

(No Model.)

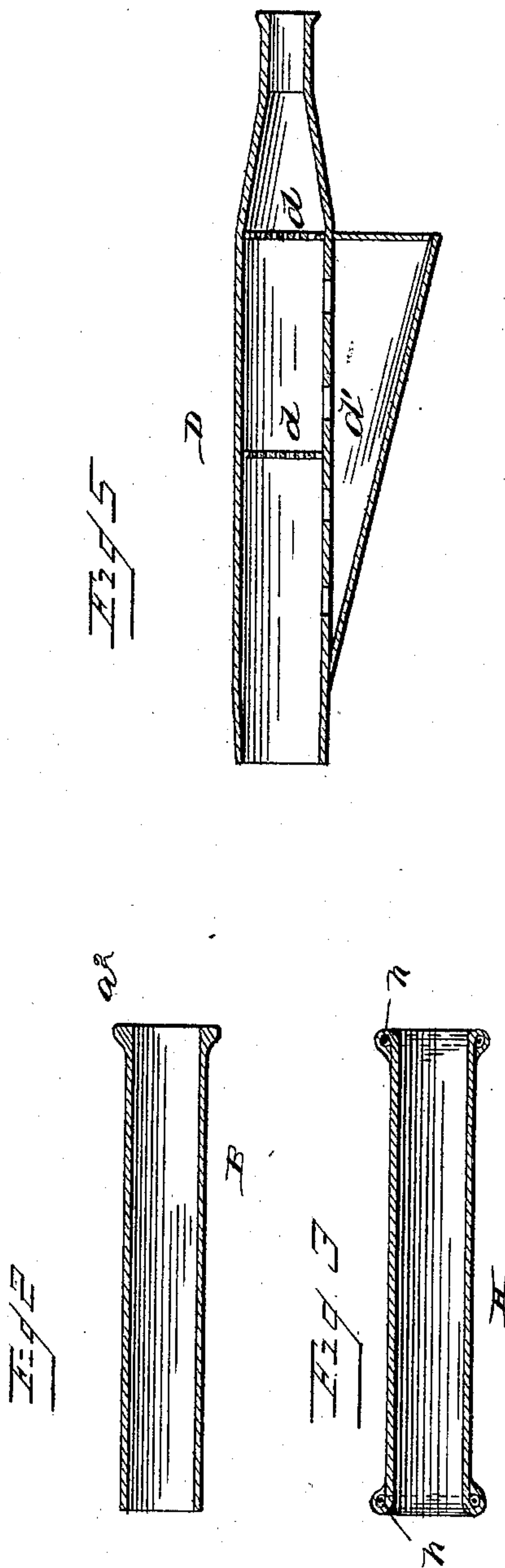
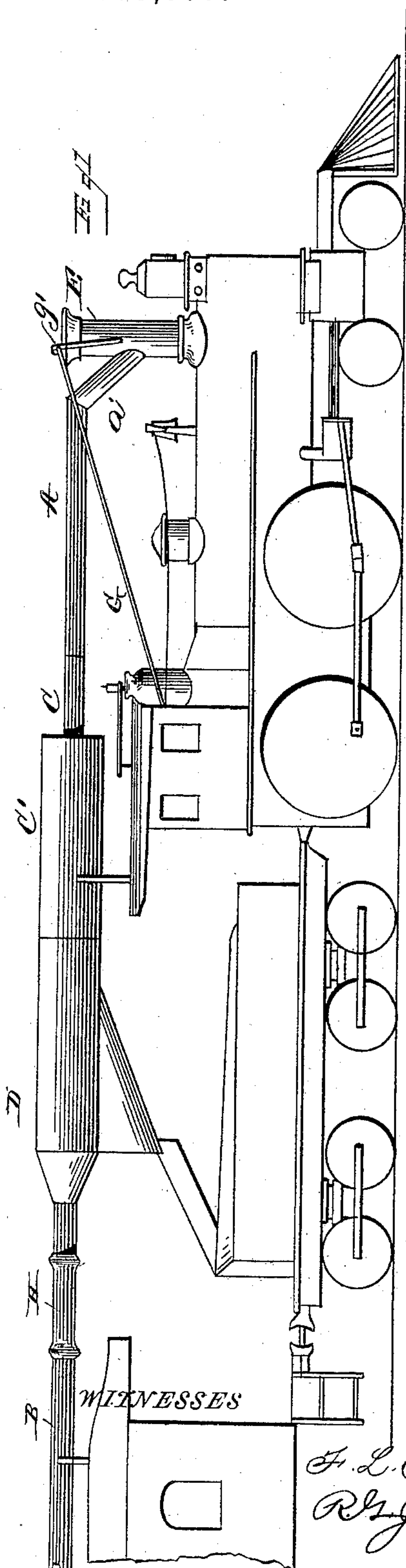
2 Sheets—Sheet 1.

W. B. JOHNSON.

SMOKE, SPARK, AND CINDER ARRESTER.

No. 396,697.

Patented Jan. 22, 1889.



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Fig 8

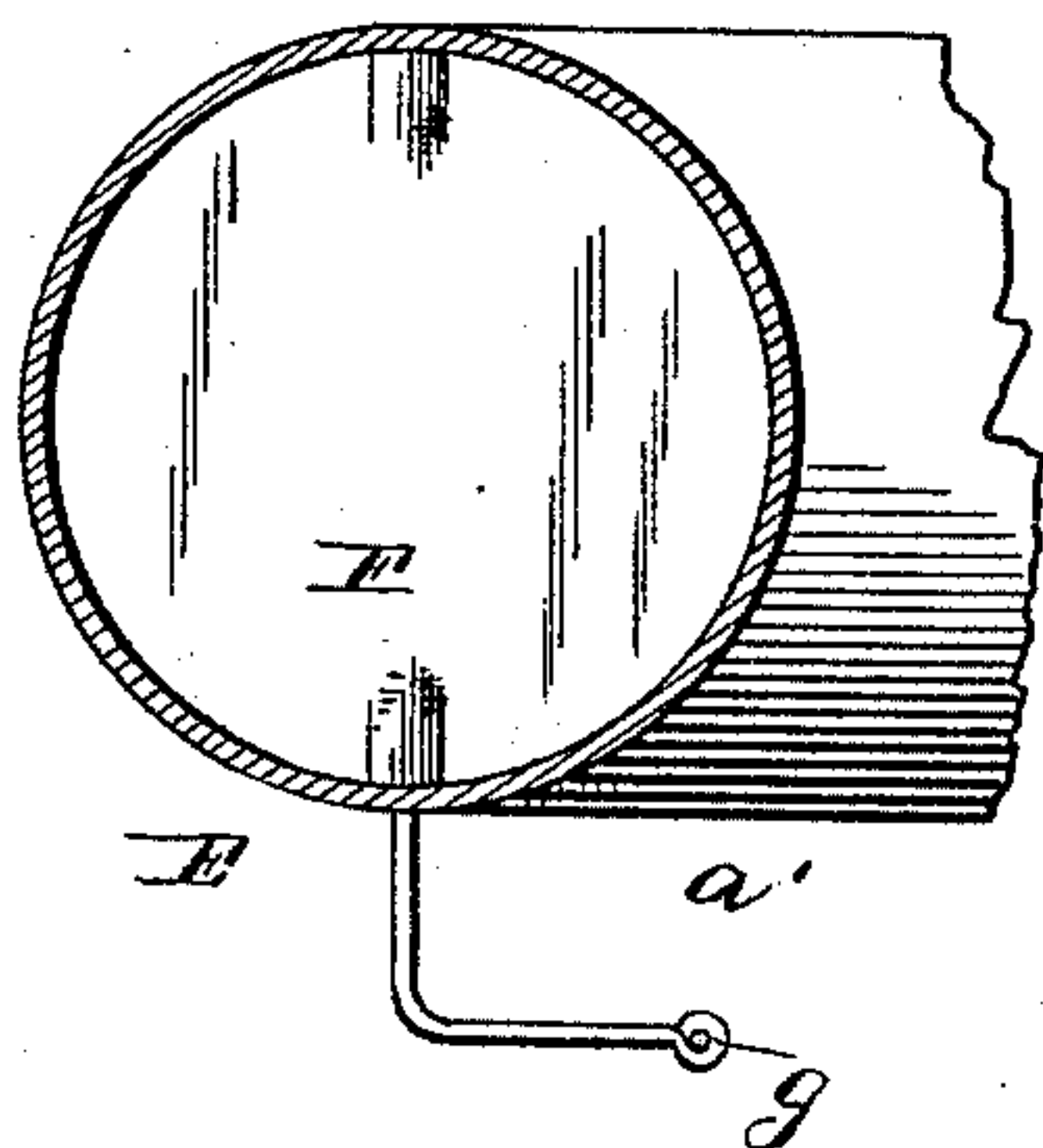


Fig 9

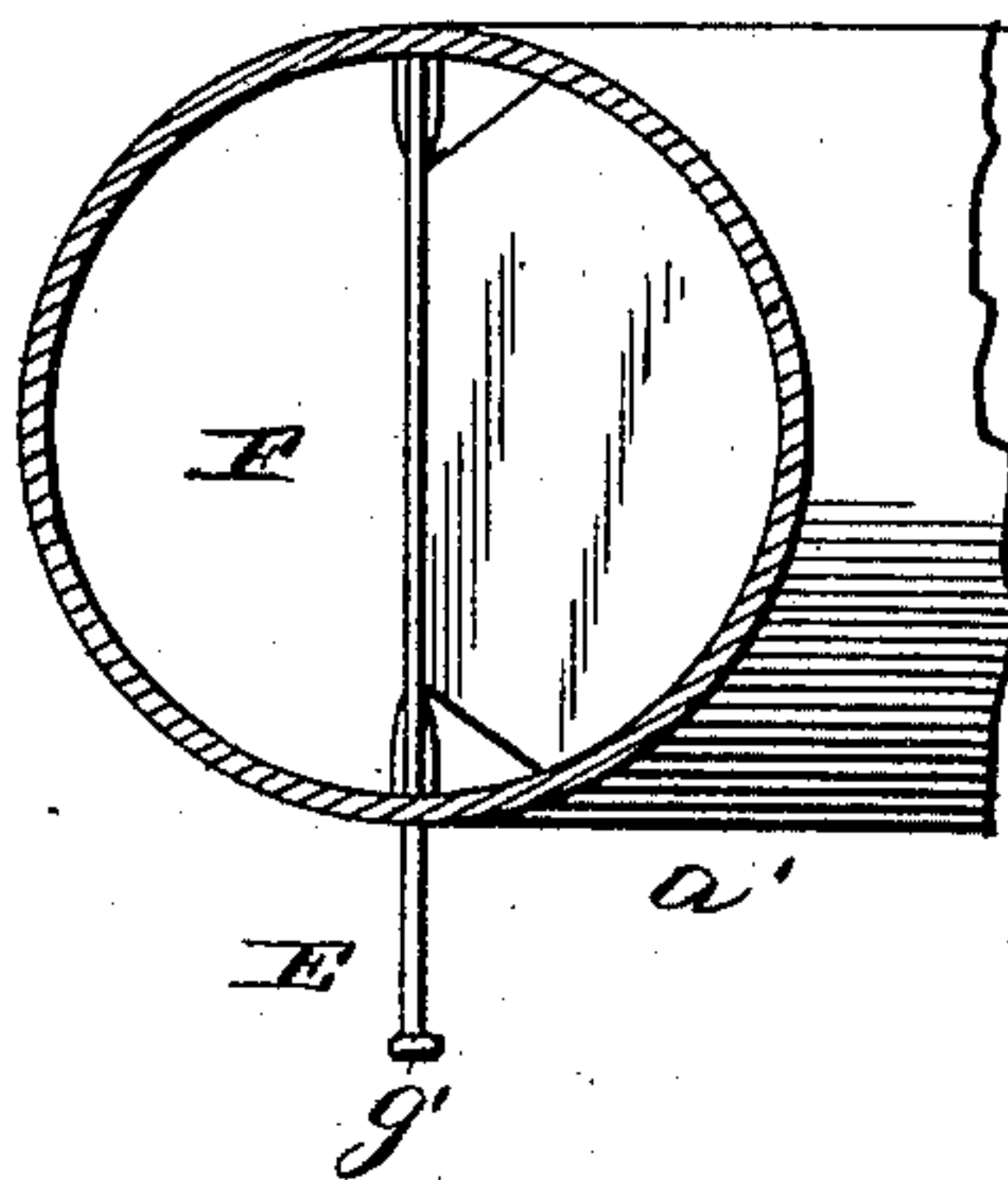


Fig 4

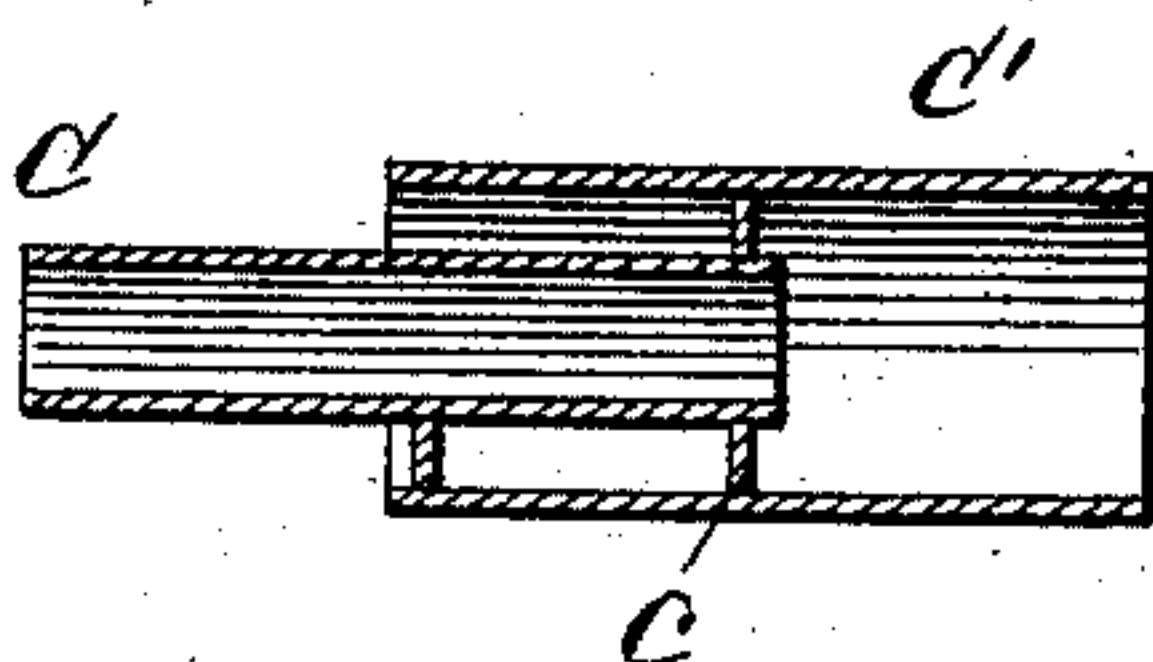
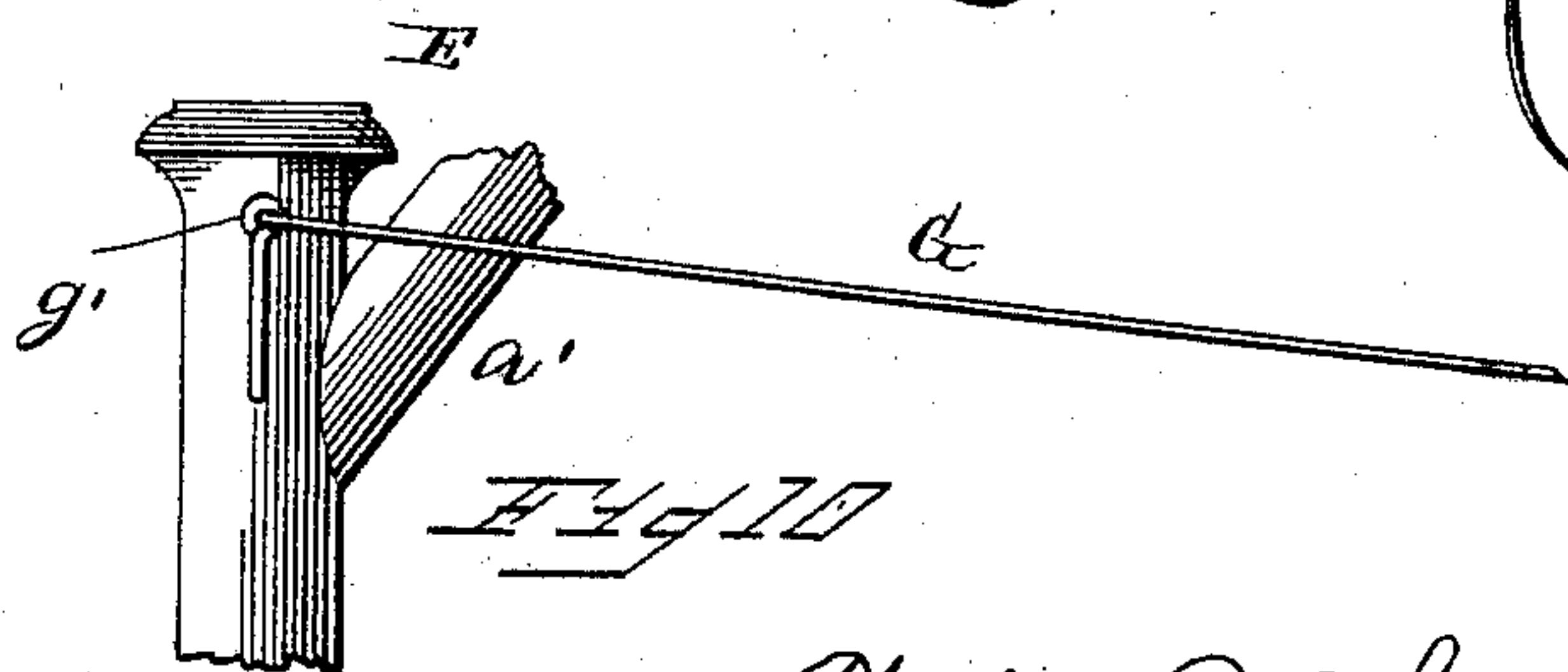
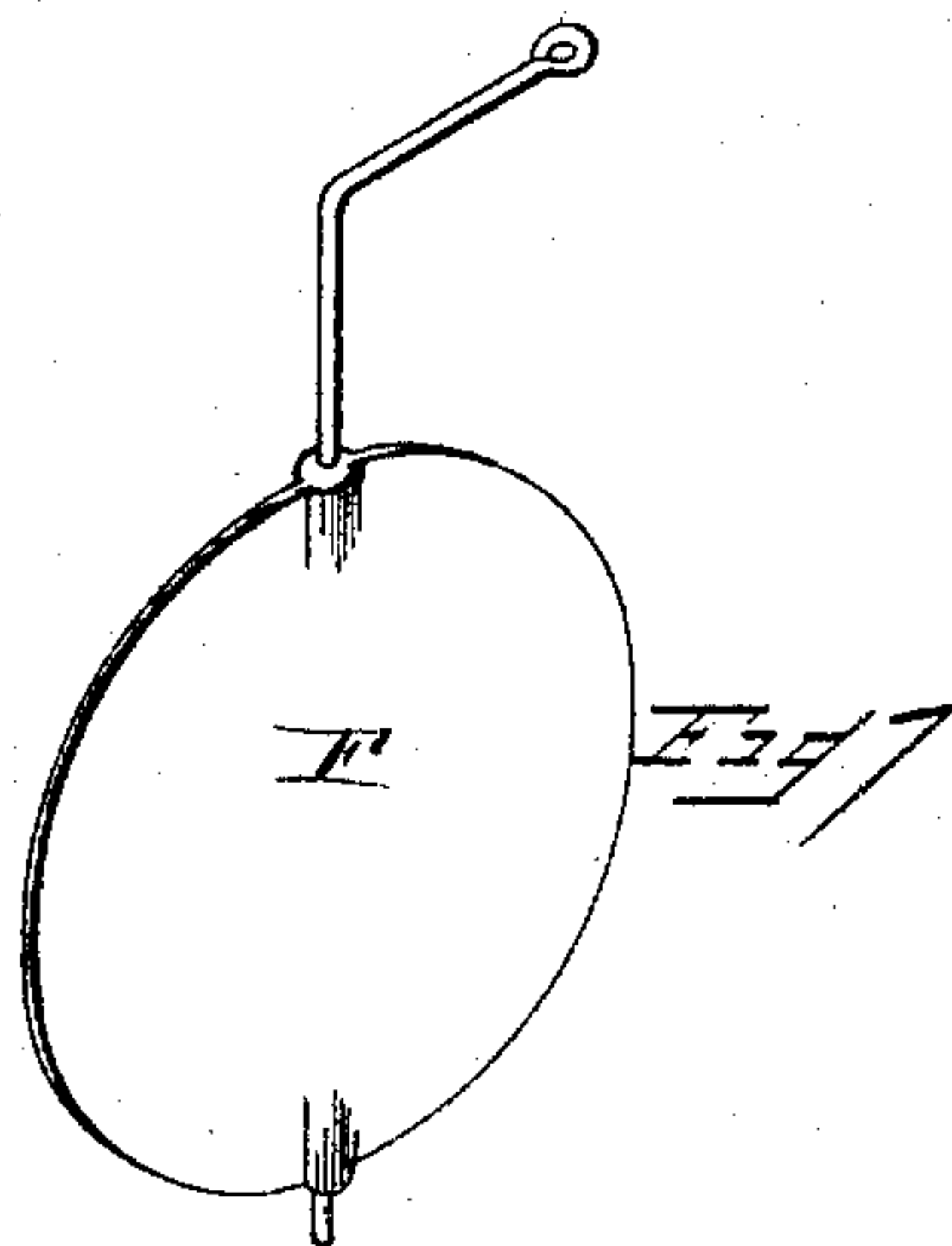
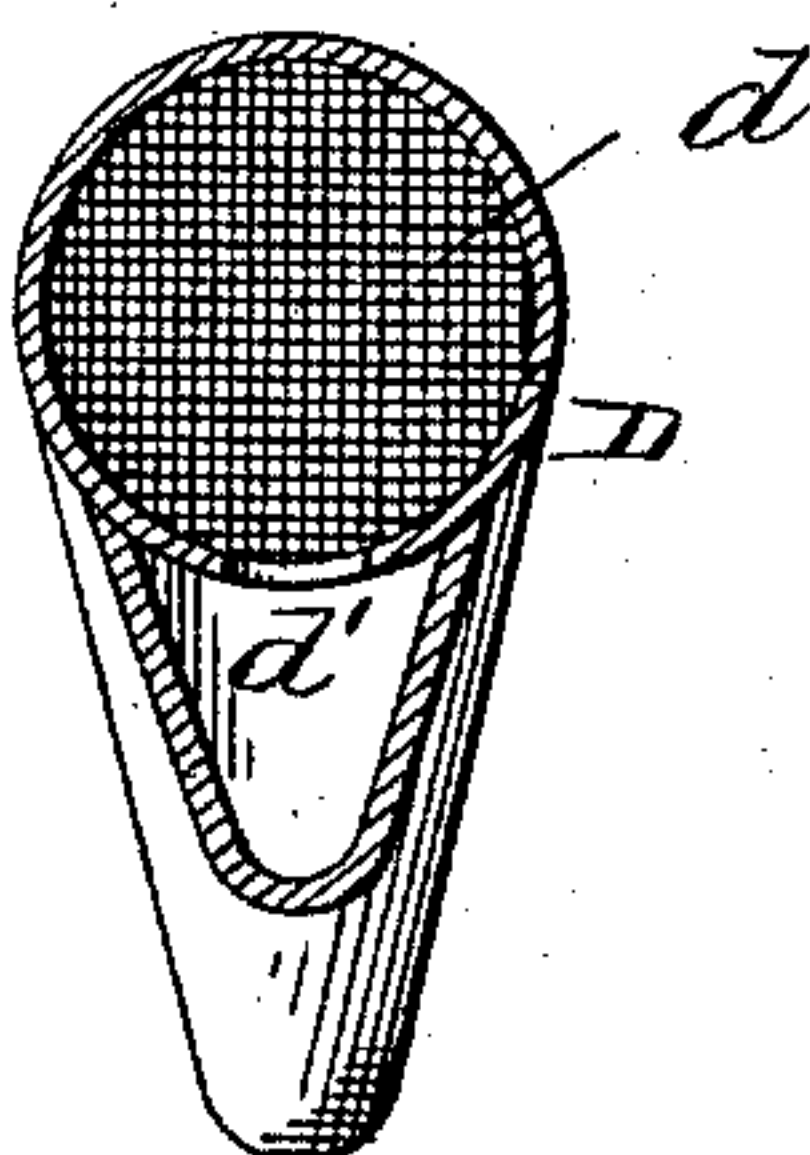


Fig 6



WITNESSES.

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UNITED STATES PATENT OFFICE.

WALTER B. JOHNSON, OF FREDERICKTOWN, OHIO.

SMOKE, SPARK, AND CINDER ARRESTER.

SPECIFICATION forming part of Letters Patent No. 396,697, dated January 22, 1889.

Application filed August 27, 1888. Serial No. 283,830. (No model.)

To all whom it may concern:

Be it known that I, WALTER B. JOHNSON, a citizen of the United States, residing at Fredericktown, in the county of Knox and State of Ohio, have invented certain new and useful Improvements in Smoke, Spark, and Cinder Arresters; 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 relates to improvements in a device for arresting the sparks, smoke, and cinders in the smoke-stack of a railroad-engine and conveying the sparks and cinders back to the tender and the smoke to the rear end of the hindmost car.

The object of my improvements is to provide a means of preventing two of the most disagreeable features or objections known to railroad traveling—first, that of the smoke escaping from the smoke-stack of engines and entering cars impregnated with the most offensive of odors; second, that of arresting the cinders and sparks in the smoke-stack and conveying the same back to the rear of the tender, where they are dumped in a box placed there for said purpose, thereby preventing the sparks from igniting with dry material along the railroad, sometimes causing great loss, or the cinders from entering the car, creating dust that settles upon and disfigures clothing, rendering them worthless, as well as getting in the eyes of passengers, inflicting serious injury. I attain these objects by the combination and arrangement of parts fully described in the specification and illustrated in the accompanying drawings, in which—

Figure 1 is a view of my device attached to the smoke-stack and cars and in a position for use. Figs. 2 and 3 are sectional views showing the means of connecting the ends of pipe between the cars. Fig. 4 is a longitudinal sectional view through the center of section C. Fig. 5 is a similar view of the section D. Fig. 6 is a transverse view of the section D on the line xx . Fig. 7 is a view of the damper or shut-off located in the smoke-stack at the point the device intercepts the same.

Figs. 8 and 9 are transverse views of the smoke-stack at the point where the damper is located, showing, respectively, the position of the damper when closed and when open. Fig. 10 is a view of the damper and means of operating same detached from the smoke-stack.

The device is composed of the sections A, B, C, and D. The section A intercepts the smoke-stack E at the point shown in Fig. 1. At this point there is an orifice, a , in the smoke-stack leading into a similar flue or orifice, a , in the section A, thence continuing backward through the different sections to the rear end of the hindmost car.

The damper F is located at the upper edge of the interception of the smoke-stack E and the section A. Said damper corresponds in shape to the flue of the smoke-stack, which is usually circular, in order to effectually close said flue at the point named.

The damper F is secured to the rod G, which has bearings g' at the juncture of the smoke-stack E and the section A. This damper is operated from the cab of the engine by means of the rod G. It will be readily seen that by drawing backward the rod G the flue of the smoke-stack is closed, as shown in Fig. 8, and by pushing said rod forward it is opened. This will enable the engine to be used with or without my device, accordingly as it is desired. When the rod G is detached at the point g' , the damper assumes the position shown in Fig. 9. A portion of section A may then be detached at the elbow a , and the engine can then be used to draw freight or for any purpose required without my device.

The section A is made with the elbow a' in order to extend the continuous pipe (composed of the aforesaid different sections) to a sufficient height to clear the top of the cars.

H designates the elastic leather or strong canvas used between the cars, which is constructed with a view of detaching the cars at any point and of permitting them to adapt themselves freely to the irregularity of track. The pipe is formed at said place with a raised ring, a^2 , as shown in Fig. 2. The elastic H has located in its ends the spirally-coiled ring h , as shown in Fig. 3.

It will readily be perceived that when it is wished to separate the cars all that is necessary is to uncouple same, and the elastic when pulled will expand and slip off of the pipe. 5 When the cars are again coupled, the elastic, in combination with the spirally-coiled elastic band, can be expanded and again slipped over the raised ring a^2 , so that it is only necessary to have a brakeman couple or unite my device when the cars are coupled, but not when 10 uncoupled. In the latter event it is self-operative.

The section C is constructed with a larger pipe, C' , surrounding it, as shown in Fig. 4. 15 Said pipe is secured and supported by the braces c . The purpose of the pipe C' is to create a powerful draft to force rapidly and effectually the smoke and cinders through the pipe. It is evident that as the large pipe C' 20 is open in front it will always catch a strong draft, which is generated by the motion of the cars. Said draft is strong in proportion to the speed of the cars, and at all times does its work thoroughly.

The section D is formed as shown in Figs. 25 5 and 6, respectively. The perforated screens d catch the cinders, which drop into the orifices d' , and are conveyed thence into the rear end of tender, while the smoke is driven out 30 the rear end of the pipe at the end of the hindmost car, and is thereby gotten rid of effectually.

As my invention is very simple in construction and effectual in operation, it is useless to 35 further enlarge upon its merits.

I attach importance to the construction and arrangement of the section C. The larger pipe, C' , surrounding it creates a uniform draft at all points in the pipe, thereby making 40 a clean sweep of the cinders. If the draft were admitted at the top by hoods or projecting caps at intervals along the sections, as has been done in inventions of this kind, it would not be as strong and uniform in the pipe. 45 Besides, where thus admitted a heap of cin-

ders always collects in front of the cap or hood, owing to the forward pressure of the air in entering the pipe. My improvement in constructing the larger pipe, C' , to completely 50 environ the smaller pipe obviates this difficulty. I also attach special importance to the perforated screens d , located in section D, and to the downwardly-projecting portion of said section, by means of which the cinders are separated from the smoke at the rear of the 55 tender, into which they are dropped. This is one of the main features of my invention, because I am aware that cinder and smoke conductors have heretofore been constructed with a pipe extending the full length of the 60 train; but after a thorough trial of same they have proven to be impracticable, simply because of the fact that the cinders could not be forced through the entire length of the pipe upon a very long train. It has been 65 demonstrated that the cinders will collect in heaps in being transmitted through a long pipe, and if not constantly watched the pipe will soon become filled and do incalculable harm. For this reason the screens d and the 70 downwardly-projecting portion under said screens are decided improvements, as they entirely remove the difficulties aforementioned.

What I claim is—

The smoke and cinder conductor described, 75 consisting of the section A, the shut-off located at the junction of said section and the smoke-stack, the section C, having the larger pipe, C' , surrounding it, the section D, having the perforated screens d and the downwardly-projecting flaring portion under said 80 screen, and provided with the orifice d' , the flexible couplings H, and the section B, all substantially as described and set forth.

In testimony whereof I affix my signature in 85 presence of two witnesses.

WALTER B. JOHNSON.

Witnesses:

C. M. HILDRETH,
HARRY GROFF.