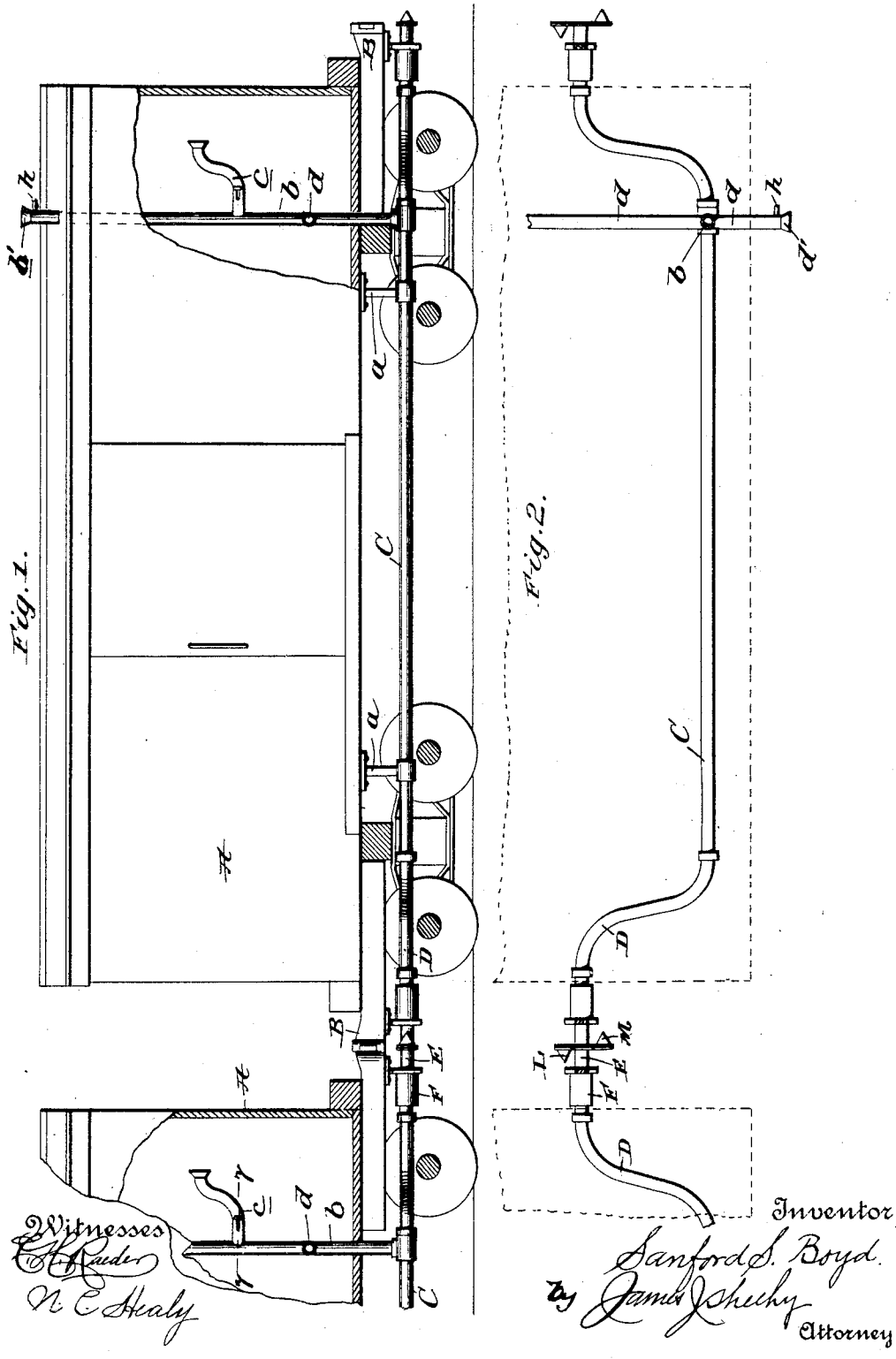
No. 694,825. Patented Mar. 4, 1902.

S. S. BOYD.

SPEAKING TUBE FOR TRAINS.

(Application filed June 13, 1901.)

(No Model.) 2 Sheets—Sheet 1.



No. 694,825. Patented Mar. 4, 1902.

S. S. BOYD.

SPEAKING TUBE FOR TRAINS.

(Application filed June 13, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

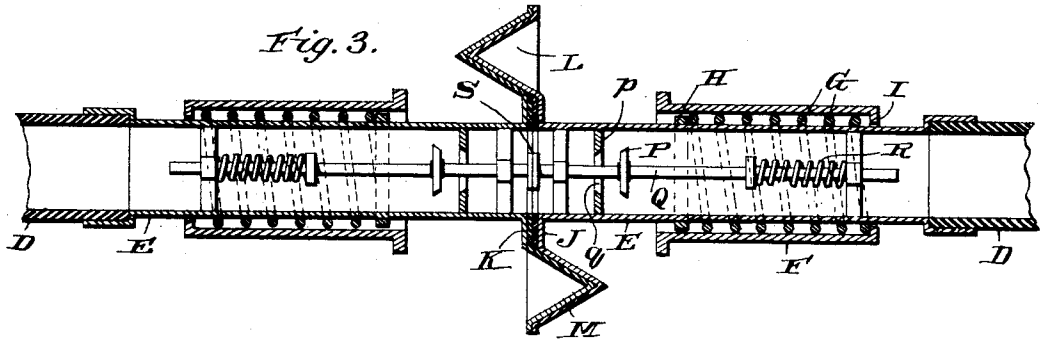


Fig. 4.

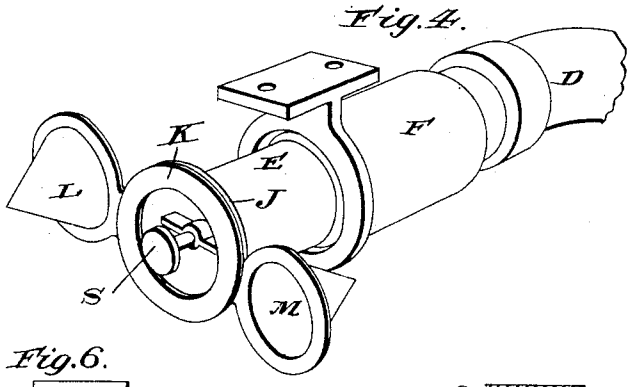


Fig. 6.

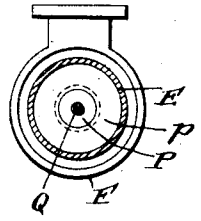


Fig. 5.

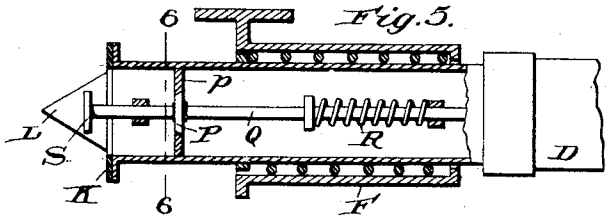
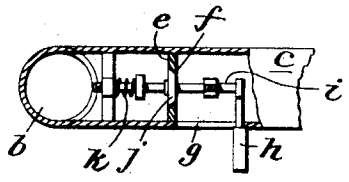


Fig. 7.



Witnesses
E. H. Rauder
N. C. Healy

Inventor
Sanford S. Boyd.
by James J. Sheehy
Attorney

UNITED STATES PATENT OFFICE.

SANFORD STEWART BOYD, OF LAURENS, SOUTH CAROLINA.

SPEAKING-TUBE FOR TRAINS.

SPECIFICATION forming part of Letters Patent No. 694,825, dated March 4, 1902.

Application filed June 13, 1901. Serial No. 64,416. (No model.)

To all whom it may concern:

Be it known that I, SANFORD STEWART BOYD, a citizen of the United States, residing at Laurens, in the county of Laurens and State of South Carolina, (whose post-office address is Laurens, South Carolina,) have invented new and useful Improvements in Speaking-Tubes for Trains, of which the following is a specification.

My invention relates to improvements in speaking-tubes, and contemplates the equipment of railway-cars and locomotives and their tenders with tube-sections which when the cars are coupled together and to a locomotive are adapted to form a continuous main tube, through the medium of which a trainman or other person located at an intermediate point in the length of the train or at the rear end thereof is enabled to conveniently converse with the engineer in the cab of the locomotive.

With the foregoing in mind the invention will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a view, partly in side elevation and partly in vertical section, illustrating two box-cars as equipped with my improved speaking-tube sections, the cars being shown as coupled and the speaking-tube sections in proper relative positions to form a continuous speaking-tube. Fig. 2 is a view illustrating the speaking-tube sections in plan and the cars in dotted lines. Fig. 3 is a horizontal section illustrative of the appurtenances at the meeting ends of two tube-sections. Fig. 4 is a perspective view illustrating one end of one speaking-tube section and the appurtenances thereof. Fig. 5 is a longitudinal vertical section of the same. Fig. 6 is a transverse section taken in the plane indicated by the line 6 6 of Fig. 5, and Fig. 7 is a detail section taken in the plane indicated by the line 7 7 of Fig. 1.

In the said drawings similar letters designate corresponding parts in all of the several views, referring to which—

A A are two cars of the box or freight type provided with couplings B and otherwise of the ordinary construction, and C C are longitudinal main tube-sections, one of which is employed on each car. These main tubes in the preferred embodiment of the invention are formed of metal and disposed below and connected to the floor of the car by hangers *a*. They are provided adjacent to one end of their respective cars with branch tubes *b*, which extend at an angle to the main tubes and through the roofs of the cars and are provided in turn with mouthpieces *c* within the car and also with lateral arms *d*, the latter reaching through the side walls of the cars and terminating in mouthpieces *d'*, located at the outer sides of the cars at a convenient distance from the ground or road-bed. The tubes *b* are provided at their upper ends with mouthpieces *b'*, and the arms *d* are likewise equipped at their outer ends with mouthpieces *d'*. These mouthpieces *b' d'*, in common with the mouthpieces *c*, are equipped with normally closed valves to exclude dust and dirt from the interior of the tube-sections, and since the said valves are similar in construction a detail description of the one shown in Fig. 7 will suffice to impart an understanding of all. As will be readily observed by reference to said figure, the mouthpiece *c* is provided with a diaphragm *e*, having a valve-seat *f*, and is also provided with a longitudinal slot *g*, the latter being designed to permit of movement of the finger-piece *h* on the stem *i* of a valve *j*, which is backed by a spring *k* and normally held thereby in the closed position shown for the purpose before stated. When it is desired to use the speaking-tube, the user has but to press the valve *j* away from its seat, when a free passage for the voice will be afforded through the opening in the diaphragm *e*.

When my improved main tube-sections C are applied to passenge-coaches, the mouthpieces *c* on the branches *b* and within the coaches will alone be employed, the extension of the branches *b* through the roofs of the car being dispensed with and the lateral arms *d* also being dispensed with. I desire it understood, however, that where the conditions are such as to make it preferable to employ the lateral arms *d* in passenger-coaches the same may be done.

At their opposite ends the main tube-sections C are connected to rubber tube-sections D, and these sections D are connected in

turn to tubular end pieces E, of metal. The tubular end pieces are surrounded by sleeves F, hung from the couplings B of the car, and coiled springs G are interposed between collars H on the end pieces and flanges I at the inner ends of the sleeves to take up shock and jar when the ends of the end pieces E meet incident to the coming together or coupling of the two cars. At their forward ends the end pieces E are provided with flanges J, bearing annular rubber cushions K to prevent noise when the end pieces come together and assist in making the speaking-tube air-tight. The flanges J on the end pieces E are provided in turn with forwardly-extending cone-shaped projections L and cone-shaped sockets M, said projections and sockets being disposed at opposite sides or rather at diametrically opposite points on the flanges J, as best shown in Fig. 4. Interiorly the end pieces E are provided with diaphragms *p*, having valve-seats *q*, and valves P, which are provided with stems Q, movable in guides in the end pieces E and are backed by springs R. The said springs R normally hold the valves P to their seats, and thereby preclude the entry of dust into the speaking-tube sections when the ends of the said sections are not together. The springs R also serve to normally hold the outer end portions of the valve-stems Q in an extended position, as shown in Figs. 4 and 5, and since said outer end portions of the stems are provided with heads or enlargements S it will be seen that when the end pieces E meet incident to the coupling of two cars together or the coupling of one of the cars to a locomotive similarly equipped the valves P will be pressed away from their seats after the manner shown in Fig. 3, and consequently free passage for the voice will be afforded through the diaphragms *p*.

The cone-shaped projection L on one of the tubular end pieces E serves, in conjunction with the socket M on the complementary end piece E, and the cone-shaped projection on the latter end piece serves, in conjunction with the cone-shaped socket on the first-named end piece, to guide the cushioned ends of the said end pieces together incident to the coupling of the two cars, and thereby insure the making of an air-tight and dust-proof connection between the two tube-sections C.

The tube-section applied to the locomotive (not shown) is similar to those shown in Fig. 1, with the exception that it is provided with a branch which extends into the locomotive-cab and is equipped at a point convenient to the engineer's seat with a valve-mouthpiece similar in construction to that shown in Fig. 7.

When a locomotive equipped with one of my improved tube-sections is connected to a train of cars similarly equipped, it will be readily observed that a person within or on top of any one of the cars or standing at the side of the same may conveniently signal and, if desired, hold a conversation with the engineer. It will also be observed that a conversation may be easily carried on by persons located in different cars of the train, which is an important advantage.

I prefer in practice to employ the means described for automatically effecting connection of the tube-sections incident to the coupling of two cars together or the coupling of the cars to a locomotive, but do not desire to be understood as confining myself to such means or to connecting the sections automatically, as when desired the connection may be effected by hand. I also do not desire to be understood as confining myself to the specific construction and relative arrangement of parts as herein pointed out, as such changes or modifications may be made in practice as fairly fall within the scope of my claims.

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

1. The combination of a vehicle, a main tube or tube-section carried thereby, and a tubing extending at an angle to the main tube, and provided with a mouthpiece; the said main tube extending to one end of the vehicle and being provided at its end with means adapted to engage similar means upon a similar tube in another vehicle.

2. The combination of a vehicle, a main tube or tube-section carried thereby, and a tubing extending at an angle to the main tube and provided with a mouthpiece and also with a normally closed valve; the said main tube extending to one end of the vehicle and being provided at its end with a normally closed valve, and means adapted to engage similar means upon a similar tube in another vehicle.

3. The combination of a vehicle, a metallic tube-section carried thereby and extending to a point adjacent to one end thereof, a flexible tube connected to such end of the tubular section, a tubular end piece connected to the flexible tube and having a collar, a cushioned flange at its forward end, and the opposite cone-shaped projection and socket and also having a diaphragm provided with a valve-seat, a spring-pressed valve normally resting in said seat and having its stem extended beyond the end of the end piece to be engaged by the stem of a valve carried by a similar tubular section on another vehicle, and means for guiding its end into engagement with the end of such similar tubular section, a sleeve hung from the vehicle and surrounding the tubular end piece and having an abutment, and a coiled spring also surrounding the tubular end piece and interposed between the collar thereon and the abutment of the sleeve.

4. The combination of a railway-car, a main metallic tube or tube-section carried thereby and extending to points adjacent to the ends thereof, a tubing extending at an angle to the main tube-section and provided with a mouthpiece, and a valve for normally closing the same and excluding dust therefrom, flexible tubes connected to the ends of the main tubu-

lar section, tubular end pieces connected to the flexible tubes and having collars, and also having diaphragms provided with valve-seats, spring-pressed valves normally resting in the seats and having their stems extended beyond the ends of the end pieces to be engaged by the stems of valves carried by similar tubular end pieces on other cars, and means for guiding its ends into engagement with the ends of such similar tubular end pieces, sleeves hung from the car and surrounding the tubular end pieces and having abutments, and coiled springs also surrounding the tubular end pieces and interposed between the collar thereon and the abutments of the sleeves.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SANFORD STEWART BOYD.

Witnesses:

W. H. MARTIN,

GEO. H. BALENTINE.