No. 725,674. PATENTED APR. 21, 1903.

J. P. COLEMAN.

RAILWAY SIGNAL SYSTEM.

APPLICATION FILED JAN. 30, 1903.

NO MODEL.

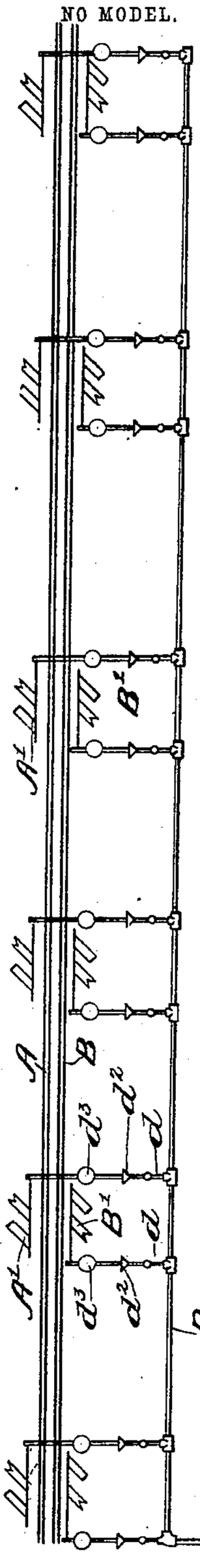

Fig. 1.

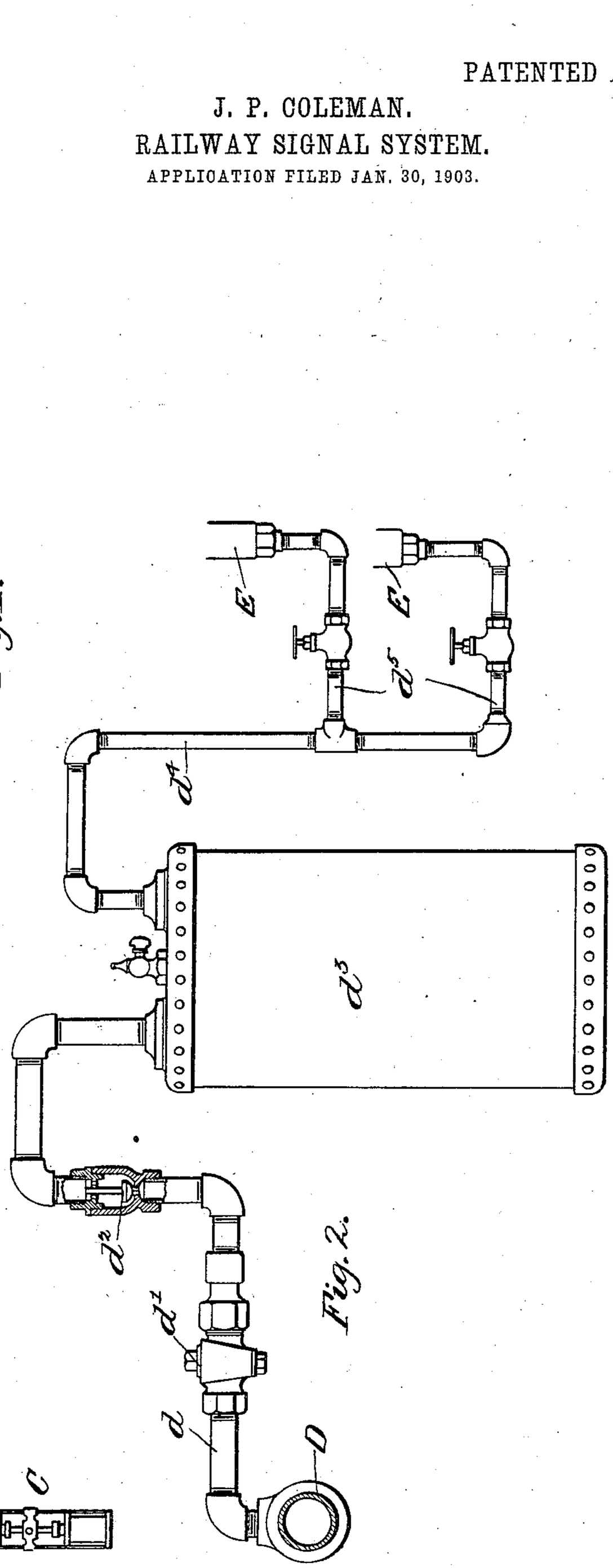

Fig. 2.

WITNESSES:

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JOHN PRESSLEY COLEMAN, OF EDGEWOOD PARK, PENNSYLVANIA, ASSIGNOR TO THE UNION SWITCH AND SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

RAILWAY SIGNAL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 725,674, dated April 21, 1903.

Application filed January 30, 1903. Serial No. 141,091. (No model.)

To all whom it may concern:

Be it known that I, JOHN PRESSLEY COLEMAN, a citizen of the United States, residing at Edgewood Park, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Railway Signal Systems, of which the following is a specification.

My invention relates to improvements in that character of signal system wherein fluid under pressure is required to be maintained constantly at fixed points along a line of railway-track, to the end that prompt and uninterrupted service may be obtained from the system so operated or controlled. The fluid-pressure employed usually consists of atmospheric air raised to the desired pressure for operating the signal devices and is developed and maintained at one or more points along the system by suitable compressing-engines.

It has been the general custom in arranging such systems to provide a continuous conductor for the fluid-pressure from each point at which the pressure is used to the next adjacent point, thus, in effect, producing a continuous conductor or pipe throughout the system of signals, with branches therefrom to each signal embodying the fluid-pressure. Where long pipe-lines are employed, as on extensive systems covering many miles of railway, these compressors are required to develop a higher pressure than that required for the operation of each individual signal device in order that a certain reserve energy may be present that may be called upon to meet the emergency of a fractured pipe-line or a temporary stoppage of the compressors for repairs, &c., without necessarily interrupting the operation of the signal system. This excess energy is also useful in accelerating the flow of the fluid-pressure through the pipe-line to those signals most remote from the compressors and is a most important factor in the maintenance of a comparatively uniform pressure throughout a long pipe-line. A fracture of the pipe-line or any of the branch pipes of such a system may be and a number of times has been of such a character as to effectually overtax the capacity of all of the compressors of the system in their efforts to maintain a working pressure within the pipe-line. Such occurrences result in the derangement of the signal system and cause many signals to move to display danger indication to trains improperly, causing in consequence delays and confusion of traffic upon the railway. In order that such occurrences may be nullified or largely nullified in so far as they effect the operation of the signals, I have devised a new and novel arrangement of the conductors by which the signals are supplied with fluid-pressure. This arrangement comprises reservoirs, one located at each signal and having a check-valve in the connection between the reservoir and the main conductor or pipe, so arranged as to be unseated by flow of fluid from the main conductor into the reservoir and to be seated at other times, so as to absolutely prevent all flow of fluid from the reservoir into the main pipe should the pressure within the main pipe fall below that in the reservoir for any reason whatsoever—such, for instance, as from a break in the main pipe or a stoppage of the compressing-engines. The fluid in the main pipe and reservoir is preferably maintained at a much higher pressure than the minimum required by the signal device for its operation and in a volume greatly in excess of that withdrawn from the reservoir by each operation of the signal in order that the contents of the reservoir during emergencies may represent sufficient energy of itself to operate the signal until the emergency has passed and the normal delivery of fluid at the normal pressure in the system is again established.

In my invention also it is not of great importance that compressors be located at each extremity of the pipe-line, as it heretofore has been found advisable to arrange them. One compressor centrally located may maintain more free from interruptions the service of a given signal system than would under like conditions the use of two compressors, one at each end of the same system, under the methods heretofore followed.

I will describe a railway signal system embodying my invention and then point out the novel features thereof in a claim.

In the accompanying drawings, Figure 1 is

a diagrammatic view of a portion of a double-track railway, the railway-signals provided for each track, the pipe-line for the fluid-pressure, and the connections to the signals for one line of track. Fig. 2 is a view of a portion of the apparatus drawn to a larger scale.

Similar letters of reference designate corresponding parts in both of the figures.

A and B designate the two lines of railway-track, A′ the signals governing the passage of trains on one track, and B′ the signals governing the passage of the trains on the other track.

C designates an air-compressor, which may be located at a suitable point along the line of railway, and D a main pipe-line leading therefrom and extending along the line of railway-track. At each signal-point a branch d is tapped into the main pipe-line, and each branch is provided with a stop-cock d', a check-valve d^2, which is unseated by the flow of compressed air from the main pipe-line, and a reservoir d^3. The check-valve d^2 may be of any desired construction, provided it acts to prevent any flow of compressed air from the reservoir d^3 when the pressure in the main pipe-line D is lowered below that in the reservoir. A pipe d^4 leads from each reservoir and has one or more branches d^5 leading therefrom, according to the number of fluid-pressure mechanisms to be operated. In the drawings I have shown two branches, one for the home signal and one for the distant signal, both of which are here shown as being mounted on the same post or support. Any of the well-known types of fluid-pressure mechanism may be employed, and the electromagnetic controlling device E may be conveniently of a form similar to that shown and described in United States Patent No. 357,109, issued February 1, 1887, to George Westinghouse, Jr., for "Electrical interlocking mechanism for switches and signals." These electromagnetic devices are controlled from a track-circuit in a well-known manner.

The operation of the system will be readily apparent to those skilled in the art and from the foregoing description.

What I claim as my invention is—

In a railway signal system, the mechanisms for the signals of which are operated by fluid-pressure, the combination of a fluid-pressure generator, a pipe-line leading therefrom, a reservoir connected therewith and from which the supply of fluid-pressure for operating the signals is obtained, a check-valve in the connection between the pipe-line and the reservoir and a controlling device in the connection between the reservoir and signal-operating mechanism.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN PRESSLEY COLEMAN.

Witnesses:

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W. L. MCDANIEL.