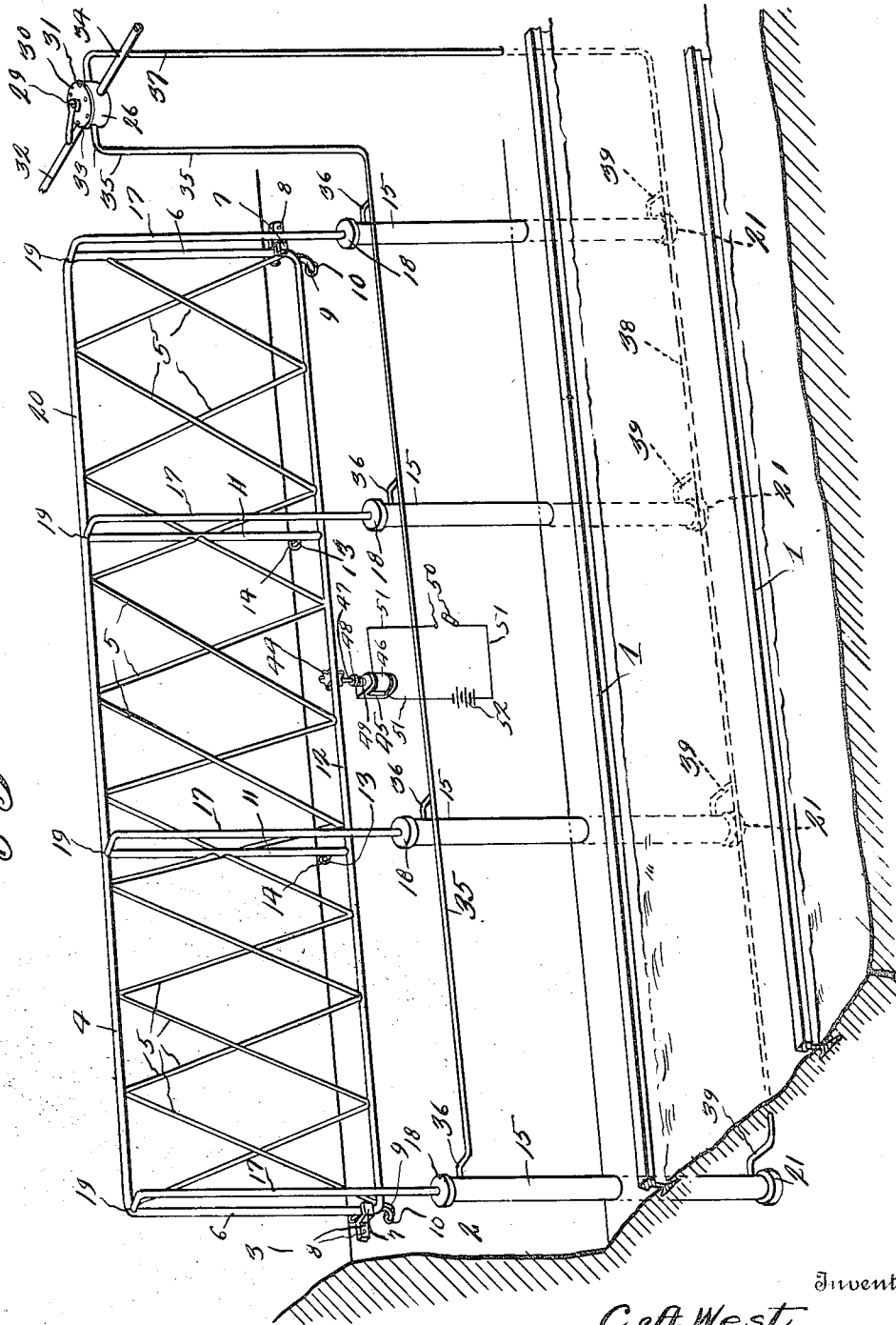


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APPLICATION FILED JUNE 22, 1917.

1,259,060.

Patented Mar. 12, 1918.
2 SHEETS—SHEET 1.

Fig. 1.



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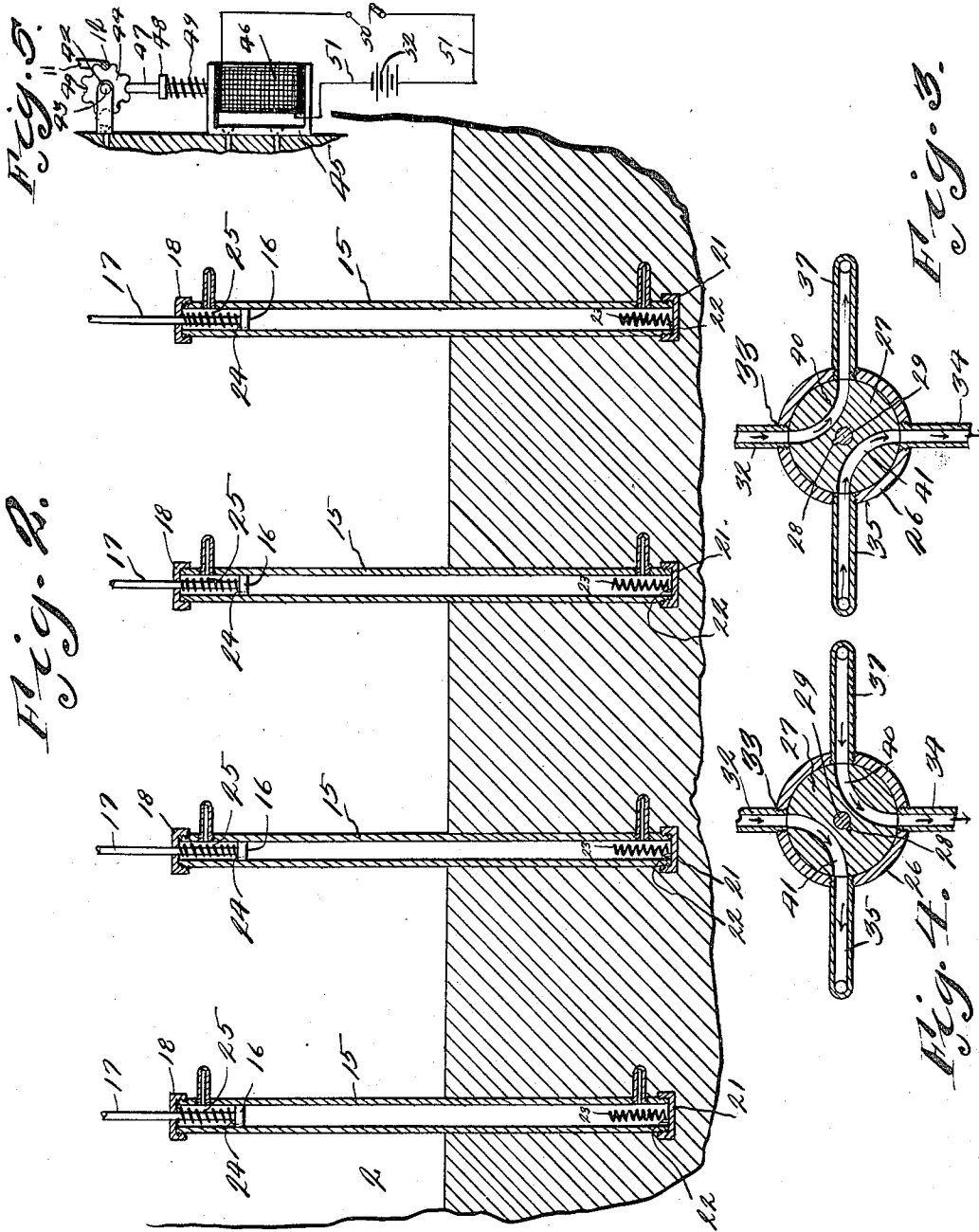
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UNITED STATES PATENT OFFICE.

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GATE FOR SUBRAILWAYS AND THE LIKE.

1,259,060.

Specification of Letters Patent.

Patented Mar. 12, 1918.

Application filed June 22, 1917. Serial No. 176,343.

To all whom it may concern:

Be it known that I, CARL A. WEST, a citizen of the United States, residing at Somerville, in the county of Middlesex, State of Massachusetts, have invented a new and useful Gate for Subrailways and the like; 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.

This invention relates to an improved gate for sub-railways, and one of the objects of the invention is to provide an improved gate mounted in guides and suspended from the upper ends of the movable members of the operating means, whereby the gate may be lowered in a position adjacent the side wall of the trench, in which the rails are disposed.

A further object of the invention is to provide improved means, either pneumatic or hydraulic means for raising and lowering said gate.

A further object of the invention is the provision of means for holding the gate raised, thereby preventing pressure from overcoming the pneumatic or hydraulic means and causing the gate to lower.

A further object of the invention is the provision of means for steadying and guiding the gate as it rises and lowers, to relieve the strain on the rising movable members.

In practical fields the details of construction may necessitate alterations falling within the scope of what is claimed.

The invention comprises further features and combination of parts as hereinafter set forth, shown in the drawings, and claimed.

In the drawings:—

Figure 1 is a view in perspective of the railway gate for railway subways, showing the gate constructed in accordance with the invention.

Fig. 2 is a vertical sectional view through the operating means.

Fig. 3 is a detail view of the valve, showing the same in section, for controlling the hydraulic or pneumatic means.

Fig. 4 is a sectional view of the valve, showing the same in another position.

Fig. 5 is an enlarged detail view of the means for holding the gate raised.

Referring more especially to the drawings, 1 designates the rails, which, as a rule, in subway railways, are arranged in the bottom of a trench, hence on the side of the rails, there is a vertical wall or surface 2, from the upper surface or face 3 of which, the passengers step or pass on to the cars or coaches.

The aim of the present invention is to provide an improved gate arranged close to and rising upwardly from the wall 2, thereby preventing passengers from stepping off the surface 3 and falling into the trench. This gate 4 consists of a suitable rectangular frame, which may be constructed of any suitable material, preferably tubular or rod metal, thereby insuring strength and rigidity. This frame is suitably braced or reinforced by the intersecting rods or wires 5. The end rods 6 of the frame are mounted in the guides 7, which are angular, as shown, and are secured at 8 to the vertical surface or wall 2 of the trench, whereby the angular parts may overlie the ends of the frame. Depending from the lower corners of the frame, are bifurcated lugs 9 in which rollers 10 are journaled, said rollers acting to engage the vertical surface or wall 2. The gate 4, between its ends, is provided with vertical rods or braces 11, and their lower portions a little above the lower rod 12 of the gate are provided with laterally extending bifurcated lugs 13 having rollers 14 journaled therein. These rollers 14 engage the vertical wall or surface 2, and together with the rollers 10, act to steady and guide the gate as it rises and lowers, thereby preventing binding and keeping the same from wobbling. A series of suitable pneumatic cylinders 15 are provided, and their lower end portions are arranged in the bottom of the subway trench and mounted in the cylinders are pistons 16. Extending upwardly from the pistons 16 are suitable rods 17, which are mounted and guided in the caps 18 of the cylinders. The upper ends of the piston rods are bent laterally and are integrally or otherwise connected at 19 to the upper longitudinal rod 20 of the gate. Caps 21 are threaded on the lower ends of

the cylinders, and secured to the inner face of said caps by means of the eyes 22 are the lower ends of the springs 23, which act as cushions for the pistons 16 as they lower in said cylinders. Surrounding the piston rods 17 and having their lower ends secured at 24 to the pistons are coiled springs 25, which also act as cushions for the pistons as they rise. Adjacent one end of the gate is a suitable valve casing, which may be supported in any suitable manner, not shown, and in the casing 26 is a two way valve 27, which is keyed at 28 to the revoluble valve stem 29. The stem is mounted in bearings of the casing 26, which is provided with a cover 30 which is secured at 31 to the casing thereby retaining the valve in place. An air supply pipe 32 leading from any suitable source of supply is connected at 33 to the valve casing, and connected with the valve casing at a diametrically opposite point, is an outlet pipe 34. Connected to and in communication with the valve casing at right angles to the pipes 32 and 34, is a pipe or tube 35 which is provided with branch tube or pipe connections 36, which are in turn connected to and in communication with the upper end portions of the pneumatic cylinders 15, at points above the pistons 16. Also connected to and in communication with the casing 26, at a point diametrically opposite the connection of the pipe 35, is another pipe 37, which has a portion 38 arranged adjacent the lower ends of the cylinders 15. This portion 38 is provided with branch tubes or pipes 39 connected to and in communication with the lower end parts of said cylinders 15. The revoluble valve 27 has its passages 40 and 41 arranged, so as to put the supply pipe 32 alternately in communication with the pipes 37 and 35, whereby the gate may be raised and lowered. For instance, when the gate is raised, the valve 27 is disposed as shown in Fig. 3, in which case, air passes into the pipe 37 through the duct 40, thence into the lower portion of the cylinders 15 under said pistons 16, thereby moving the pistons upwardly, raising the gate to the position shown in Fig. 1. In order that the lower rod 12 may engage between any two adjacent teeth of the detent wheel 44 when the gate approaches its limit on being raised, the electromagnet is energized by closing the switch 50, so as to suck or draw the rod or core downwardly to release the star wheel, in which case the wheel is free to rotate so that the rod 12 may engage between any two adjacent teeth thereof. When the gate is being so raised, the air above the pistons 16 passes out through the pipe 35, through the duct 41, and out through the pipe 34 to the atmosphere. In order to lower the gate, the valve 27 is

turned, whereby the duct 41 will communicate with the pipes 32 and 35, and the duct 40 in communication with the pipes 37 and 34. The air will then pass from the pipe 32 through the passage 41 in to the pipe 35 and thence into the cylinders 15 above the pistons 16, pushing the pistons downwardly and lowering the gate, and in this case, the air below the pistons 16 will pass out through the pipe 37, through the duct 40 of the valve 27, and thence through the pipe 34. Mounted in bearings 42 of the vertical wall or surface 2, is a shaft 43 having a star wheel 44, between any two adjacent teeth of which, the lower rod of the gate is designed to engage. Also supported on wall 2 by means of a bracket 45, is an electro-magnet 46 having a plunger or core 47. A suitable collar 48 is carried by the core or plunger, and interposed between the collar and the end of the electro-magnet is a spring 49, whereby the end of the core or plunger is held between any two adjacent teeth of the star wheel, thereby preventing the same from rotating, and by this construction, the gate is held in a raised position in such wise as to prevent pressure thereon from overcoming the pneumatic pressure. In order to permit the gate to lower incident to the pneumatic pressure above the pistons 16, the electromagnet is allowed to become energized, thereby sucking the core plunger 47 downwardly through the magnet against the action of the spring 49, thereby disengaging the end of the core from the star wheel. The electromagnet is electrically connected to a suitable switch or push button 50, by means of the wires 51 and battery 52.

The invention having been set forth, what is claimed as new and useful is:—

1. In combination with a side wall of a subway trench, spaced guides secured to said side wall, a gate having its ends guided in said guides, the ends of the gate and intermediate portions of said gate having rollers engaging said side wall, pneumatic cylinders, pistons mounted therein and having piston rods connected to the upper part of the gate, and means for supplying a pressure medium on either side of said pistons for raising and lowering them, and consequently correspondingly moving the gate and supporting the same in its raised and lowered positions.

2. In a device as set forth, a vertically movable gate adapted to be arranged adjacent a side wall of a subway trench, guiding means for the ends of said gate, anti-frictional rollers carried by the gate and engaging said side wall, pneumatic cylinders, pistons mounted therein and having piston rods connected to the upper part of the gate, means for supplying a pressure me-

dium on either side of the pistons to move the gate vertically and support the same in different adjusted positions, and an electrically controlled device having a toothed wheel to engage the lower bar of the gate to assist in supporting the gate in a raised position.

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

CARL ALBERT WEST.

Witnesses:

SOMERLEY C. FOLLANSBEE,
EARLE B. DAVIS.