April 18, 1933. J. G. GARRITY ET AL 1,904,783

ELECTRIC AUTOMATIC RECORDING APPARATUS

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Fig. 2.

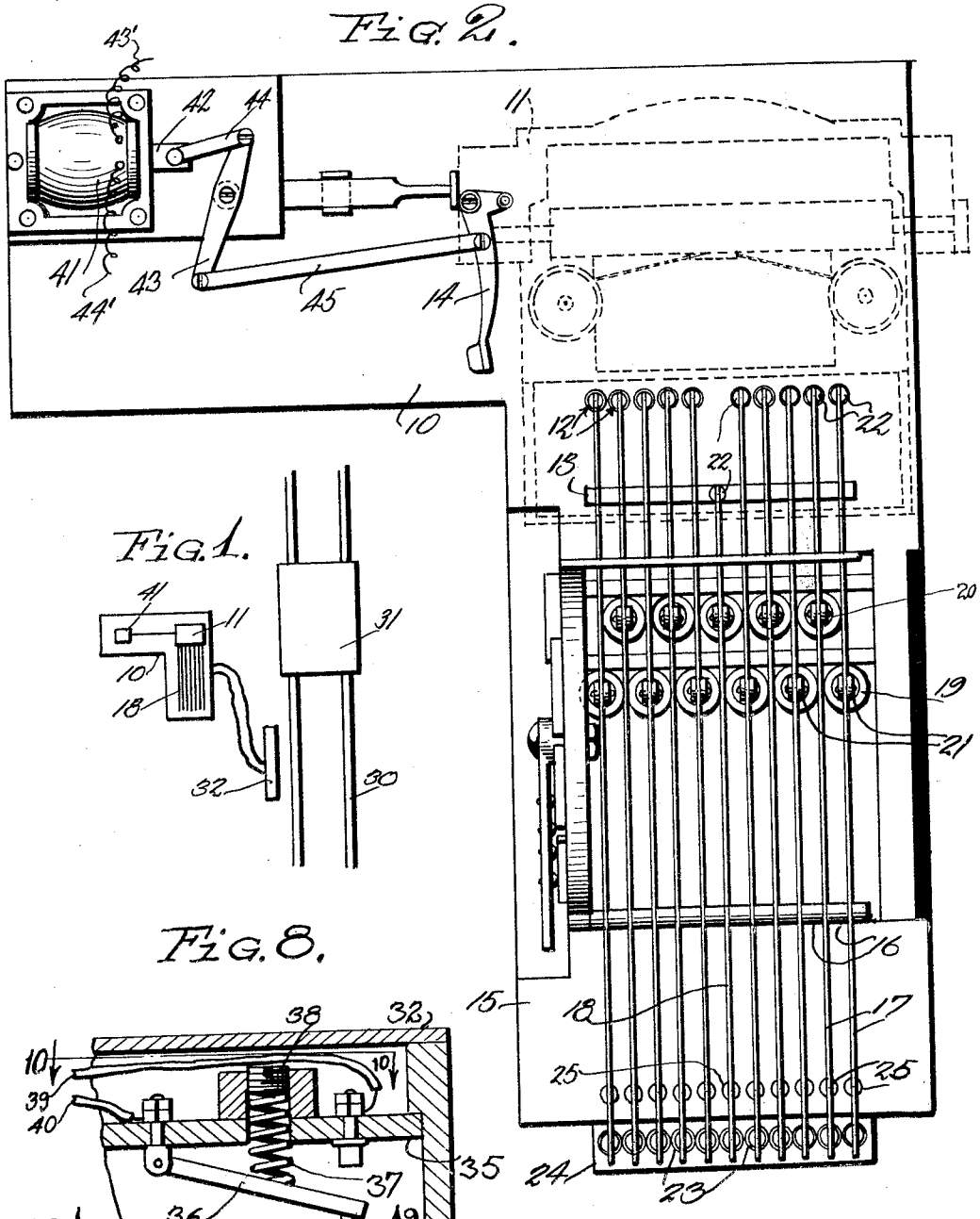


Fig. 1.

Fig. 8.

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ELECTRIC AUTOMATIC RECORDING APPARATUS

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Fig. 3.

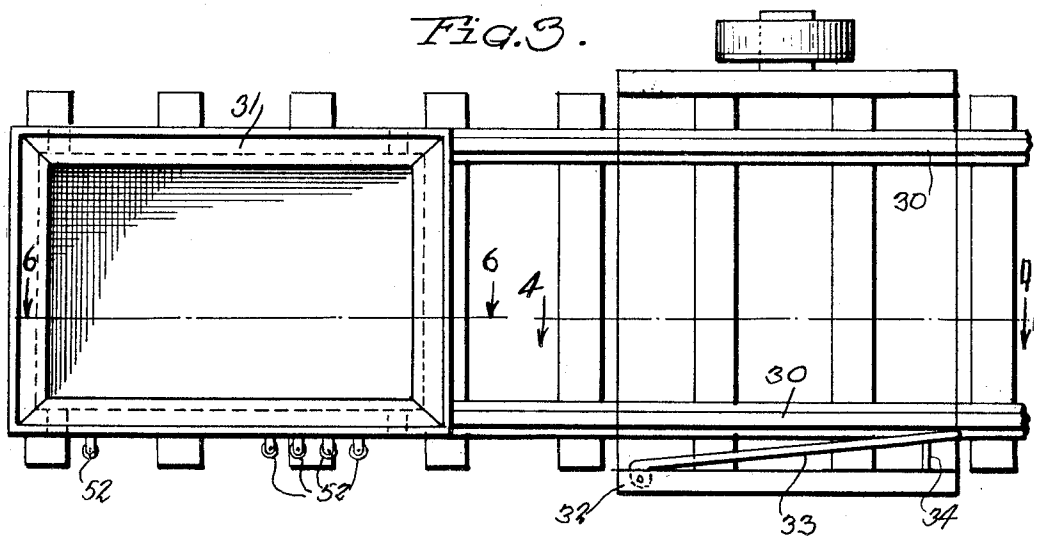


Fig. 4.

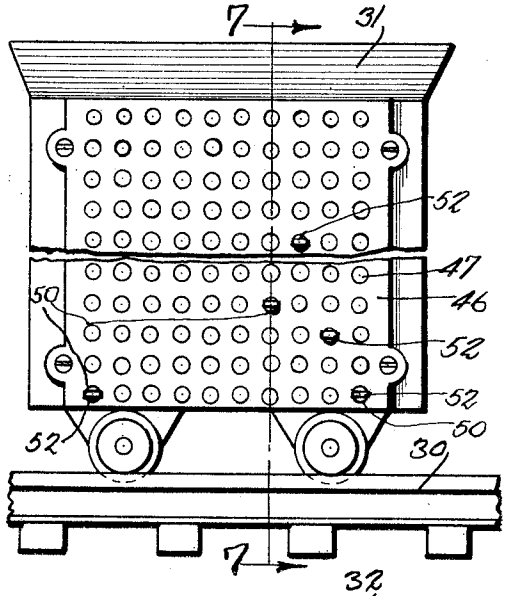


Fig. 4A.

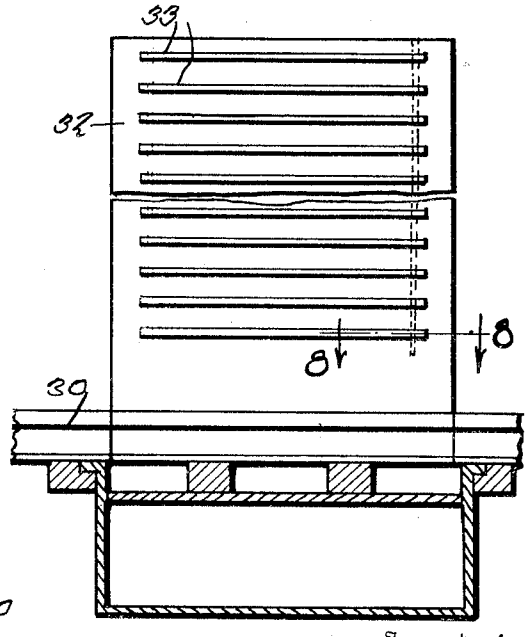
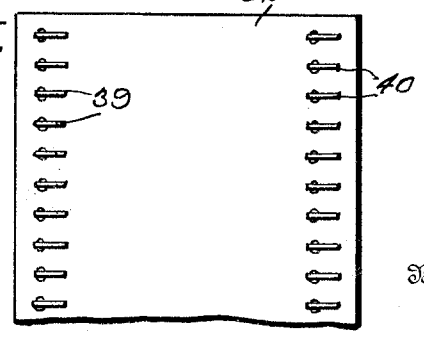


Fig. 5.



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ELECTRIC AUTOMATIC RECORDING APPARATUS

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Fig. 6.

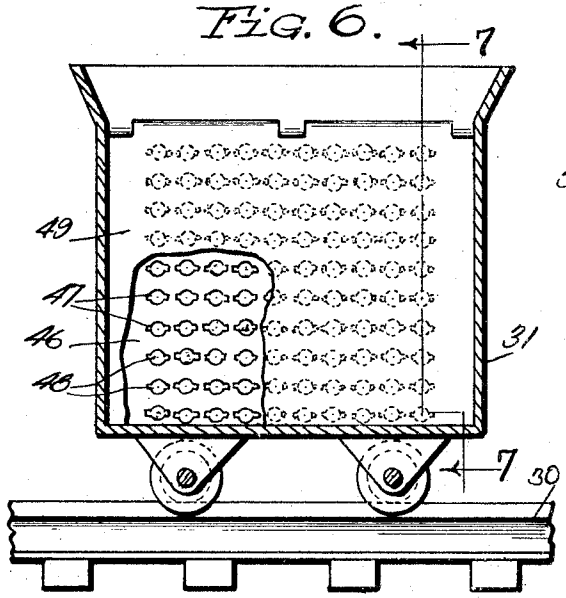


Fig. 7.

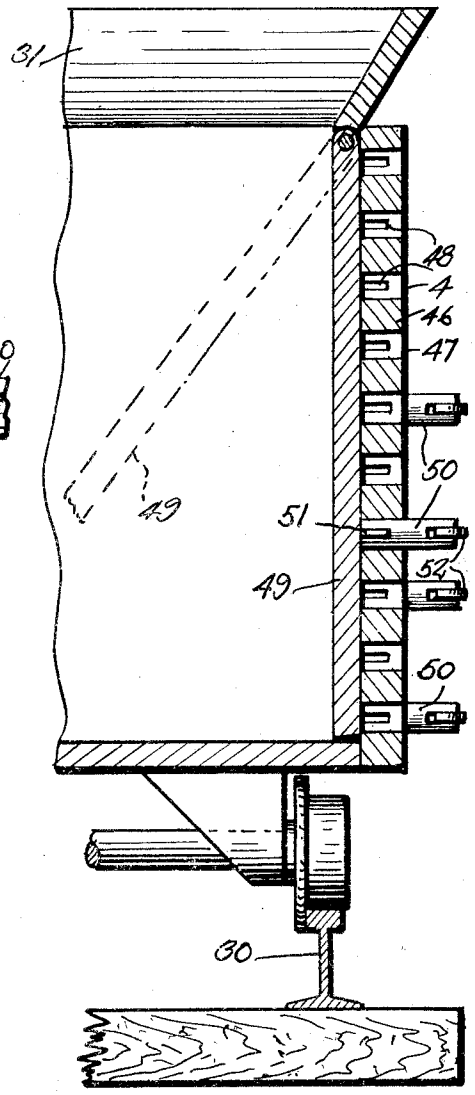


Fig. 9.

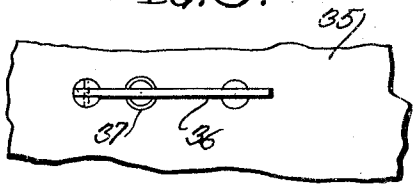


Fig. 10.

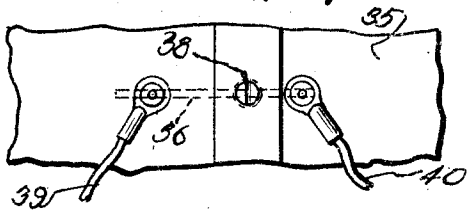
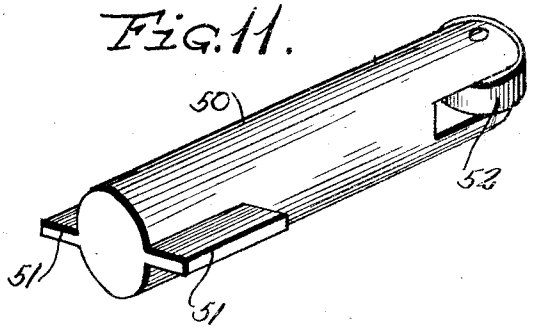


Fig. 11.



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ELECTRIC AUTOMATIC RECORDING APPARATUS

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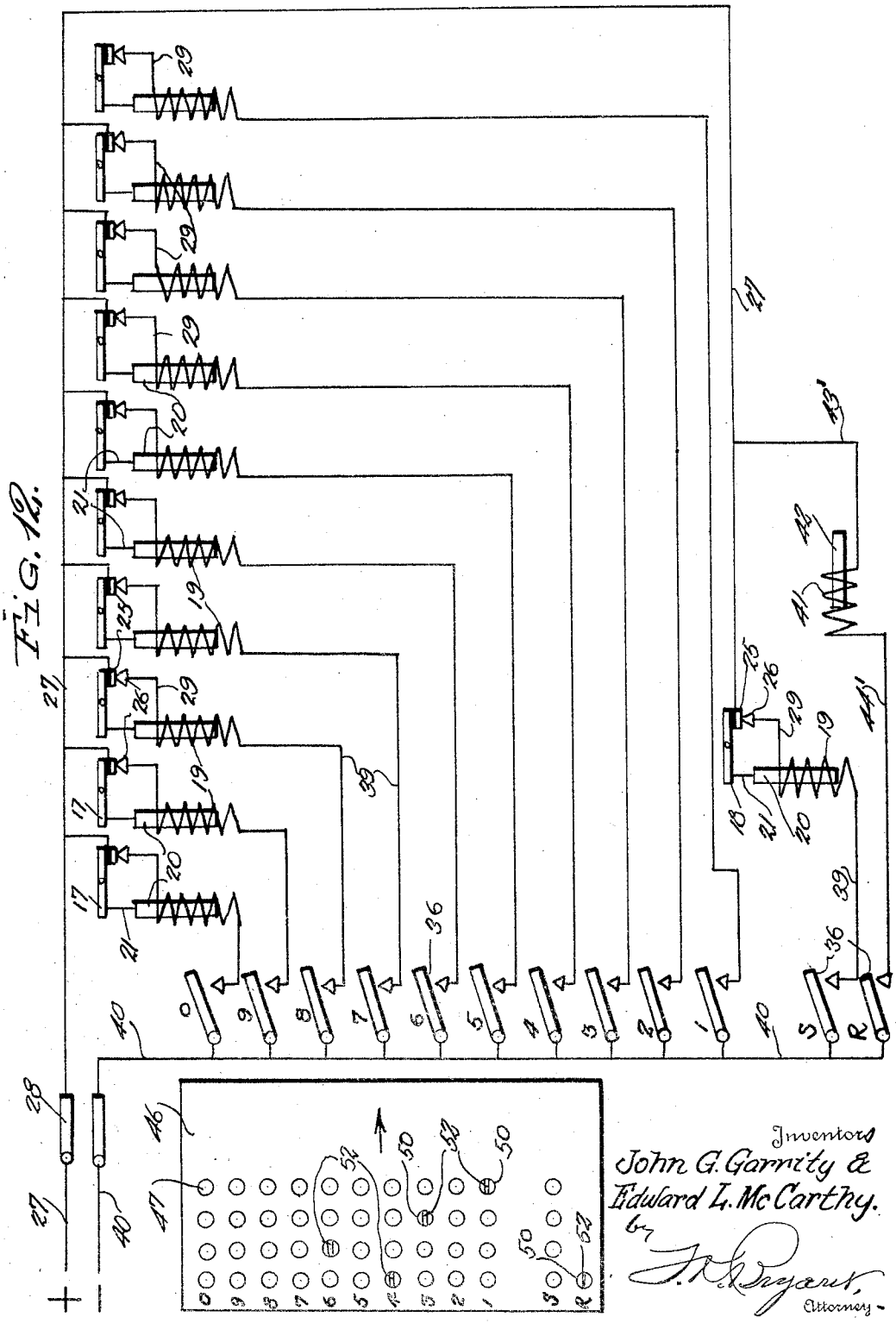


Fig. 12.

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UNITED STATES PATENT OFFICE

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ELECTRIC AUTOMATIC RECORDING APPARATUS

Application filed December 22, 1931. Serial No. 582,669.

This invention relates to recording devices and has special reference to a car number recorder.

In the operation of many mines it is common to load the material in cars for removal from the mine and to pay the miner and his helpers, if any, on the basis of the quantity of material mined and loaded. It is also common to have all of the cars thus loaded weighed at a single point at which the operator of the mine and the miner's organization each have a check-weighman. Obviously, the miner cannot leave the face at which he is working to accompanying each loaded car to the scales so, in order that it may be known to whom to credit the weight of material in each car, each miner is assigned a recognition number and is provided with a series of checks bearing that number. As each car is loaded he attaches one of his checks thereto and, upon the car reaching the scales the number on the check is recorded by the check-weighmen as well as the weight of mineral in the car. Sometimes the check accidently becomes detached from the car and at other times a dishonest miner will remove the check from a loaded car and replace it with one of his own to get credit for material which he has not mined.

We have shown in our copending application for patent on electric automatic recording scale, Serial Number 582,670 that such car weights may be recorded by certain apparatus which we have invented associated with an ordinary typewriter.

The present invention relates to certain apparatus likewise associated with a typewriter for effecting the recording of the numbers assigned to the individual miners or crews of miners working in a mine and it will be seen, by reference to the aforesaid copending application, that part of the same apparatus used to record the weights is utilized in the present invention.

One important object of the invention is to provide a novel general construction of apparatus adapted, upon the passing of a station point by a car, to effect the operation of a typewriter to record a number assigned to such car.

A second important object of the invention is to provide car supported means under control of the loading miner for establishing certain circuit closer actuating devices in position on such car as to cause the car in moving past the station point to effect closing of circuits which will in turn effect operation of a typewriter to record a number corresponding to the positions or arrangement of the circuit closing devices.

A third important object of the invention is to so arrange such circuit closing devices that, after the car is loaded, they cannot be changed until the car is again unloaded.

A further important object of the invention is to provide means for restoring the typewriter carriage to normal position upon the operation of recording the number being effected.

With the above and other objects in view, the invention consists in general of certain novel details of construction and combination of parts hereinafter fully described, illustrated in the accompanying drawings and specifically claimed.

In the accompanying drawings like reference characters will indicate like parts in the several views, and:—

Figure 1 is a diagrammatic plan view of the invention;

Figure 2 is a plan view of the portion of the invention directly associated with the typewriter;

Figure 3 is a plan view showing a portion of a track with the parts of the invention particularly associated therewith;

Figure 4 is a view in elevation of one side of the car used herein;

Figure 4A is a section on the line 4—4 of Figure 3;

Figure 5 is an elevation of a portion of the back of a switch board associated with the track;

Figure 6 is a detail section, partly broken away, on the line 6—6 of Figure 3;

Figure 7 is an enlarged detail section on the line 7—7 of Figure 4;

Figure 8 is an enlarged detail section on the line 8—8 of Figure 4A;

Figure 9 is a detail elevation on the line 9—9 of Figure 8;

Figure 10 is a detail elevation on the line 10—10 of Figure 8;

Figure 11 is a perspective view of a contact closing member used herein;

Figure 12 is a wiring diagram of typical electrical connections for the invention.

In the embodiment of the invention herein disclosed there is shown a stand or support having a platform 10 at one end and on this platform is mounted any ordinary typewriter 11 having a bank of ten number keys 12 and a spacing bar 13. The typewriter mechanism does not itself in its entirety constitute any special part of the invention and, to avoid confusion only those parts having a direct relation to the present invention are shown in full lines, the remainder being shown in dotted lines. At the same time, it is to be understood that some form of typewriter having the desired keys, spacer bar and platen rotating lever 14 is necessary to the operation of recording the weights and thus such typewriter, as a whole, does form part of the mechanism essential to carrying the invention into execution. The other or rear end of the base or support is likewise provided with a raised platform 15, somewhat higher than the platform 10. Extending up from the platform 15 at the rear edge thereof is a series of spaced brackets 16. Number levers 17 and a spacer lever 18 are positioned between these brackets and extend both to the front and to the rear thereof, these levers being pivoted to the brackets. A solenoid 19 having a core 20 is located beneath each of these levers adjacent the platform 10 and each core is connected to a respective lever by a turnbuckle 21 so that the cores may be adjusted with respect to the solenoids. Each of the levers carries on its forward end a downwardly extending hammer 22, the hammers of the levers 17 being alined over the respective number keys 12 while the hammer of the lever 18 is alined over the spacer bar 13. Springs 23 connect the rear ends of the levers with a bracket 24 fixed to the rear of the support and hold the hammers normally raised slightly above the keys and spacer bar.

On the plateform 15 is mounted a bank of circuit breakers each consisting of a fixed contact 25 and a spring contact 26 tending to move away from the respective fixed contact but held in engagement therewith by the action of the respective lever 17 or 18. These contacts are, of course, insulatedly mounted and the contacts 26 are connected in multiple to a line supply wire 27 wherein is interposed a control switch 28 by which current may be cut off the apparatus when desired. Each respective contact 25 is connected to one terminal of a respective solenoid 19 by a wire 29.

In Figure 3 there is shown a track 30 on which runs the cars, one of which is indicated in general at 31. Adjacent the track and parallel thereto is a casing 32 and on the face of this casing toward the track is mounted a series of circuit closer operating levers 33 which are each pivoted at one end to the casing and normally inclined toward the track. Each of these levers carries a plunger 34 at its free end which extends through the front face of the casing. Within the casing 32 is a partition 35 whereon is mounted a series of knife switches 36 held in normally open positions by springs 37 which may be adjusted by means of suitable adjusting screws 38. These switches have their blades respectively engaged by the plungers 34. Each of these switches has one terminal or pole connected to a respective solenoid 19 by a wire 39 and these switches have their remaining poles connected in multiple to the remaining line wire 40.

Mounted on a suitable stand above the platform 10 is a solenoid 41 having a core 42 which is connected to a lever 43, pivoted intermediate its ends to the stand, by a link 44. The other end of this lever is connected by a link 45 with the lever 14. The solenoid 41 has one terminal connected by a wire 43′ to the line wire 27 and has its other terminal connected by a wire 44′ with the remaining knife switch 36.

On the side of the car adjacent the housing 32 is a plate 46 having a series of rows of holes 47 formed therethrough and the inner end of each hole is provided with keyways 48. The rear ends of these holes are closed by a plate 49 hinged to the car to form a portion of one side and opening inwardly of the car so that, when the car is loaded, no access can be had to the inner or rear ends of the holes 47. Plugs 50 are arranged to fit in the holes 47 and are provided with keys 51 on their inner ends and rollers 52 for contacting the arms 33 on their outer ends. These keys not only serve to position the plugs properly to have the rollers run on the arms 33 but also serve to prevent removal of the plugs from the exterior of the car.

The order to make the operation of the device clear the several rows of holes 47 shown in the diagram have at their left the numerals 1 to 0 and the letters S and R, the latter standing respectively for "space" and "return". The several knife switches are similarly marked.

Before the car is loaded the miner opens the door 49 and inserts the plugs with which he is provided in the proper holes. Thus, suppose his number to be 1364, he inserts a plug in the first hole of the "1" row, a plug in the second hole of the "3" row, one in the third hole of the "6" row and one in the fourth hole of the "4" row. Plugs are also inserted in the "S" row to allow for a num-

ber of spaces after the operation and a plug is inserted in the "R" row to ensure return of the typewriter carriage when the operation is complete. He then closes the door and loads the car. Obviously the plugs cannot now be removed without unloading the car. The car is now drawn out of the mine to move past the housing 32 and, as it does so, the plugs will contact with the respective bars, in succession, push them away from the car and close the switches 36 corresponding to the setting of the plugs. Thus, in the example here shown, the switches will be closed in the order 1, 3, 6 and 4 and corresponding circuits will be closed to actuate the solenoids 19 controlling the typewriter keys 1, 3, 6 and 4, each of these circuits being broken immediately after it is closed to allow the corresponding key to rise and the typewriter carriage to move one space to the left. After all the number plugs have acted, the spacer plugs, if any, will act to effect movement to the left of the carriage the desired number of spaces. Finally, the plug in the "R" row will act. This will close the switch controlling the solenoid 41 which will act to return the carriage of the typewriter and turn the platen roll one line upwardly.

Of course, if this apparatus is to be used in connection with that described in the copending aplication above mentioned the plug for the "R" row will be omitted since the weight recording takes place on the same line as the number and the weight recording apparatus is itself provided with carriage control means for returning such carriage to its normal position as described in said copending application.

Obviously, the device may be arranged to actuate the letter keys of a typewriter as well as the number keys, this requiring simply a multiplication of the parts here shown and described as controlling the number keys. Thus road initials and freight car numbers may be automatically recorded as a freight train passes a given point.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that many changes may be made in the form, proportions and construction of the invention without departing from the material principles involved. It is not, therefore, desired to confine the invention to the exact form herein shown and described, but it is desired to include all such as come within the scope of the appended claims.

What is claimed as new is:—

1. Apparatus to record car numbers by effecting actuation of a typewriter having keys, a spacer bar, a carriage and platen, and a platen shift lever, said apparatus including a series of electro-magnetic means arranged when energized to actuate respective keys of a typewriter, and means carried by a car and operable to successively close circuits through selected electro-magnetic means.

2. Apparatus to record car numbers by effecting actuation of a typewriter having keys, a spacer bar, a carriage and platen, and a platen shift lever, said apparatus including a series of electro-magnetic means arranged when energized to actuate respective keys and the spacer bar of a typewriter, and means carried by a car and operable to successively close circuits through selected electro-magnetic means.

3. Apparatus to record car numbers by effecting actuation of a typewriter having keys, a spacer bar, a carriage and platen, and a platen shift lever, said apparatus including a series of electro-magnetic means arranged when energized to actuate respective keys of a typewriter, means carried by a car and operable to successively close circuits through selected electro-magnetic means, other electro-magnetic means associated with the platen shift lever of the typewriter and arranged to return the carriage and shift the platen upon energization, and other means carried by the car and operable to close a circuit through the last mentioned electro-magnetic means.

4. Apparatus to record car numbers by effecting actuation of a typewriter having keys, a spacer bar, a carriage and platen, and a platen shift lever, said apparatus including a series of electro-magnetic means arranged when energized to actuate respective keys and the spacer bar of a typewriter, means carried by a car and operable to successively close circuits through selected electro-magnetic means, other electro-magnetic means associated with the platen shift lever of the typewriter and arranged to return the carriage and shift the platen upon energization, and other means carried by the car and operable to close a circuit through the last mentioned electro-magnetic means.

5. Apparatus to record car numbers by effecting actuation of a typewriter having keys, a spacer bar, a carriage and platen, and a platen shift lever, said apparatus including a series of electro-magnetic means arranged when energized to actuate respective keys of a typewriter, normally open switches adjacent the path of the car, each having circuit connection with a respective electro-magnetic means, spring means holding said switches normally open, car supported means arranged to engage successively with selected switches as the car moves past the switches to close the same and thus correspondingly and successively energize the electro-magnetic means, other electro-magnetic means associated with the platen shift lever and adapted when energized to return the carriage to normal position and shift the platen, a further similar switch adjacent the path of the car and in circuit with the last

electro-magnetic means, and a further car supported means adapted to engage and close said last switch.

6. Apparatus to record car numbers by effecting actuation of a typewriter having keys, a spacer bar, a carriage and platen, and a platen shift lever, said apparatus including a series of electro-magnetic means arranged when energized to actuate respective keys and the spacer bar of a typewriter, normally open switches adjacent the path of the car, each having circuit connection with a respective electromagnetic means, spring means holding said switches normally open, car supported means arranged to engage successively with selected switches as the car moves past the switches to close the same and thus correspondingly and successively energize the electro-magnetic means, other electro-magnetic means associated with the platen shift lever and adapted when energized to return the carriage to normal position and shift the platen, a further similar switch adjacent the path of the car and in circuit with the last electro-magnetic means, and a further car supported means adapted to engage and close said last switch.

7. Apparatus to record car numbers by effecting actuation of a typewriter having keys, a spacer bar, a carriage and platen, a platen shift lever, said apparatus including a series of electro-magnetic means arranged when energized to actuate respective keys and the spacer bar of a typewriter, normally open switches adjacent the path of the car, and each having circuit connection with a respective electro-magnetic means, spring means holding said switches normally open, car supported means arranged to engage successively with selected switches as the car moves past the switches to close the same and thus correspondingly and successively energize the electro-magnetic means, said car supported means including a plug receiving plate having a series of rows of holes alined with said switches, and plugs insertable in selected holes and projecting from the car to engage and close the switches, said plugs being insertable in said holes only from the interior of the car and the car supported means including a door within the car closing over the inner ends of the plugs.

8. Apparatus to record car numbers by effecting actuation of a typewriter having keys, a spacer bar, a carriage and platen, and a platen shift lever, said apparatus including a series of electro-magnetic means arranged when energized to actuate respective keys of a typewriter, normally open switches adjacent the path of the car, each having circuit connection with a respective electro-magnetic means, spring means holding said switches normally open, car supported means arranged to engage successively with selected switches as the car moves past the switches to close the same and thus correspondingly and successively energize the electro-magnetic means, other electro-magnetic means associated with the platen shift lever and adapted when energized to return the carriage to normal position and shift the platen, a further similar switch adjacent the path of the car and in circuit with the last electro-magnetic means, and a further car supported means adapted to engage and close said last switch, said car supported means including a plug receiving plate having a series of rows of holes alined with said switch, and plugs insertable in selected holes and projecting from the car to engage and close the switches, said plugs being insertable in said holes only from the interior of the car and the car supported means including a door within the car closing over the inner ends of the plugs.

In testimony whereof we affix our signatures.

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EDWARD L. McCARTHY.