

(No Model.)

R. S. CARR.  
TRAIN TELEPHONE.

No. 442,799.

Patented Dec. 16. 1890.

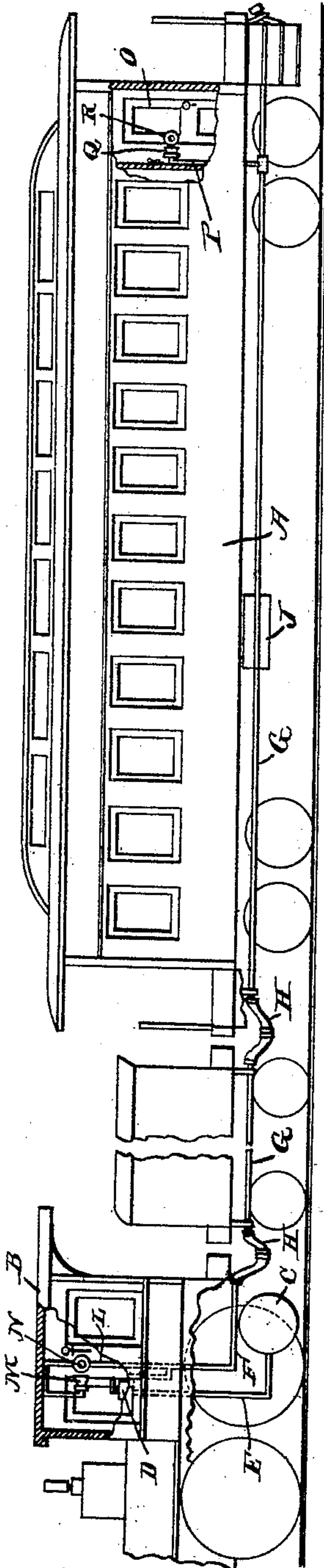


Fig. 1.

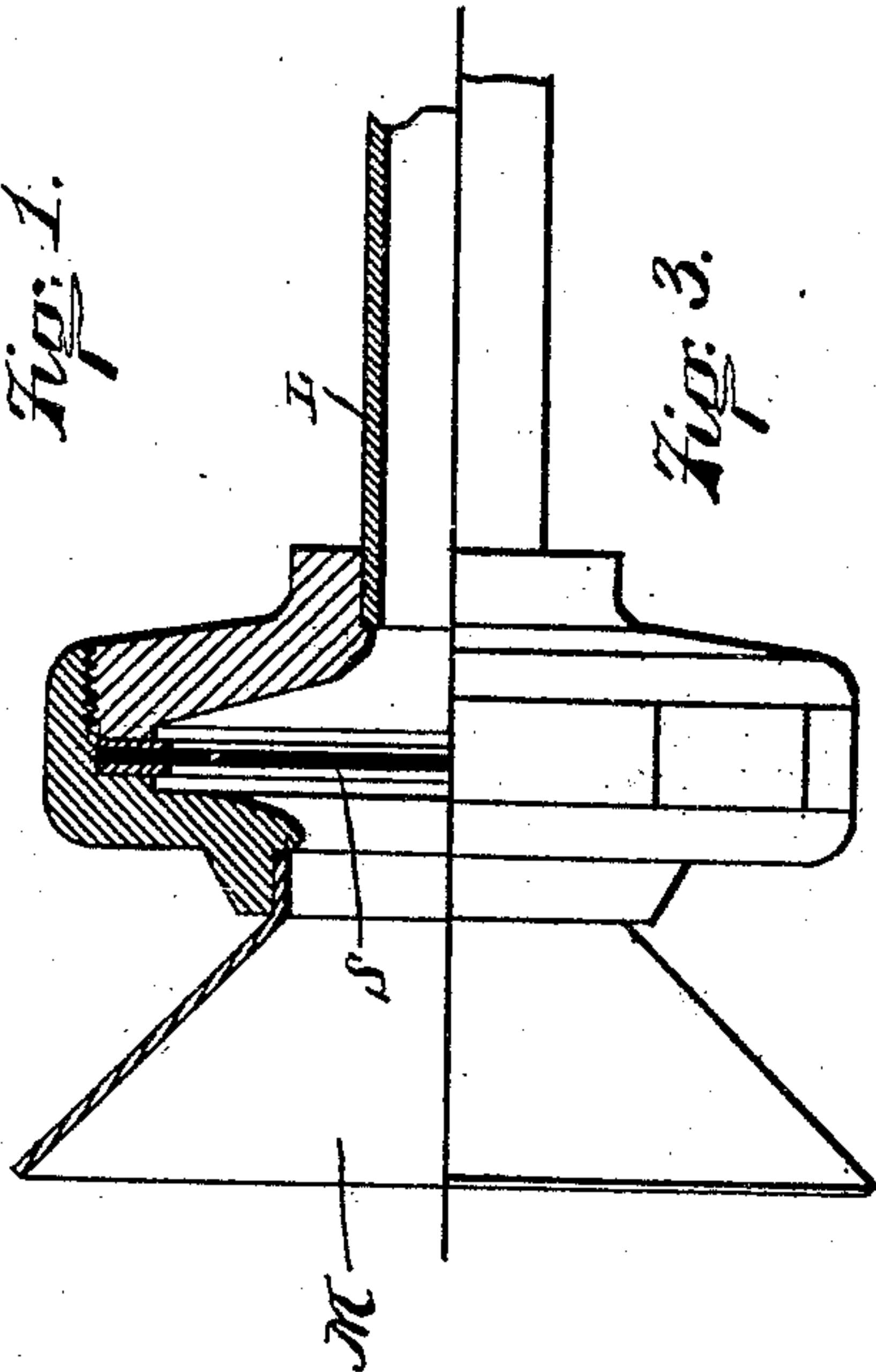


Fig. 3.

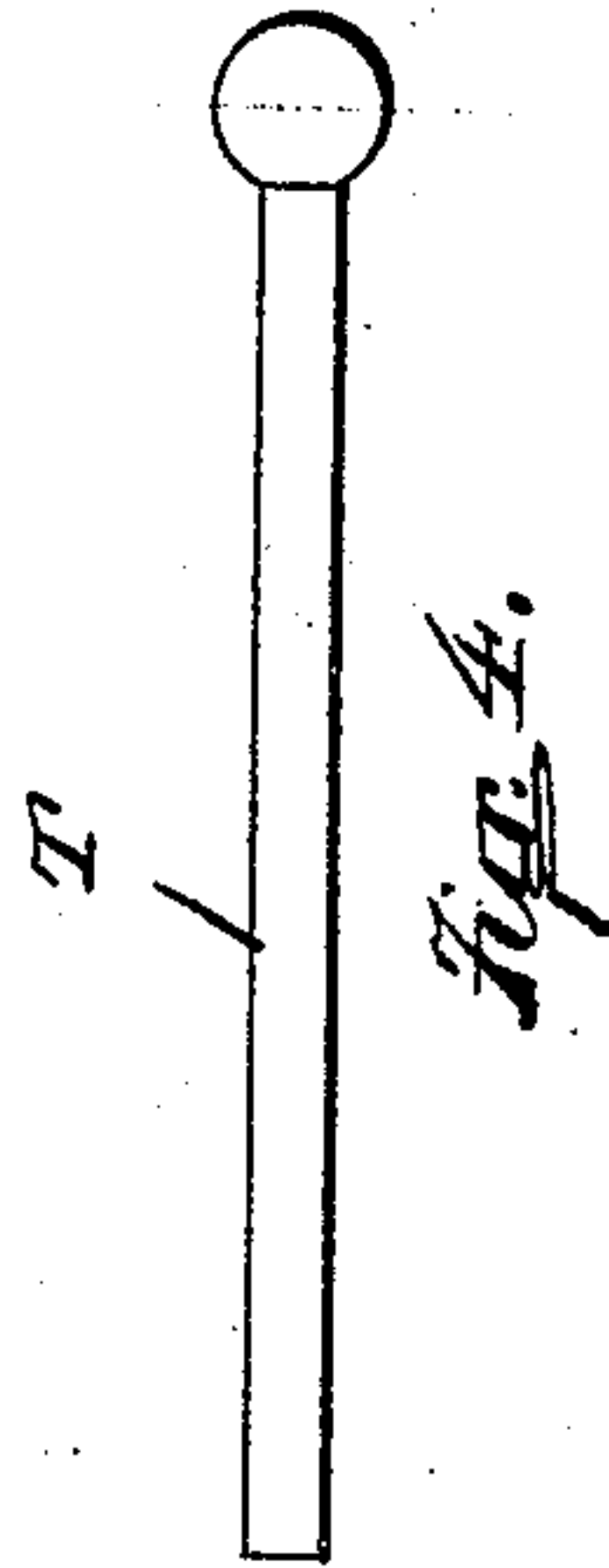


Fig. 4.

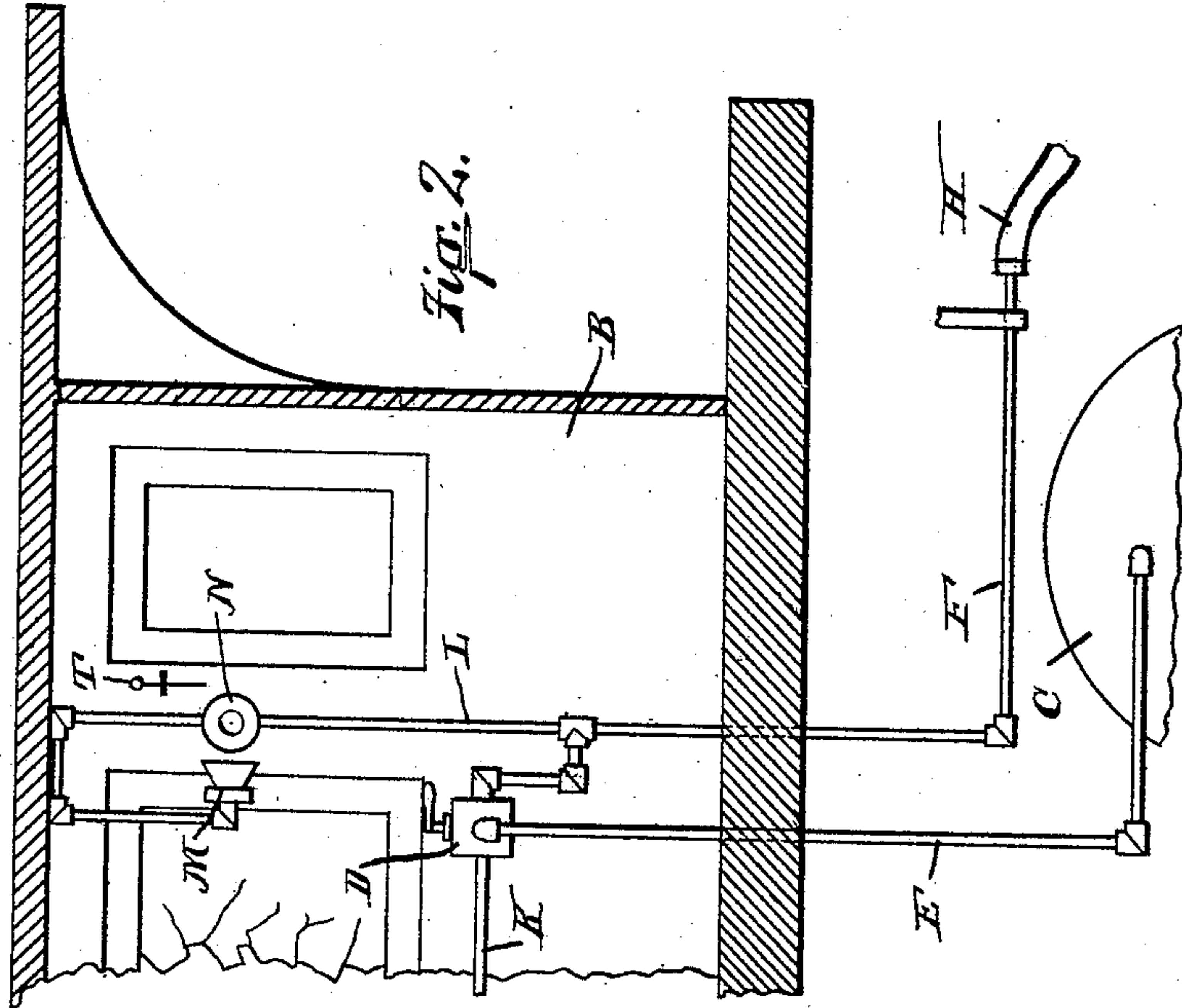


Fig. 2.

Witnesses:

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# UNITED STATES PATENT OFFICE.

ROBERT S. CARR, OF HAMILTON, OHIO, ASSIGNOR OF TWO-THIRDS TO  
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## TRAIN-TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 442,799, dated December 16, 1890.

Application filed February 17, 1890. Serial No. 340,762. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT S. CARR, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in  
5 Train-Telephones, of which the following is a specification.

This invention relates to a system of communication between a locomotive-engineer and the conductor in the cars forming his train,  
10 or between the conductor in one car of the train and a person in another car of the train. The communication is effected through the medium of tubes containing air under pressure, the mouth-pieces and ear-pieces of the  
15 tube being provided with diaphragms. It is preferable for economical reasons to utilize the tubes and air employed in the ordinary air-brake system, and I so exemplify my invention.

20 My invention will be readily understood from the following description, in which—

Figure 1 is a side elevation of a portion of a locomotive with one car attached, portions of the locomotive and car appearing in vertical section to expose more fully the telephonic apparatus arranged within the car and within the cab of the locomotive; Fig. 2, a vertical section of a portion of the locomotive-cab, on an enlarged scale, exhibiting the interior telephonic apparatus, &c.; Fig. 3, a  
30 side elevation, half-diametrical section, of one of the mouth-pieces, on an enlarged scale; Fig. 4, a side elevation of a knocker-pin, exemplifying a signaling device for calling attention  
35 when the apparatus is to be used.

In accompanying drawings, A indicates a railway-car, of which there may be any proper number connected in a train; B, a locomotive attached to the car; C, the usual air-reservoir attached to the locomotive; D, the usual engineer's brake-valve in the cab of the locomotive; E, the usual pipe placing this valve in communication with the air-reservoir; F,  
40 the usual train-pipe placing the engineer's valve in communication with brake apparatus under all cars of the train; G, continuing portions of such train-pipe under the tender and cars of the train; H, flexible pipes connecting the train-pipe at the junctures between  
50 the locomotive and cars and between the several cars which may be in the train; J, the

usual brake apparatus under the car or several cars, this brake apparatus being in communication with the train-pipe in the usual manner, not necessary to be particularly  
55 shown or described in connection with the present invention; K, the usual pipe through which the air-brake system receives its supply of air under compression, such pipe usually leading from an air-pump attached to  
60 the locomotive; L, a pipe in the cab connected with the train-pipe and, like the train-pipe, containing air under pressure; M, a telephonic mouth-piece connected with the pipe L and therefore with the train-pipe; N, a similar  
65 mouth-piece also in communication with the pipe L, the intention being that the mouth-piece M shall be used to talk into, while the mouth-piece N shall serve as an ear-piece to be listened at, the preferable arrangement  
70 being such that these two mouth-pieces are so disposed as to be convenient at once to the mouth and ear of the user; O, a portion of the interior of the car; P, a pipe leading from the train-pipe under the car to the interior  
75 of the car; Q, a mouth-piece, like mouth-piece M, in communication with pipe P; R, a mouth-piece, like mouth-piece N, also communicating with pipe P, the intention being that the mouth-pieces Q and R shall serve,  
80 respectively, as mouth and ear pieces, as above mentioned, in connection with mouth-pieces M and N; S, a strong diaphragm in each mouth-piece of the system, one side of said diaphragm being open and exposed to the mouth-piece,  
85 while the other side is in free communication with and is exposed directly to the pressure of air within the pipe to which the mouth-piece is connected, and T a knocker-pin which may be employed in tapping on a dia-  
90 phragm of a mouth-piece to produce a calling-signal, this knocker-pin being intended merely to exemplify a knocking device.

The train-pipe containing air under pressure, one side of all the diaphragms of the mouth-  
95 pieces will be subjected to this pressure, and the diaphragms must be air-tight and strong enough to resist the pressure. The conductor knocking on the diaphragm of the mouth-piece Q or R in car A or in any other car which may  
100 be in the train produces vibrations of the diaphragm knocked on, and these vibrations are



transmitted by means of compressed air with-  
in the train-pipe to all of the other diaphragms  
of the system. The knocking may be done by  
the knocker-pin T or by any other instrument  
5 or device adapted for the purpose. All the  
diaphragms of the system will thus give out  
the transmitted sound, and an agreed code of  
signals may serve to indicate what is meant  
by the knocking. One knock may be a sig-  
10 nal for the engineer to give attention to the  
telephone, two knocks for the conductor, &c.,  
and a signal-code may be arranged by means  
of which messages may be transmitted be-  
15 tween parties employing the system. The  
called party, hearing his call, responds by ap-  
propriate knocks; but it is not contemplated  
that utility of the system shall be thus lim-  
ited to the transmission of the code-signals by  
knocks. The calling knocks having brought  
20 the proper parties into communication by  
means of the system, the parties will then pro-  
ceed to employ the system for vocal commu-  
nication, one party talking into his mouth-  
piece while the other party listens at his mouth-  
25 piece, &c. The use of the two mouth-pieces  
at each point of communication, one for the  
mouth and one for the ear, is designed sim-  
ply to facilitate the communication. It is ob-  
30 vious that a single mouth-piece at each point  
may be employed, it being used alternately  
as a mouth-piece and as an ear-piece.

In practice with my invention I have only  
employed compressed air or in connection  
with the air-brake system of the railway-  
trains; but I contemplate that the result will 35  
be equally satisfactory in connection with  
steam as employed in steam-brakes or the  
steam-heating systems of railway-trains, and  
if steam should prove an efficient medium as  
a substitute for air in my invention I would 40  
then consider that steam was the equivalent  
of compressed air, and I thus at present con-  
template it.

I claim as my invention—

In a train-telephone, the combination, sub- 45  
stantially as set forth, of a locomotive and car,  
each provided with an air-pipe, a flexible pipe  
connecting said two pipes, air-brake mechan-  
ism upon the car connected with the air-pipe  
of said car, an air reservoir and valve at said 50  
locomotive in communication with said air-  
pipe thereof, mouth-pieces in said locomotive  
and car in communication with the air-pipes  
thereof, and a diaphragm in each mouth-piece  
55 exposing one side to its mouth-piece and the  
other side to the compressed air which may  
be contained in said air-pipes.

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Witnesses:

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