car, a semicylindrical conduit-section supported thereon, flared at its
130 ends, and longitudinally slotted near each end at one side, of a semicylindrical junction-pipe within the conduit-section, also flared at its ends and having antifriction-rollers be-

neath its bottom wall, and a bell-crank lever fulcrumed on the car and pivotally connected at one end with the junction-pipe through the side slot in the conduit-section, substantially
5 as described.

10. In a smoke-conductor for cars, the combination, with a semicylindrical conduit-section flared at its ends and having central longitudinal slots in its side near each end, of a
10 semicylindrical junction-pipe in each end of said conduit-section, and also flared at its ends, depending curtains within said junction-pipes, antifriction-rollers beneath the bottom walls of the said junction-pipes, and lateral
15 bars connected to the junction-pipes and extending horizontally through the slots in the conduit-section and having wings on their outer ends, substantially as described.

11. In a smoke-conductor for cars, the combination, with the smoke-conductor section, of a sliding junction-pipe and surfaces and connections adapted to be deflected by the impact of air and slide said pipe, substantially
20 as described.

12. The herein-described means for carrying the smoke over the space between the cars, consisting of movable guides on the ends of each car and wind-boards mounted adjacent thereto and adapted to be moved by the
25 pressure of the wind and operatively connected to said guides, whereby one guide is operated automatically to bridge over the intervening space and the other guide is actu-

ated to operate therewith, substantially as described.

13. In a smoke-escape, the combination, with
35 conductor-sections mounted on the respective cars and adapted to facilitate the passage of smoke therethrough, of guides at each end of said sections, adapted to guide the smoke from
40 one section to the adjacent section, and automatic means for operating said guides, consisting of surfaces adapted to be deflected by the wind and intermediate connections between said guides and surfaces, whereby said
45 automatic action is effected, substantially as described.

14. In a smoke-escape, the combination, with conducting-pipes formed in sections adapted to be mounted on the respective cars, of guides
50 for the smoke, consisting of sliding pieces adapted to bridge over the space from one section to the adjacent one and wind-boards adapted to be moved by the pressure of the wind thereon and operatively connected to
55 said sliding guides, whereby the guide in one section will be operated outward to bridge over the intervening space and the adjacent guide will be operated inward to give place thereto, substantially as described.

JNO. W. DUNCAN.
THOS. B. QUINBY.

Witnesses:

FRANK H. SLOCOMB,
J. S. MILLS.