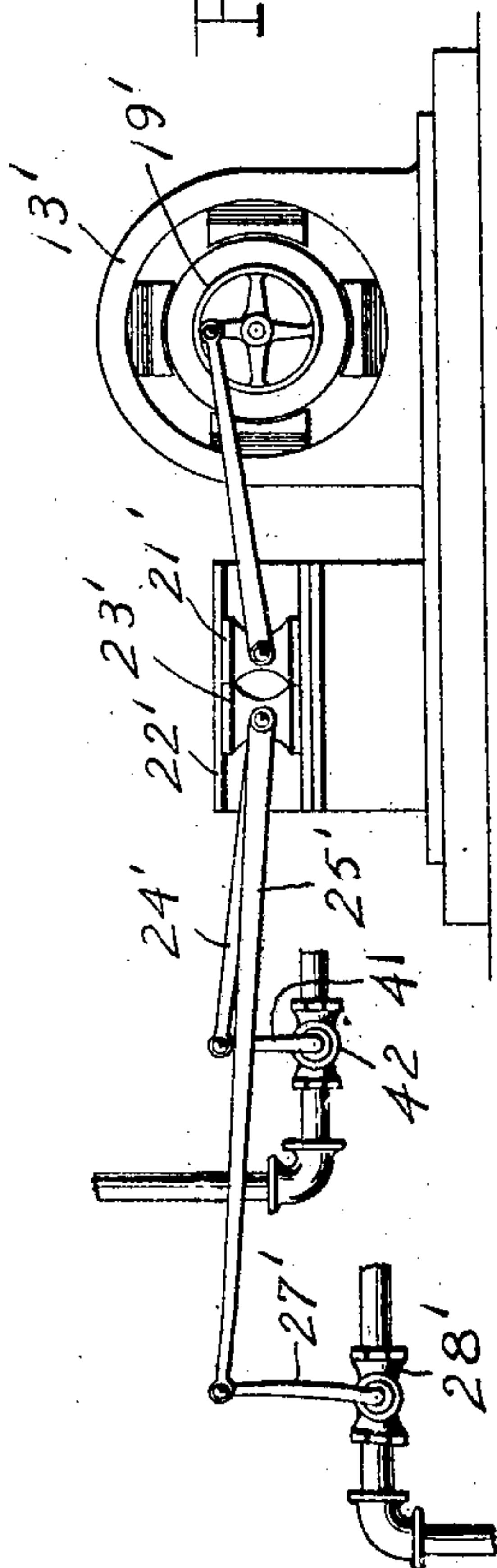


APPLICATION FILED JAN. 22, 1908.

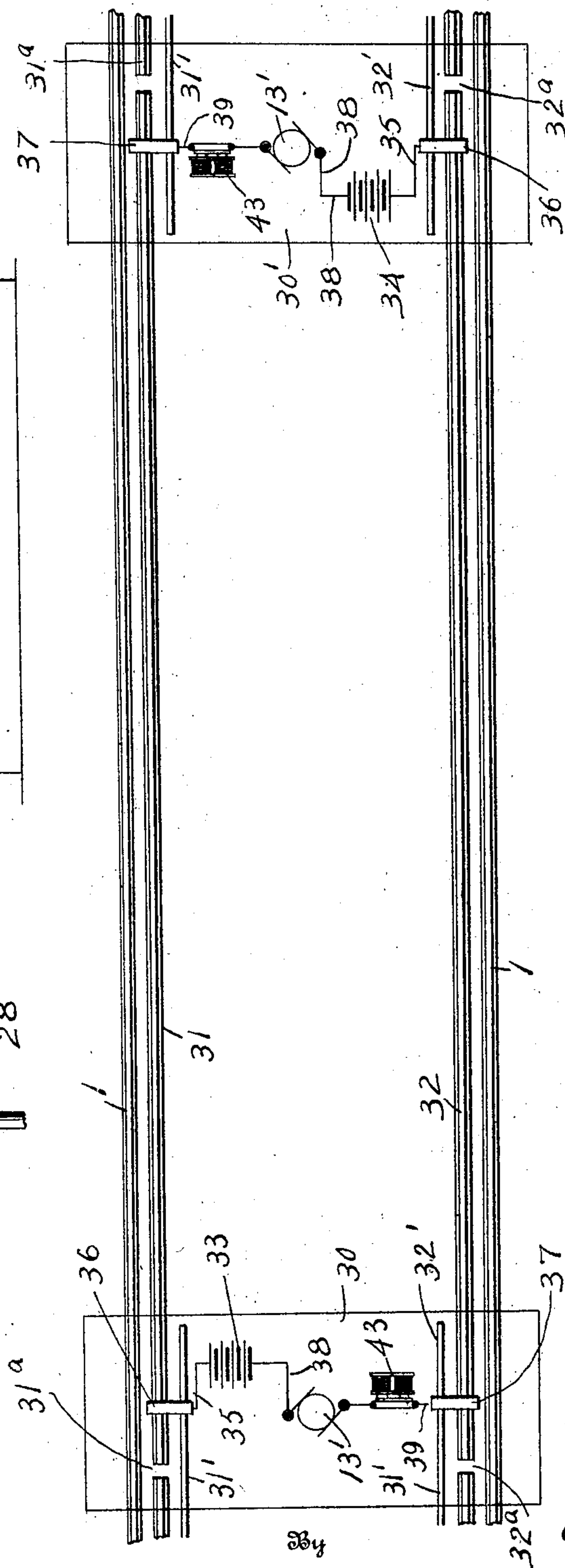
2 SHEETS—SHEET 1.

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W. H. Rockwell  
M. J. Miller.



Inventors  
W. U. G. Shaw  
Oscar Johnson  
Charles & Charles

**Attorneys**

W. U. G. SHAW & O. JOHNSON.

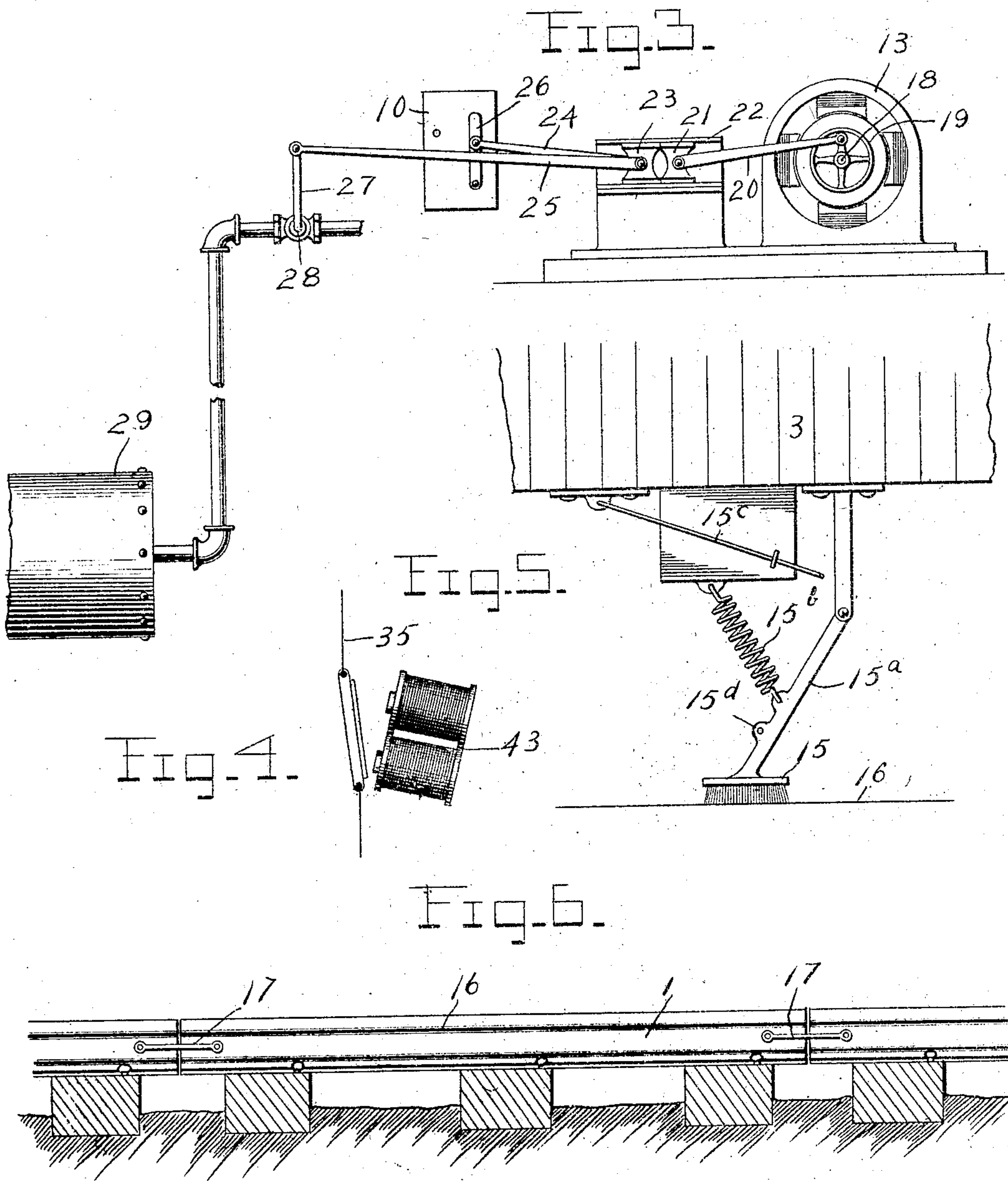
AUTOMATIC BRAKE SYSTEM.

APPLICATION FILED JAN. 22, 1908.

Patented June 15, 1909.

2 SHEETS—SHEET 2.

925,137.



Witnesses  
W. S. Rockwell  
M. J. Miller.

Inventors  
W. U. G. Shaw  
Oscar Johnson

384

*Charles Chandler*

Attorney



# UNITED STATES PATENT OFFICE.

WILLIAM U. G. SHAW AND OSCAR JOHNSON, OF LA FAYETTE, INDIANA, ASSIGNORS OF ONE-THIRD TO VALENTINE McNEER, OF WABASH, INDIANA.

## AUTOMATIC BRAKE SYSTEM.

No. 925,137.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed January 22, 1908. Serial No. 412,160.

To all whom it may concern:

Be it known that we, WILLIAM U. G. SHAW and OSCAR JOHNSON, citizens of the United States, residing at La Fayette, in the county of Tippecanoe, State of Indiana, have invented certain new and useful Improvements in Automatic Brake Systems; and we 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 new and useful improvements in electrically operated brake systems for railways and it has particular reference to a system embodying sectional ground conductors designed to close a circuit when two cars or engines are in the same block and to automatically operate electrical devices for shutting off the power and in simultaneously throwing on the brakes.

In connection with a system of the above type, the invention aims as a primary object to provide a novel construction, combination and arrangement of parts, the details of which will appear in the course of the following description, wherein reference is had to the accompanying drawings forming a part of this specification, like characters of reference designating similar parts throughout the several views in which—

Figure 1 is a view showing the invention as applied to steam railroads. Fig. 2 is a detail fragmentary side elevation illustrating the mechanical connections employed in the adaptation of the mechanism to steam railroads. Fig. 3 is a detailed side elevation of a rock shaft embodied in an electric motor forming a part of the present invention, together with parts of the constituent devices directly controlled from said shaft. Fig. 4 is a side elevation showing an automatically operated electric switch and a pivoted arm suspended from the lever of said switch. Fig. 5 is a side elevation showing a brush for engaging the ground conductors above referred to. Fig. 6 is a view showing the bonded third rail conductors employed in connection with electric railroad systems.

Referring specifically to the accompanying drawings, the numeral 1 designates the main tracks of a railroad upon which are the cars 2 and 3.

The numeral 13 indicates a motor and from this motor a wire 14 leads to a brush 15,

there being one of these brushes on each side of the car.

Adjacent one of the rails 1, is a third rail conductor 16, the rail sections of which are bonded as at 17.

The motor 13 includes the shaft 18 designed when said motor is energized for partial rotary movement.

The shaft 18 carries on its projecting end a wheel 19 with which is connected a pitman 20 which is likewise connected to a block 21 slidable between supporting guides 22. A second block 23 is likewise slidable between the guides 22, the block 23 being positively moved in one direction by the block 22 and being moved in a reverse direction when the parts are manually reset. Pivotaly connected to the block 23 are links 24 and 25, the link 24 being pivoted to the pivoted arm 26 of the switch 10 and the link 25 being pivoted to the arm 27 of a valve 28 which controls the supply of air to the brake system from the compression tank 29.

The brushes 15 are preferably supported by pivotal arms 15<sup>a</sup>, against which bear springs 15<sup>b</sup> for holding said brushes in contact with the conductor 16. It will be apparent that one of the brushes 15, dependent on the direction of travel of the car, will be out of use and hooks 15<sup>c</sup> are carried by the car for engagement in eyes 15<sup>d</sup> provided upon the arms 15<sup>a</sup> to sustain either of the brushes 15 raised, and spaced from the rails 1.

The form just described is that illustrated in Fig. 3, the form shown in Figs. 1 and 2 being a modification thereof. In Figs. 1 and 2, the numerals 30 and 30' represent the cabs of engines on the rails 1, and for the purposes of illustration, in the same block. Parallel conductors 31 and 32 are arranged adjacent each of the rails 1. The E. M. F. is supplied from batteries 33 and 34 arranged in the cabs 30 and 30'. One of the wires 35 of each of said batteries has connection with a brush 36, a similar brush 37 being arranged on the opposite side of the cab to the brush 36. The other wire 38 leading from the respective batteries 33 and 34 has connection with the operating motor 13', which is an exact duplicate in construction, function and operation of the motor 13 previously described. From each of the motors 13', wires 39 lead to the brushes 37 of the respective cabs 30 and 30'. The wheel designated 19' in this embodiment of the invention ac-



tuates a block 21' similar to the block 21 which engages a block 23', which together with the block 21' is slidable in supporting guides 22'. Links 24' and 25' are pivoted to the block 23' and are respectively connected to the arm 41 of the throttle-valve 42, and the arm 27' of the brake valve 28' the arm 41 corresponding in function in connection with a steam engine to the switch 10 in the electric railroad system. With the exception of these adaptations, the two systems are the same. The conductors 31 and 32 are divided into blocks similarly to the conductor 16, brush supporting conductors 31' and 32' being provided adjacent the breaks 31<sup>a</sup> and 32<sup>a</sup> in the respective conductors 31 and 32. When two engines running in opposite directions enter the same block, the circuit is immediately closed to operate the controlling devices. In the present case starting with the battery 33 the current will flow through the wire 35, brush 37, conductor 31, wire 39, the motor 13' of cab 30', wire 38, battery 34 in cab 30', wire 35 of that cab, brush 36, conductor 32, brush 37, motor 13' of cab 30, and back to the battery 33, the electrical devices being operated in the manner described.

It is obvious that the conductors 31 and 32 may be insulated by resistances of such strength that the current may be closed in like manner when two engines are on adjacent blocks at the contiguous ends thereof. This feature of construction is likewise applicable to the electric railway system and is not claimed as a part of the present invention, but is merely recited to show that it may be adopted in effecting the efficient operation of the system as a whole.

It is preferred to interpose in the wire 35 electro magnetic switches 43 for automatically cutting out the circuit established between the cabs 30' and 30 after the operation of the electric devices therein, such switches being of conventional form.

It is preferred to place the conductor 16 or the conductors 31 and 32 as the case may be, sufficiently close to the rails 1 as to constitute said conductors guard rails.

What is claimed is:

In a system of the type set forth, the combination with a car or cab, rail conductors, means for driving said car or cab, controlling means for said driving means and a source of electric supply, of a motor electrically connected with said source of supply, a brush on said conductor, connections between said motor and said brush, a second conductor, connections between said source of supply and said second conductor, a shaft included in said motor, a wheel on said shaft, an air compression chamber, a conductor leading therefrom, a valve in said conductor and operative connections between said controlling means and said wheel and between said valve and said wheel comprising a guide, a pair of blocks independently slidable in said guide, a pitman connecting one of said blocks to said wheel, and links connecting said valve and switch to the other block.

In testimony whereof, we affix our signatures, in presence of two witnesses.

WILLIAM U. G. SHAW.  
OSCAR JOHNSON.

Witnesses:

WALTER F. MORE,  
M. MEGGS.