

(No Model.)

3 Sheets—Sheet 1.

J. R. HICKS.
CAR BRAKE.

No. 414,537.

Patented Nov. 5, 1889.

Fig. 1.

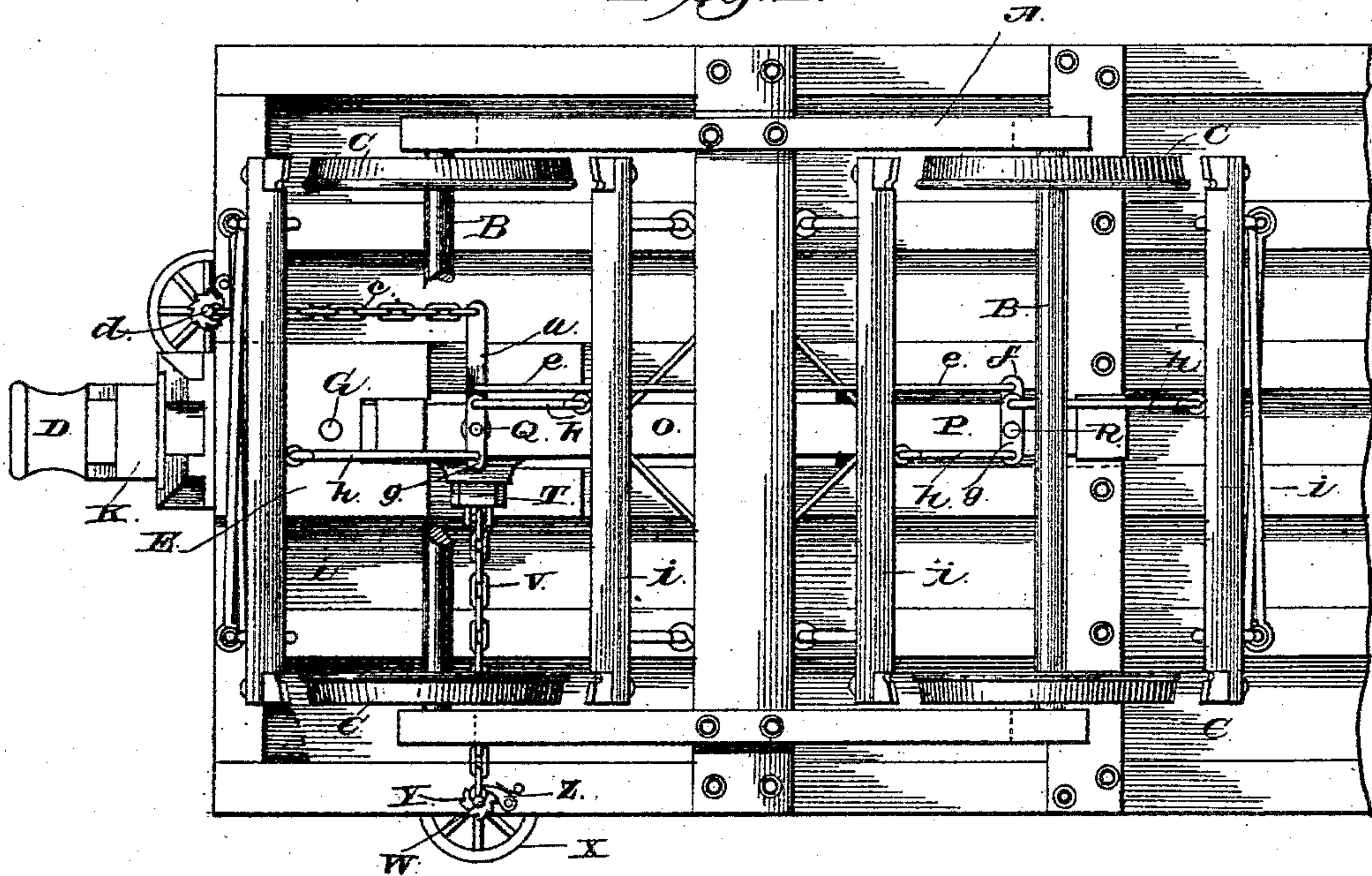
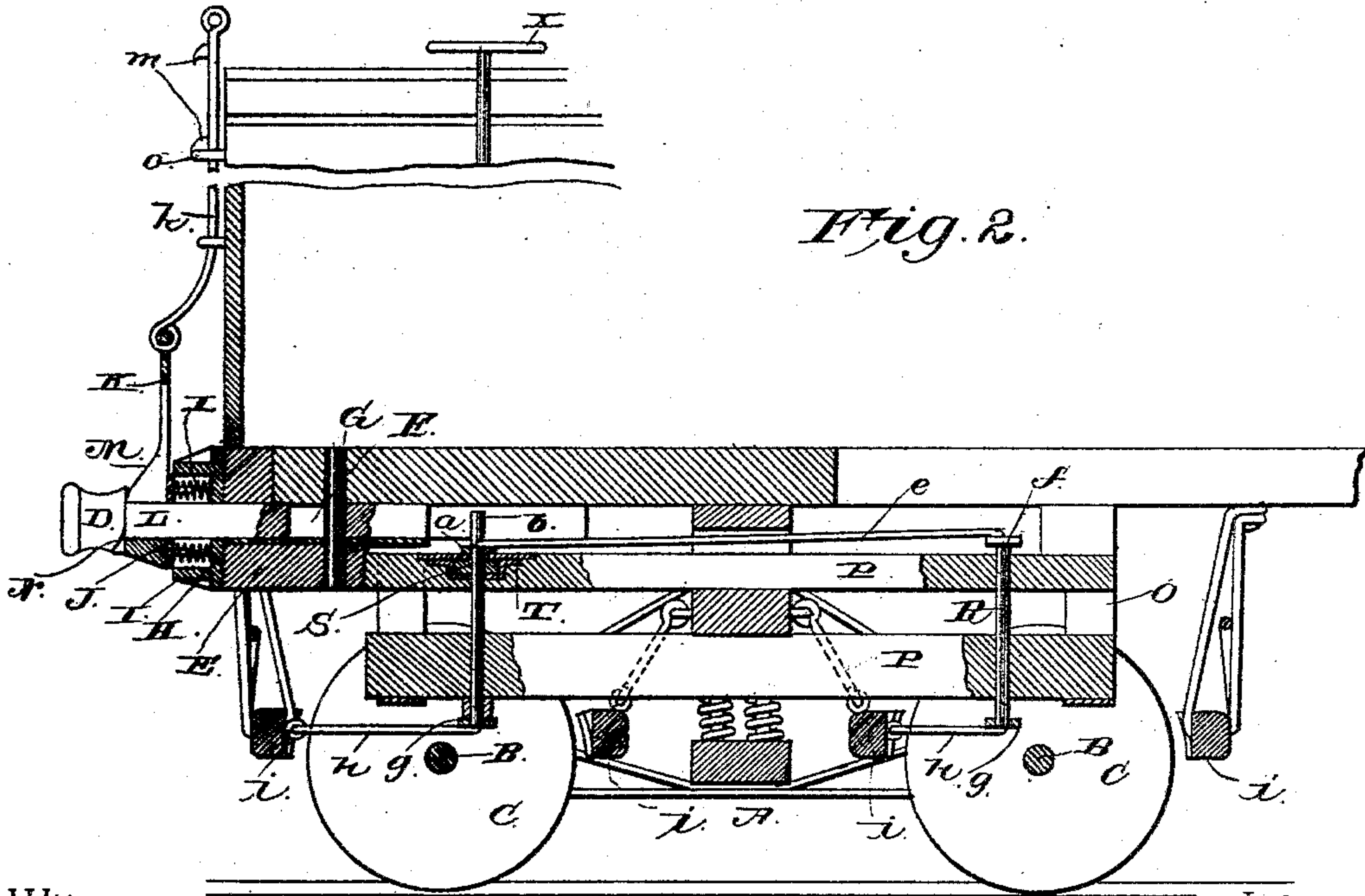


Fig. 2.



Witnesses

Inventor

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Fig. 3.

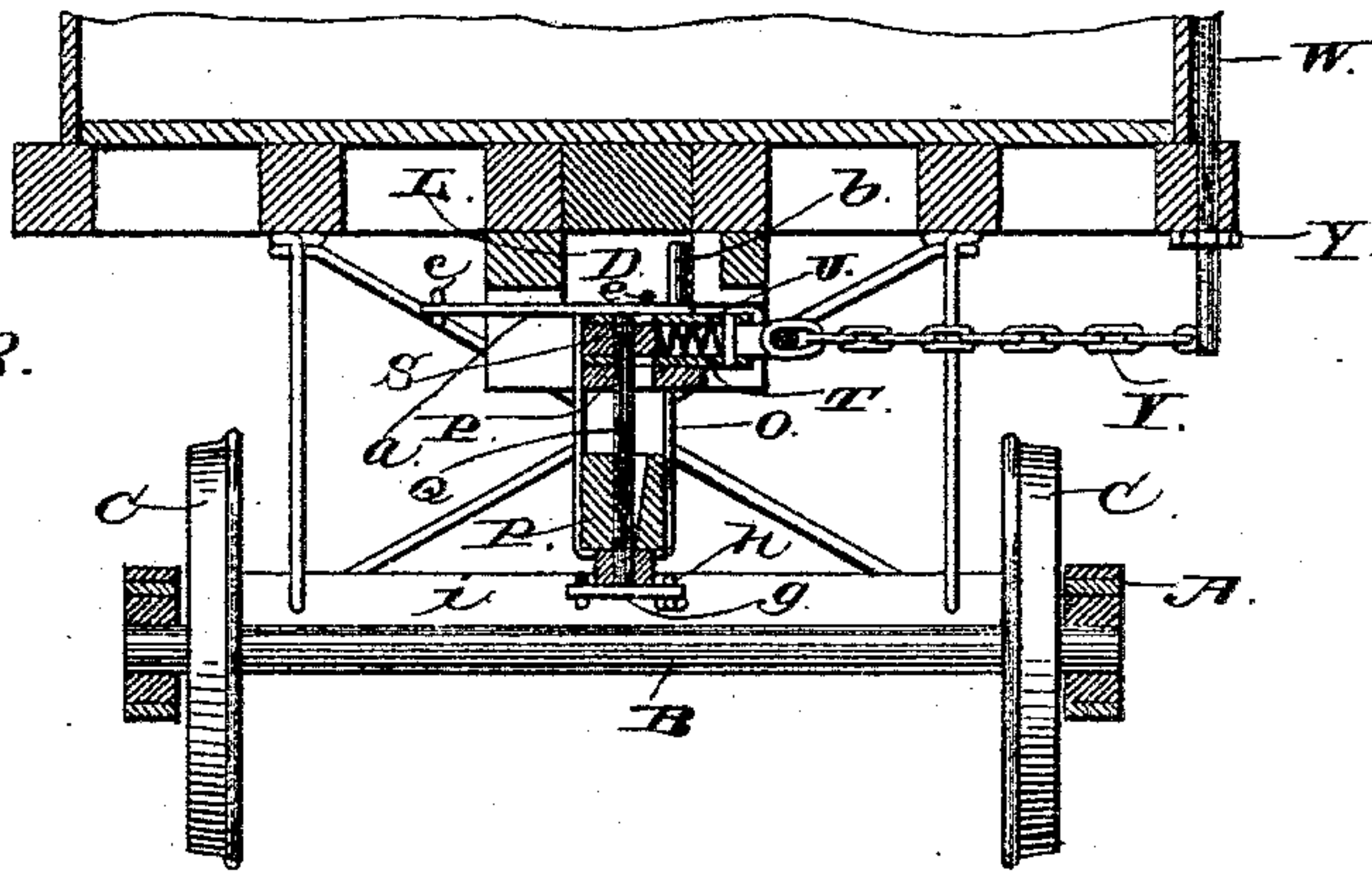


Fig. 4.

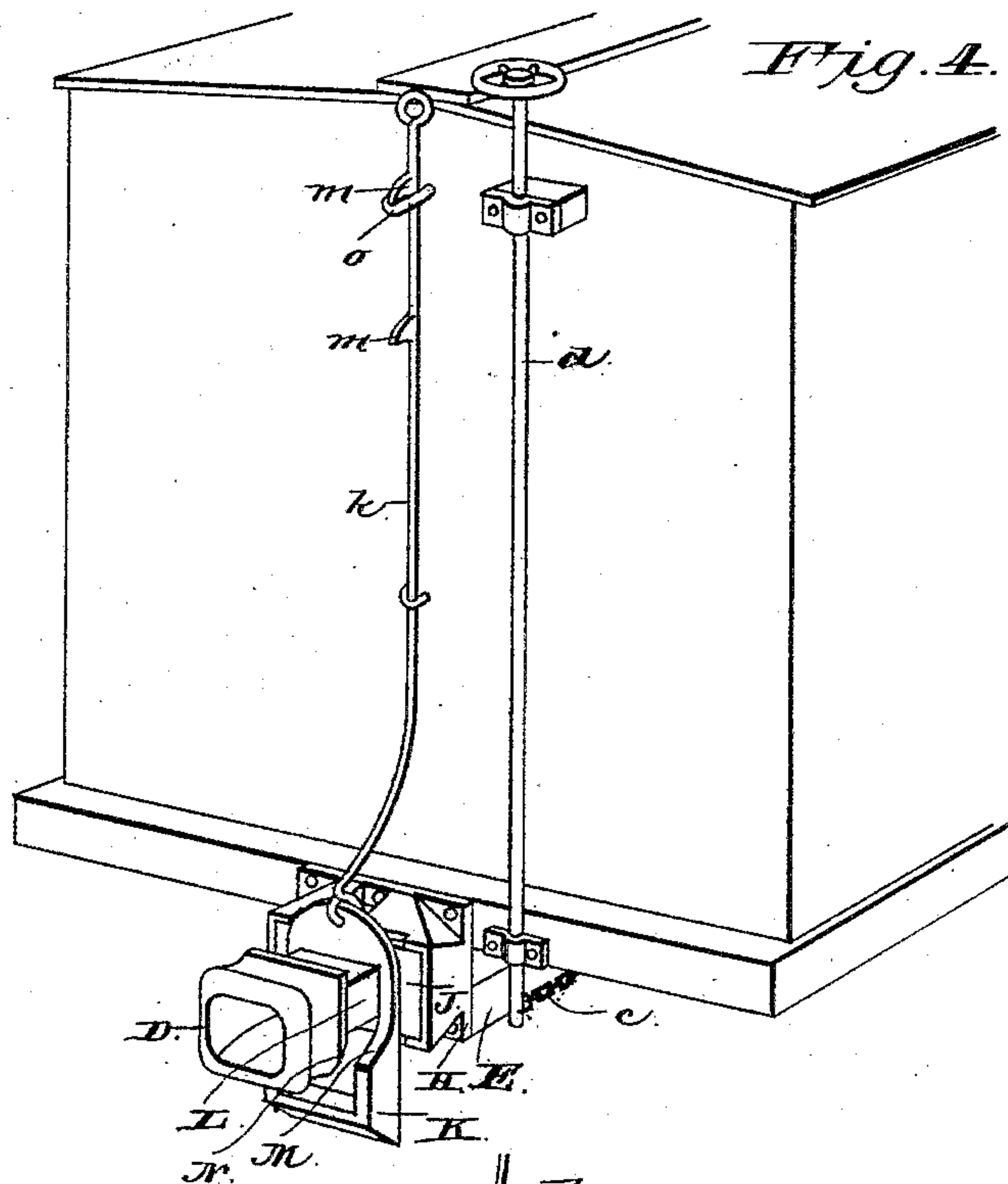
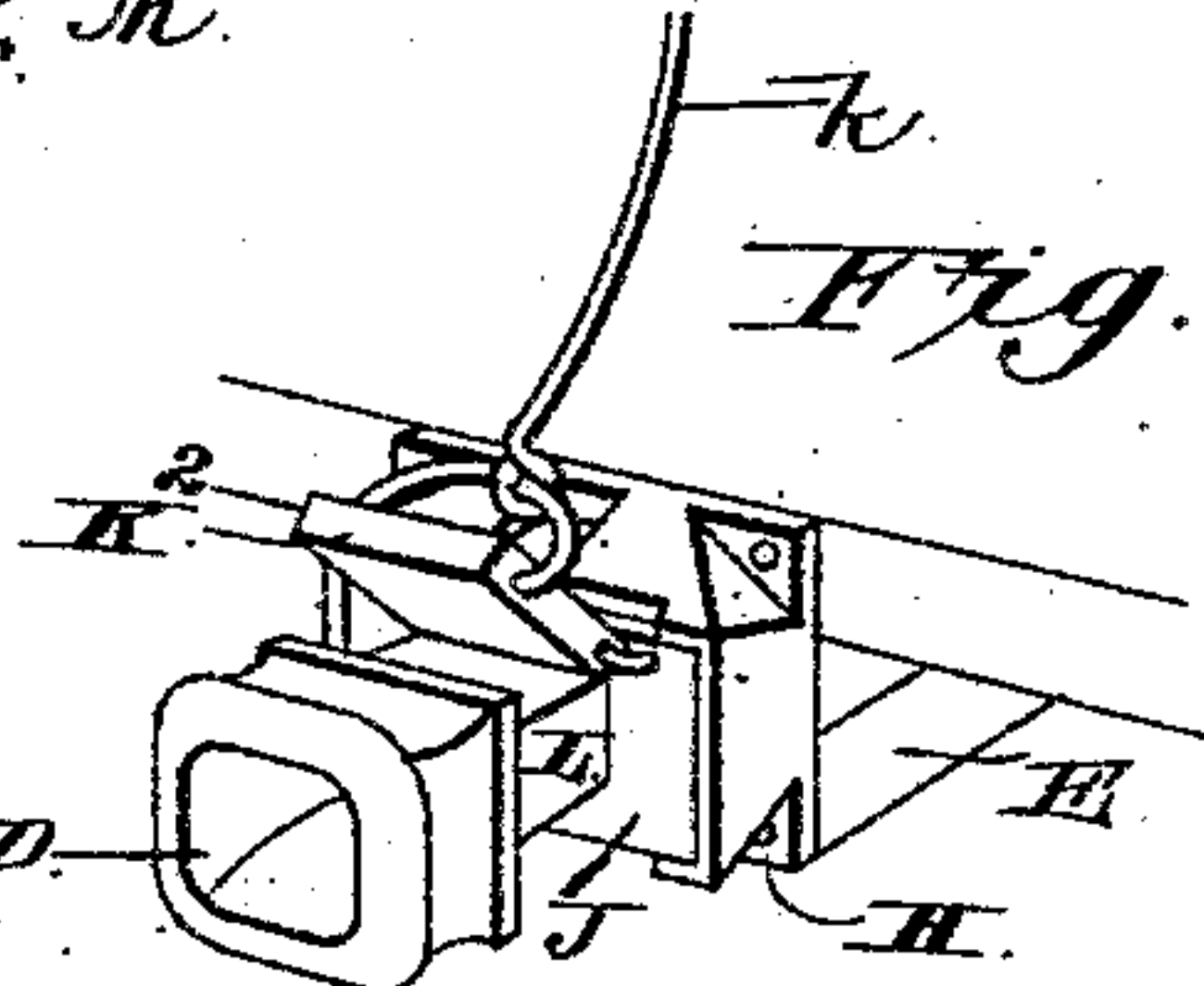


Fig. 6.



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Fig. 5.

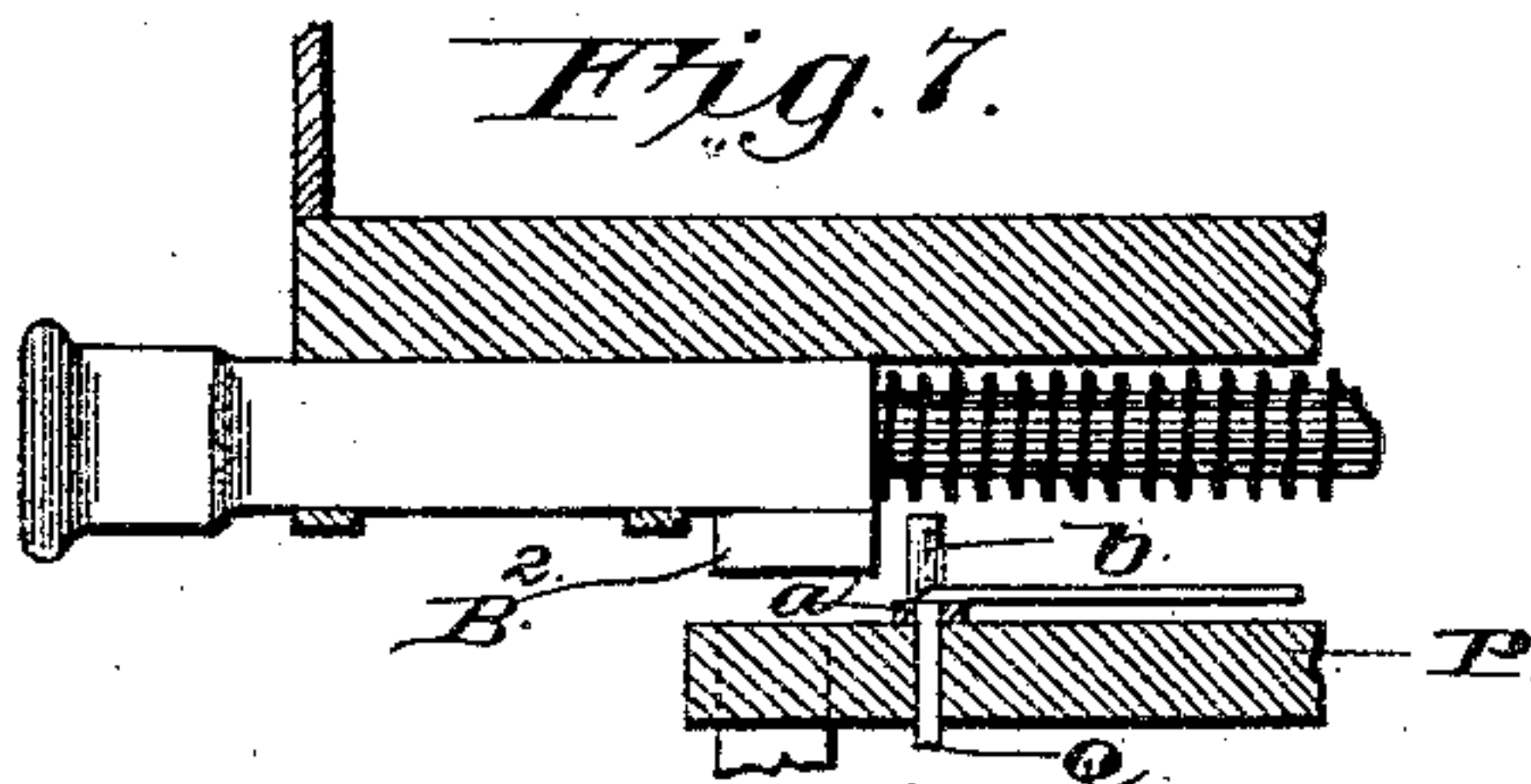
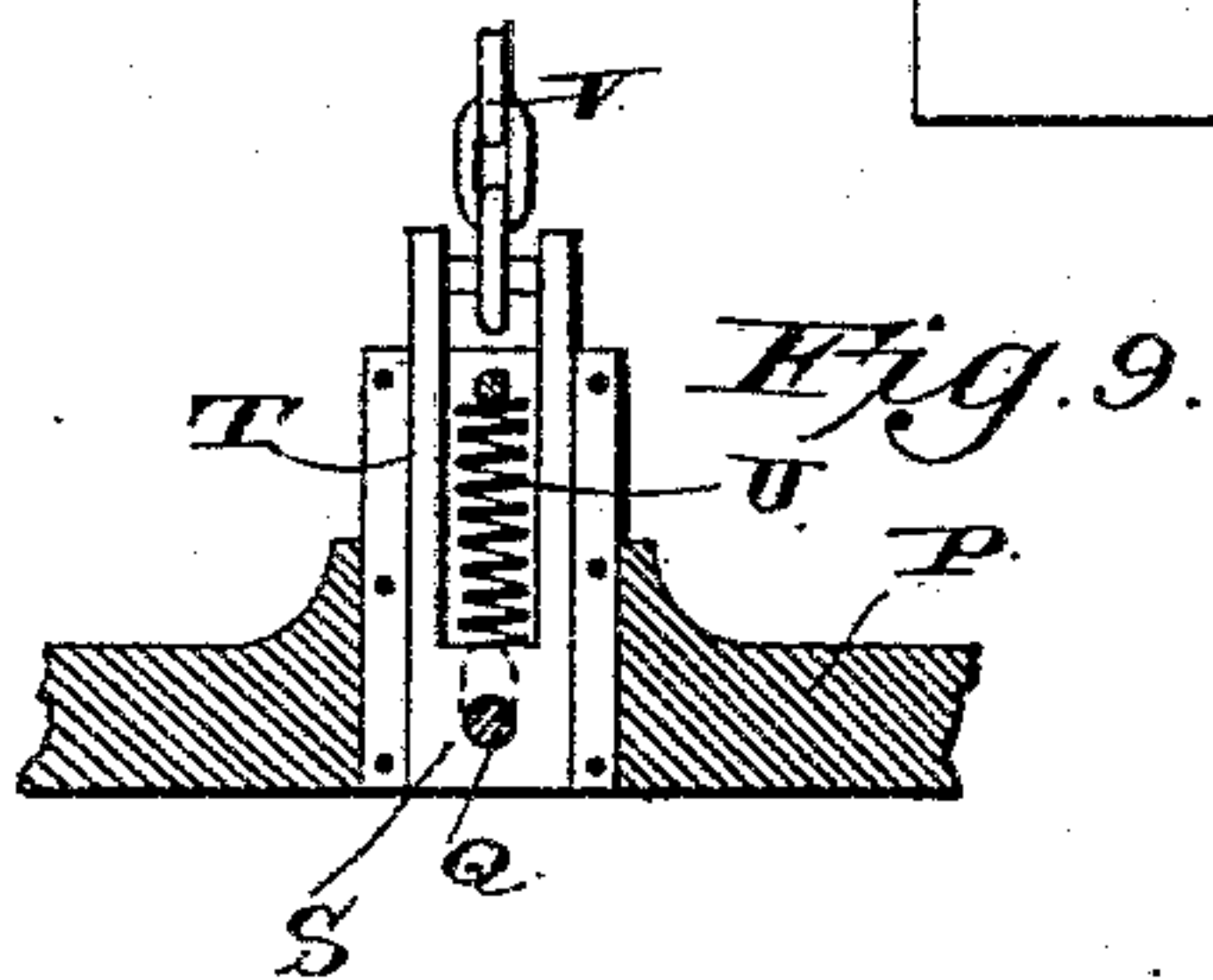
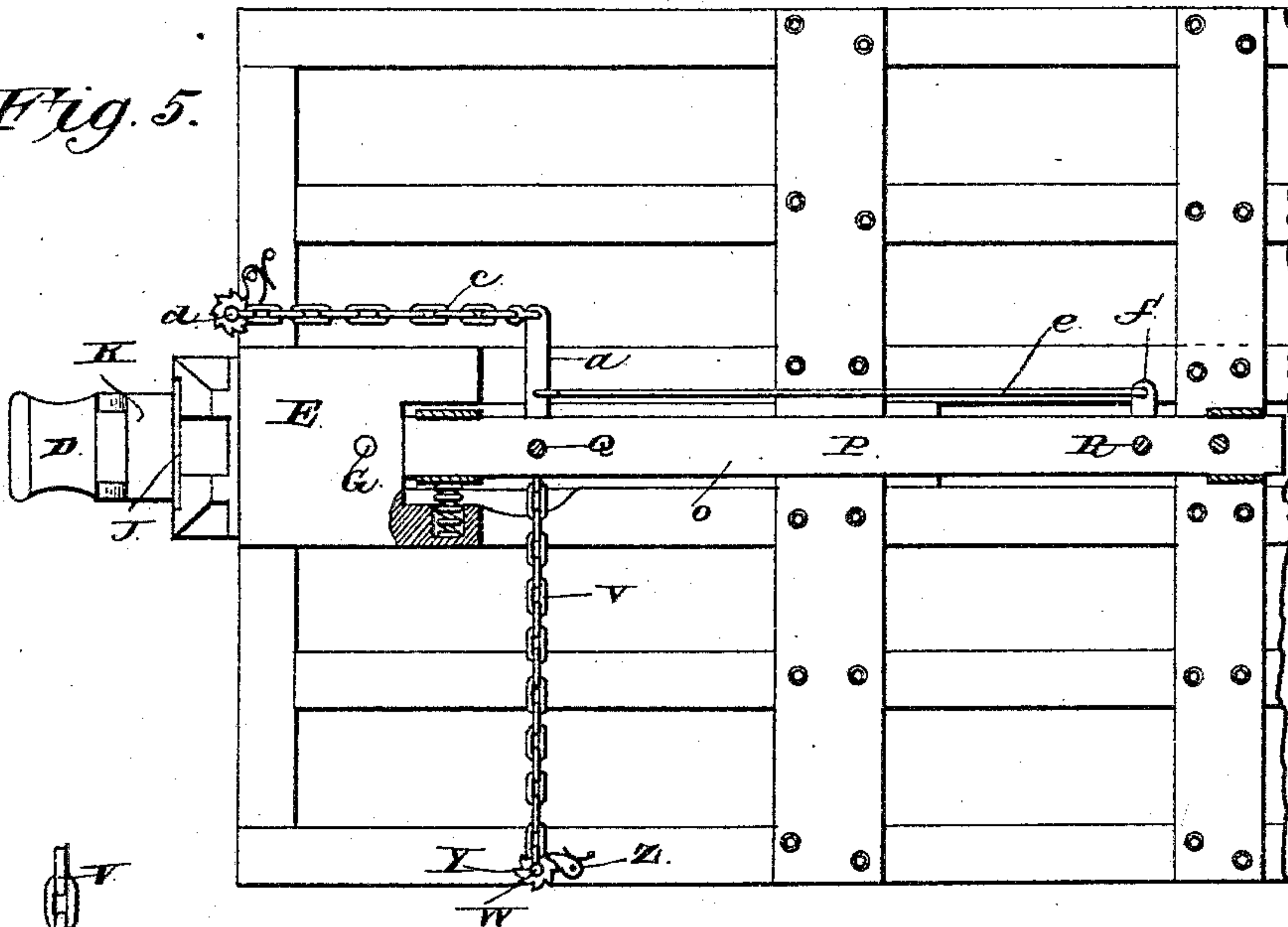


Fig. 7.

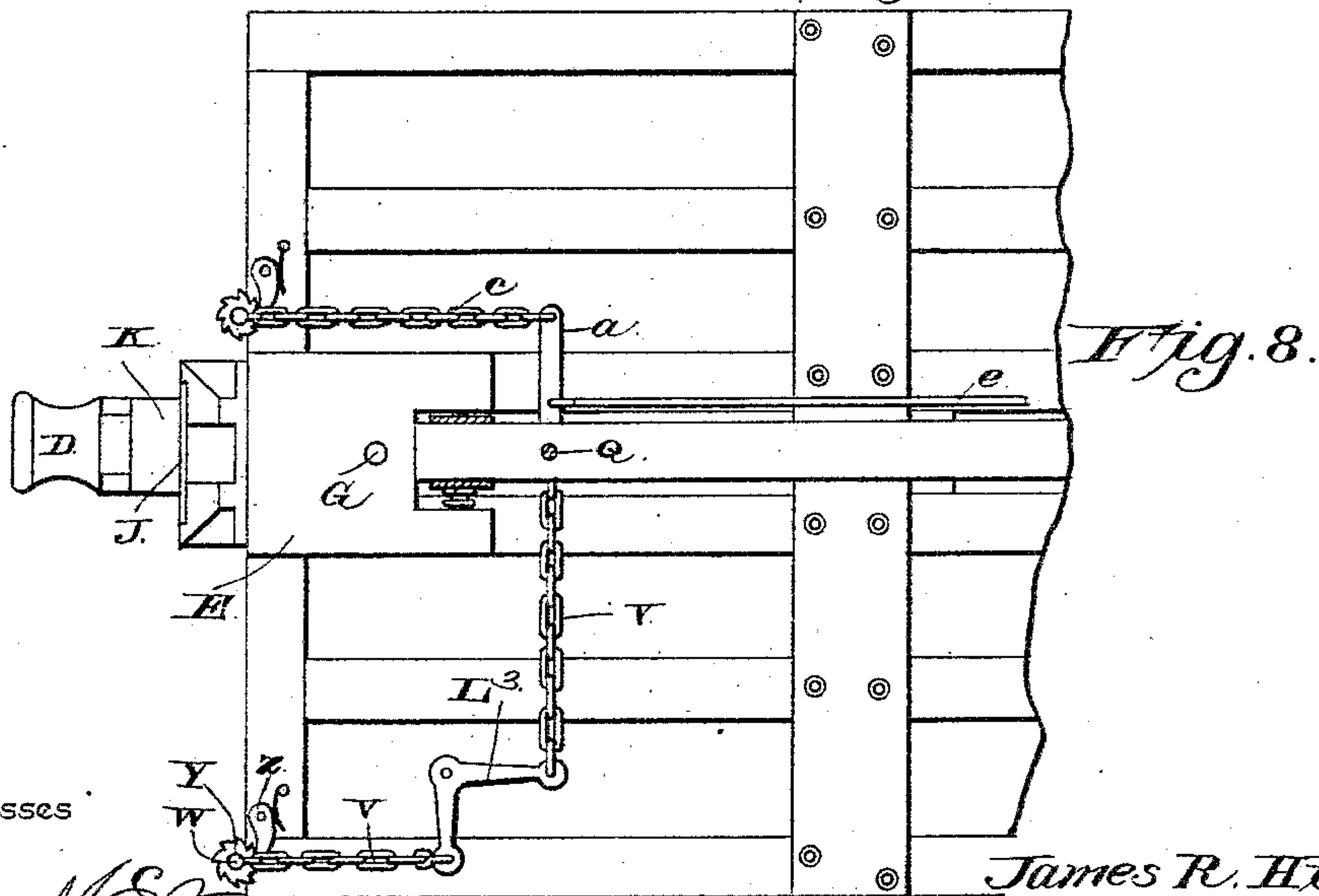


Fig. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

JAMES RANDLE HICKS, OF MCKENZIE, TENNESSEE, ASSIGNOR OF ONE-HALF
TO F. D. WALPOLE, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 414,537, dated November 5, 1889.

Application filed May 29, 1889. Serial No. 312,589. (No model.)

To all whom it may concern:

Be it known that I, JAMES RANDLE HICKS, a citizen of the United States, residing at McKenzie, in the county of Carroll and State of Tennessee, have invented a new and useful Car-Brake, of which the following is a specification.

This invention relates to that class of railroad-car brakes which are operated automatically when the cars come together in the act of stopping the train; and it has for its object to provide a brake apparatus of this class which shall be simple in construction and certain and efficient in operation, and which, when desired, may be thrown out of gear, so as to be temporarily out of operation.

The invention consists in the improved construction, arrangement, and combination of parts which will be hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a bottom plan view of one end of a railroad-car equipped with my improved brake apparatus. Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a vertical transverse sectional view, showing the construction of the mechanism for throwing the brake apparatus out of gear. Fig. 4 is a detail perspective view of the front end of the car and the draw-head. Figs. 5, 6, 7, and 8 are detail views illustrating modifications. Fig. 9 is a detail view of the box in which the shaft Q is journaled.

The same letters refer to the same parts in all the figures of the drawings.

A designates the trucks of a car equipped with my improvement.

B B are the axles, and C C the wheels.

In the construction of the trucks proper no improvement is herein claimed.

D designates the draw-head, which is arranged to slide longitudinally in a suitable boxing E, said draw-head being provided with longitudinal vertical slots F, through which passes a vertical pin G, which limits the longitudinal movement of the draw-head. Near the front end of the boxing E is arranged a vertical partition H, in front of which springs I are arranged to bear against the rear end of a follower J, which thus, as will be seen, acts as a spring-buffer to take up the blow of the draw-head when the cars come together.

K is a link or frame arranged to slide ver-

tically upon the stem or shank L of the draw-head, and having beveled sides M M, adapted when the said link or frame is raised to bear against the shoulders N upon the rear side of the draw-head, thus preventing the latter from moving in a rearward direction and actuating the brake mechanism, as will be presently more fully described. It will be seen that whether the frame K is in a raised or lowered position the follower J receives the impact of the draw-head through the said frame.

O designates a frame arranged longitudinally in the truck and comprising a pair of horizontal parallel beams P P, arranged one above the other and transversely to the axles B B. The said frame-beams afford bearings for the vertical shafts Q and R, the latter of which is journaled directly in suitable boxes or bearings in the said frame-beams, while the former Q has its lower end journaled directly in the lower frame-beam P, while its upper end is journaled in a box S, arranged to slide transversely in a casing T, attached to the upper frame-beam and forced in an inward direction in the said casing by the action of a suitably-arranged spring U.

To the outer end of the box A is connected a rod or chain V, the outer end of which is attached to and wound upon a vertical shaft W, mounted in suitable bearings at the side of the car and provided at its upper end with a hand-wheel X, by means of which it may be conveniently manipulated. The shaft W may also be provided with a ratchet-wheel Y, adapted to engage a suitably-arranged spring-pawl Z for the purpose of retaining the said shaft in any position to which it may be adjusted. The upper end of the vertical shaft Q is provided with a lever a, arranged at right angles thereto and provided at the outer end of one of its arms with an upwardly-extending stud b, which is located in the path of the longitudinally-sliding draw-head and adapted to be actuated by the latter. The outer end of the other arm of the lever a is connected by a chain c with the lower end of a vertical shaft d, arranged in suitable bearings at the end of the car and having at its upper end a hand-wheel, by means of which it may be manipulated. Pawl-and-ratchet mechanism of ordinary construction is also to be pro-

vided for retaining the shaft *d* in any position to which it may be set or adjusted. The lever *a* is connected by a link or connecting-rod *e* with an arm or lever *f* at the upper end of the shaft *R*, and both of the shafts *Q* and *R* are provided at their lower ends with arms or levers *g*, which are connected by means of links *h* with the brake-bars *i*, which are suspended from the frames of the trucks in the usual manner, and the ends of which carry brake-shoes of ordinary construction adapted to bear against the treads of the wheels. It will be seen that by the construction described brakes are arranged to bear against the opposite sides of each set of wheels; but it is obvious that by making such modifications as will readily suggest themselves to the skilled artisan the brakes may be applied to one set of wheels only of each truck or only to one side of each set of trucks, as may be found to be proper and sufficient.

The operation of this invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed, by those skilled in the art to which it appertains. The link or frame *K* is provided with an upwardly-extending operating-rod *k*, by means of which it may be raised or lowered as occasion may require. When the said link or frame is in a raised position, the draw-head is prevented from sliding rearwardly and from actuating the brakes. When, on the other hand, the said link or frame is in a lowered position, the draw-head is enabled to slide longitudinally, as it will be impelled to do when the cars come together. It will then engage the upwardly-extending stud *b* of the arm or lever *k* at the upper end of the vertical shaft *Q*, thus causing the said shaft to rock or oscillate in its bearings, when, through the intermediate mechanism of levers and connecting-rods, as herein described, the brakes will be set tightly against the rims of the wheels. It will thus be seen that when for any cause the cars come forcibly together, whether it be on account of the locomotive slackening its speed or on account of the train being on a down-grade, the brakes will be automatically and instantaneously set, while when the cars are drawn apart from each other the brakes will as instantaneously be released. It will also be seen that means are provided whereby the brakes may be set by hand whenever for any reason this shall be found desirable. It will also be noticed that by simply raising the link-frame *K* the draw-head is prevented from sliding rearwardly and from actuating the brakes.

In cases where the brakes are automatically operated it will sometimes be found of the greatest importance to release the brakes instantaneously while the cars are in such a position that it is impossible to bring them apart sufficiently to release the brakes automatically. In such cases I avail myself of the mechanism comprising the shaft *W*, which is

operated so as to wind the chain *V*, and thus move the box *S*, in which the upper end of the shaft *Q* is journaled, in an outward direction against the tension of the spring *U*. The upwardly-extending stud *b* of the lever *a* will thus be drawn out of the path of and out of contact with the rear end of the draw-head, and the brakes will thus be instantaneously released.

In Fig. 5 of the drawings I have illustrated a modification of my invention by which the shaft *Q* is mounted permanently in the bars or beams *E E*, composing the frame *O*, the adjustment of the said shaft *Q* being effected by mounting the rear end of the said frame *O* pivotally in the truck and enabling its forward end to slide or move laterally to a limited extent. In this case the frame *O*, instead of the shaft *Q*, will be connected directly with the chain *V*, so that by operating the shaft *W* the front end of the said frame will be bodily swung aside to a sufficient extent to disengage the lug or stud *b* from contact with the rear end of the draw-head.

Another modification in the detail construction of my invention is shown in Fig. 6 of the drawings, said modification consisting in substituting for the vertically-sliding link *K* a plate *K*², hinged to the front end of or side of the follower *J*, and adapted, when lowered, to bear against the shoulder of the draw-head and thus prevent the latter from moving in a rearward direction. The said hinged plate may be operated by means of an upwardly-extending rod *k*, having ratchets *m*, adapted to engage a guiding-staple *o*, through which said rod extends.

My invention may, when desired, be applied to cars having draw-heads of ordinary construction without changing the draw-head except by bolting or otherwise securing on its under side a block or bar *B*², adapted to engage the pin *b* of the lever *a*.

Draw-heads as ordinarily arranged will be found to have sufficient play or longitudinal movement to operate my improved brake mechanism with ease and certainty, and considerable expense may thus be saved in applying my invention to old cars. This construction has been shown in Fig. 7 of the drawings. It will also be seen that in this figure the vertically-sliding link *k* and its substitute—viz., the hinged plate *K*²—have both been omitted upon the draw-head. By so doing expense may be saved in the construction of the device and reliance is placed upon the adjustable arrangement of the shaft *Q* or of the frame *O*, in which said shaft is mounted, as shown, respectively, in Figs. 3 and 5 of the drawings. It will of course be understood that the said link or frame *K* or hinged plate *K*² may, when desired, be omitted in any of the modified constructions of my improved brake apparatus.

It may not always be deemed convenient to arrange the shaft *W*, by means of which the mechanism for throwing the brake ap-

paratus out of gear is operated, at the side of the car. It may, instead, be located at the end of the car, as shown in Fig. 8, a bell-crank lever L^3 being arranged, as shown, to change the direction of the chain V.

In the practical construction of my improved brake apparatus many other changes and alterations might be made without affecting the general principle of my invention, and I therefore wish it to be understood that I do not limit myself to the constructions herein shown, but reserve the right to any and all changes and modifications which may be resorted to without departing from the spirit of my invention.

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

1. In an automatic car-brake, the combination, with the longitudinally-sliding draw-head, of a frame mounted vertically in the truck of the car, a shaft journaled vertically in said frame and having at its upper end an arm or lever provided with an upwardly-extending stud adapted to be engaged by the rear end of the shank of the draw-head, and a chain connecting one end of said arm or lever with a shaft journaled vertically at one end of the car and having a hand-wheel at its upper end, substantially as herein set forth.

2. In an automatic car-brake, the combination, with the longitudinally-sliding draw-head, of a frame or link mounted to slide vertically upon the shank of the same in rear of the shoulder formed by the head thereof and having beveled sides, substantially as and for the purpose set forth.

3. In an automatic car-brake, the combination, with the truck having a suitable box or casing, of the draw-head arranged to slide longitudinally therein, a wall or partition arranged transversely in said casing, springs located in front of said wall, a follower or buffer arranged at the front ends of said springs, and a link or frame having beveled sides arranged to slide vertically upon the shank of the draw-head and adapted to bear against the spring-buffer at the front end of the casing of the draw-head, substantially as and for the purpose set forth.

4. The combination of the longitudinally-sliding draw-head, a vertical shaft having at its upper end an arm or lever provided with an upwardly-extending stud adapted to be engaged by the rear end of the draw-head, and mechanism for locking or securing the draw-head at the front end of its longitudinal movement, substantially as and for the purpose set forth.

5. The longitudinally-sliding draw-head having shoulders formed near its front end, in combination with a plate or frame adapted to bear against said shoulders for the purpose of preventing the longitudinal movement of the draw-head, an operating-rod attached to said plate or frame and having ratchets

adapted to engage a guiding-staple through which said rod passes, and a spring-buffer arranged to receive the impact of said plate or frame, substantially as and for the purpose herein set forth.

6. In an automatic brake, the combination of the longitudinally-sliding draw-head, the vertical shaft provided at its upper end with an arm or lever having an upwardly-extending stud adapted to be engaged by the rear end of said draw-head, and a transversely-sliding box forming a bearing for the upper end of said vertical shaft, whereby the said vertical shaft may be tilted so as to bring the upwardly-extending stud out of the path of the longitudinally-movable draw-head, substantially as and for the purpose set forth.

7. The combination, with the longitudinally-movable draw-head, of a tilting shaft having at its upper end a lever provided with an upwardly-extending stud adapted to be engaged by the rear end of the draw-head, and a spring arranged to press against the bearing of said shaft and holding the said shaft in such a position that the said upwardly-extending stud shall lie in the path of the longitudinally-movable draw-head, substantially as set forth.

8. The combination of the longitudinally-movable draw-head, a vertical shaft having its upper end journaled in a transversely-sliding box, a spring arranged to bear against the said box, so as to retain the shaft in a true vertical position, an arm or lever at the upper end of said shaft, having an upwardly-extending stud adapted to be engaged by the rear end of the draw-head, and a chain attached to the transversely-sliding box and having its outer end connected to a shaft journaled vertically at the side of the car and having a hand-wheel at its upper end, substantially as and for the purpose herein set forth.

9. In an automatic car-brake, the combination of a longitudinally-sliding draw-head, mechanism for locking the same at the front end of its movement, a vertical shaft having its upper end journaled in a transversely-sliding box and provided at its upper end with an arm or lever having an upwardly-extending stud adapted to be engaged by the rear end of the draw-head, a vertical shaft journaled in suitable bearings at the opposite end of the truck, arms or levers at the upper and lower ends of said vertical shafts, the brake-bars suspended from the under side of the truck, and links or rods connecting the several arms or levers with each other and with the brake-bars, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JAMES RANDLE HICKS.

Witnesses:

F. E. BLAKE,
W. D. HUNTER.