

No. 723,184.

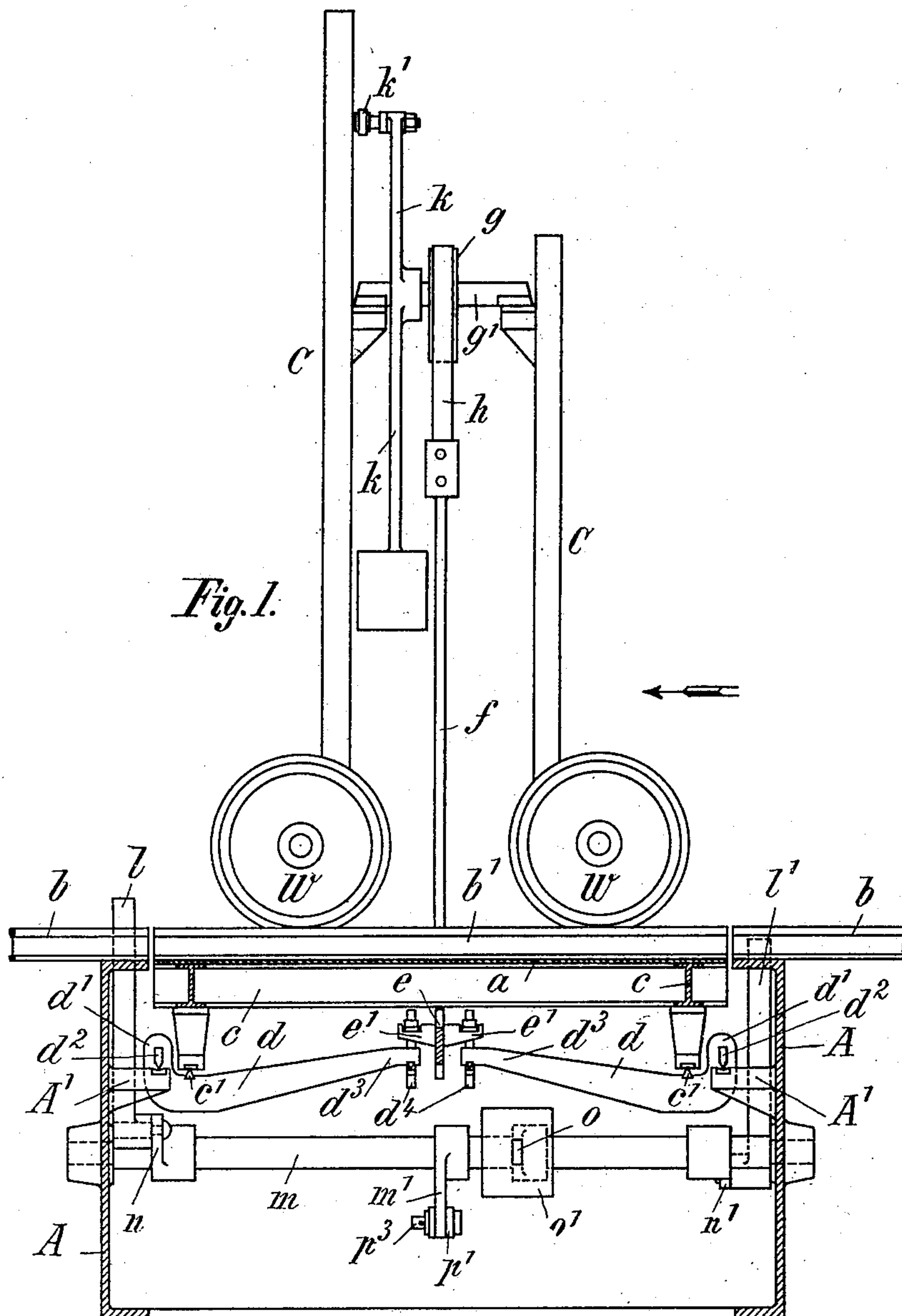
PATENTED MAR. 17, 1903.

M. E. REISERT.
RAILROAD SCALE.

APPLICATION FILED JAN. 15, 1901.

NO MODEL.

5 SHEETS—SHEET 1.



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5 SHEETS—SHEET 2.

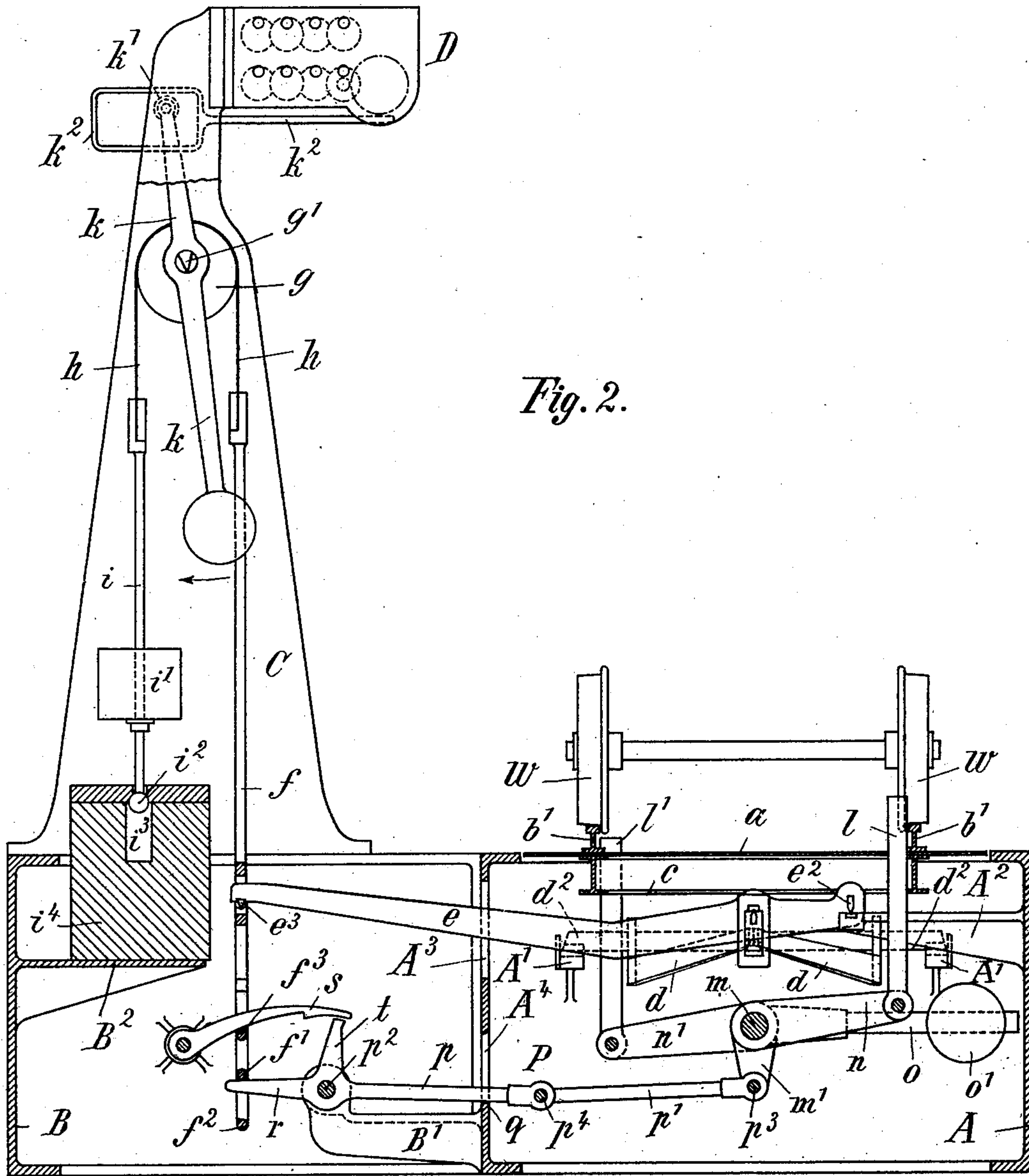


Fig. 2.

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5 SHEETS—SHEET 5.

Fig. 6.

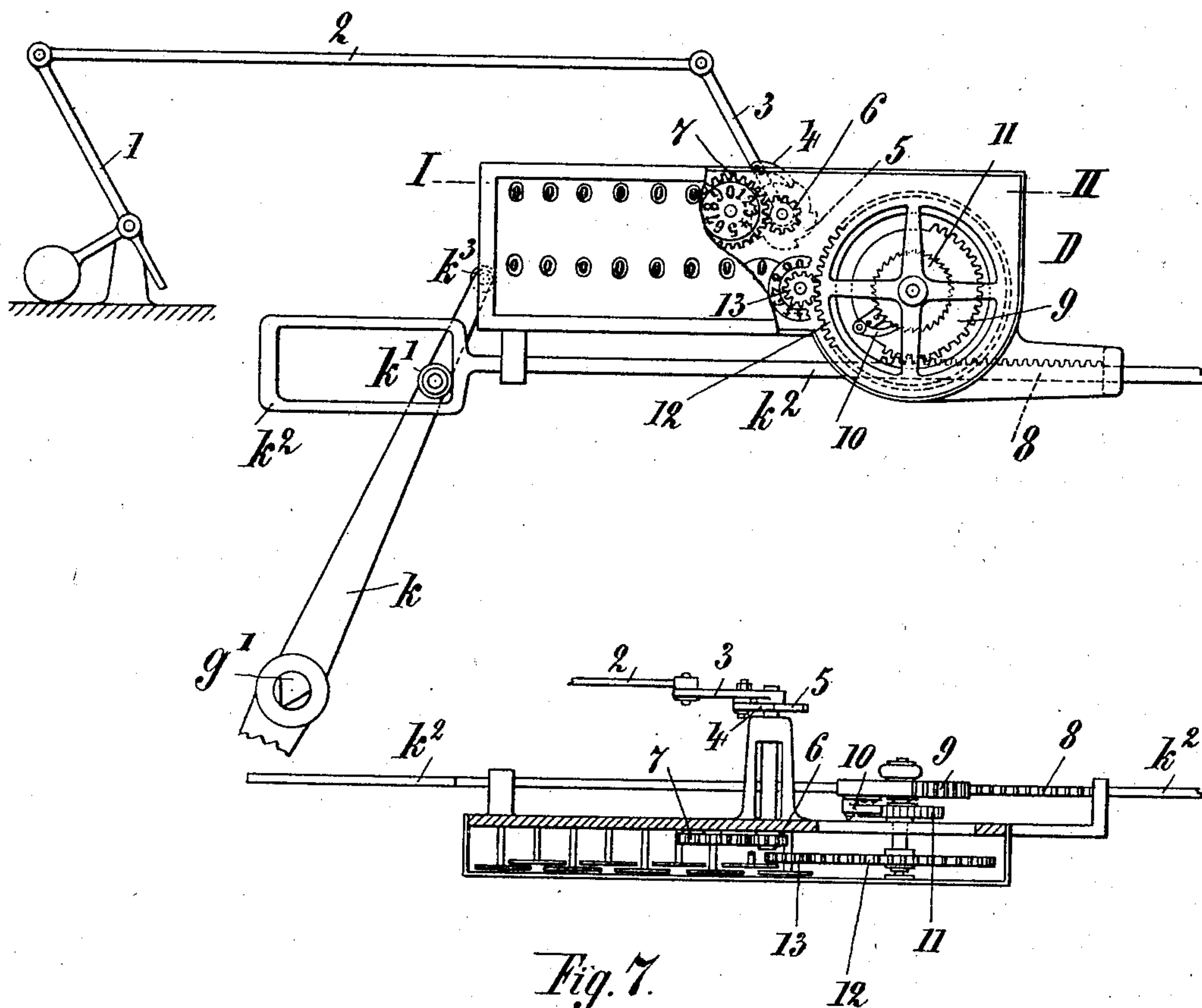


Fig. 7.

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UNITED STATES PATENT OFFICE.

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RAILROAD-SCALE.

SPECIFICATION forming part of Letters Patent No. 723,184, dated March 17, 1903.

Application filed January 15, 1901. Serial No. 43,401. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL EDUARD REISERT, a subject of the German Emperor, and a resident of Hennef-on-the-Sieg, in the Province of Rhineland and Kingdom of Prussia, in the German Empire, have invented certain new and useful Improvements in Railroad-Scales, of which the following is a specification.

10 The present invention relates to improvements in railroad-scales for weighing large quantities of merchandise—such as coal, ore, vegetables, and like materials—which are brought upon and respectively removed from
15 the platform or bridge of the railroad-scale in suitable trucks, vehicles, or wagons running upon rails and carrying not less than a predetermined minimum weight or load.

The object of the improvements is to provide means which allow that only such wagons carrying a load above the said minimum weight can be driven over the bridge or platform of the scale and which also prevent a vehicle just removed from the bridge or platform from being run back upon the platform and weighed once more on fraudulent purpose.

20 The above object is attained by means of a blocking device in combination with the railroad-scale and capable of being released by running upon the scale bridge or platform a wagon having a load in excess of the predetermined minimum weight. By this disengagement of the blocking device a suitable
35 power device—such as a weighted lever, spring, or the like—is allowed to act upon and to reverse a suitable stop-arm or stop-arms arranged in the path of the wagon—that is to say, in front and at the rear of the scale
40 bridge or platform—in order to clear the railroad-track in front of the wagon and to bar the same at the rear of the latter, so that the wagon can be moved forward, but will be prevented from rearward movement. In
45 connection with the blocking device there is arranged a locking device which retains the said blocking device, or more properly the stop-arms, after their reversal in the blocking position until the wagon is entirely passed

over or removed from the scale bridge or platform. After the removal of the load from the platform the scale mechanism of the railroad-scale returns into its initial position, whereby the locking device is released and the blocking device at the same time caused
55 to return also into its initial position. By this return motion of the blocking device the stop-arms are again reversed, thus permitting another truck or wagon to be run into position upon the scale bridge or platform. 60

With this end in view the present invention consists in certain novel features of construction and combination of parts, as will be hereinafter fully described with reference to the accompanying sheets of drawings, wherein— 65

Figure 1 is a longitudinal vertical section, and Fig. 2 a cross-section, of the improved railroad-scale. In both of these figures the parts are in position they assume when a wagon carrying less than a predetermined
70 minimum load is on the scale bridge or platform. Fig. 3 is a similar section to Fig. 2, showing the blocking device in the reversed position, a wagon having a load above the predetermined minimum weight being on the
75 scale bridge or platform, the lever mechanism connecting the scale bridge or platform with the pendulum-scale forming part of the railroad-scale being removed for sake of simplicity. Fig. 4 is a plan of Fig. 3 as it
80 appears after the removal of the scale bridge or platform, and Fig. 5 is a plan view of the lever system. Fig. 6 is a front elevation of the registering mechanism on a larger scale, the front plate being partly broken away to
85 show the inner gearing; and Fig. 7 is a sectional plan view on line I II of Fig. 6.

Similar characters refer to similar parts throughout the several figures.

The vehicles or wagons to be weighed run
90 on rails *b*, in the track of which is arranged the weigh bridge or platform *a*, the latter being provided with corresponding rails *b'*. The frame *c*, carrying the platform *a*, rests by means of knife-edges *c'* upon two levers *d*,
95 the outer ends *d'* of which are supported by the aid of knife-edges *d''* from suitable knife-edge-bearing brackets *A'*, extending from the

wall of a box or casing A, inclosing the lever mechanism of the scale. The inner ends d^3 of the levers d are suspended from suspension-loops d^4 , carried by arms e' of a platform-lever e . One end of this lever rests by means of a knife-edge e^2 upon a knife-edge bearing on a bracket A^2 of the box A, while the other end, extending through a slot A^3 into an adjacent box B, is suspended by means of a knife-edge e^3 from a knife-edge bearing on a bar f of a pendulum-scale, forming part of the railroad-scale. The box B serves as a receptacle or casing for a part of the blocking device and its locking means (to be described later on) and forms at the same time the support for the standards C, carrying the pendulum-scale. The bar f is suspended from a steel band h , passing over a pulley g and having attached to its other end a bar i , provided with a weight i' . The shaft g' of the pulley is fulcrumed by means of knife-edges on suitable brackets secured to the proximate faces of the standards C. The bulb-shaped end i^2 of the bar i , engaging a recess i^3 of a weight i^4 , is thereby connected to the latter weight in such a manner that the weighted bar i i' i^2 can perform a differential motion with respect to the weight i^4 , which ordinarily rests upon a bracket B^2 of the box B.

Connected with the pulley g or its shaft g' , respectively, is a double-armed weighted lever k , adapted to operate by means of a friction-roller k' the push-rod k^2 of a suitable registering device D. The upper counter of the registering mechanism D records and indicates the constant minimum loads, the lower counter the variable excesses above the predetermined minimum load. Each time the weighted lever k rocks to the left its friction-roller k^3 strikes against a weighted lever 1. The rocking motion of this lever 1 is imparted by means of a connecting-rod 2, a lever 3, and a pawl 4, pivoted thereto, to the ratchet-wheel 5, which drives the gear-wheels 6 7 of the upper counter. The return movement of the lever connection is effected automatically by the weighted lever 1 as soon as the lever k swings to the right. When the lever k is rocked to the right, its friction-roller k' displaces a push-rod k^2 , provided with a rack 8, engaging a pinion 9. This pinion operates by means of a pawl 10 a suitable ratchet-wheel 11, keyed on the same shaft as the toothed wheel 12, engaging the driving-wheel 13 of the lower counter. The push-rod is brought back into its initial position each time the lever k swings to the left. The combination of the weighted steel band h with suspension-bar f , the pulley g , the weighted lever k , the push-rod k^2 , and the registering device D forms the pendulum-scale proper. The construction and operation of such pendulum-scale are well known and need, therefore, no detailed description. The combination of the said pendulum-scale with the above-described lever mechanism, carrying the

weigh bridge or platform and acting upon the bar f of the pendulum-scale, forms the railroad-scale proper. The construction and operation of such scales are likewise well known and need also no further explanation.

The blocking device, mounted within the boxes or casings A and B, consists of a rocking shaft m , journaled within the walls of the box A and provided near its ends with oppositely-directed arms n and n' , respectively. To the free ends of these arms are articulated slide arms or bolts l and l' , respectively, which are vertically guided in suitable guides provided on the box A. When the shaft m is rocked in one direction, the slide-bolt or stop-arm l is lowered out of the path of the wagon-wheels W, while at the same time the stop-arm l' is raised to act as a stop for the said wheels W. When the shaft m is rocked in the other direction, then the stop-arm l' is lowered and the stop-arm l raised. By rocking the shaft m in one or the other direction the stops l and l' for the wagon will therefore be reversed alternately in order to allow a wagon to be moved on and across the scale-platform or to prevent a wagon being moved on and then backed off said platform. In the position the parts are shown in Figs. 1 and 2 the removal of the wagon from the platform of the railroad-scale is barred by the raised stop-arm l . The rocking or oscillating of the shaft m for lowering the stop-arm l is effected by the influence of a weighted arm o o' , attached to the shaft m , as soon as said weighted arm or the shaft m , respectively, is released by the deflection of a toggle-joint P, which is composed of a lever p and a link p' , articulated at p^4 . The lever p is pivoted at p^2 in a support or bracket B' , while the free end of the link p' is pivotally connected at p^3 to an arm m' , extending from the shaft m . The deflected position of the toggle-joint P and the therefrom resulting reversed position of the stop-arms l and l' are represented in Figs. 3 and 4. The toggle-joint is operated and deflected at the required time by the bar f of the pendulum-scale, as will be explained later on. In order to prevent shocks and the like imparted to the scale from causing a premature deflection of the toggle-joint, this latter is in its position of rest slightly deflected toward the opposite side and rests with its lever p upon the edge q of the slot A^4 . (See Fig. 2.)

When the platform is loaded with a wagon containing exactly or less than the desired minimum weight, such weight will slightly draw down, by means of the levers d e , the suspension-bar f , and thereby lift or raise the weighted bar i i' i^2 into the position shown in Fig. 2, the bulb i^2 moved upward in the space or recess i^3 of the weight i^4 ; but as the weight i^4 corresponds to the predetermined minimum weight or load it overbalances or balances at least the weight of the wagon on the platform and will not be raised from its support B^2 . The slight downward motion of the bar

f is not sufficient to allow that its pin f' acts upon an arm r of the toggle-lever p and deflects thereby the toggle-joint P . This toggle-joint remains rather at rest, while at the same time the raised stop-arm l prevents the procedure of the wagon carrying less than the predetermined minimum load from the platform—that is to say, the passing or running of such wagon across the platform of the railroad-scale without weighing and recording their contents. The slight downward motion of the bar f imparts consequently to the lever k likewise but a small amplitude in the direction of the arrow shown in Fig. 2, so that the friction-roller k' does not come in contact with the push-rod k^2 and is not caused to operate the registering device D . These positions of the parts are shown in Figs. 1 and 2. When, however, a wagon carrying a load above the predetermined minimum load is run upon the platform, also the weight i^4 is raised from its support B^2 , and the pendulum-lever k in consequence of the greater travel of the steel band h and greater rotation of the pulley g caused to move through a greater amplitude and to operate the push-rod k^2 of the registering device in well-known manner. In such a case the bar f performs, of course, a greater downstroke, for instance, until it assumes the position shown in dotted lines, Fig. 3. By this extent of movement of the bar f its pin or tappet f' is caused to press upon the arm r and to turn the latter downward, thereby deflecting the toggle-joint upward—that is to say, through the straightened position toward the opposite side into the position indicated in Fig. 3. At the same time the arm o , owing to its weight o' , rocks the shaft m now released by the deflection of the toggle-joint and reverses thereby the stop-arms l and l' , the stop-arm l being then lowered and the stop-arm l' raised, Figs. 3 and 4. The vehicle or wagon upon the rails b' of the platform can then be moved forward, but the rearward movement thereof will be prevented by the raised stop-arm l' . In the reversed position shown in Figs. 3 and 4 the stop-arms l and l' will remain until the vehicle or wagon has been removed entirely from the platform of the railroad-scale. As soon as the first pair of wheels W of the wagon leaves the platform the whole system of the railroad-scale commences to return into its initial position until the weight i^4 is again seated upon its support B^2 —that is to say, until the bars i and f have returned into the positions shown in Figs. 1 and 2. The mechanism of the railroad-scale now remains at rest until the second pair of wheels of the wagon has left the platform, as the weight i' corresponds only to the weight of the scale mechanism and is but capable to return the scale mechanism when fully unloaded into its initial position. As soon as the wagon is entirely removed from the platform the weighted bar i i' i^2 descends into the recess i^3 of the weight i^4 and raises at the same time the bar

f . The tappet f^2 of the ascending bar f acts from below against the arm r and turns the latter upward. The toggle-joint P is hereby straightened and respectively slightly deflected downwardly, while the shaft m is rocked in the opposite direction, the stop-arm l raised, and the stop-arm l' lowered, the whole railroad-scale mechanism being thus returned into its normal position of rest. As the toggle-joint is so arranged as to be very near the point at which deflection takes place, it will require only a slight force or power to start it, and the operation of the weighing will not be affected; but nevertheless the straightened toggle-joint P locks the rocking shaft m so reliably that it will be impossible to forcibly depress the raised stop-arm l with a view to running a wagon having less than the predetermined load over the platform. In order to prevent that after the deflection of the toggle-joint the then-raised stop-arm l' may be forcibly depressed with a view of backing the last wagon off the platform and then bringing it again forward for reweighing, a further locking device is provided, which consists of a pawl or hook s , adapted to engage an arm t of the lever p of the toggle-joint and to thus lock the said toggle-joint in its deflected position. (See Fig. 3.) A straightening of the toggle-joint and respectively a rocking of the shaft m and reversing of the stop-arms l and l' is only possible after the hook s has been disengaged from the arm t . This disengagement, however, takes place only after the load has been removed from the platform—viz., when the second pair of wheels of the wagon has left the platform—by the return or ascending movement of the bar f , the tappet f^3 of which strikes against the hook s and lifts it off from the top of the arm t , Fig. 3, whereupon the toggle-joint is straightened by upward movement of the tappet f^2 , as already explained above.

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

1. The combination with a platform of a platform-scale for weighing loaded wheeled vehicles and a blocking device normally blocking the exit for the vehicle from said platform; of mechanism operated by a predetermined load on the platform and operating to move the blocking device so as to clear said exit, for the purpose set forth.

2. The combination with a platform-scale and means to receive and guide a vehicle thereon; of means operated by a predetermined load on the platform to prevent the loaded vehicle being backed off said platform when the load exceeds the predetermined amount, substantially as and for the purpose set forth.

3. The combination with the platform of a platform-scale for weighing loaded vehicles and a blocking device at the entrance to and at the exit from said platform normally posi-

tioned to block the exit and leave the entrance unobstructed; of mechanism operated by a predetermined load on the platform and operating to reverse the position of the blocking devices to block the entrance and clear the exit, for the purpose set forth.

4. The combination with the platform of a platform-scale for weighing loaded vehicles and a blocking device at the entrance to and at the exit from said platform normally positioned to block the exit and leave the entrance unobstructed; of mechanism operated by a predetermined load on the platform and operating to reverse the positions of the blocking devices to block the entrance and clear the exit and to return said blocking devices into their normal positions when the platform is relieved of the load, for the purpose set forth.

5. The combination with the platform of a platform-scale for weighing loaded vehicles and a blocking device blocking the exit from said platform; of mechanism operated by a predetermined load on the platform to move the blocking device out of the path of the vehicle, and means to lock said blocking device in such position, substantially as and for the purpose set forth.

6. The combination with the platform of a platform-scale for weighing loaded vehicles, a blocking device blocking the exit from said platform and a locking appliance locking said blocking device; of mechanism operated by a predetermined load on the platform and operating to release the blocking device and move the same to clear said exit, for the purpose set forth.

7. The combination with the platform and platform-lever of a platform-scale for weighing loaded vehicles, and a blocking device normally blocking the exit of such vehicle from said platform; of mechanism connected with the blocking device and operated by the platform-lever when moved to a poising position to move said blocking device and clear said exit, for the purpose set forth.

8. The combination with the platform and platform-lever of a platform-scale for weighing loaded vehicles, and a blocking device at the entrance to said platform; of means operated by the platform-lever when moved to poising position and operating to move the blocking device to prevent a vehicle being backed off said platform, substantially as set forth.

9. The combination with the platform and platform-lever of a platform-scale for weighing loaded vehicles, and a blocking device at the entrance to and exit from said platform normally blocking said exit and leaving the entrance clear; of mechanism operated by the platform-lever when moved to poising position and operating the blocking devices to clear the exit from and block the entrance to the platform, substantially as and for the purpose set forth.

10. The combination with the platform and platform-lever of a platform-scale for weigh-

ing loaded vehicles, and a blocking device at the entrance to and exit from said platform normally blocking said exit and leaving the entrance clear; of mechanism operated by the platform-lever when moved to balancing position and operating the blocking devices to clear the exit from and block the entrance to the platform and to return said blocking devices into their normal positions when said platform-lever is unloaded, substantially as and for the purposes set forth.

11. The combination with the platform and platform-lever, of a platform-scale for weighing loaded vehicles, a blocking device at the entrance to and exit from said platform normally blocking said exit and leaving the entrance clear, and locking appliances for locking said devices into their blocking position; of mechanism operated by the platform-lever when moved to poising position and operating to release the exit-blocking device and move the same to clear said exit and to move the entrance-blocking device into blocking position and lock the same, substantially as and for the purposes set forth.

12. The combination with the platform and platform-lever of a platform-scale for weighing loaded vehicles, a blocking device at the entrance to and exit from said platform normally blocking said exit and leaving the entrance clear, and locking appliances for locking said devices into their blocking position; of mechanism operated by the platform-lever when moved to balancing position and operating to release the exit-blocking device and move the same to clear said exit and to move the entrance-blocking device into blocking position and lock the same, and to return the blocking devices into their normal position when said platform-lever is unloaded, substantially as and for the purpose set forth.

13. The combination with a platform-scale for weighing loaded vehicles, of a blocking device at the entrance to said platform, mechanism operated by a predetermined load on said platform and operating said blocking device to block the entrance thereto and prevent the backing off of the loaded vehicle, and a locking device operated by the load and locking the blocking device against unauthorized displacement, for the purpose set forth.

14. The combination with the platform of a platform-scale for weighing loaded vehicles, a blocking device at the entrance thereto and a locking appliance for locking said device into blocking position; of mechanism operated by a predetermined load on the platform and operating to move the blocking device and lock the same into blocking position and to release said device and move it out of blocking position when the platform is relieved of its load, substantially as and for the purpose set forth.

15. The combination with a platform-scale for weighing loaded vehicles; of a blocking device at the entrance to and at the exit from

the platform, the last-named blocking device normally blocking said exit, and mechanism operated by a predetermined load on the platform, organized to reciprocally move said blocking devices only when a vehicle of the predetermined load is run onto the platform in such a manner as to move the blocking device at the exit out of the path of such vehicle and the blocking device at the entrance into the path thereof, for the purpose set forth.

16. The combination with the platform of a platform-scale for weighing loaded vehicles, and two reciprocally-movable blocking devices for blocking the entrance to and exit from the platform, the one at the exit normally blocking the same; of mechanism operated by a predetermined load on the platform and operating to reciprocally move the blocking devices so as to reverse their normal positions and block the entrance to and clear the exit from the platform, for the purposes set forth.

17. The combination with the platform of a platform-scale for weighing loaded vehicles, and two reciprocally-movable blocking devices for blocking the entrance to and exit from the platform, the one at the exit normally blocking the same; of mechanism operated by a predetermined load on the platform and operating to reciprocally move the blocking devices so as to reverse their normal positions and block the entrance to and clear the exit from the platform, and to return the blocking devices to their normal positions when the platform is relieved of its load, substantially as and for the purposes set forth.

18. The combination with the platform of a platform-scale for weighing loaded vehicles, a blocking device at the exit from said platform and a registering mechanism; of appliances operated by a predetermined load on the platform and operating the registering mechanism to register when exceeding the predetermined load and move the blocking device to clear the exit from the platform, for the purposes set forth.

19. The combination with the platform and the platform-lever of a platform-scale for weighing loaded vehicles, a blocking device at the entrance to and from said platform normally blocking said exit and leaving the entrance clear, of mechanism operated by a predetermined load on the platform and operating to move said blocking devices to clear the exit from and block the entrance to said platform and means controlled by the movement of the platform-lever into its unloaded position to return the blocking devices into their normal position, substantially as and for the purposes set forth.

20. The combination with the platform and the platform-lever of a platform-scale for weighing loaded vehicles, a blocking device at the entrance to and exit from said platform normally blocking said exit and leaving the entrance clear, and locking appliances for

locking said devices into their blocking position; of mechanism operated by the movement of the platform-lever into a loaded position to release the exit-blocking device and move the same to clear said exit and simultaneously move the blocking device at the entrance to the platform and lock the same, and to unlock the blocking device at the entrance and move both blocking devices into their normal positions and lock the exit-blocking device when said platform-lever moves into its unloaded position, for the purposes set forth.

21. The combination with a platform-scale for weighing loaded vehicles, a registering mechanism, and appliances operated by a predetermined load on the platform and operating said registering mechanism; of means operated by said predetermined load and operating to prevent the loaded vehicle being backed off the platform, for the purpose set forth.

22. The combination with a platform-scale for weighing loaded vehicles, a registering mechanism, and appliances operated by a predetermined load on the platform and operating said registering mechanism; of a blocking device at the entrance to and exit from said platform, the last-named blocking device normally blocking said exit, mechanism operated by the predetermined load only, and operating the blocking devices to clear the exit from and block the entrance to said platform, and locking appliances for locking the blocking devices against unauthorized displacement while the vehicle is on the platform, for the purposes set forth.

23. The combination with a platform-scale for weighing loaded vehicles, a registering mechanism, the actuating-rod thereof, a weighted rock-lever connected with said rod to reciprocate the same, a pulley secured to the fulcrum-shaft of said weighted lever, a flexible band *h* on said pulley, rods *f* and *i*, one at each end of said band, a balancing-weight on rod *i*, the scale-weight connected with said rod so as to permit limited motion of the latter independently of said scale-weight, the platform-lever *e* and the lever system of the platform-scale connected thereto, said lever *e* engaging the rod *f* on said band, the rock-shaft *m* extending across the scale-platform intermediate of the vehicle-track, a radial arm at either end of said shaft, a stop-bar connected to each of said arms and respectively adapted to be projected into the path of the vehicle at the entrance to and exit from the scale-platform; of mechanism operated by the aforesaid rod *f* connected with shaft *m* to rock the same, substantially as and for the purposes set forth.

24. The combination with the scale-platform, its track, the rock-shaft *m* and stop-bars *l* and *l'* connected to radial arms on said shaft and the toggle-levers *pp'* connected to a radial arm on said shaft; of the rod *f* connected with the scale-weight as described

and engaged by an arm on the toggle-lever, and means operated by the load on the scale-platform and acting on said rod f to move the same and thereby actuate the toggle-levers, substantially as and for the purpose set forth.

25. The combination with the scale-weight, the rock-shaft m , the toggle-levers p , p' connected thereto as set forth, said lever fulcrumed at p^2 and provided with radial arms r and t , the rod f connected with the scale-

weight as described and having abutments f^3 , f' , f^2 , said arm r projecting into the path of abutments f' , f^2 , of the locking-pawl s in the path of abutment f^3 and adapted to engage the arm t on the aforesaid toggle-lever, substantially as and for the purpose set forth.

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Witnesses:

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