

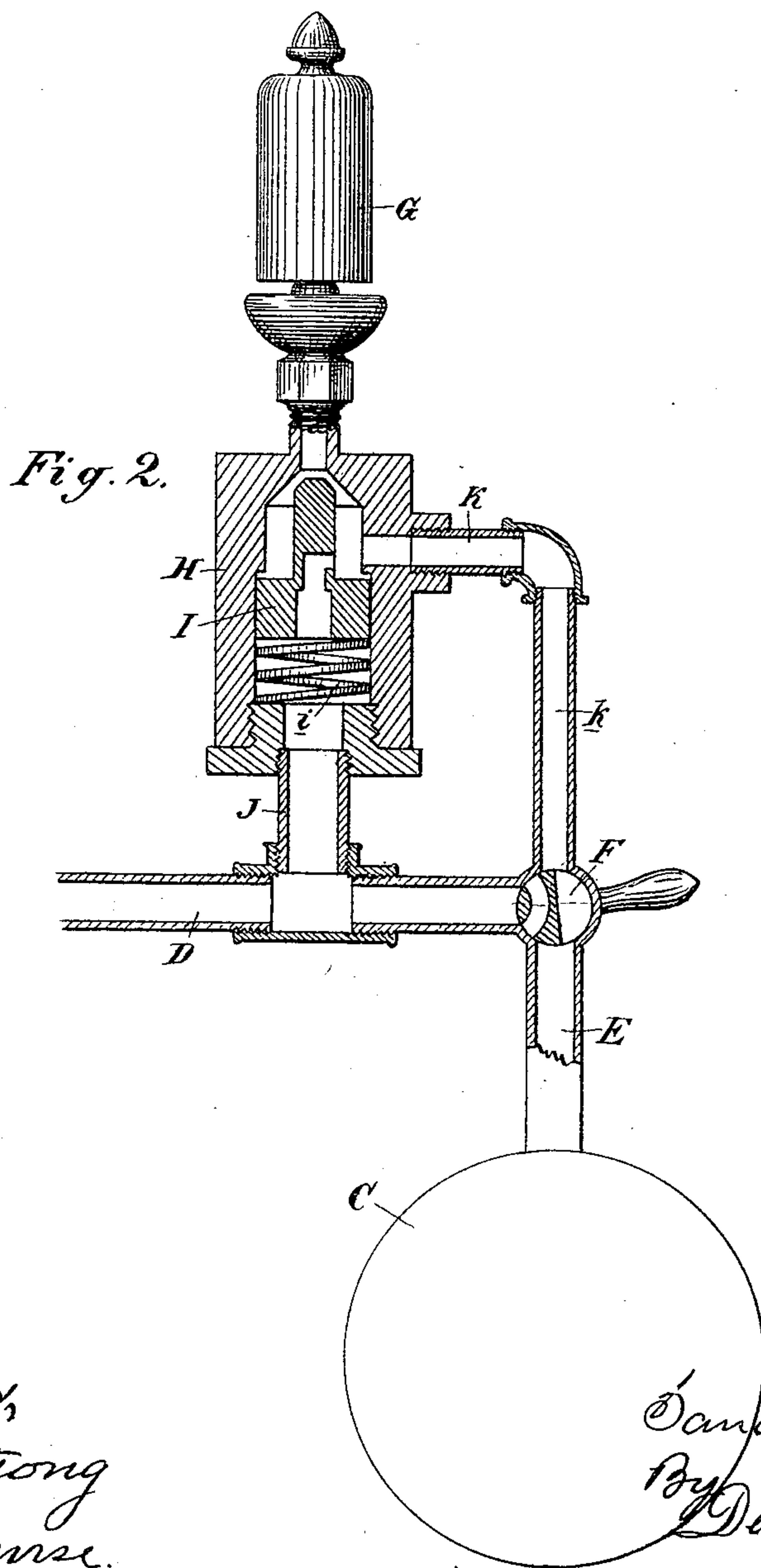
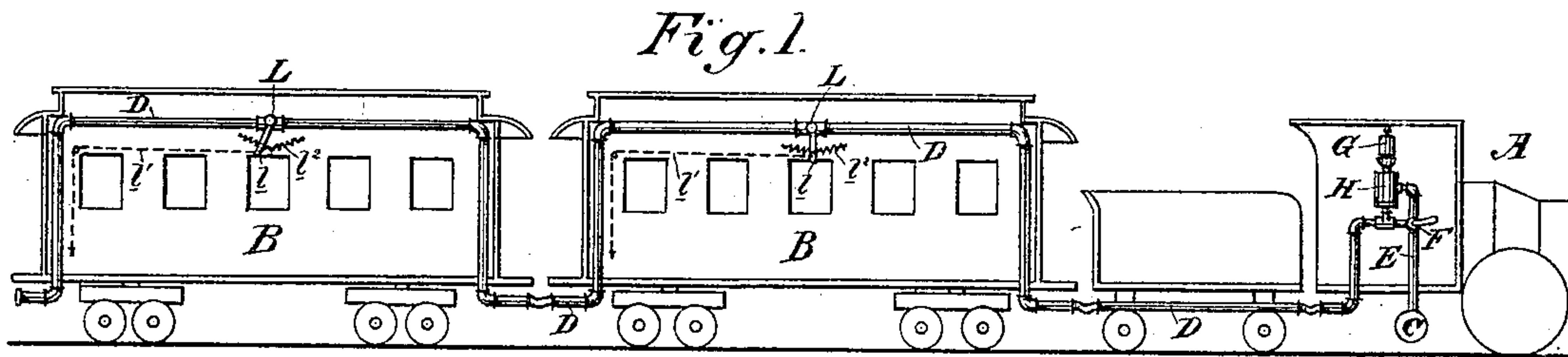
(No Model.)

S. FORMAN.

CAR SIGNAL.

No. 353,785.

Patented Dec. 7, 1886.



Witnesses,  
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# UNITED STATES PATENT OFFICE.

SANDS FORMAN, OF GOLD HILL, NEVADA.

## CAR-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 353,785, dated December 7, 1886.

Application filed July 22, 1886. Serial No. 208,805. (No model.)

*To all whom it may concern:*

Be it known that I, SANDS FORMAN, of Gold Hill, Storey county, State of Nevada, have invented an Improvement in Railway-Car Signals; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of signals in which a whistle located upon or near the locomotive of a railway-train and connected with an air-receiver is operated by means of valves within an air-pipe passing through the cars of the train and connected with the whistle and air-receiver, said class of signals being represented by the device secured by Letters Patent of the United States, No. 334,766, issued to me January 26, 1886.

My invention consists, in connection with a single pipe passing through the cars of the train and having suitable valves for effecting and controlling the escape of air from said pipe, of a novel valve controlling the whistle and a connection between said valve and the pipe and the air-receiver, said connection being controlled by a cock or valve, all of which I shall hereinafter fully describe.

The object of my invention is to simplify the signal by constructing it in such a manner that but a single pipe passing through the cars of the train is necessary.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation showing the application of my signal. Fig. 2 is a vertical section of the valved cylinder and its connections with the air-receiver and whistle, the valve being shown in the position assumed when the signal is in operation.

The train of cars is here shown as consisting of the locomotive A and the coaches B. Under the locomotive is the compressed-air receiver C, which may be of any suitable construction, such as the usual one employed for operating the air-brakes.

D is a pipe which passes through the coaches of the train, said pipe being in different sections joined together between the cars by the usual hose connections and couplings having self-closing valves, as in the ordinary air-brake couplings. The forward end of the pipe D joins the pipe E, which leads from the air-receiver, their point of junction being controlled by a two-way cock or valve, F.

G is the whistle. This is mounted upon and communicates with the top of a cylinder, H, in which operates a piston-valve, I, controlled by a spring, *i*. The upper end of this valve controls the communication between the whistle and the cylinder, the spring holding it normally closed. The lower end of the cylinder is connected by a pipe, J, with the pipe D, which extends through the cars, while into the side of the cylinder, near its top, is let a pipe, K, which is connected by a union-coupling, or otherwise, with a pipe, *k*, which joins the pipes D and E at their point of junction, and is controlled by the two-way cock or valve F. The lower or piston end of the valve I has an aperture made through it, so that the communication between the pipes K and J is always open.

L are valves located within each car or coach, and connected with the pipe D in such a manner that by opening them the air which is in said pipe is allowed to escape. These valves should preferably be inserted in T's, let into the pipe D, so that said pipe can remain open to the rear end of the train, where it is closed in any suitable manner.

The valves L are provided with levers *l*, and can be operated by cords *l'*, running to the end of the car, or to other convenient points; and these valves should be so constructed, as by means of springs *l''*, that they shall be self-closing.

The operation of my signal is as follows: In order to set the device ready for operation, the two-way cock F is so turned as to close the branch communication of the air-receiver, through the pipes *k* K and valved cylinder H, with the pipe D and open the direct communication with the said pipe. When the air has passed into this pipe and filled the branch connection through the cylinder and hollow-ended valve I, the two-way cock is operated, so as to close the direct communication of the air-receiver with the pipe D, and to open its branch communication through the pipes *k* K and the valved cylinder. The air being now under equal pressure throughout will remain stationary, and the valve I will still close the connection with the whistle. When, for any reason, it becomes necessary to communicate with the engineer, the operator in any car, by seizing and pulling the cord or le-



ver of the valve L in the pipe D, opens said valve, thus allowing the air which is in the pipe to escape. The air from the receiver now passes into the top of the cylinder with such force that in passing through the piston-valve I to the pipe D it forces said valve down against its spring, thus opening the communication with the whistle and causing its operation. This continues as long as the valve L in the car is kept open. As soon as it is closed the air filling the pipe D restores the pressure therein and allows the valve to move up under the influence of its spring and close the port of communication with the whistle. In this way I am enabled to provide a signal in which but a single pipe passing through the cars is necessary.

The two-way cock or valve should be so constructed as to close simultaneously the double communication of the air-receiver with the pipe D, because, otherwise, if the pipe D should break or the train should pull apart, the whistle would continue to blow until the air was shut off; but if the two-way cock can close completely the communication with the air-receiver the accident to pipe D would not have this effect.

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

1. In a railway-car signal, the combination of a compressed-air receiver, a pipe passing through the cars of the train, valves by which the escape of the air from said pipe is effected and controlled, a direct and a branch connection between the pipe and the air-receiver, a two-way valve or cock controlling the direct and the branch connections, so that one may be closed while the other is opened, a whistle communicating with the branch connection, and a spring-actuated hollow-ended valve let into said branch connection and controlling the communication with the whistle, whereby upon the escape of the air from the pipe through the cars the valve is relieved and the whistle operated, substantially as herein described.

2. In a railway-car signal, the compressed-air receiver C, the single pipe D, connected with the receiver and passing through the cars, and the valves L, by which the escape of the air from said pipe is effected and con-

trolled, in combination with the cylinder H, connected at one end with the pipe D and at the other with the receiver at the point of connection of said receiver with pipe D, the whistle G, connected with the cylinder, the spring-actuated hollow piston-valve I within the cylinder and normally closing the communication of said cylinder with the whistle, and the two-way cock or valve F, controlling the admission of air to pipe D and to either end of the cylinder above and below its valve, substantially as herein described.

3. In a railway-car signal, the whistle G, in combination with the cylinder H, and the hollow-ended spring-actuated piston-valve I in the cylinder and controlling the communication of said cylinder with the whistle, substantially as herein described.

4. In a railway-car signal, the whistle G, in combination with the means by which it is operated, consisting of the cylinder H, communicating with the whistle, a compressed-air receiver and a pipe through the cars, having valves by which the escape of the air therefrom is effected and controlled, said cylinder being separately connected with the receiver and the pipe, and the hollow-ended spring-actuated piston-valve I in the cylinder and controlling the communication with the whistle, substantially as herein described.

5. A railway-car signal comprising the compressed-air receiver C, the pipe D through the cars, having the valves L for effecting and controlling the escape of air from said pipe, the pipe E, connecting pipe D with the air-receiver, the cylinder H, the pipe J, connecting its lower end with the pipe D, and the pipes K k, connecting its upper end with the pipe E, the two-way cock or valve F at the junction of the pipes D k E, the whistle G, communicating with the top of the cylinder, and the hollow-ended spring-actuated piston-valve I within the cylinder and controlling its communication with the whistle, all arranged and adapted to operate substantially as herein described.

In witness whereof I have hereunto set my hand.

SANDS FORMAN.

Witnesses:

S. FRANKEL,  
LOUIS FRANKEL.