

(No Model.)

2 Sheets—Sheet 1.

P. H. SMITH.
SWITCH TONGUE OPERATING MECHANISM.

No. 541,393.

Patented June 18, 1895.

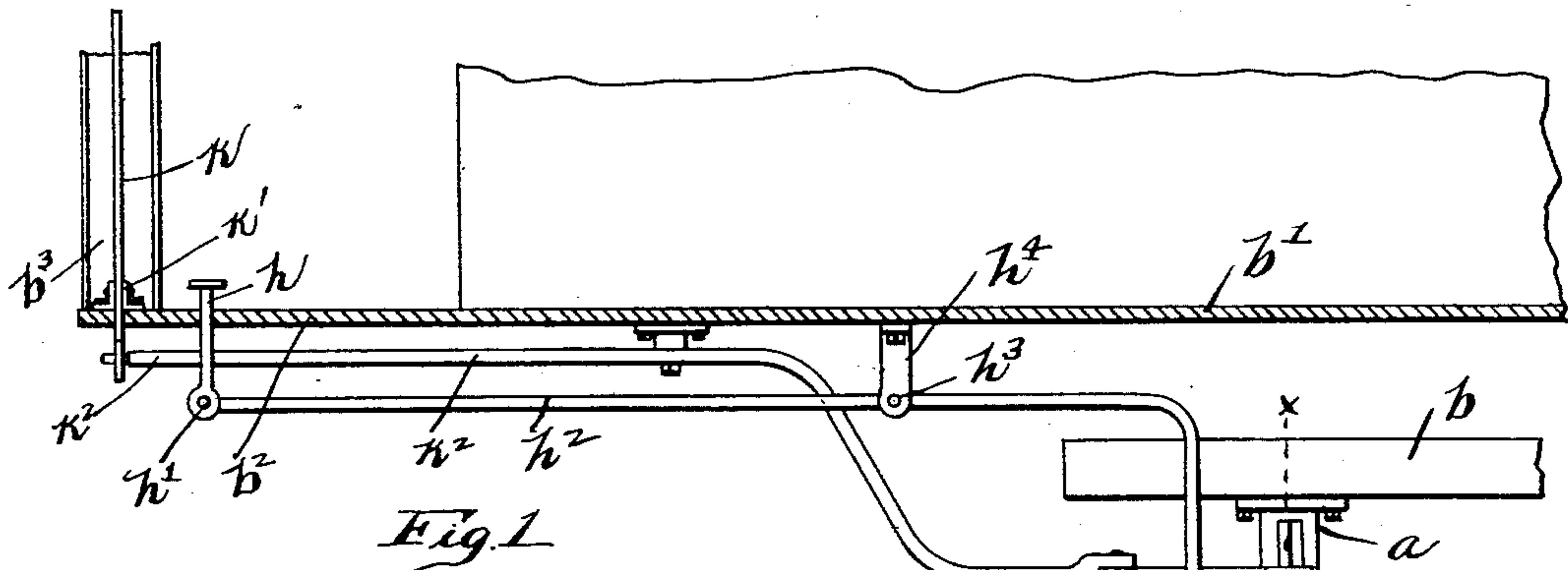
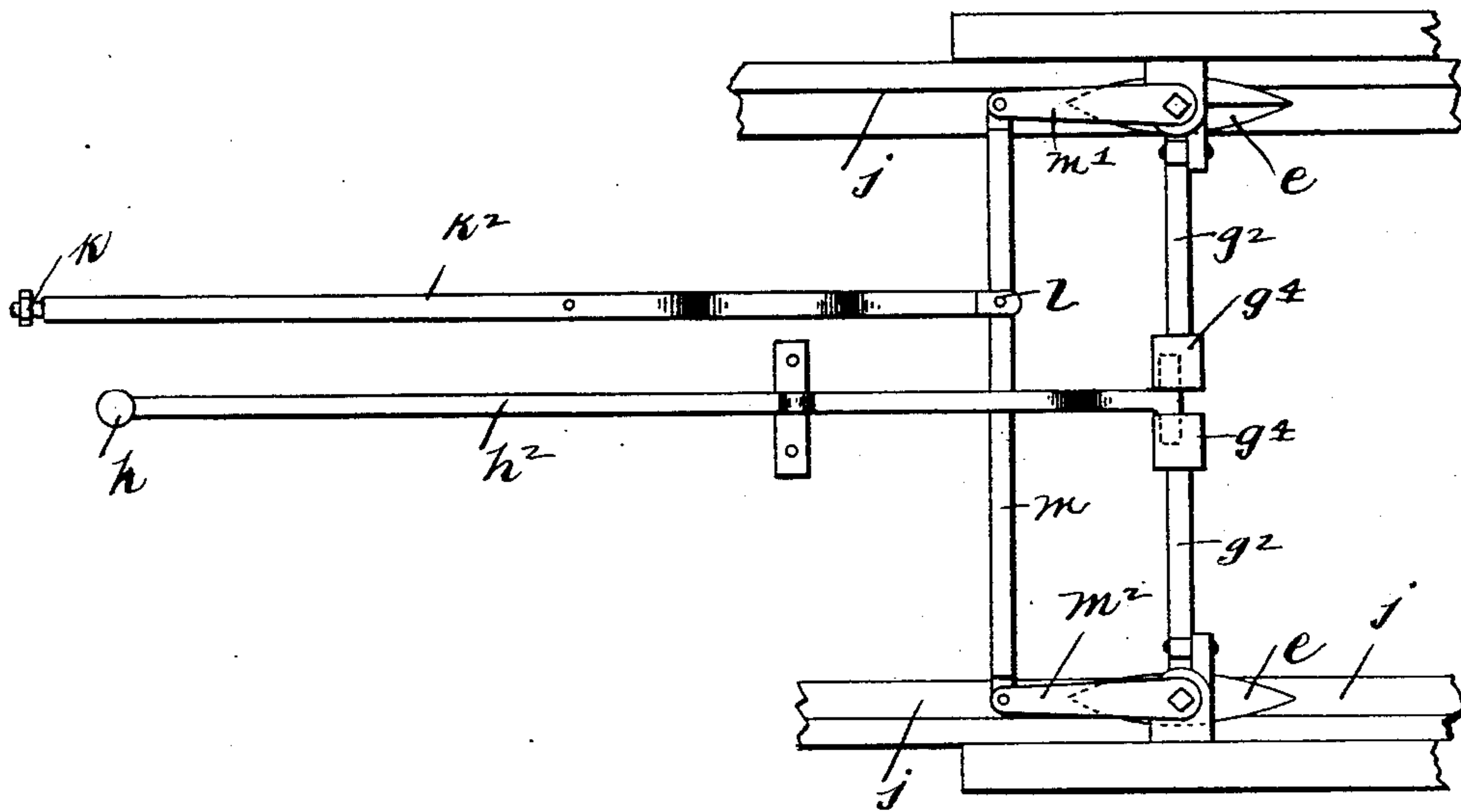


Fig. 2



Witnesses:

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Inventor.

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(No Model.)

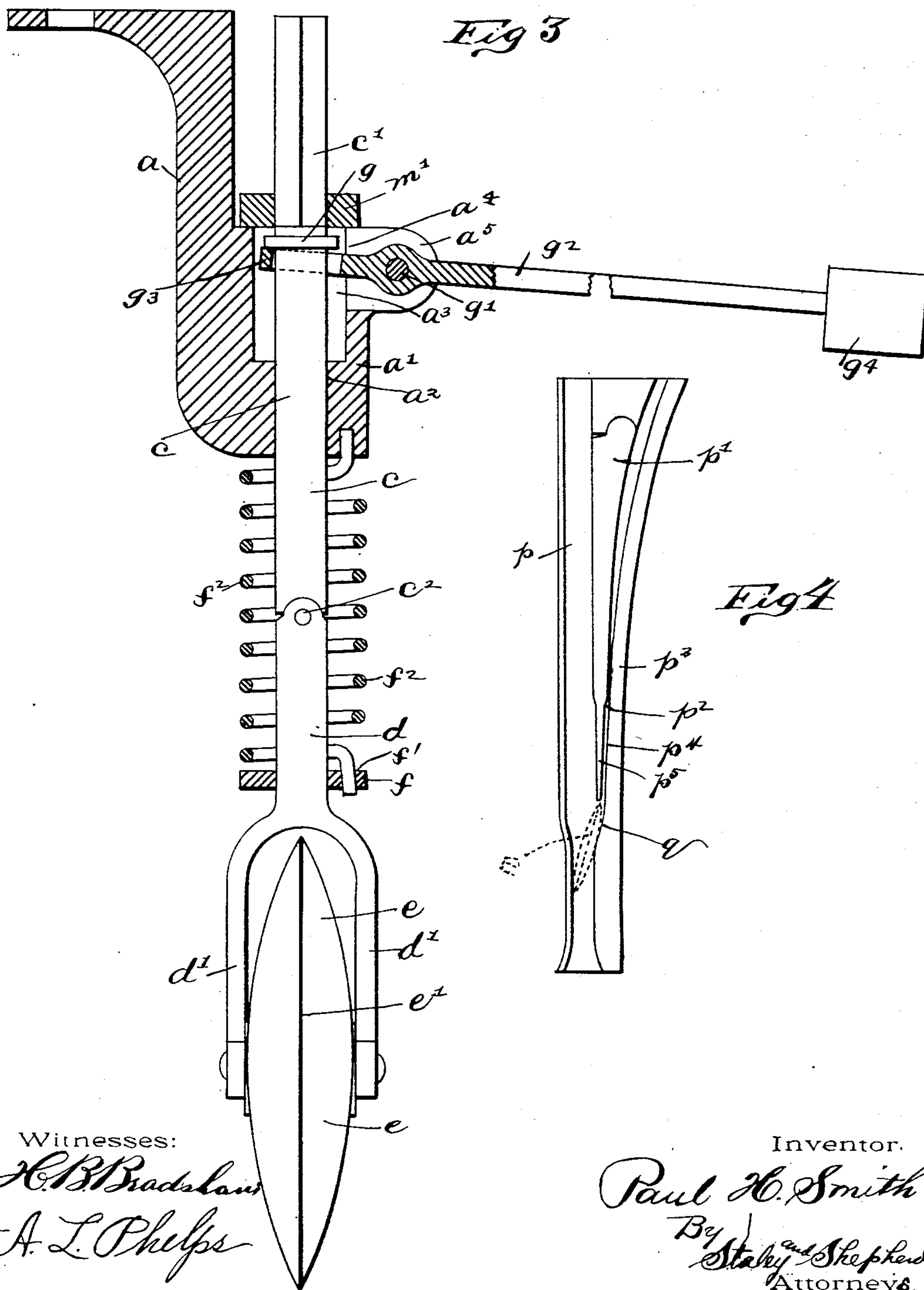
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

PAUL H. SMITH, OF COLUMBUS, OHIO.

SWITCH-TONGUE-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 541,393, dated June 18, 1895.

Application filed August 18, 1894. Serial No. 520,671. (No model.)

To all whom it may concern:

Be it known that I, PAUL H. SMITH, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Switch-Tongue-Operating Mechanisms, of which the following is a specification.

My invention relates to the improvement of railway switch operating devices and has particular relation to that class of switch operating mechanism adapted to be employed on street railways.

The objects of my invention are to provide an improved mechanism of this class of superior construction and arrangement of parts by means of which a switch tongue may be turned by the motorman or car driver without leaving the car platform and to provide improvements in details of construction which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of the forward portion of a car, showing my switch-tongue-operating device thereon. Fig. 2 is a plan view of said mechanism, the same being taken from below the bottom of a car. Fig. 3 is an enlarged view, partly in section and partly in elevation, on line $x x$ of Fig. 1; and Fig. 4 is a plan view of a switch-plate and tongue thereon, showing my improved construction of the same.

Similar letters refer to similar parts throughout the several views.

In carrying out my invention I employ two oppositely located depending hangers or brackets a the upper end portions of which are secured to the lower framework b of a car b' . In forming each of the hangers a , I provide the lower portion of the same with an inwardly projecting shoulder or thickened portion a' through which is formed vertically an opening a^2 , the upper portion of the latter being enlarged as indicated at a^3 . Through this hanger opening a^2 is made to pass loosely a vertical rod or shaft c , the upper end of the latter which projects above the shoulder portion a' being squared or angular in cross section as indicated at c' . The lower end of this rod section c is jointedly connected as indicated at c^2 with the upper end of a down-

ward extending rod section d , the lower end portion of the latter being bifurcated. Between the arms d' formed by the bifurcation of the rod or shaft d is journaled a wheel or disk e . This disk or wheel is preferably of the double convex form shown, although the same may be of any desired form which will present a comparatively sharp central ridge or peripheral edge as indicated at e' . At a point above the rod arms d' , I affix to the rod d a nut or lug f to which is secured as indicated at f' the lower end of a coil spring f^2 , the latter being loosely coiled, as shown, to the rod d and lower portion of the shaft c and having its upper end rigidly connected, as shown, with the lower portion of the hanger a .

On that portion of the shaft c which is within the enlargement a^3 of the opening a^2 I affix a flange g . In the upper end portion of the shoulder portion a' of each of the hangers, I provide an inner side opening a^4 which communicates with the enlargement a^3 of the opening a^2 and on opposite sides of said opening a^4 I provide outwardly projecting lugs a^5 . Between these lugs a^5 is fulcrumed as indicated at g' a weight arm g^2 one end of the latter extending within the opening a^4 and enlargement a^3 of the opening a^2 and terminating in a slotted end portion g^3 through which the shaft c loosely passes, said slotted end portion being adapted to engage with the under side of the shaft flange g as shown in Fig. 3 of the drawings. The outwardly extending weight arm g^2 carries on its outer end a suitable weight g^4 .

In the platform b^2 of the car I provide upon the inner side of the dash-board b^3 a suitable vertical treadle pin h , the latter passing loosely through said car platform and having fulcrumed to its lower end at a point h' a rearward extending lever h^2 . This lever arm at a point h^3 in its rear half is fulcrumed to a suitable hanger h^4 depending from the under side of the car. The rear end portion of the lever is bent and terminates as indicated at h^5 in a rearwardly bent portion which is provided with a substantially T-shaped head i , the latter being indicated in dotted lines in Fig. 2 of the drawings. As shown in the drawings, the arms of this head project respectively beneath the weights g^4 .

k represents a hand lever which passes

downward through the front portion of the car platform and which is fulcrumed to the latter at k' . The lower portion of this lever is jointly connected with the forward end of a rearward extending lever arm k^2 and the rear portion of the lever arm is pivotally connected as indicated at l with a transverse bar m . With each end of this bar m is jointly connected a rearward extending arm, said arms being indicated respectively at m' and m^2 . The rear end of each of the arms m' and m^2 is, as shown in the drawings, provided with an angular or squared opening which is adapted to fit over the squared upper end portion of the shaft c' . The central portion of the lever arm k^2 is provided with a sliding bearing or rests loosely within the keeper o which depends from the car platform.

As shown in the drawings, the tendency of the weights g^4 is through the engagement of the weight arms g^2 and shaft flanges g to keep the shaft c elevated and thereby retain the spring f^2 under compression. This elevation of the shaft c results in the wheel e being normally supported at a desirable distance above the track rail j and said springs are so connected with the hanger and flange portion f as to normally retain the wheel edge in alignment with the track rail.

In Fig. 4 of the drawings I have shown a plan view of the usual switch plate which is indicated at p . On this switch plate is pivoted in the usual manner a switch tongue p' . The forward or smaller end of this tongue is, as shown, cut away so as to form a slight rounded or beveled shoulder portion p^2 which is adapted to come into contact with the usual side flange or rail continuation p^3 of the plate, thus leaving when such contact takes place a small space between the pointed end of the tongue p^5 and said plate flange. At a point in front of said tongue I also cut away slightly the inner face of the flange p^3 as indicated at q .

Assuming that the car is running upon a main track and that it is desired to direct the car on to a side or branch track, the motorman first elevates the weights g^4 by pressing with his foot upon the treadle pin h . This raising of the weights will immediately allow the springs f to act with the result that the wheels e are dropped down directly on to the track center flange. Reaching the switch point the motorman may by moving the lever k in the proper direction, so rotate the shaft c as to throw the wheels e to the angle shown in dotted lines in Fig. 4 of the drawings, thus causing one of said wheels e to be directed into the cut q and between the tongue p^5 and tongue plate flange p^3 and resulting when the wheel e passes the shoulder p^2 , in the tongue being thrown in the proper direction to direct the car wheels upon the branch track. In thus turning the wheels e , it will be seen that a partial twist will have been imparted to the

springs f^2 and that having passed the switch point, said springs and the wheels e will resume their normal positions as the motorman releases the grasp on the hand lever k . It is also evident that the motorman may at the same time lift his foot from the treadle pin with the result that the weights g^4 will drop to their normal positions. Indicated in the drawings.

Owing to the jointed connection of the shaft sections c and d , it will be seen that the section d will be capable of such lateral movement as it may be called upon to perform during the operation above described.

Owing to the fact that I employ two of the wheels e with a similar operating mechanism for each, it is evident that a switch may be thrown on either side of the track and that a car may thus be made to run upon a main track and any number of side or switch tracks connected therewith in either direction.

It will be observed that the construction of my device is exceedingly simple and that the switch tongue throwing wheel being adapted to be rotated when brought into contact with the track rail will obviate any tendency toward the same causing accidents by coming into contact with a projection of any character. It will also be seen that the parts of my device are few and that their arrangement and construction are such as to prevent any tendency toward their readily getting out of order or becoming inoperative and that the device may be connected with a car with a comparatively slight expense.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a switch tongue operating mechanism the combination with a car frame, a hanger depending therefrom, a shaft journaled in said hanger said shaft consisting of two jointed sections c and d , a tongue operating wheel journaled in said lower section and a coil spring surrounding said jointed sections, the ends of said spring being connected respectively with said hanger and lower section and means whereby said jointed shaft is normally elevated and the spring compressed, substantially as and for the purpose specified.

2. In a switch tongue operating mechanism the combination with the car frame and oppositely located hangers a depending therefrom, of vertical shafts journaled loosely in said hangers, wheels e journaled in the lower ends of said shafts, springs surrounding said shafts, their upper ends engaged with said hangers and their lower ends with the shafts, weight carrying arms g^2 fulcrumed to said hangers and engaging with projections on the shafts and a lifting lever fulcrumed beneath the car, having a foot treadle projecting through the car platform and having its rear end adapted to engage with the under sides of said weights g^4 and a lever connection be-

tween the upper portion of the shaft *c* and a hand lever on the car platform, substantially as and for the purpose specified.

5 3. In a railway switch-operating mechanism, the combination of a switch plate and a tongue pivoted thereon, said tongue having a shoulder portion *p*² on its side and the switch plate having a recess in its flange in advance

of the tongue point, whereby the tongue may be operated by a wheel, or equivalent device, 10 depending from the car, substantially as specified.

PAUL H. SMITH.

In presence of—

C. C. SHEPHERD,
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