

L. M. HOSEA.  
SPARK-CONVEYERS.

No. 173,407.

Patented Feb. 15, 1876.

Fig 1.

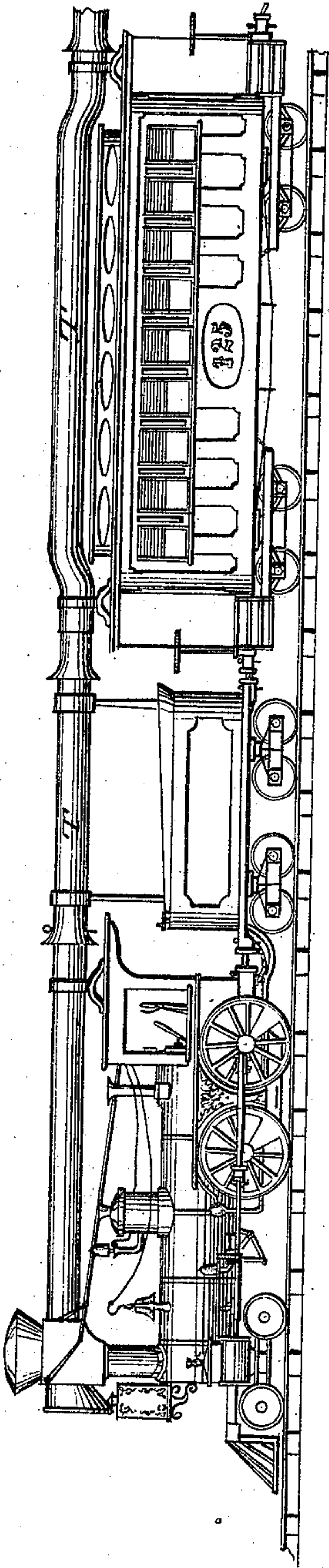


Fig 3.

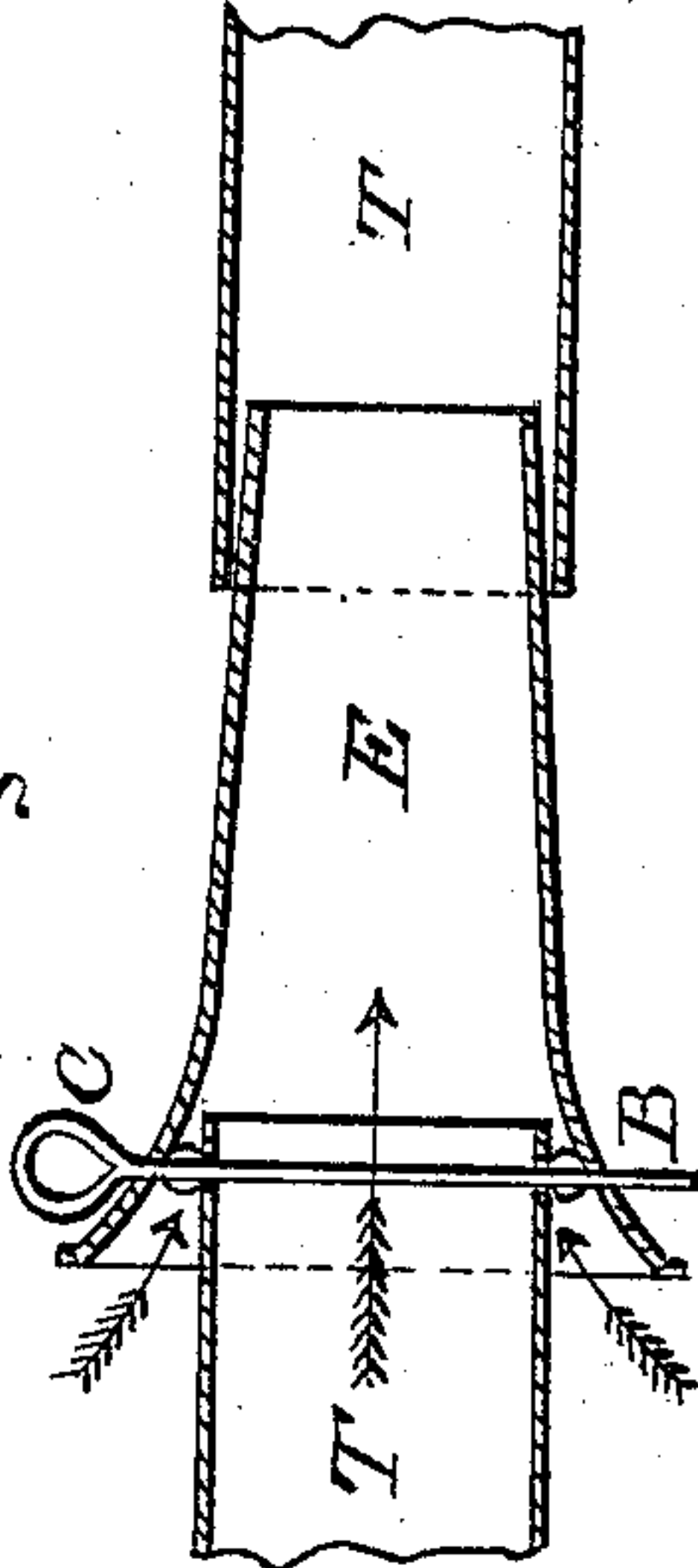
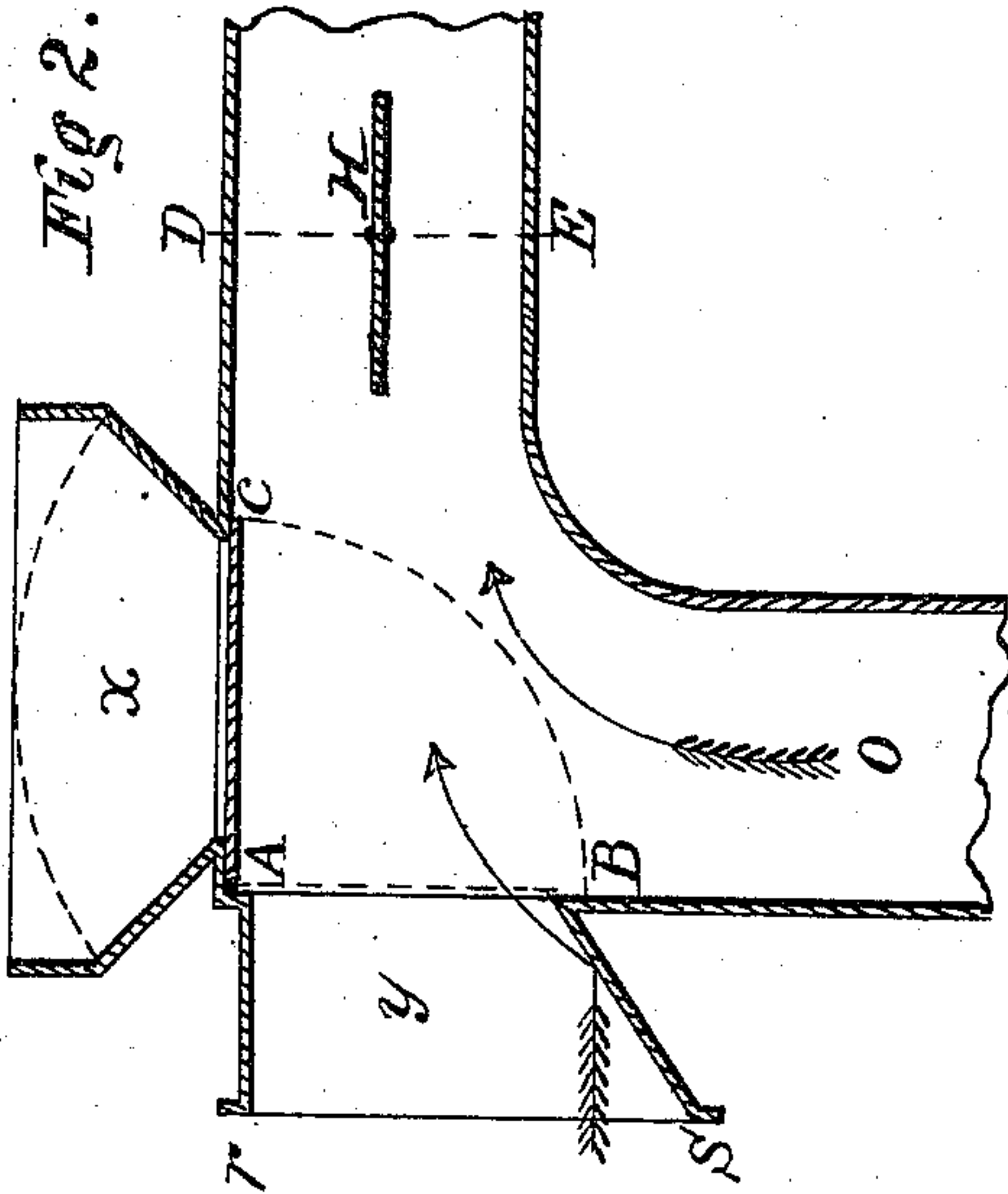


Fig 2.



Witnesses

L. M. Hosea  
L. H. Worcester

Inventor.

Lewis M. Hosea



# UNITED STATES PATENT OFFICE.

LEWIS M. HOSEA, OF CINCINNATI, OHIO.

## IMPROVEMENT IN SPARK-CONVEYERS.

Specification forming part of Letters Patent No. **173,407**, dated February 15, 1876; application filed July 28, 1873.

### *To all whom it may concern:*

Be it known that I, LEWIS M. HOSEA, of Cincinnati, Hamilton county, Ohio, have invented a certain Improvement and Attachment for Railway Locomotives and Trains, of which the following is a specification:

The object of my invention is to promote the efficiency of that kind of smoke-conveyers of railway-trains which consist, essentially, of an open-ended articulated tube, reaching from the smoke-stack of the locomotive to the rear car of a train, and through which the unconsumed products of combustion are carried by strong currents of air induced by the progress of the trains, and aided by the exhaust from the front to the rear of the train, where they escape.

My improvements consist, first, in placing a valve in the angle between the mouth of the conveyer-tube and the opening in the top of the smoke-stack above such tube, so that one of these openings may be closed thereby, while the other is uncovered; secondly, in combining, with said valve, another valve, placed in the conveyer-tube just in rear of the smoke-stack, which operates in unison therewith, to simultaneously open and close the conveyer-tube, both in front and in rear of the smoke-stack; third, in connecting the several sections of the conveyer-tube by tubular couplings, made tapering at one end, so that they may easily enter a straight cylindrical tube and permit them to wobble therein to the extent required, and provided with a flaring mouth at the other end, made considerably larger in diameter than the end of the tube which enters it, so that air may freely enter around the tube to accelerate the draft in the conveyer. The coupling-tubes are connected by a pin to the sections of the conveyer-tube, in such a manner that they can be readily reversed.

Reference being had to the drawing, Figure 1 is a side elevation of a locomotive-engine, tender, and car, showing the invention. Fig. 2 is a longitudinal section of the stack and attachments, showing its construction and operation. Fig. 3 is a longitudinal section of the coupling-tube, showing its construction and operation.

The stack and all other parts of my invention are constructed of metal, and consist of

a smoke-stack terminating in a horizontal tube of convenient size for the free passage of smoke, and of any desired shape, (round, square, oval, &c.) The upper part of the stack consists of a box, Fig. 2, having two openings, *x* and *y*, opened and closed alternately by a valve or damper, A C, hinged at A, and worked from the cab by a rod and crank or other suitable device. The aperture *y* is provided with a flange or lip projecting to the front, of the shape indicated in section *r s*, for the purpose hereinafter explained. The aperture *x* is provided with a flange or extension of the stack, enlarged to receive a wire-netting. The horizontal tube, immediately in rear of the stack, is fitted with a valve or damper, pivoted and coupled with A C in such manner as to open and close said tube in connection with the valve A C, so that when the aperture *y* is open the rear damper shall be open also, as shown in Fig. 2, and when aperture *y* is closed damper H shall stand as indicated by the broken line D E, closing the tube. The horizontal tube T is constructed in sections, attached to and corresponding in length with each car, the connection being made by a reversible tube with a flaring end and a contracted end, as at E, Fig. 3, and held in position by a movable pin, B.

The operation is as follows: The valves or dampers A, C, and H standing as shown in Fig. 2, and the train being in motion forward, a relative current of air, caused by the motion of the parts, is induced and maintained throughout the horizontal tube T and connections, accelerated throughout by the air caught by the flaring ends of the coupling-tubes and drawn within, (space being left for that purpose.) At the point of entrance through the aperture *y* the mouth of the conveyer-tube, which is formed by the flange surrounding said aperture, concentrates the air and deflects it slightly upward, as shown by the arrow, thereby tending to increase the draft in the body of the stack O from the fire-box. This is effected by the downwardly-deflected lower side S of said flange or mouth. The result is to aid the draft independently of the exhaust, and to force the sparks, steam, and smoke back into and through the horizontal tube T. The exhaust-steam, being con-



densed by the air-current in contact with the sparks within the tube, will extinguish them, and the same current conveys them to a place of safety in rear, thereby affording passengers and employes a simple and effectual relief from the great annoyance and danger now suffered in railroad travel.

If the motion is permanently reversed the coupling-tubes are to be reversed by removing the coupling-pin and reinserting it in proper place. Should cars become detached the connection or coupling tubes draw out without injury. The flaring ends of the coupling-tubes and the mode of coupling permit a free oscillation between cars.

In running backward or standing at rest the dampers are turned to close the conveyer-tube both in front and in rear of the smoke-stack, leaving the aperture *x* open for the free egress of smoke through the netting.

In using this apparatus the cone and other usual obstructions in the stack of a locomotive may be dispensed with, thus enabling the exhaust-orifices to be enlarged and the back

pressure removed from the engines, while a freer fire and freer steam can be secured.

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

1. In a combined smoke stack and conveyer, such as described, the combination, with its funnel for the admission of air, and its smoke-exit, located in the rear of such funnel, of a single damper, adapted to control either of these openings, substantially as set forth.

2. The combination, with a combined smoke stack and conveyer, such as described, of a damper adapted to control its funnel for the admission of air, and its smoke-exit in the rear of such funnel, and another damper in the conveyer-tube, substantially as and for the purpose specified.

3. The reversible and tapering tubular couplings, having an expanded flaring mouth, substantially as and for the purposes specified.

LEWIS M. HOSEA.

Witnesses:

WM. G. HOSEA,

L. H. SARMISTEDT,