(No Model.) 2 Sheets—Sheet 1.

# J. G. DIXON.

## TREADLE FOR USE IN RAILWAY SIGNALING.

No. 527,481. Patented Oct. 16, 1894.

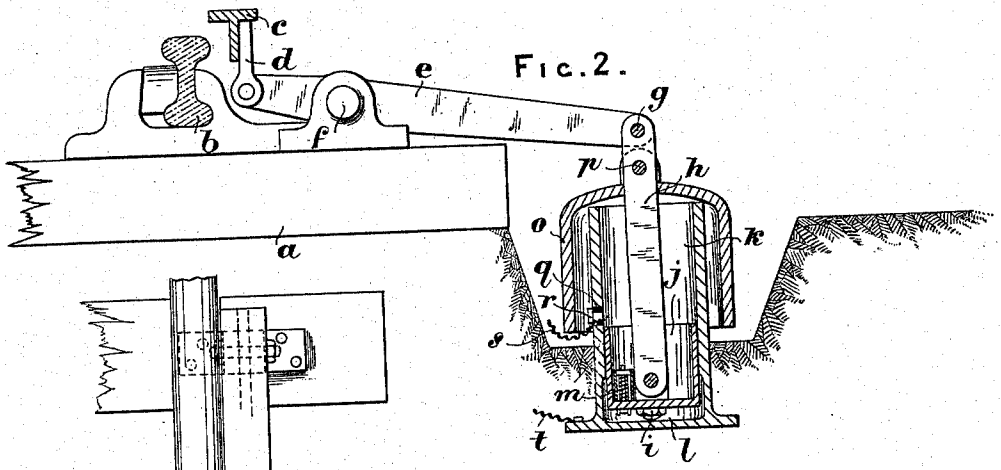


Fig. 2.

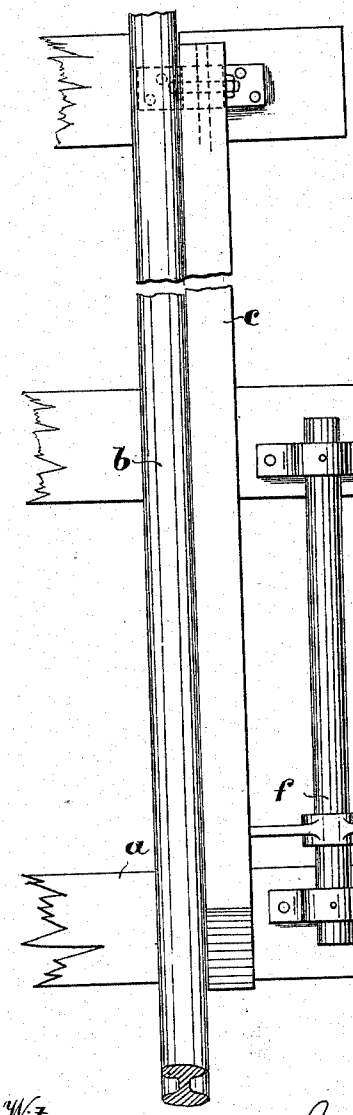


Fig. 4.

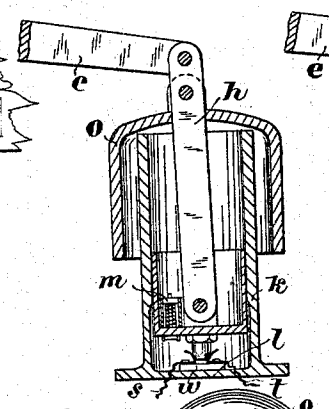


Fig. 3.

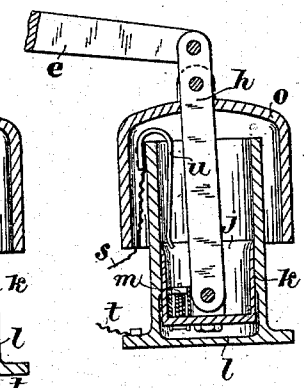


Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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## TREADLE FOR USE IN RAILWAY SIGNALING.

No. 527,481. Patented Oct. 16, 1894.

FIG. 6.

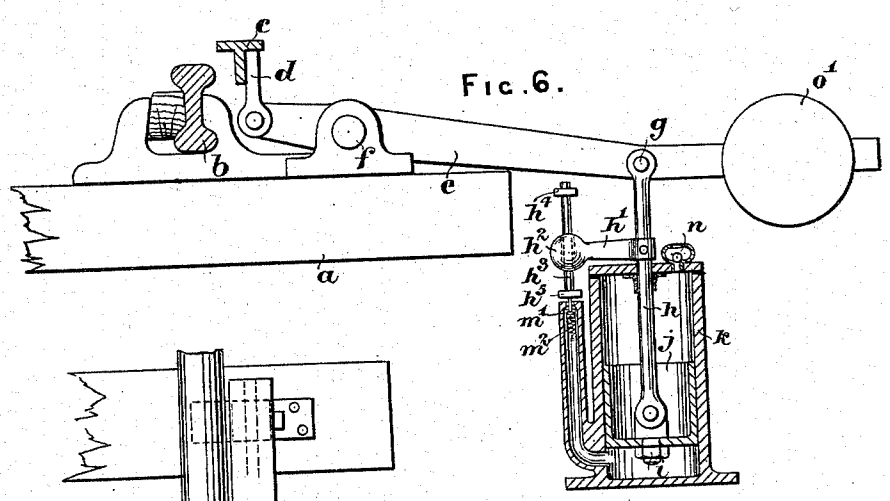
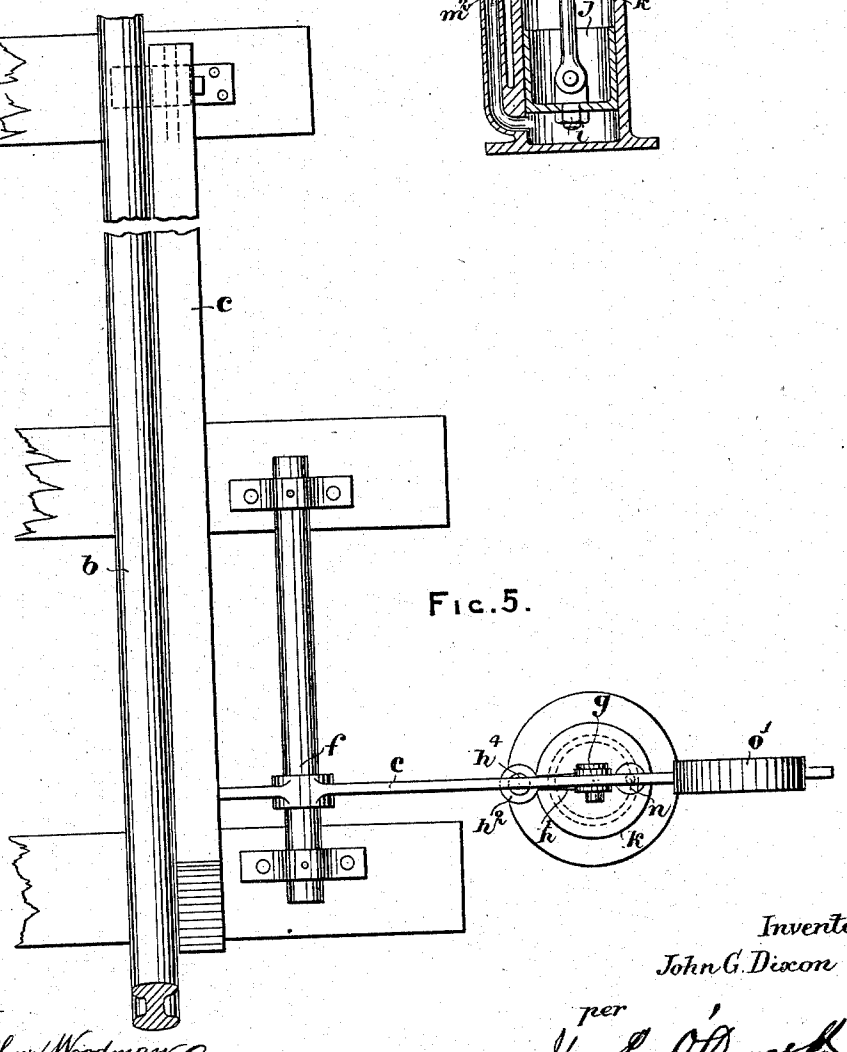



FIG. 5.

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# UNITED STATES PATENT OFFICE.

JOHN GEORGE DIXON, OF BIRKBY, ENGLAND.

## TREADLE FOR USE IN RAILWAY SIGNALING.

SPECIFICATION forming part of Letters Patent No. 527,481, dated October 16, 1894.

Application filed February 20, 1894. Serial No. 500,890. (No model.) Patented in England December 13, 1893, No. 23,945.

*To all whom it may concern:*

Be it known that I, JOHN GEORGE DIXON, a subject of the Queen of Great Britain and Ireland, residing at 98 Norman Road, Birkby, in the county of York, England, have invented certain new and useful Improvements in Treadles for Use in Railway Signaling, (for which I have applied for a patent in Great Britain, No. 23,945, dated December 13, 1893,) of which the following is a specification.

My invention relates to an improved form of treadle for actuating an electrical contact for any purpose in railway signaling where it is required that the passage of a train or vehicle shall release, lock or actuate block instruments, signals, bells, indicators or any device employed for the purpose of railway signaling.

My invention consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In order that my invention may be better understood and more readily carried into effect I will describe the drawings hereunto annexed.

Figure 1 is a plan of the treadle showing one form of cylinder or dash pot. Fig. 2 is a section of the dash pot shown in plan in Fig. 1 arranged with a prolonged "making contact." Fig. 3 is a section of the lower portion of the same dash pot as illustrated in Figs. 1 and 2, showing an alternative method of prolonged "making contact." Fig. 4 illustrates a section of the lower portion of the cylinder or dash pot illustrated in Figs. 1 and 2 but arranged with an instantaneous "breaking contact." Fig. 5 is a plan on top of my alternative dash pot, and Fig. 6 is a section of the treadle and the alternative dash pot, illustrating the transverse lever.

The same letters refer to the same parts or substitutes therefor in the several figures of the drawings.

With reference to Figs. 1 and 2, *a* is a supporting sleeper which carries the rail *b*. *c* is a treadle bar which may be of any convenient length, say seventeen feet, and it is pivoted at one of its ends below rail level, and is attached at or near its other end to the transverse lever *e* by means of the connection *d*. The transverse lever *e* is pivoted at *f*. The other end of the transverse lever *e* is connected at *g* to the piston rod *h*. The piston *j* is connected to the piston rod by the nut *i*. *k* is the cylinder which is open at the top but is closed and air tight at the bottom *l*. *m* is an air valve of known construction and may be for instance a leather flap valve. This valve is so constructed that its action allows the piston to travel freely and unopposed on its upward stroke but its downward motion is retarded by means of the valve *m* which closing prevents the free passage of air to the upper or open end of the cylinder. *o* is an outside protecting shell or case which is connected to the rod *h* at *p*. The said shell or case *o* while acting as a cover also acts as a counter balance weight. The piston *j* and cylinder *k* are constructed of any convenient conducting material. In a suitable position in the cylinder *k* is fixed an insulator *q* which consists of a plug of ebonite, porcelain or any insulating material. A hole is first bored in *k* to receive *q*, and inserted at or near the center of the insulator *q* is a conducting stop, pin or spring *r*. To *r* is attached a wire *s*. In electrical contact with *k* is a wire *t* which is fixed to *k* by any convenient means. The position of the conducting piece *r* is such that when the piston *j* is at the bottom of its stroke, that is, its normal position, the contact piece *r* is not in contact with the piston *j* but is situated at such a height that at the commencement of the upward movement of the piston *j* electrical contact would be completed between *j* and *r*, and the circuit included in the wires *s* and *t* will be completed and will remain completed as long as the piston *j* is traveling upward and until it has returned to its normal position when the circuit becomes broken. It will thus be seen that as the downward travel of the piston is retarded by means of the valve *m* so the contact that *r* makes with *j* (*j* being already in electrical communication with *k*) will be prolonged correspondingly.

Fig. 3 shows a modified arrangement of prolonged "making" contact. In this case the electrical circuit is completed by means of a spring *u* which is fixed to an insulating piece *v* the latter being attached to *k*. When the piston *j* rises the inner side of the piston *j* comes in contact with the spring *u* and remains in contact with *u* until *j* has returned

to the normal position when the circuit between $s$ and $t$ will be broken.

Fig. 4 shows a form of instantaneous "breaking contact," in which $w$ is an insulating piece fixed to $l$. $x$ is a conducting contact fixed to $h$, or the bottom nut $i$ as the case may be may act in lieu thereof. $x$ completes the circuit between the contact springs or brushes $y$, $z$. These springs $y$ and $z$ are attached to the insulating piece $w$. In the normal position the piston $j$ is at the bottom of its cylinder $k$, then $x$ is in electrical contact with $y$ and $z$ and consequently the circuit between $s$ and $t$ is completed. When the treadle bar $c$ is depressed by the tread of the front wheel of a passing engine the transverse bar $e$ is tilted so that the piston rod $h$ and piston $j$ are moved upward, the contact of $x$ with $y$ and $z$ is instantaneously broken and so remains until the return of the piston to the normal piston and $x$ makes contact with $y$ and $z$. In this figure the circuit is normally made.

Fig. 5 is a plan showing the treadle, rail, transverse lever and alternative dash pot.

Fig. 6 is a section on line Y′—Z′ of Fig. 5.

In Figs. 5 and 6, the result is practically the same as that described with reference to Figs. 1 to 4 inclusive, the only difference being that a more prolonged contact is obtained in Fig. 6 and at a certain specified distance on the return stroke of the piston the air is admitted rapidly into the cylinder and the treadle returns normal immediately. In these figures, $a$, $b$, $c$, $d$, $e$, $f$ and $g$ are corresponding parts to those described in Figs. 1 to 4. $h$ is the piston rod; $k$, the cylinder; $j$, the piston. $k'$ is a pipe from the cylinder terminating in a spring valve $m'$. $m^2$ is the spring. Projecting from $h$ is a tappet $h'$ having a ball or other shaped end $h^2$ through which a slot is made. Operating in this slot is a rod $h^3$ with adjusting screws $h^4$ and $h^5$ at the ends. A ball valve $n$ is provided at the upper side of the cylinder. The cylinder is inclosed.

The action is as follows:—Normally the rod $h^3$ with its lower adjusting screw $h^5$ is resting upon the upper part of the valve $m'$ so that the valve is normally open. On the operation of the treadle $c$ the transverse bar $e$ is raised at the other side of the fulcrum. The piston rod $h$ and piston $j$ are moved upward and air is forced out of the valve $n$ and drawn in at the valve $m'$. When the transverse lever and piston have been raised to a specified distance the termination $h^2$ of the tappet $h'$ comes in contact with the adjusting screw $h^4$ and raises the lower adjusting screw $h^5$ free of the valve $m'$ which closes by the spring $m^2$ being allowed to expand. On the return stroke of the piston, the air not being allowed to escape freely from either of the valves, the return movement is very much prolonged, the escape being through leakage from the bottom to the top side of the piston. When the piston has moved down to a pre-determined distance the rod $h^3$ is free to fall so that the nut $h^5$ presses on the top of the valve $m'$, when air is freely admitted and the piston completes its downward motion rapidly.

Although in this figure no electrical contacts are described, it is obvious that those described in Figs. 1 to 4 inclusive are applicable in every form to the dash pot shown in Fig. 6.

Other arrangements of valves might be made. The chief point, however, of my invention consists in arranging a dash pot substantially as described for the purposes of making electrical contacts used in railway signaling.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

The combination, with a depressible treadle, and the counterbalanced and pivoted lever $e$, of the dash pot cylinder $k$, the piston sliding therein, the rod $h$ operatively connecting the said lever and piston, the insulated contact piece normally above the piston in the cylinder, and the two conductors connected respectively to the said contact piece and cylinder, the circuit being completed by the ascending piston, substantially as set forth.

JOHN GEORGE DIXON.

Witnesses:
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HAROLD H. RAMSDEN.