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S. C. MOORE.

CONTROLLING MEANS FOR RELEASE VALVES.

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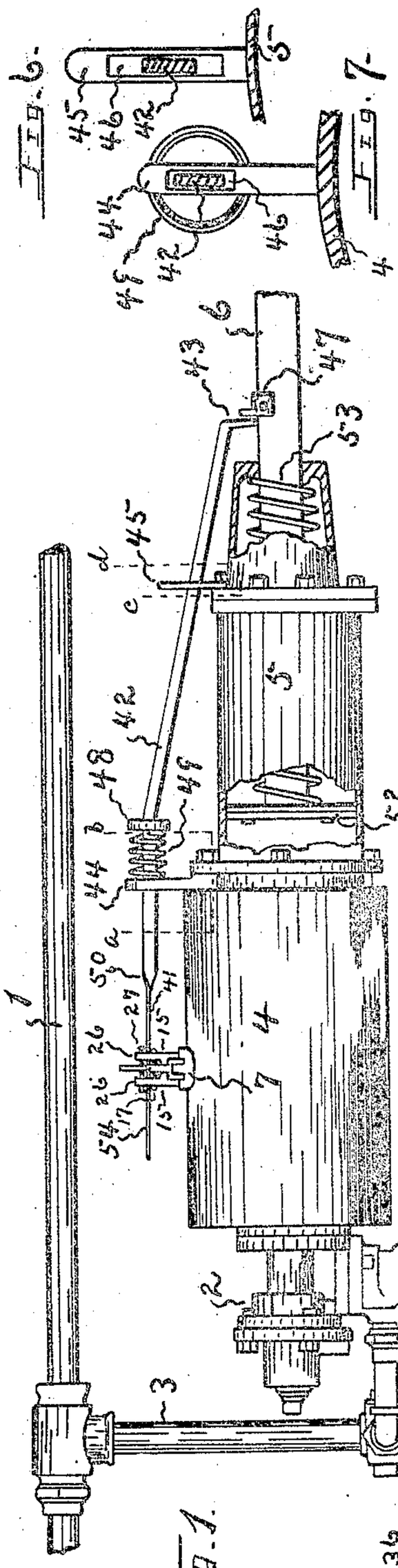

FIG. 1.

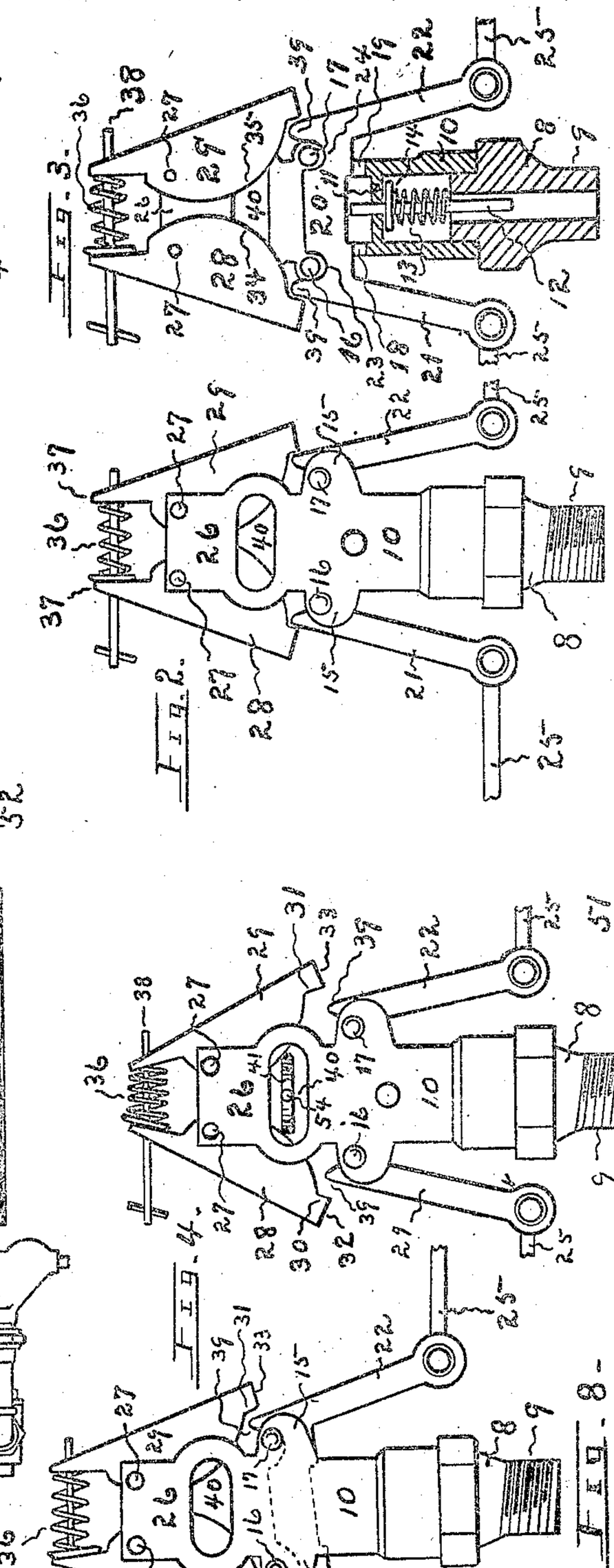

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 8.

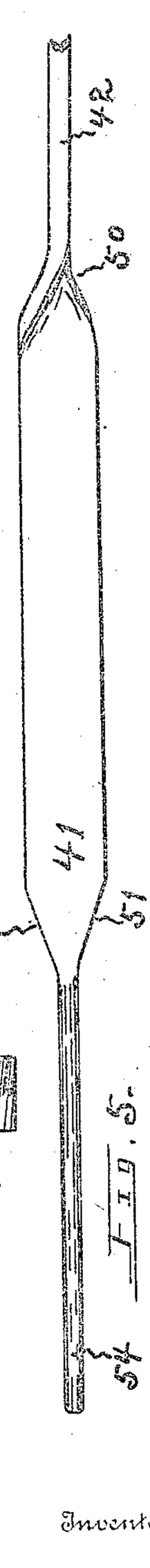

FIG. 5.

Witnesses

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CONTROLLING MEANS FOR RELEASE-VALVES.

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To all whom it may concern:

Be it known that I, SILAS C. MOORE, a citizen of the United States, residing at South Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Controlling Means for Release-Valves, of which the following is a specification.

This invention relates to improvements in controlling means for release-valves for use in connection with release-valves ordinarily found upon the auxiliary reservoir of air-brake mechanism.

The object of the invention is to provide a locking means to cause the release-valve to be continued in an "open" or released position after said valve has been manually opened.

The invention also includes automatic devices for changing the position of the locking means, so that the releasing-lever at the exhaust-port upon the auxiliary reservoir may become unlocked and restored to a normal or operative position.

The invention presents features especially relating to simplicity of construction and reliability of action, all being fully explained herein, pointed out by the claims, and illustrated in the drawings.

When a freight-car or freight-train has been detached from the locomotive, the air-brakes become set, and at the time of switching cars it becomes the duty of the yardman or other employee to release the compressed air from the auxiliary reservoir of each car, this being accomplished by raising and holding one of the arms of the rock-lever of the release-valve until the air escapes. This operation is familiarly known as "bleeding," and it results in much loss of time, especially where there are several cars in one train, since the air does not immediately escape. By use of the simple devices shown in the invention and which may be readily attached to any ordinary air-brake mechanism the wheels of an entire train may be quickly released from the brakes.

The invention provides a resiliently-mounted spreading-rod, which is disposed in a position lengthwise the piston-rod and brake-cylinder and traverses a part of the auxiliary reservoir sufficient to actuate a pair of locking-bars, which have a connection with the ordinary releasing-lever or rock-lever now in use. The operation of the spreading-rod is to have a longitudinal movement and to be brought in an inward direction under operation of the piston-rod as soon as the releasing-lever has been raised and to have an outward movement by operation of its resilient mounting.

In the drawings, Figure 1 represents a vertical side view of parts of air-brake mechanism with my invention mounted thereon, the train-pipe, piston-rod, and a part of the piston-cylinder being broken away. Figs. 2, 3, and 4 are vertical side views of a type of release-valve in common use in connection with an auxiliary reservoir. Fig. 3 shows a part in section to disclose the valve and rock-lever. The upper part of these figures show the locking-bars of my invention. Fig. 5 is a plan view of the inner end of the spreading-rod, being a part of my invention and appearing also in Fig. 4. Figs. 6 and 7 are detail views, respectively, on lines *a b* and *c d* of Fig. 1 looking outwardly from the release-valve. Fig. 8 is a front view of a part of the invention, showing a locking-bar in engagement with one of the arms of the rock-lever in a manner to lock this lever in an open position to allow escape of compressed air.

Referring now to the drawings, the numerals 1, 2, and 3 respectively indicate the train-pipe, triple valve, and connecting-pipe therebetween found in ordinary air-brake construction.

4, 5, and 6 indicate, respectively, the auxiliary reservoir, brake-cylinder, and piston-rod.

The numeral 7, Fig. 1, indicates the release-valve upon the auxiliary reservoir.

The construction of the release-valve is quite fully shown in the lower parts of Figs. 2, 3, 4, and 8, and it will be seen that the lower part of escape-pipe 8 has a threaded part 9, used for making connection with the wall of reservoir 4. Pipe 8 has removably secured thereon the valve-housing 10, with the apertured transverse web 11 therein. The pintle 12 is seated in this aperture and passes downward within the bore of escape-pipe 8, the spring 13 exerting a resisting pressure upon valve 14, forcing the latter to a seating upon the inner face of web 11 in a manner to close the aperture.

The upper end of valve-housing 10 is provided with pairs of oppositely-disposed brackets 15, each pair having a transverse contact-bolt mounted therebetween, as bolts 16 and 17. The valve-housing is provided with recesses 18 and 19 below the plane of

brackets 15, Fig. 3, which permits a downward-swinging movement of either arm of the rock-lever 20. Rock-lever or releasing-lever 20 is provided with arms 21 and 22 and with downwardly-curved recesses 23 and 24 for engagement, respectively, with contact-bolts 16 and 17, and it will be understood that rock-lever 20 has a seating upon pintle 12, its normal position being a contact with bolts 16 and 17.

Upon swinging rock-lever 20, as by lowering arm 21, the curved wall of recess 24 will engage contact-bolt 17, which operates as a fulcrum, and pintle 12 will be pushed inwardly, thereby allowing condensed air to escape, and this is the method of operation for releasing the wheel-brake, and either one of arms 21 or 22 may be used for this purpose. In practice operating-rods 25 are employed which pass to each side of the car for use of the operator. The devices thus described have been used many years in connection with improved air-brake mechanism for freight-cars, and the use of my invention does not contemplate any change, except, perhaps, the valve-housing.

For purposes of my invention I employ extensions 26, passing above brackets 15, but upon the same vertical plane and preferably constructed integral therewith. Extensions 26 operate as bearing-plates, between which I pivotally mount, as at 27, the locking-bars 28 and 29. These locking-bars are upon the same vertical plane as rock-lever 20, each having at its lower end, respectively, an inner longitudinal contact-face 30 and 31 (best shown in Fig. 4) and transverse terminal faces 32 and 33, these faces being for the purpose of making certain contacts with the upper end or sides or arms 21 and 22, more fully to be described hereafter, and I provide for the locking-bars curved inner contact-walls 34 and 35, which come in engagement at times with spreading-head 41, and I provide resilient means for control of the locking-bars, as spring 36, secured between their upper ends 37 upon the slidable pintle 38 in a manner so that a resistance is made to the approach of the upper ends 37 of these bars.

I provide upper and outer extensions or projections 39 upon each of arms 21 and 22 of rock-bar 20. Locking-bars 28 and 29 have a length sufficient to overhang the outer sides of extensions 39, and this is their normal position when braking is being effected, the inner faces 30 and 31 of the locking-bars making contact with and by means of spring 36 pressed inwardly upon the outer faces of projections 39.

From the description it will be understood that the means just described will operate to lock the rock-lever in an open position, for when either of arms 21 or 22 of the rock-lever has been raised by the operator the opposite arm becomes locked. If arm 22 be raised, as shown in Fig. 8, face 30 will no longer have a bearing upon the outer side of the extension 39 of arm 21, but will pass inwardly, and this extension will have a seating upon the transverse face 32 of locking-bar 28, and arm 21 is thereafter held in its downward position until released by means of the spreading-rod and spreading-head, presently to be described. Either of arms 21 or 22 may be pressed downward, and the invention is operative with equal effectiveness to instantly lock the parts in a manner so that without further attention from the operator compressed air may escape from the reservoir.

I provide automatic means for the release of arms 21 and 22, consisting of devices, now to be described, which operate in a manner to cause the lower end of bars 28 and 29 to have a spreading movement, so that the arms of the rock-lever may be released from a rearward travel of the spreading-rod and spreading-head. I provide the transversely-formed aperture 40 in the lower part of extensions 26, adapted to contain on occasion the spreading-head 41 or spreading-rod 42. The latter extends upon the central plane of the reservoir 4 in a direction from valve 7 to centrally traverse brake-cylinder 5, its terminal end 43 being closely adjacent to piston-rod 6, thereby passing standard 44 within slot 46, Fig. 7, of which it is sustained. Standard 44 may be secured in any convenient manner, as upon the end of and outwardly extending from reservoir 4. The spreading-rod is also sustained in standard 45, secured upon and outwardly extending from the end of brake-cylinder 5. These standards have longitudinal slots 46, conforming to the angular walls of spreading-rod 42, in which the latter may slide, but is prevented from having any rotative movement.

I employ lug 47, secured upon piston-rod 6. This lug is adapted on occasion to make contact with end 43 of the spreading-rod, and I provide the collar or lug 48, secured upon the spreading-rod adjacent standard 44, and employ resilient means, as spring 49, seated upon the spreading-rod between said lug and standard, this spring resisting a movement of lug 48 in a direction toward standard 44.

It will be understood that the body of spreading-rod 42 is formed as a flat bar and preferably is twisted at 50, so that the spreading-head 41 will have the lesser diameter of its body presented transversely to that of rod 42. Spreading-head 41 is provided with convergently-formed sides 51 and is adapted by reason of its bearings to pass flatwise within the transverse aperture 40. (Best shown in Fig. 4.)

Having described the parts, operation will be readily understood. Piston-rod 6 is driven outwardly by pressure of air coming

upon piston-head 52 with a degree of force sufficient to overcome the resistance of spring 53. As piston-rod 6 moves outwardly at this time spreading-head 41 will pass from within aperture 40 under operation of spring 49 a sufficient distance to allow locking-bars 28 and 29 under operation of spring 36 to assume an operative position, as shown in Figs. 2 or 3, ready to perform their function. Spring 36 is a reliable means to prevent spreading of the lower ends of these locking-bars while piston-rod 6 is extended outwardly. During the outward movement of the spreading-rod, which need not exceed a distance of two or three inches, the convergent walls 51 are removed to a point closely adjacent to extensions 26. I employ, preferably, an elongated finger 54, formed upon the free end of head 41. This finger is disposed within aperture 40 at all times when the head 41 is withdrawn, so that this head may never be displaced from an operative position. At the time of outward travel of piston-rod 6 the rear end 43 of the spreading-rod remains close to its surface, so that at the time of inward travel of the piston-rod lug 47 will make reliable engagement and thereby will carry the spreading-rod in a direction toward valve 7. It will be noted that the means for unlocking of bars 28 and 29 requires no attention from an operator, and the head 41 is certain to be withdrawn from a contact with curved walls 34 and 35 by the means described.

In the operation of the invention for releasing compressed air one of arms 21 or 22 is manually actuated, as by means of extending one of rods 25, already described. These arms thereupon immediately become locked by operation of locking-arms 28 and 29, which causes the release-valve to remain open and allows compressed air to escape. This operation is automatic, since maintenance of the valve in an open position does not require the continued attention of the operator, and by use of the invention a single employee is enabled to release compressed air from all of the auxiliary reservoirs of a train in a comparatively short time. As soon as the release-valve becomes "locked" in an open position piston-rod 6 commences to have a gradual inward travel, thereby forcing spreading-head 41 in a lengthwise direction within aperture 40 and spreading locking-bars 28 and 29 in directions from each other, the release-valve 7 thereupon becoming closed and parts restored to a normal position.

The invention may be used with equal facility whether the valve 7 is secured upon top, bottom, or sides of the auxiliary reservoir, and one of standards 44 or 45 may be dispensed with or may be changed in form, if desired, and it is considered that other minor details of construction could be changed without departing from the spirit of the invention, the latter depending upon its claims.

What I claim as my invention is—

1. In controlling means for a release-valve, the combination with a release-valve having a rock-bar; of a pair of locking-bars and a spreading-rod; said pair of locking-bars seated upon the rock-bar of the release-valve; said spreading-rod mounted operatively adjacent to said pair of locking-bars, and means to control the spreading-rod.

2. In controlling means for a release-valve, the combination with a release-valve having a rock-bar; of a pair or locking-bars and a spreading-rod; said pair of locking-bars seated upon the rock-bar of the release-valve; said spreading-rod mounted operatively adjacent to said pair of locking-bars; means to control the locking-bars, and means to control the spreading-rod.

3. In air-brake mechanism, controlling means for a release-valve; in combination with the auxiliary reservoir, piston-rod, and a release-valve having a rock-lever and mounted upon said auxiliary reservoir; of a pair of locking-bars seated upon said rock-lever, a spreading-rod resiliently mounted in operative proximity to said locking-bars and having an engagement with the piston-rod; and means to control said locking-bars.

4. In air-brake mechanism, controlling means for a release-valve; in combination with the auxiliary reservoir, piston-rod, and a release-valve having a rock-lever and mounted upon said auxiliary reservoir; of a pair of locking-bars seated upon said rock-lever, a spreading-rod mounted in operative proximity to said locking-bars and having an engagement with the piston-rod; means to control said locking-bars, and means to control the spreading-rod.

5. In combination with a release-valve having a releasing-lever formed as a rock-bar, of controlling means for said release-valve, comprising outer and upwardly-extending projections formed upon said rock-bar; a pair of resiliently-mounted locking-bars having inner contact-faces seated upon the outer sides of said outer and upwardly-extending projections of the rock-bar, and having transversely-disposed faces formed upon its terminal ends adapted to have a seating upon the terminal end of one of the projections formed upon said rock-bar of said releasing-lever at the time of actuating said rock-bar.

In testimony whereof I have affixed my signature in presence of two witnesses.

SILAS C. MOORE.

Witnesses:

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