

No. 773,566.

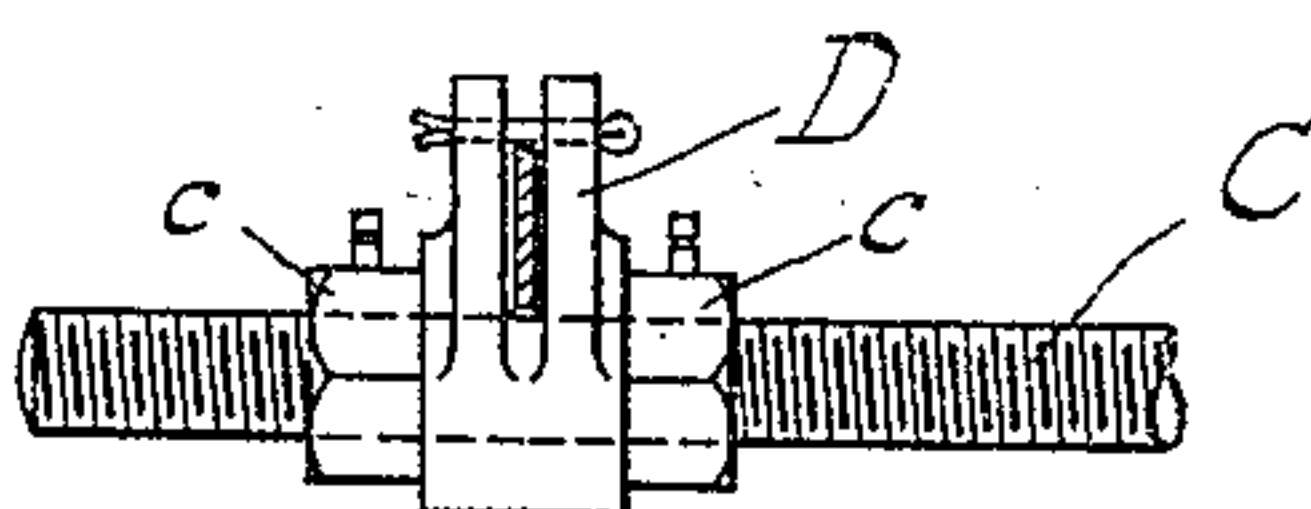
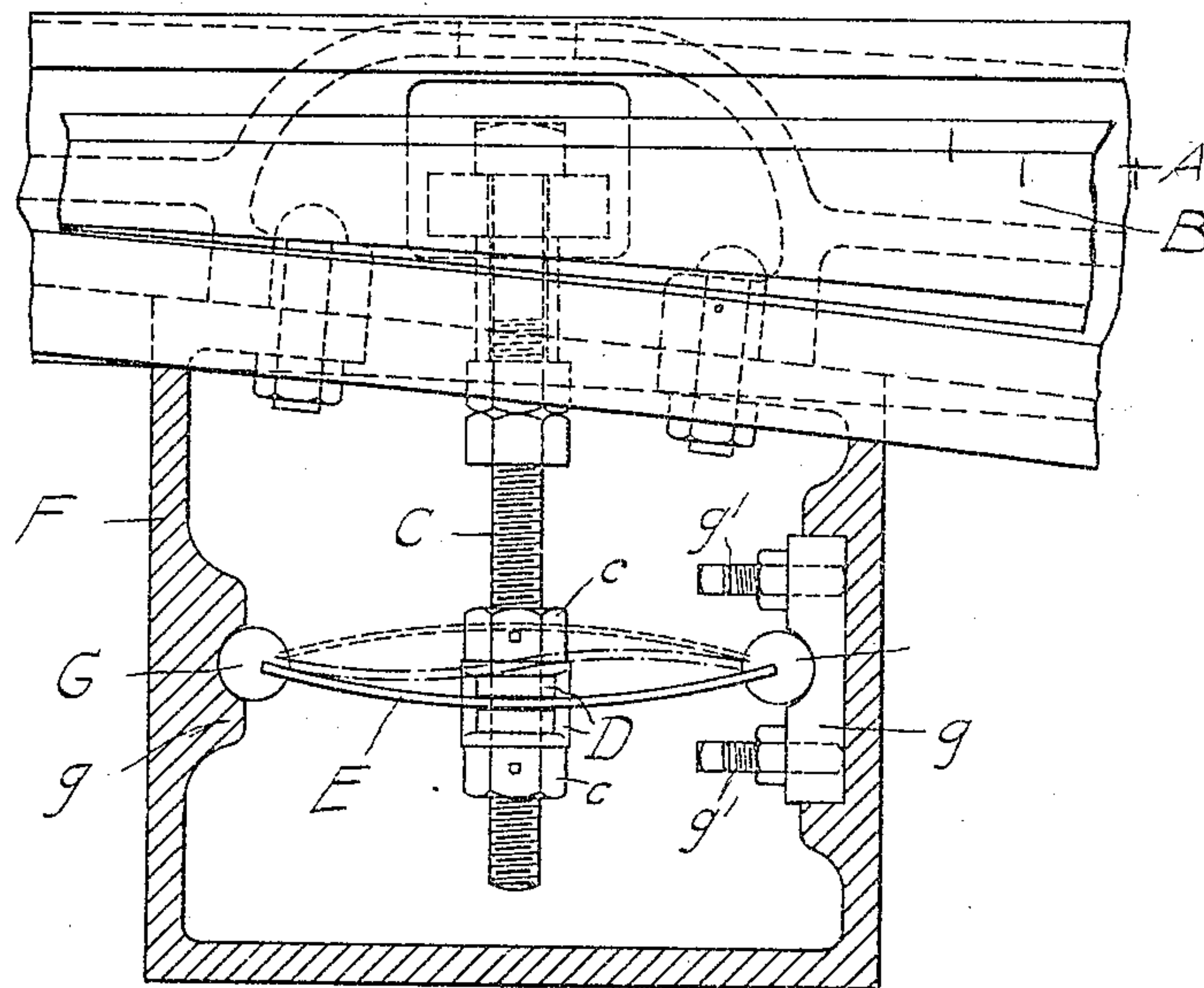
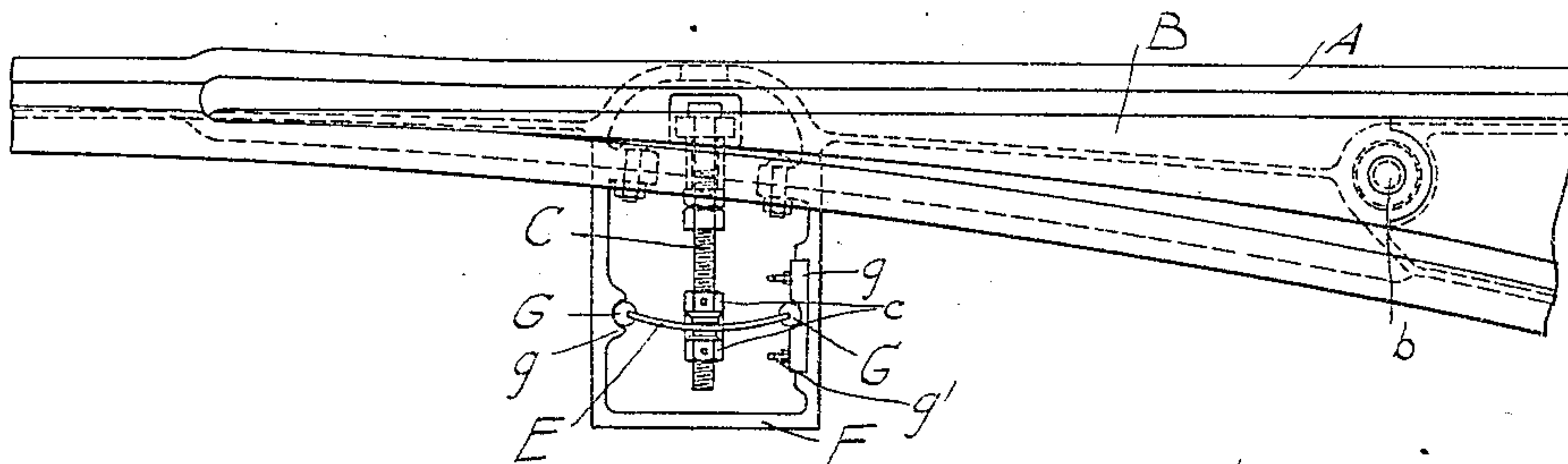
PATENTED NOV. 1, 1904.

J. HART.

### SWITCH OPERATING AND LOCKING DEVICE.

APPLICATION FILED DEC. 26, 1903.

NO MODEL.



**WITNESSES:**

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# UNITED STATES PATENT OFFICE.

JAMES HART, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO THE LORAIN STEEL COMPANY, A CORPORATION OF PENNSYLVANIA.

## SWITCH OPERATING AND LOCKING DEVICE.

SPECIFICATION forming part of Letters Patent No. 773,566, dated November 1, 1904.

Application filed December 26, 1903. Serial No. 186,628. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HART, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Switch Operating and Locking Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to certain new and useful improvements in switch operating and locking devices, and is designed to provide means of simple and efficient character by means of which a movable switch point or tongue may be locked in either one of its two positions and which will also act to assist in throwing the tongue or point from one position to the other, also whereby the switch may be readily converted into a spring-switch, with right or left hand throw, as may be desired.

With these objects in view my invention consists in the combination of a movable switch tongue or point, of a spring connected thereto and so arranged that it acts to resist movement of the tongue up to a certain point, beyond which its action becomes reversed and it is made to assist the further movement of the tongue; also, in means in connection with said spring for adjusting its tension; also, in other means whereby said tongue may be set to act wholly in either one of two directions, and thereby give the tongue the action of an ordinary spring-switch; and, finally, the invention consists in the novel construction and combination of parts, all substantially as herein described, and pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view showing my invention applied, the cover of the spring-box being removed; Fig. 2, a view of a portion of the same on a larger scale, and Fig. 3 a detail view.

The letter A designates the body portion of the switch structure, and B the movable tongue or point, pivoted at *b*. Connected to the tongue is a laterally-projecting threaded rod C, on which is adjustably secured by the nuts *c* an upwardly-projecting slotted or forked arm D.

E designates a piece of spring material placed transversely in the spring-box F and engaged at its central portion by the arm D. To reduce friction and facilitate the action of this spring, its ends are inserted (preferably loosely) in slots in rollers G, which are provided with bearings *g* on the lateral walls of the box F. To provide means for adjusting the tension of this spring, one of these bearings *g* may be formed by a separate piece or block, as shown, made adjustable by set-screws *g'*.

The spring E is so adjusted that it will have its greatest tension when the tongue B is at the central point of its throw, the nuts *c* being properly adjusted, so that the spring will be in approximately the position indicated by the intermediate dotted lines in Fig. 2 when the tongue is at such central point. It will therefore be clear that the resistance of the spring will act as a lock to hold the tongue in both of its full-thrown positions, but that as soon as the tongue is forced beyond its middle position the spring will act strongly thereon to complete its throw. The lock thus formed is amply sufficient to prevent the tongue from being accidentally thrown, although it can be readily forced over by the use of the usual switch-bar.

In case it is desired to convert the switch into a spring-switch with right or left hand throw the nuts *c* can be so adjusted that the movement of the tongue will not be sufficient to carry the spring by center. Its action then becomes similar to the spring usually employed in connection with spring-switches.

For the spring I have heretofore used with good results flat pieces of crucible-steel (not too highly tempered) one foot long by an inch wide and one-eighth of an inch thick. I do not, however, limit myself to the use of such a spring, as it is evident that various kinds of springs may be employed; nor do I wish to limit myself to the details of construction and arrangement herein shown and described, as those may be varied without departing from the spirit and scope of my invention as defined in and by the appended claims.

The nature of the strains to which the spring is subjected is such as to tend to cause it to



break in time; but it will be apparent that it can be very easily and cheaply replaced in case of breakage.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a movable switch tongue or point, of a bowed spring to which said tongue or point is connected, and which is arranged to have its greatest tension when said tongue or point is at the central point of its throw.

2. The combination with a movable switch tongue or point, of a spring to which said tongue or point is connected, and means for adjusting the movement of said spring whereby such movement may be wholly to either side of its center, or equally upon both sides thereof.

3. The combination with a movable switch-tongue, of a spring-box, a spring arranged transversely of said box and under tension between the lateral walls of the same, and an arm connected to the said tongue and engaging the central portion of the spring.

4. The combination with a switch-tongue, of a spring-box, slotted rollers having bearings in said box, a transverse spring whose ends are engaged with the slots of said rollers, and a connection between the central portion of said spring and the tongue.

5. The combination with a switch-tongue,

of a spring-box provided with spring-bearings in its lateral walls, one of said bearings being adjustable, a transverse spring under tension between the said bearings, and an arm engaging the central portion of the spring and connected to the tongue.

6. The combination with the tongue having the laterally-projecting rod and the bowed spring, of the arm adjustably secured upon the said rod and engaging the said spring.

7. The combination of the spring-box, the roller-bearings at the side walls of said box, one of said bearings being adjustable toward and away from the other one, the vertically-slotted rollers in said bearings, and the transverse spring whose ends engage the slots of said rollers.

8. The combination with a movable switch-tongue, of a bowed spring and connections between the tongue and spring, whereby the latter has its greatest tension when the tongue is at the central point of its throw, together with means for adjusting the tension of the said spring.

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

JAMES HART.

Witnesses:

LORETTO O'CONNELL,  
H. W. SMITH.