

W. R. MATTHEWS.
DRAFT APPLIANCE FOR RAILWAY CARS.
APPLICATION FILED JULY 12, 1909.

950,490.

Patented Mar. 1, 1910.

4 SHEETS—SHEET 1.

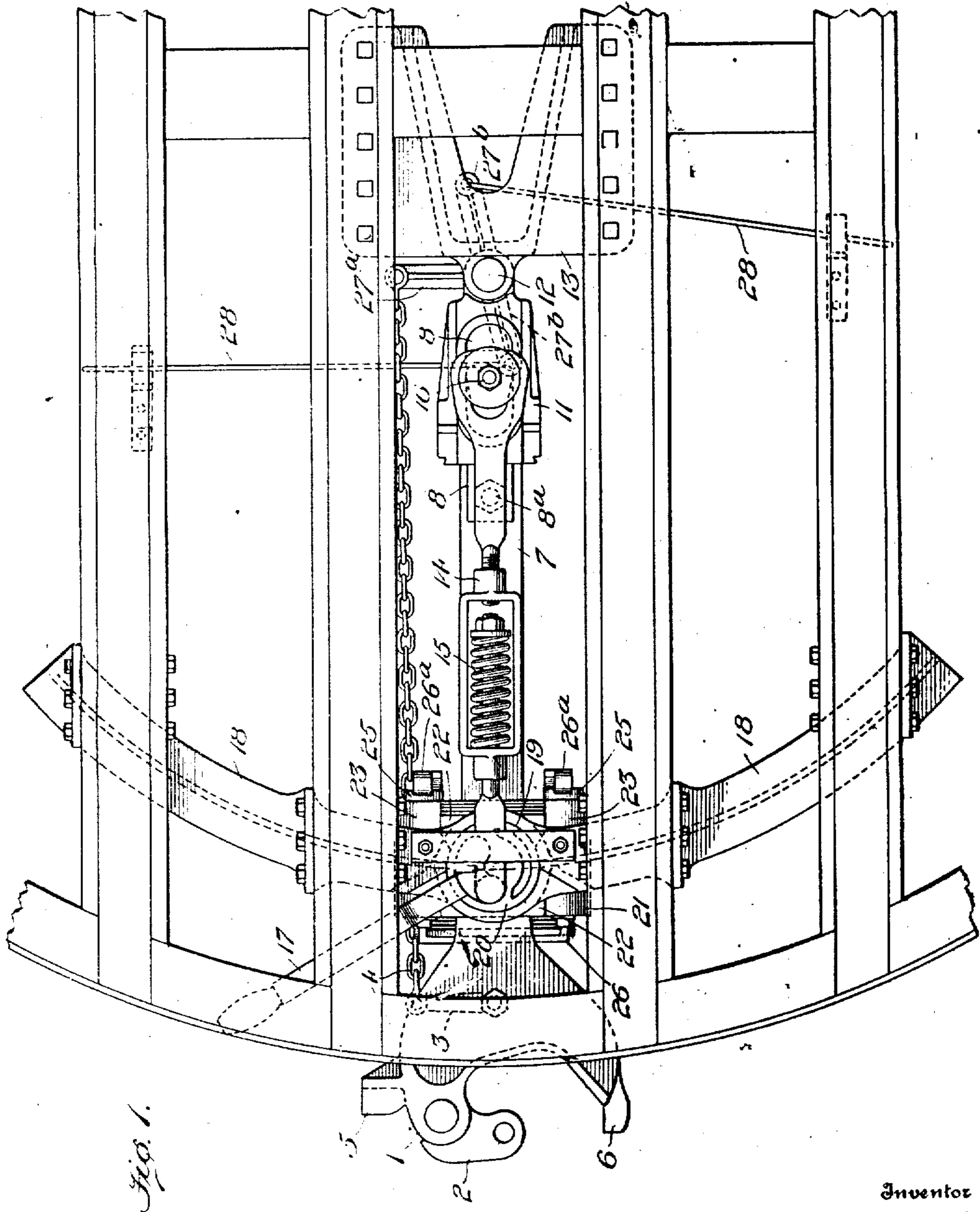


Fig. 1.

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Witnesses

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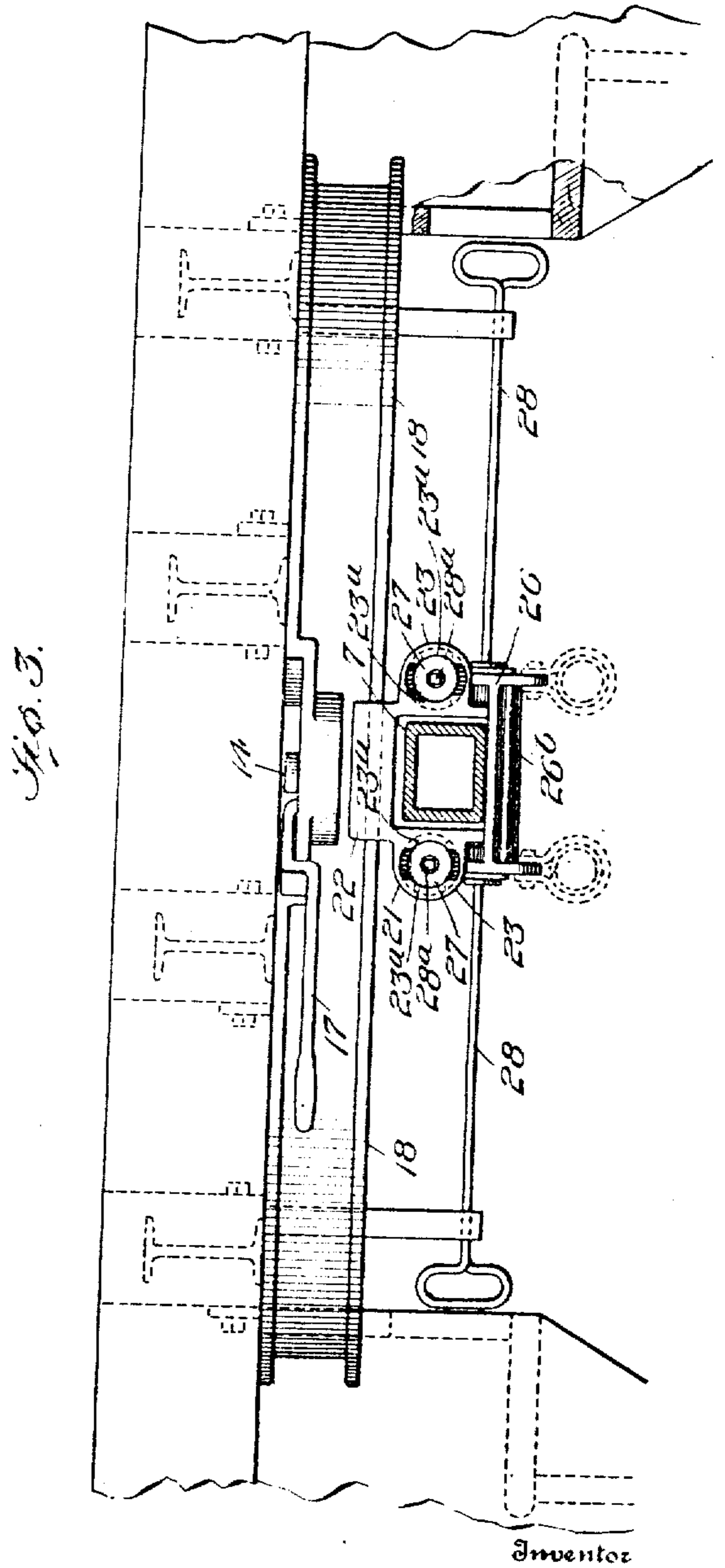
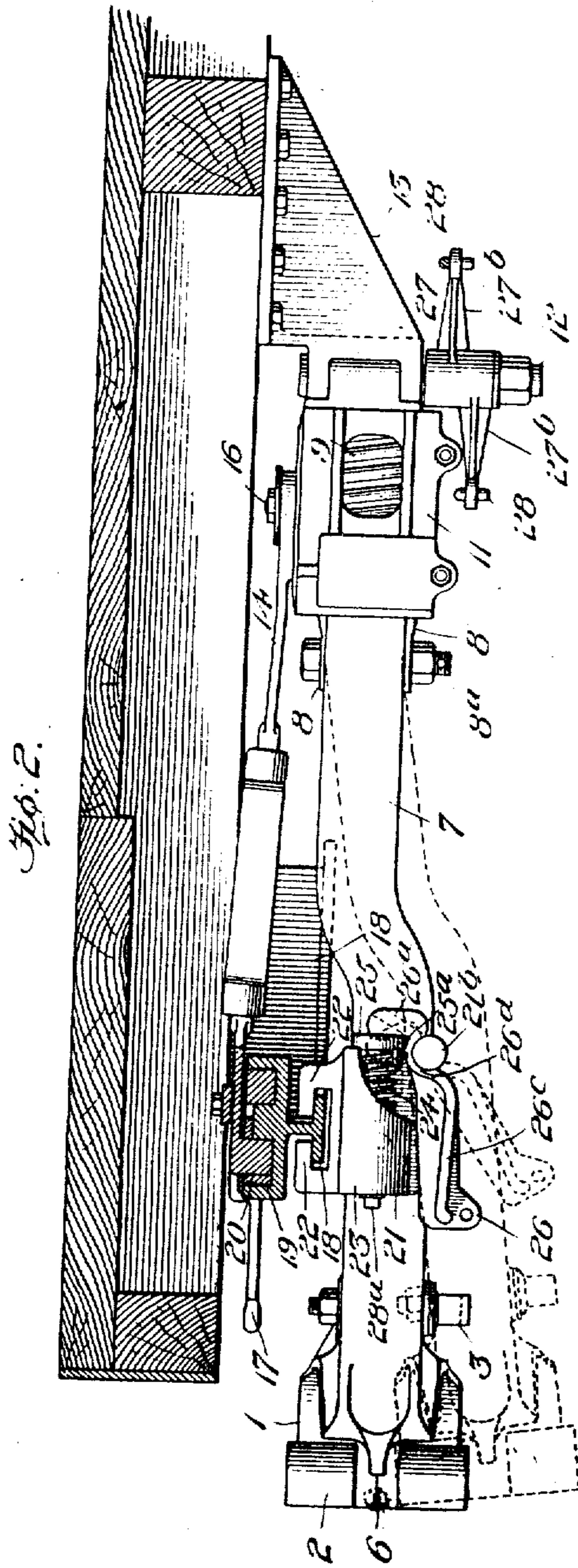
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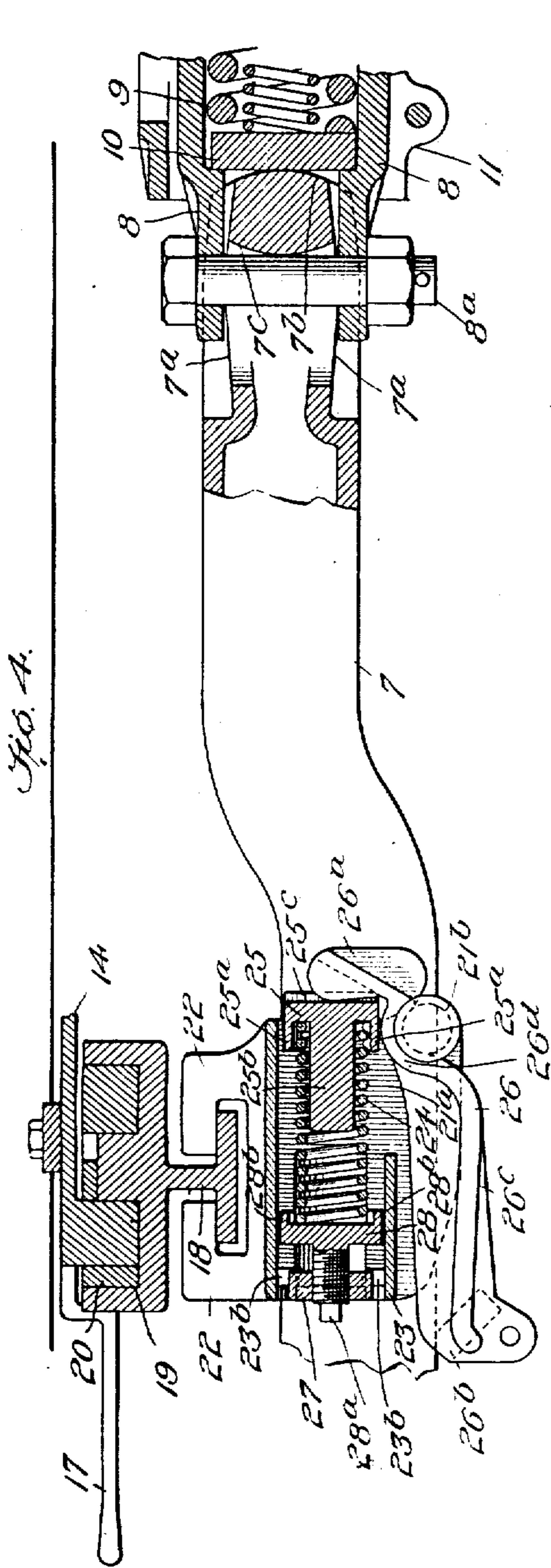


Fig. 4.

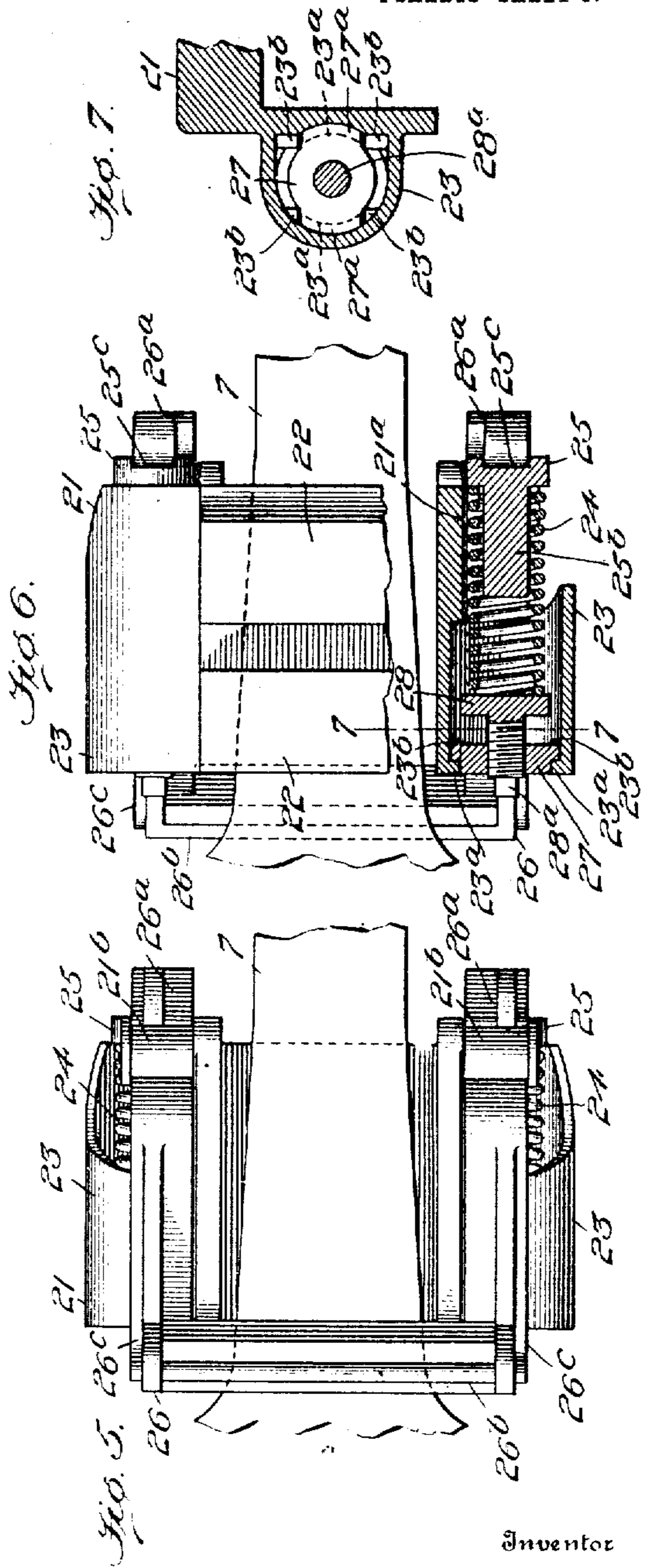


Fig. 5.

Fig. 6.

Fig. 7.

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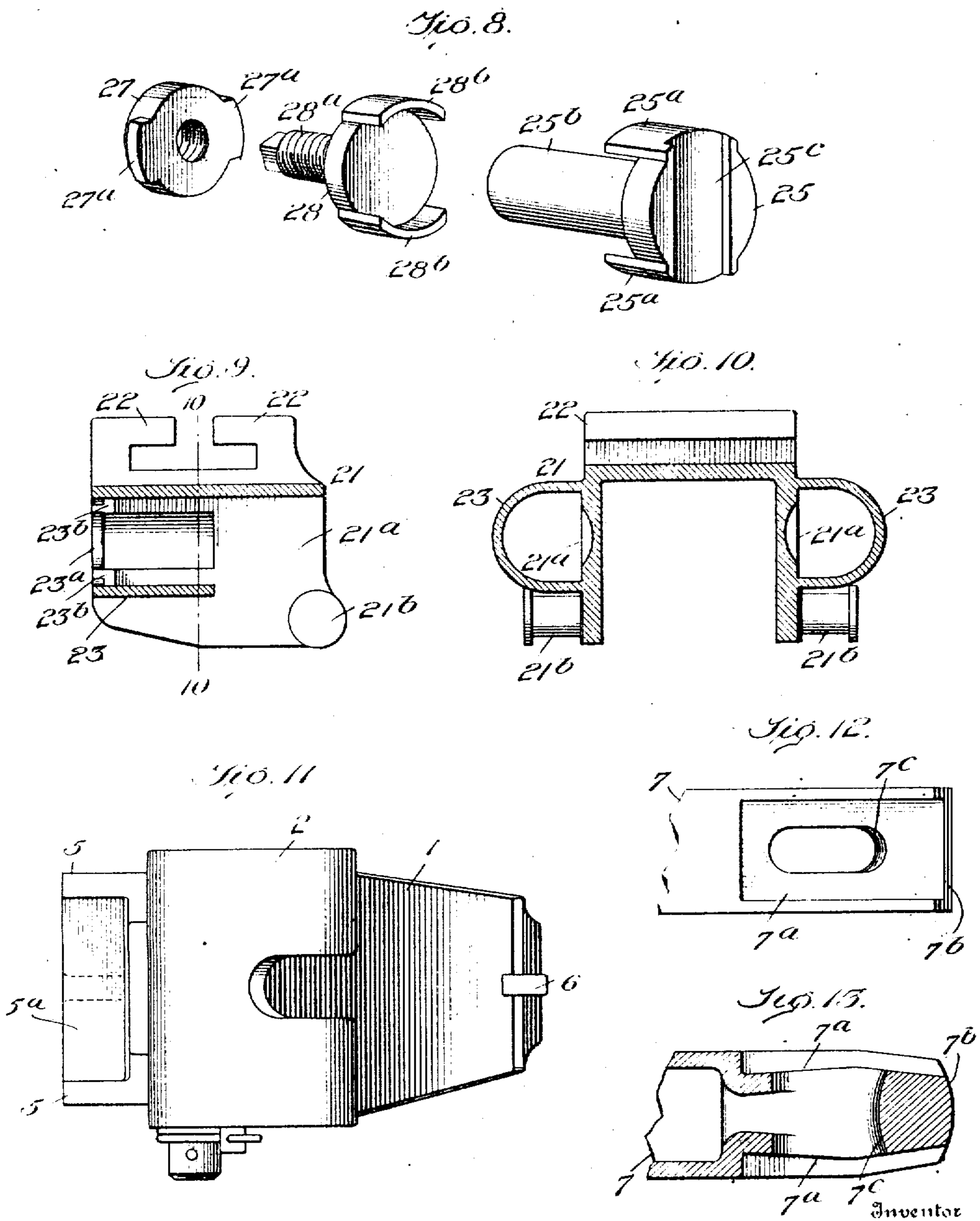
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UNITED STATES PATENT OFFICE.

WILLIAM R. MATTHEWS, OF ASPINWALL, PENNSYLVANIA, ASSIGNOR TO THE McCONWAY & TORLEY COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DRAFT APPLIANCE FOR RAILWAY-CARS.

950,490.

Specification of Letters Patent.

Patented Mar. 1, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM R. MATTHEWS, a citizen of the United States, residing at Aspinwall, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Draft Appliances for Railway-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the construction of draft gear for railway cars, and, while generally applicable to railway vehicles of all classes, is particularly applicable to street and interurban cars, which are commonly operated over tracks having sharp vertical curves.

The principal object of the invention is to provide simple, efficient and durable means whereby a coupler, which is mounted upon a car with capability of lateral movement, may be permitted to move vertically when the car to which it is attached passes over a vertical curve in the track, the construction being such that the coupler is returned to its normal position after the vertical curve has been passed.

To this end, the main feature of my invention, generally stated, consists in the provision of means for yieldingly supporting a coupler so as to permit it to move vertically, the said coupler being pivotally mounted to swing from side to side of the car, and the said supporting means comprehending lever mechanism and being combined with the coupler so as to be laterally movable therewith.

There are other, minor, features of invention, residing in particular combinations and elemental constructions, all as will hereinafter more fully appear.

In the drawings chosen for the purpose of illustrating the invention, the scope whereof is pointed out in the claims, Figure 1 is a plan view of a draft gear embodying my invention, adjacent parts of the car framing being also shown; Fig. 2 is a side elevation of the devices shown in Fig. 1, the vertically displaced position of the coupler being represented by dotted lines, and the uncoupling chain and portions of the coupler guide rail and car framing being omit-

ted; Fig. 3 is an end elevation of the devices shown in Fig. 1, the relation of the air hose thereto being illustrated in dotted lines, and the coupler head and uncoupling chain being omitted; Fig. 4 is a detail view, partly in side elevation and partly in vertical section, showing the yielding means for permitting the coupler to move vertically and also showing the preferred manner of connecting the coupler stem to the draft spring yoke; Fig. 5 is a detail, inverted plan view of the yielding means for permitting vertical movements of the coupler, a portion of the coupler being also shown; Fig. 6 is a detail view, partly in plan and partly in horizontal section, showing the yielding means for permitting vertical movements of the coupler, and also showing the adjacent portion of the coupler; Fig. 7 is a detail section of a portion of the device for yieldingly supporting the coupler, the view being taken in the plane of the line 7-7, Fig. 6; Fig. 8 is a segregated, perspective, detail view illustrating the construction and arrangement of the nut, spring seat and follower which are located within each of the spring casings; Fig. 9 is a detail view of the carrier showing one of the spring casings in longitudinal, vertical section; Fig. 10 is a detail view of the carrier, taken in the plane of the line 10-10, Fig. 9; Fig. 11 is a detail view showing the coupler head in end elevation; Fig. 12 is a detail, plan view of the rear end of the coupler stem; and Fig. 13 is a detail, vertical, central section of the rear end of the coupler stem.

Like symbols refer to like parts wherever they occur.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, 1 is the coupler head upon which are mounted a pivoted knuckle 2 and any well known or suitable knuckle locking mechanism, the latter being preferably provided with the well known lock or catch lever 3 for attachment to an uncoupling chain 4. Any form of coupler head may be employed, but it is preferred to form said head with suitable guard lugs which cooperate with similar guard lugs formed on the mating coupler to prevent

said couplers from becoming disassociated when passing around a horizontal curve or over a vertical one, notwithstanding the couplers may be very much worn from long service. For this purpose it is preferred to provide the knuckle side of the coupler head 1 with a pair of laterally extending guard lugs 5, 5 which are spaced apart a sufficient distance to receive between them a guard lug similar to the guard lug 6, which is formed upon the guard arm of the coupler head and extends forwardly beyond the point of said guard arm. The lugs 5, 5 are preferably connected by a vertical web 5^a to form a pocket or recess, as shown.

The rear end of the coupler stem 7 may be pivotally attached to the car in any desired manner, but it is preferred to form this attachment through the instrumentality of yielding devices which operate to normally maintain the coupler in the longitudinal axis of the car. The special means illustrated in the drawings for pivotally connecting the coupler to the car and for maintaining the coupler in a centralized position are substantially identical with the corresponding devices shown and described in my application, Serial Number 448,128, that is to say, the yoke or spring pocket 8, draft spring 9 and follower 10 are housed within a draft member 11 in such manner that said yoke and follower may slide or move toward each other to compress the said draft spring between them, the rear end of the said draft member being provided with an extension which is perforated for the reception of the pivot pin 12 by which these several devices are attached to the pivot casting 13 that is bolted to the car framing. The centering bar 14, the two parts of which are yieldingly connected by the spring 15, is attached at its rear end to a stud 16 that is formed on the yoke 8 and extends upwardly through an elongated opening in the top of the draft member 11, while the forward end of said centering bar is pivotally connected to the car in such manner that the normal pressure of the centering bar spring 15 upon the separate sections of said bar may be released through the instrumentality of the adjusting lever 17, to thus permit the coupler to be swung manually to any desired position. A more detailed description of the construction and mode of operation of the devices for pivotally mounting and horizontally centralizing the coupler may be obtained from my aforesaid application, if desired; but it is to be understood that the form of such devices described is merely illustrative, not essential.

In order that the coupler head may be capable of extended vertical movements without subjecting the draft and buffing resisting devices to undue strain, it is preferred to so connect the rear end of the

coupler stem 7 with the yoke 8 that the coupler may be capable of vertical, pivotal movement with respect to said yoke. Such a connection may be conveniently effected by providing the rear end of the coupler stem 7 with oppositely disposed depressed or countersunk yoke receiving seats having convexly curved or inclined inner faces 7^a, 7^b which form rocking bearings upon which the forward ends of the yoke 8 bear, said yoke being connected to the coupler stem by means of a bolt 8^a which passes through a suitably formed aperture in said stem, and the follower engaging face 7^c of said stem being preferably convexly curved so as to permit the coupler to move vertically while in contact with the follower 10 without compressing the draft spring.

As the means illustrated for yieldingly and pivotally connecting the coupler to the car are such that the yoke 8 does not move rearwardly in buffing, the aperture in the coupler stem through which the bolt 8^a passes is formed as a slot which is sufficiently long to permit the said yoke and bolt to remain stationary while the coupler moves rearwardly the distance necessary to fully compress the draft spring 9, the rear wall 7^c of said slot being rounded so as to easily rock upon the said bolt 8^a when the parts are in their normal positions or are subjected to draft strains, as will be readily understood.

Attached to the under side of the car platform is a curved supporting rail 18 which, as shown, may be formed with a centrally located socket 19 for the reception of the slotted head 20 of the centralizing bar adjusting lever 17. Slidably mounted upon this rail, which is preferably of flanged form, is a carrier 21 by which the coupler is yieldingly supported in such manner as to be permitted to move vertically when the car to which it is attached passes over a vertical curve, said carrier being suspended from the lower flange of the I-beam form of supporting rail shown by means of oppositely disposed angular lugs 22, 22, which rest upon the upper surface of said flange and extend toward the vertical web of said rail.

Upon opposite sides of the coupler stem 7, which is freely movable longitudinally through the carrier, said carrier 21 is preferably provided with cylindrical spring casings 23, 23 within which are housed springs 24, 24 which, through the intermediacy of followers 25, 25 and the vertically movable pivoted yoke 26, operate to yieldingly maintain the coupler at its normal height above the track. As shown more particularly in Figs. 3, 6 and 7, the forward ends of the spring casings are formed with oppositely disposed, separated lugs or flanges 23^a, 23^a, which project in-

wardly to form seats for the nuts 27, 27, said nuts being fashioned with oppositely disposed flanges 27^a, 27^a which are adapted to pass between the lugs 23^a, 23^a of the spring casings 23, and the interior of each of said casings being provided adjacent to its end lugs 23^a with a plurality of longitudinally extending stop lugs 23^b which prevent the rotation of the adjacent nut 27 after said nut has been properly inserted in its casing, as will hereinafter more fully appear. Within each spring casing 23 is a spring seat 28 which is provided with a threaded rod or extension 28^a that passes through the adjacent nut 27 and has threaded engagement therewith, and as it simplifies the assemblage as well as the repair of the device to insert said spring seats into the spring casings 23 through the flanged openings at the forward ends of the latter, it is preferred to form the spring retaining flanges 28^b, 28^b of the spring seats 28 as curved lugs which are oppositely located and of such dimensions as to permit them to pass between the oppositely disposed flanges 23^a, 23^a of the spring casings. To facilitate repairs, the followers 25, upon which the inner ends of the springs 24 respectively bear, are likewise formed with oppositely located, curved, spring-retaining flanges, 25^a, 25^a, which are of such form and dimensions as to permit said followers to be inserted and removed through the openings in the forward ends of the spring casings 23. Each of the followers is also preferably formed with a centrally located finger 25^b which extends forwardly into the bore of the adjacent spring 24 and thus serves to insure the proper relation of said spring and follower when the device is in service. In order that the force transmitted from the pivoted, coupler supporting yoke 26 through the followers 25 to the springs 24 may be applied centrally of said springs, the rear face of each follower may be formed with a flat, depressed seat or groove 25^c for the reception of the rounded end of the corresponding short arm 26^a of the pivoted yoke 26. If desired, the rear portion of the carrier frame may, as shown, be provided with longitudinally extending, flat faces, 21^a, 21^a, which form guides for and afford lateral support to the respective followers, 25, 25, during their movements.

The vertically movable yoke or lever member 26 which supports the forward end of the coupler is preferably pivotally mounted on laterally projecting trunnions or pintles 21^b that are formed integral with the carrier frame and project outwardly therefrom beneath and adjacent to the rear ends of the spring casings 23, the outer ends of said trunnions being flanged to form guides or stops which prevent the side bars of said yoke from spreading.

The yoke 26, which is preferably an integral casting, may be conveniently formed with a transversely extending front bar 26^b, which engages the under side of the coupler stem 7, and with parallel side bars which extend rearwardly on opposite sides of the coupler and constitute bell-crank levers each having arms 26^a, 26^c and a curved, segmental pivot bearing 26^d which engages the upper portion of the corresponding trunnion 21^b.

For actuating the uncoupling chain 4 to unlock the coupler in any of the many laterally and vertically displaced positions it may assume, it is preferred to employ a release rigging which consists of a double bell crank lever 27 that is rotatably mounted upon the bolt 12 by which the draft gear is pivotally mounted upon the car. One of the arms, 27^a, of this bell crank lever is connected to the uncoupling chain 4, while each of the oppositely extending arms, 27^b, 27^b, thereof is pivotally connected to its corresponding pull rod 28, said rods extending transversely of the car in opposite directions and being provided with handles at their outer ends so that the coupler may be readily unlocked from either side of the car by simply pulling upon one of the rods.

The several parts of the yielding coupler support or carrier 21 may be conveniently assembled by first hooking the yoke 26 over the pintles 21^b so that the segmental bearings 25^b rest upon the tops of said pintles, then inserting the followers 25 into their respective spring casings 23 and bringing the depressed seats 25^c of said followers into proper relation with the rounded ends of the lever arms 26^a of the yoke side bars, next inserting the springs 24 into the spring casings and seating them upon the corresponding followers 25, and, finally, introducing the adjustable spring seats 28 and nuts 27, turning and sliding the said nuts until the flanges 27^a thereof rest between the stop lugs 23^b on the interior of the spring casing and thereafter rotating the screw rods 28^a to create the desired compression in the springs 24. The introduction of the nuts 27 and adjustable spring seats 28 into the spring casings 23 may be most readily accomplished by first screwing each nut upon the threaded extension 28^a of its spring seat 28 until said nut is close to the body of the spring seat and the oppositely extending lugs 27^a and 28^b of the respective parts are in alinement, and then simultaneously inserting a spring seat and its nut into the spring casing and forcing them rearwardly far enough to permit the nut to be rotated sufficiently to bring its lugs 27^a opposite the corresponding spaces between the stop or locking lugs 23^b of the casing 23, after which the flanges of the nut are permitted to seat themselves upon the end flanges 23^a of the

spring casing, in which position it is restrained from rotation by the stop lugs 23^b, as heretofore described.

When the carrier 21 has been assembled the suspending lugs 22 thereof are slid over the lower flanges of the curved, supporting rail 18 until the said carrier occupies a position in the longitudinal axis of the car, when the coupler stem 7 may be readily passed through the opening between the spring casings 23 and yoke 26 and attached to the spring pocket or draft yoke 8 by means of the bolt 8^a.

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

1. In a draft appliance, the combination with a laterally and vertically movable coupler, of spring means for yieldingly supporting said coupler so as to permit it to move vertically, said means including lever mechanism and being movable laterally with said coupler.

2. In a draft appliance, the combination with a vertically movable coupler, of a carrier affording vertical support to said coupler, said carrier being provided with a pivoted member which supportingly engages said coupler and being also provided with spring means which act upon the said pivoted member.

3. In a draft appliance, the combination with a coupler, of means for pivotally connecting said coupler to a car so as to permit it to swing laterally, spring controlled devices for normally maintaining the coupler in a horizontally centralized position, means for connecting said coupler and said coupler centralizing devices, said means including a pivot member permitting said coupler to have a vertical pivotal movement with respect to said centralizing devices, and a vertically movable yielding support for said coupler.

4. In a draft appliance, the combination with a coupler, of a draft yoke attached thereto, a draft spring within said yoke, and a vertically movable yielding support for said coupler, the stem of said coupler being provided with convex faces engaging said yoke.

5. In a draft appliance, the combination with a coupler, of a draft yoke, a follower within said yoke, a draft spring acting on said follower and yoke, and a bolt connecting said coupler and yoke, the stem of said coupler being provided with oppositely disposed convexly inclined faces engaging said yoke and being also provided with a convexly inclined face adapted to engage said follower.

6. In a draft appliance, the combination

with a vertically movable coupler, of a yielding support for said coupler, said support including a frame, spring means carried by said frame, and a lever device movable by said coupler to energize said spring means.

7. In a draft appliance, the combination with a vertically movable coupler, of a pivoted member engaging and supporting said coupler, and spring means which normally maintain said pivoted member in supporting engagement with said coupler.

8. In a draft appliance, the combination with a vertically and laterally movable coupler, of a curved supporting rail, a yielding support for said coupler slidably mounted upon said rail, said support including a frame, a lever mounted on said frame, and spring means which normally maintain said lever in engagement with said coupler.

9. In a draft appliance, the combination with a vertically movable coupler, of a yielding support therefor, said support including a frame, longitudinally extending springs mounted in said frame, and means operative by a vertical movement of the coupler for energizing said springs.

10. In a draft appliance, the combination with a vertically movable coupler, of a yielding support therefor, said support including longitudinally extending spring casings arranged upon opposite sides of the coupler, springs within said casings, and a pivoted yoke extending under said coupler and adapted to energize said springs.

11. In a draft appliance, the combination with a vertically movable coupler, of a yielding support therefor, said support including a frame provided with longitudinally extending spring casings arranged upon opposite sides of the coupler, springs within said casings, movable spring seats for said springs, a supporting yoke extending under said coupler and pivotally mounted on said frame, and followers interposed between said yoke and bearing on said springs.

12. A yielding support for vertically movable couplers, said support including a frame provided with spring casings having inwardly projecting flanges, nuts bearing upon the flanges of said casings, spring seats having threaded engagement with said nuts, springs arranged within said casings and seated on said spring seats, followers seated on said springs, and a pivoted yoke engaging said followers.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

WILLIAM R. MATTHEWS.

Witnesses:

J. W. HARTLEY,
F. D. ECKER.