

H. T. KRAKAU.
RADIAL DRAFT GEAR.

APPLICATION FILED MAY 11, 1906. RENEWED OCT. 14, 1907.

900,026.

Patented Sept. 29, 1908.

4 SHEETS—SHEET 1.

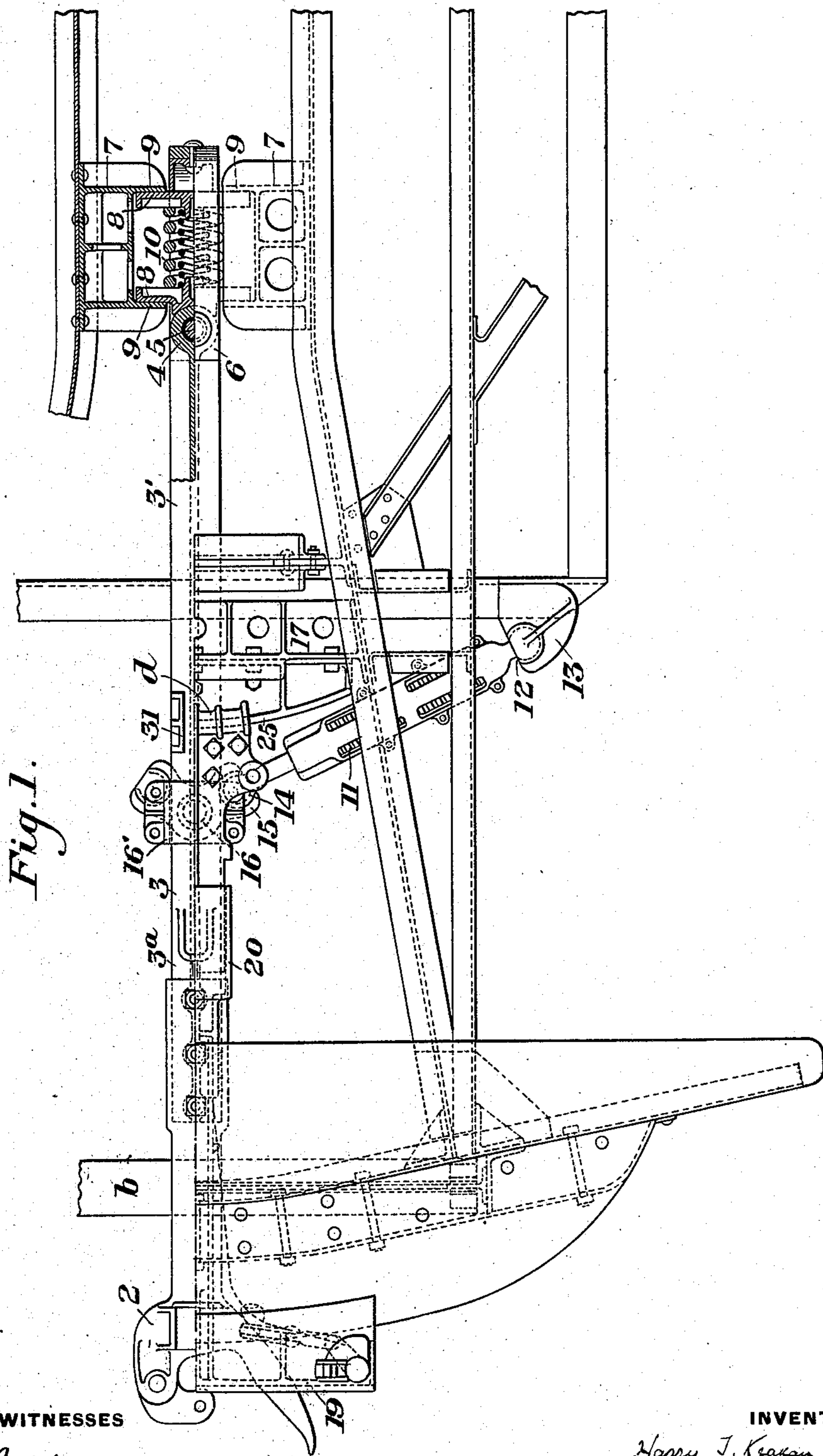


Fig. 1.

WITNESSES

R. A. Balderson
Warren W. Swartz

INVENTOR

Harry T. Krakau
by Casswell & Byrnes
his Attorneys

H. T. KRAKAU.
RADIAL DRAFT GEAR.

APPLICATION FILED MAY 11, 1906. RENEWED OCT. 14, 1907.

900,026.

Patented Sept. 29, 1908.

4 SHEETS—SHEET 2.

Fig. 8.

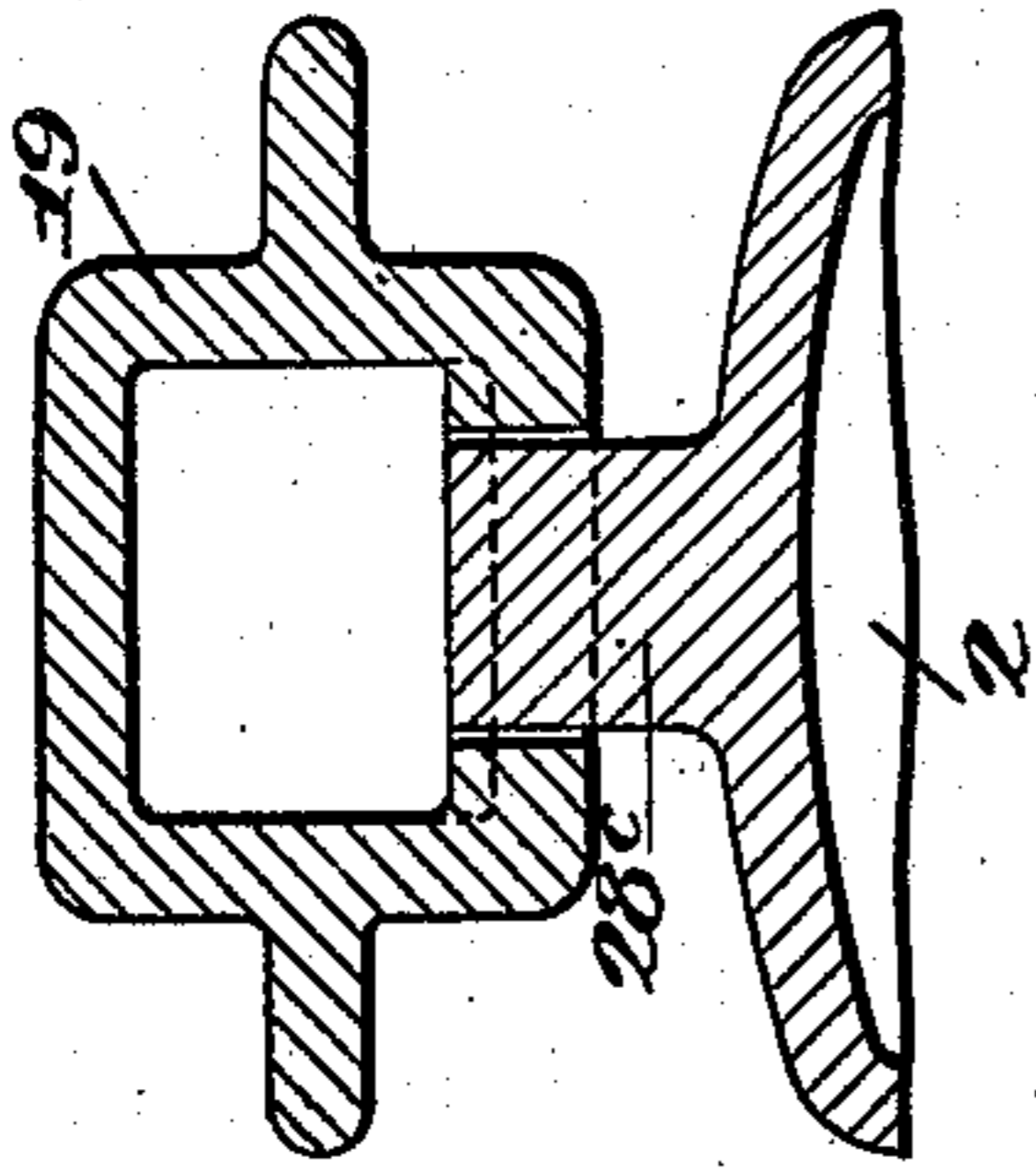


Fig. 7.

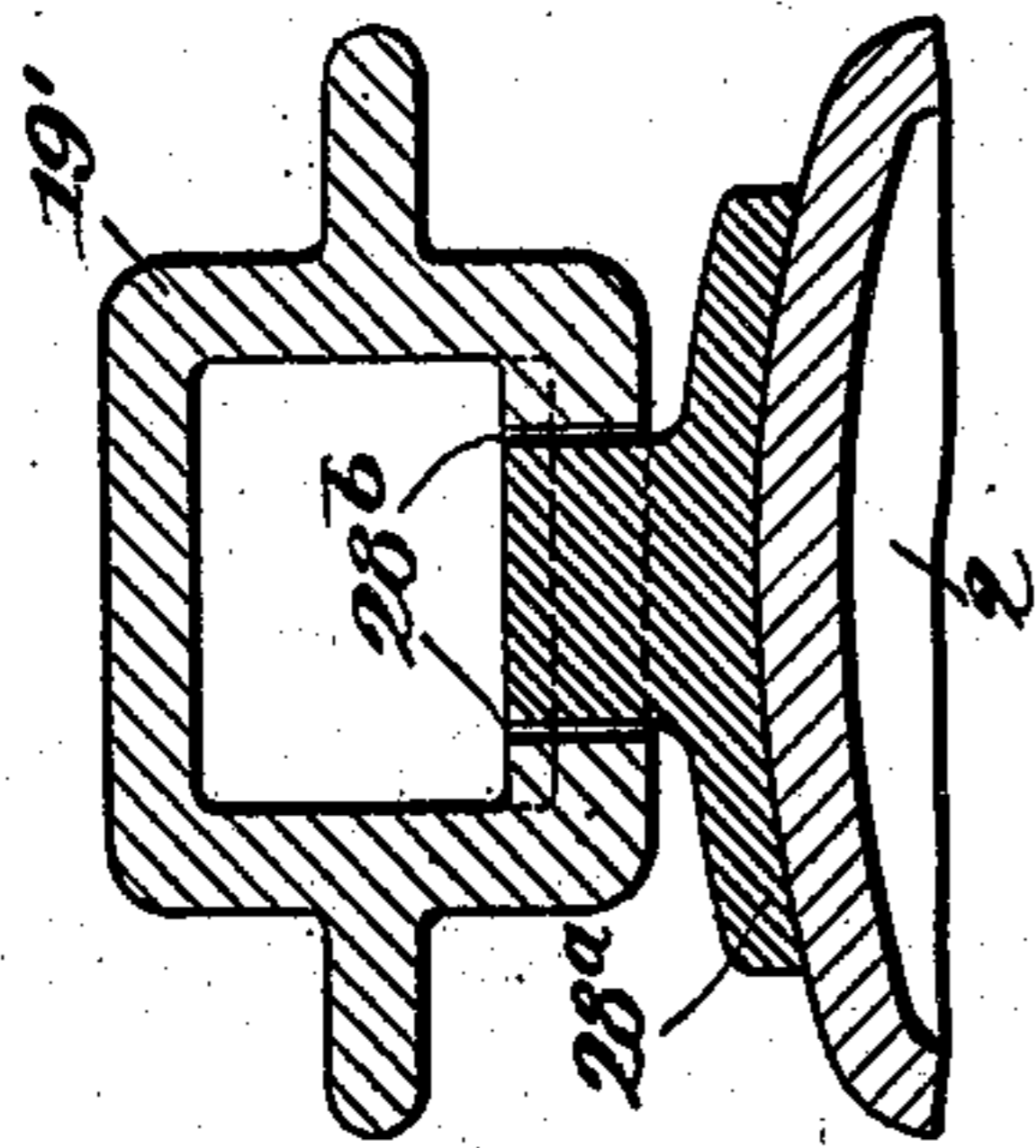


Fig. 6.

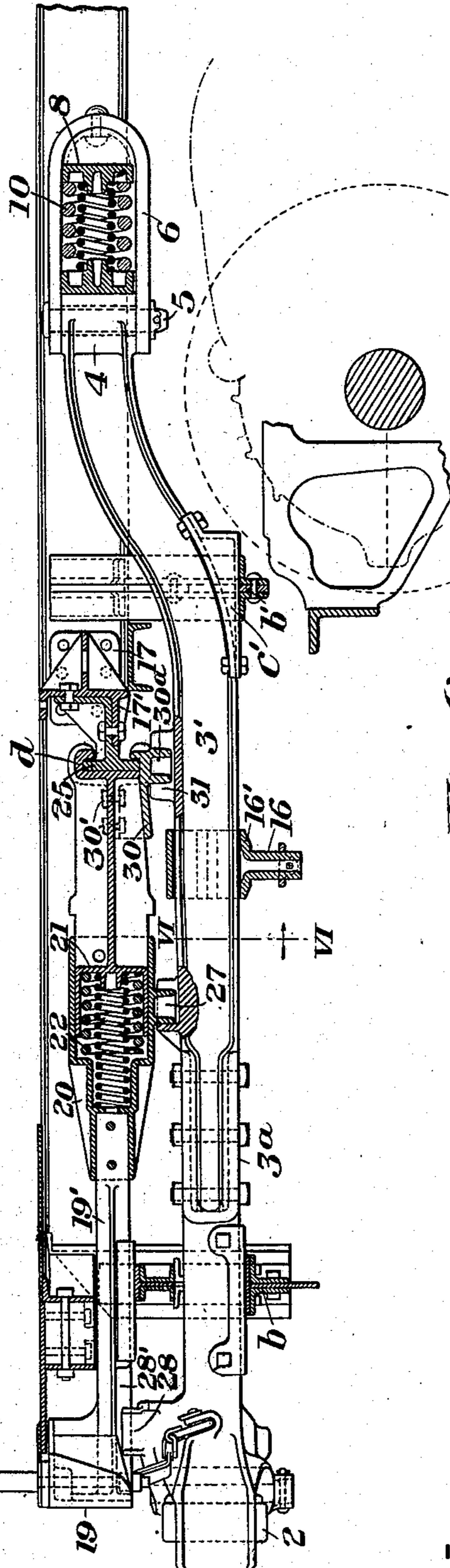
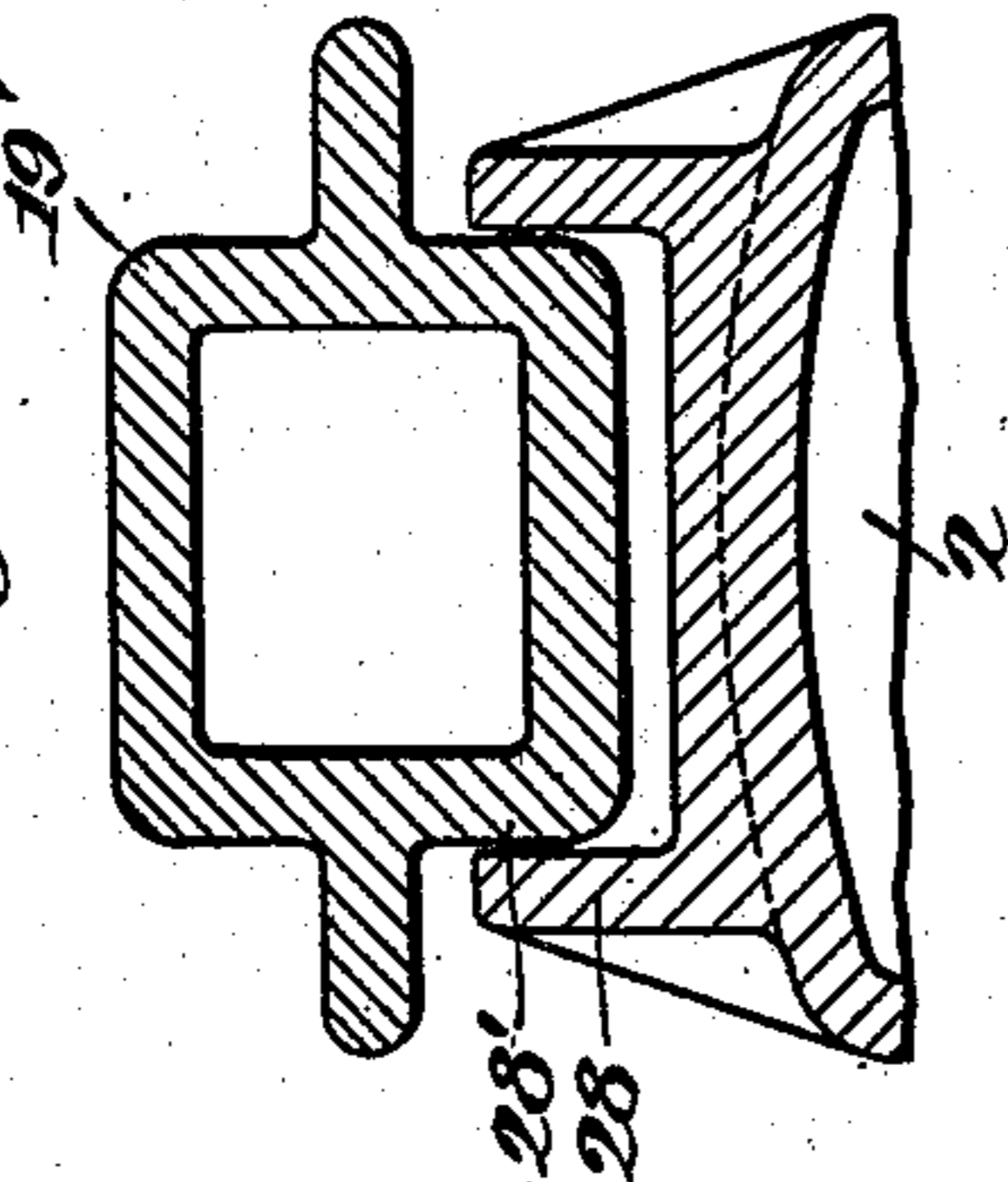


Fig. 2.

WITNESSES

R. A. Balderson.
Warren W. Swartz

INVENTOR

Harry T. Krakau
by Baxendell Byrnes
his Attorneys

H. T. KRAKAU.
RADIAL DRAFT GEAR.

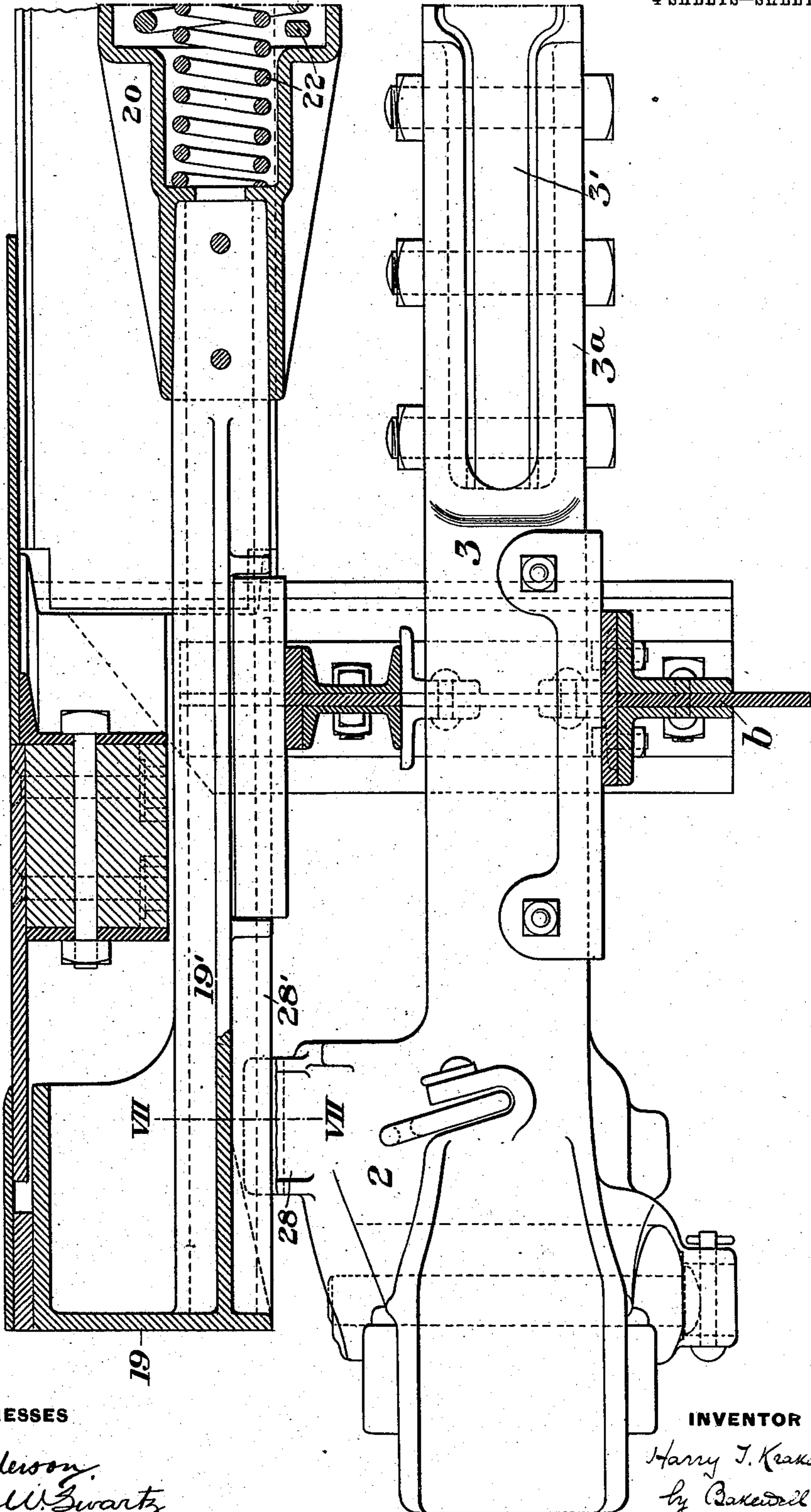
APPLICATION FILED MAY 11, 1906. RENEWED OCT. 14, 1907.

900,026.

Patented Sept. 29, 1908.

4 SHEETS—SHEET 3.

Fig. 3.



WITNESSES

R. A. Balderison
Warren W. Zwartz

INVENTOR

Harry T. Krakau
by Caxwell Byrnes
his Attorneys

H. T. KRAKAU.
RADIAL DRAFT GEAR.

APPLICATION FILED MAY 11, 1906. RENEWED OCT. 14, 1907.

900,026.

Patented Sept. 29, 1908.

4 SHEETS—SHEET 4.

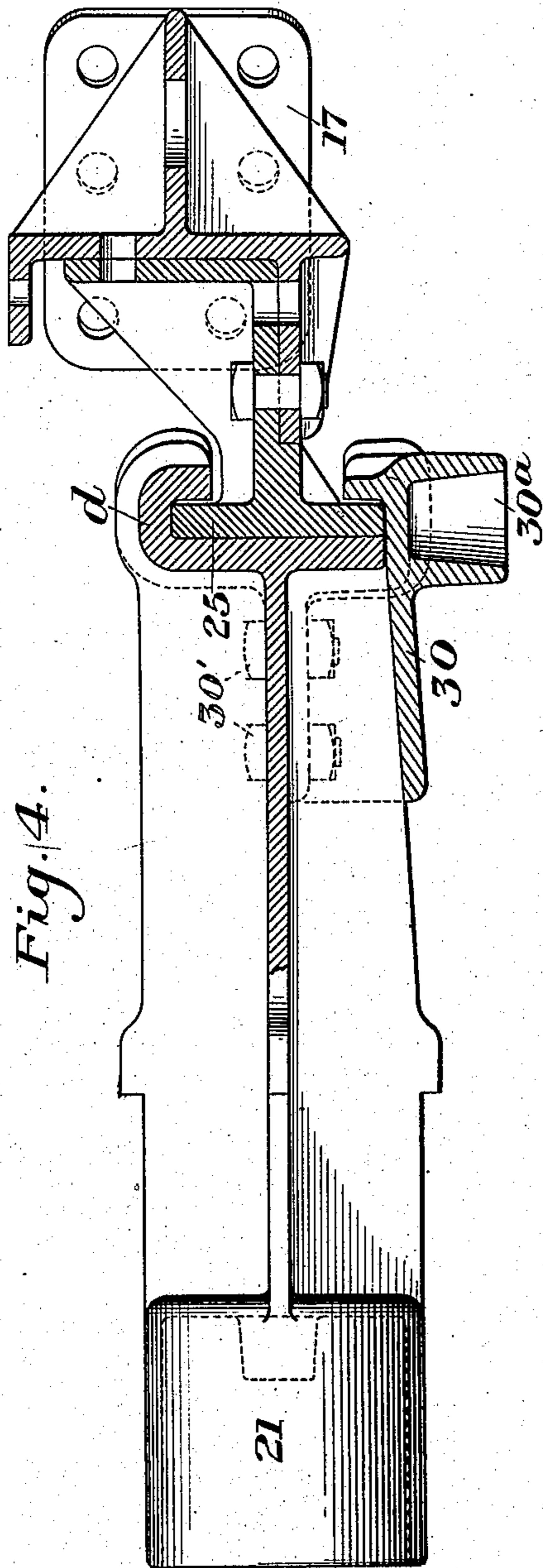


Fig. 4.

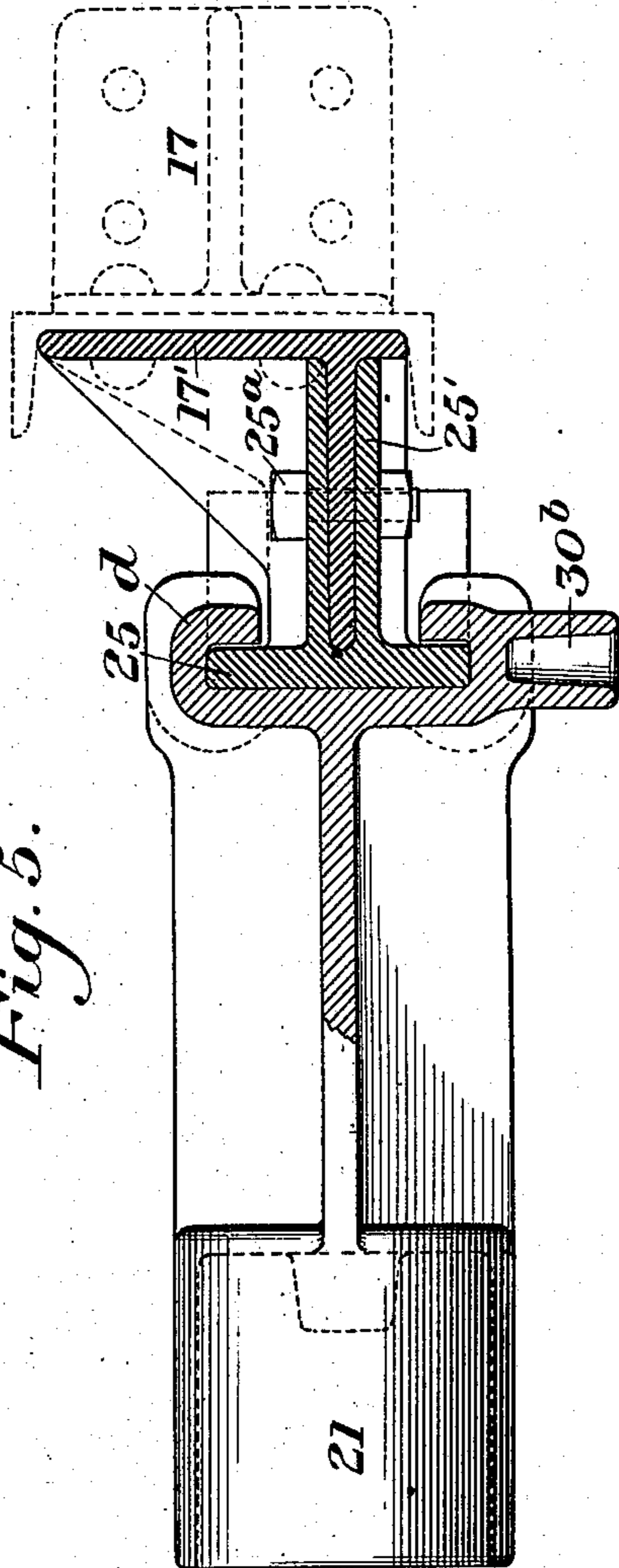


Fig. 5.

WITNESSES

R. A. Balderson.
Warren W. Swartz

INVENTOR

Harry T. Krakau
by Randall B. Byrnes
his attorney

UNITED STATES PATENT OFFICE.

HARRY T. KRAKAU, OF CLEVELAND, OHIO, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

RADIAL DRAFT-GEAR.

No. 900,026.

Specification of Letters Patent.

Patented Sept. 29, 1908.

Application filed May 11, 1906, Serial No. 316,296. Renewed October 14, 1907. Serial No. 397,355.

To all whom it may concern:

Be it known that I, HARRY T. KRAKAU, of Cleveland, Cuyahoga county, Ohio, have invented a new and useful Improvement in Radial Draft-Gear, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a partial plan view partly in section of a radial draft gear embodying my invention; Fig. 2 is a longitudinal section in part showing a side elevation; Fig. 3 is a sectional view on a larger scale, showing the forward end of the coupler and buffer; Fig. 4 is a sectional view showing the rear end of the buffer in its attachment to the car; Fig. 5 shows a modification; Fig. 6 is a vertical section on the line VII—VII of Fig. 3; Figs. 7 and 8 are sectional views showing modifications of the parts illustrated in Fig. 6.

My invention provides a draft gear in which the coupler is capable of swinging laterally through a wide range and is connected to the truck so as to be guided thereby positively into proper position.

The device can be used with success on passenger cars, and can also be applied to draft-gears in a manner which will adapt them for use not only with passenger cars, but also with much greater efficiency than heretofore on freight car equipments. The advantages of such laterally-swinging draft gears are, that they relieve the cars from the great strain to which they are subjected when provided with laterally-fixed draft gears, and also remove the strain from the wheels, axles, and truck, and thus increase the durability of the cars and effect a very considerable economy in the power required to move the trains.

The drawings show the preferred embodiment of my invention but it will be understood by those skilled in the art that the parts and their arrangement may be modified in many ways and that some of the parts of the apparatus may be applied to use without the others.

In the drawings, 2 represents the car coupler, which has a long rear extension preferably made in the form of a shank 3 which terminates at the end in a socket 4 for a vertical pivot-pin 5. For convenience, I prefer to make the coupler-shank in two parts 3' and 3'', the rear portion 3' being provided with a socket or pin hole 4 and its front end

fitting between forks at the rear end of the forward portion 3'' to which it is bolted. The socket 4 fits within yoke 6 to which it is attached by the pivot-pin 5, and the yoke is mounted between draft-irons 7, 7, followers 8 being set cross-wise within the yoke and adapted to bear against stops 9 on the irons. A spring or springs 10 is interposed between the followers and with the followers constitutes the draft-rigging. A suitable rail-bolt which is a well-known equivalent may be substituted for the yoke, frictional devices and the like may be employed, and the construction and arrangement of the springs and followers may be modified in many ways.

The coupler shank or extension is supported by carry irons *b*, *b'* and at its rear portion, the member 3' of the coupler shank is curved upwardly so as to bring the pin 5 and the yoke of the draft-rigging at substantially the level of the car sills. Above the carry-iron *b'* the shoe *c'* is applied to the shank 3' at its lower part so as to give it full bearing on the carry iron and a good wearing surface.

When the car is in service, the coupler and its shank will turn radially on the axis of the pin 5, being guided by means described below, so that it will at all times be in approximately the central portion of the railway track. The draft-rigging, however, does not move laterally, but remains in the longitudinal axis of the car, and as the coupler is subjected to the pressure of buffing and draft, the forward follower of the draft-rigging will be forced back against the spring or the rear follower drawn forward against the spring, as the case may be, the forward stops 9 resisting the force of draft and the rear stops 9 resisting the force of buffing.

To guide the coupler-shank and to hold it substantially at the center of the track, I provide it with guiding-rods shown in Fig. 1 which are made with telescopically-arranged sections having interposed springs 11 and at their rear ends these rods are connected by ball-and-socket joints 12 to brackets 13 at the ends of the truck, and at their forward ends the rods are connected by ball-and-socket joints 14 with an elbow-lever or like connection 15 mounted at the middle on the vertical pin 16 forming part of a sleeve 16' mounted on the coupler-shank as shown in Figs. 2 and 6.

The telescopic rods serve as guiding connections between the coupler shank and the

truck, and the sliding sleeve 16' permits the coupling shank to move longitudinally in buffing or in draft without moving the guiding connections to compress the springs therein, but the guiding connections will act on the coupler-shank to guide it to the center of the track no matter in what longitudinal position they may be.

The drawings show the application of my invention to passenger cars, and therefore platform-buffers are provided which are constructed in accordance with my invention so that they will move laterally with the coupler-shank and thus will be maintained in engagement with each other in all positions of the car. The platform buffer has a forward part or face plate 19 with a rearwardly-projecting shank 19' secured to a front buffer spring casing 20 which is fitted telescopically over a rear buffer spring case 21. Springs 22 are set in the spring cases and the rear case 21 has a connection with the curved guide segment, the forward face of which is concentric with the pivot pin 5. These segments are constituted as shown in Figs. 2 and 4. The casting 17 is fixed between the center sills of the car and constitutes part of the body end-sill of the car. At the forward side it has a flanged portion 17' to which the curved segment 25 is bolted so that it can be detached when desired. The front of the segment is preferably of T-shape and its upper flange engages the lip or guide flange *d* at the end of the rear spring case 21 of the buffer. There is a separate casting 30 secured by bolts 30' to the buffer and fitting the lower portion of the segment 25, in conjunction with the lip or flange *d* it holds the buffer to the segment, and by reason of its detachability from the buffer, it enables the buffer to be readily removed from the segment without detaching the other parts.

The buffer is engaged with the coupler-shank in such manner as to permit an independent relative motion of these parts to a limited extent in the direction of length of the car, and so as to cause them to move laterally together. This engagement is made by pins or projections on one of those parts, fitting within longitudinally slotted or elongated sockets on the other part, one pair of these engaging devices being at the rear of the buffer, and preferably as near to its guiding-segment as possible. The pin 30^a constituting one of the engaging devices projects downwardly from the part 30. The pin 30^a fits within a socket 31 secured to the coupler shank, which may be somewhat wider than the diameter of the pin, so that it will not permit independent lateral motion of the parts, but will permit independent longitudinal motion thereof. A corresponding pin and socket connection 27 connects the buffer and coupler shank beneath the buffer springs, these parts, however being shown integrally

formed with the buffer spring case, and with the coupler shank respectively. A third sliding connection between these parts is afforded by forming on the top of the coupler, a forked guiding portion 28 which engages a rib 28' on the under-side of the buffer shank. By these devices, the buffer is moved laterally with the coupler, and is adapted to move longitudinally with reference thereto with as little friction and liability of binding as possible. The buffer being thus moved at its rear and forward points with the coupler, constitutes in effect a floating member which has its rear bearing on a curved and extended surface at the end-sill of the car frame, and transmits the stresses of buffing to the end-sill in a straight line in every position in which it may be carried by the coupler.

In Fig. 5, I show a modified construction in which the bracket 17' is riveted to the casting 17 instead of being made integral therewith as in Fig. 4, and it fits between a forked portion 25' of the bracket 25 to which it is secured by bolts 25^a. In this figure I also show the pin 30^b integral with the buffer instead of being detachably secured thereto as in Fig. 4.

In Figs. 7 and 8 I show modified constructions of the front connection between the coupler and buffer. In Fig. 7 a pad 28^a having an upward projection or pin is secured to the top of the coupler 2 and fits within a groove 28^b on the bottom of the buffer shank, and in Fig. 8 the pin or projection 28^c is integral with the coupler and fits within a groove in the buffer shank 19'.

Within the scope of my invention as defined in the claims, those skilled in the art can modify the device in many ways, since

What I claim is:—

1. A laterally swinging buffer in combination with a curved segment against which a part of the buffer bears and a bracket secured to the frame of the car and supporting the segment, substantially as described.
2. A curved guiding segment in combination with the shank having a flange adapted to fit one surface of the segment, and a removable piece securing the shank detachably to the other face of the segment; substantially as described.
3. A radially-swinging draft-gear and a floating buffer, said draft-gear having an engagement with the buffer at the front and rear portions and at an intermediate portion permitting relative longitudinal motion of these parts; substantially as described.
4. A radially swinging draft gear and floating buffer, said draft gear having a coupling-head engaged with the buffer by engagement permitting relative motion of these parts in the direction of the length of the car, substantially as described.
5. A laterally-swinging draft-gear and floating buffer connected for simultaneous

lateral movements, said draft-gear being arranged below the buffer and being curved upwardly back of the buffer, to the pivotal connection on which it swings laterally; substantially as described.

6. A laterally-swinging draft-gear and floating buffer connected for simultaneous lateral movements, said draft-gear being arranged below the buffer and being curved upwardly back of the buffer to the pivotal connection on which it swings laterally, and a yielding draft-rigging at the rear of said pivotal connection; substantially as described.

7. A laterally swinging draft gear and a laterally swinging buffer supported independently of one another and located one above the other with the lower member extended in rear of the upper member and inclined upwardly to a pivotal anchorage on the car, substantially as described.

8. A laterally swinging draft gear and a laterally swinging buffer supported independently of one another and connected for simultaneous lateral movements and located one above the other with the lower member extended in rear of the upper member and inclined upwardly to a pivotal anchorage on the car, substantially as described.

9. A laterally swinging buffer and a laterally swinging draft gear supported independently of one another, the draft gear being below the buffer and extended in rear thereof and inclined upwardly to a pivotal anchorage in substantial horizontal alinement with the buffer, substantially as described.

10. A buffer, draft rigging alined in rear of the buffer, and a draw-bar below the buffer with its rear end inclined upwardly and connected to the rigging, substantially as described.

11. A draft rigging, a transverse arcuate

guide in front of the rigging, a laterally movable buffer engaged with the guide, and a draw-bar below the buffer with its rear end inclined upwardly and connected to the rigging, the buffer and draw-bar being connected for simultaneous swinging movements, substantially as described.

12. A draft rigging, a transverse arcuate guide in front thereof, a laterally movable elastically telescopic buffer engaged with the guide, and a draw-bar below the buffer with its rear end inclined upwardly and pivoted to the rigging, the buffer and draw-bar being connected for simultaneous swinging movements and for individual endwise movements, there being a connection between the draw-bar and the outer section of the buffer to cause said section to move rearwardly with the gear, substantially as described.

13. A laterally swinging draft gear and a laterally swinging buffer located one above the other with the lower member extended in rear of the upper member and inclined upwardly to a pivotal anchorage in substantially horizontal alinement with said other member, the two members being connected for simultaneous lateral swinging movements and capable of independent endwise movements, substantially as described.

14. A laterally swinging buffer, draft rigging alined in rear of the buffer and a draw-bar below the buffer with its rear end inclined upwardly and connected to the rigging, the buffer and draw-bar being connected for simultaneous lateral swinging movements and capable of independent endwise movements, substantially as described.

In testimony whereof, I have hereunto set my hand.

HARRY T. KRAKAU.

Witnesses:

F. L. HICKOK,
HARRY E. ORR.