

E. RYAN.  
SLACK ADJUSTING DRAW BAR.  
APPLICATION FILED NOV. 16, 1907.

906,563.

Patented Dec. 15, 1908.

2 SHEETS—SHEET 1.

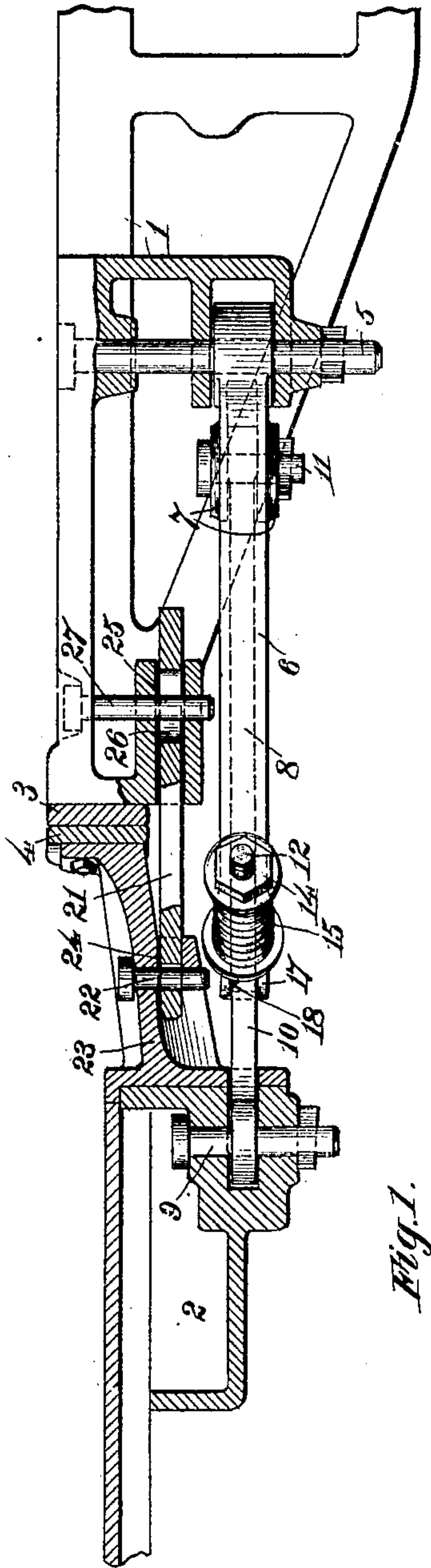


Fig. 1.

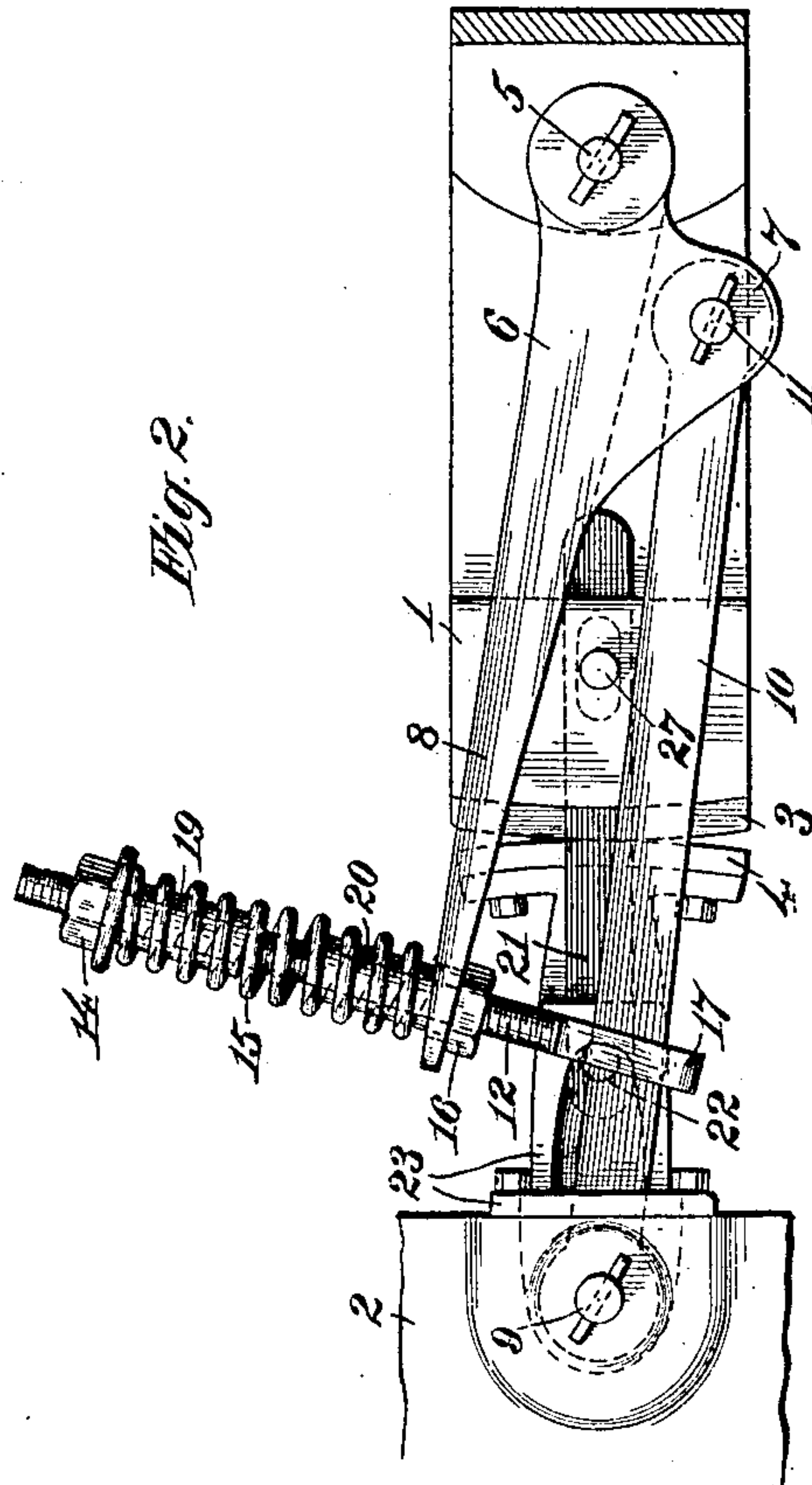


Fig. 2.

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A. A. Olson

Inventor:

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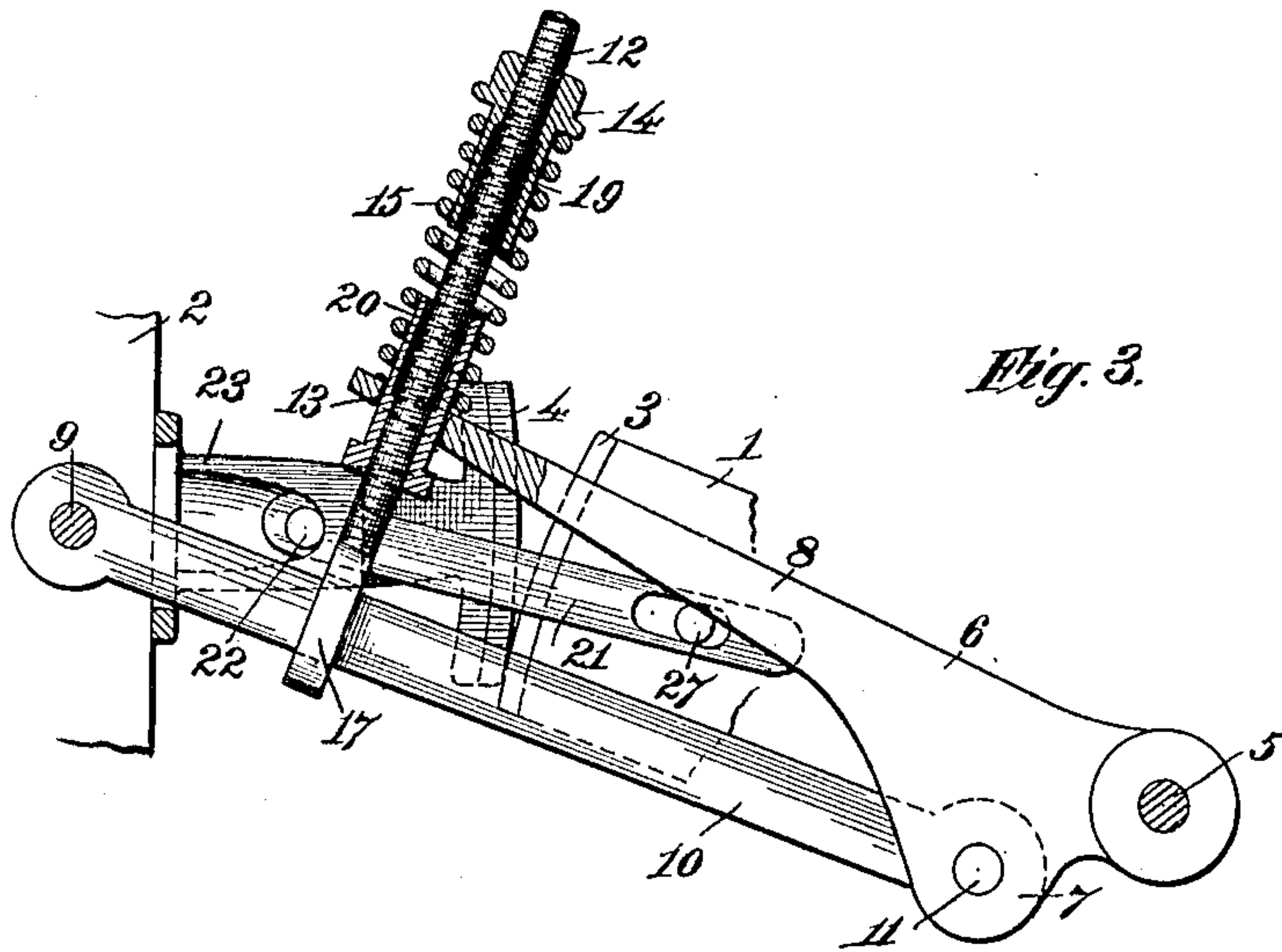


Fig. 3.

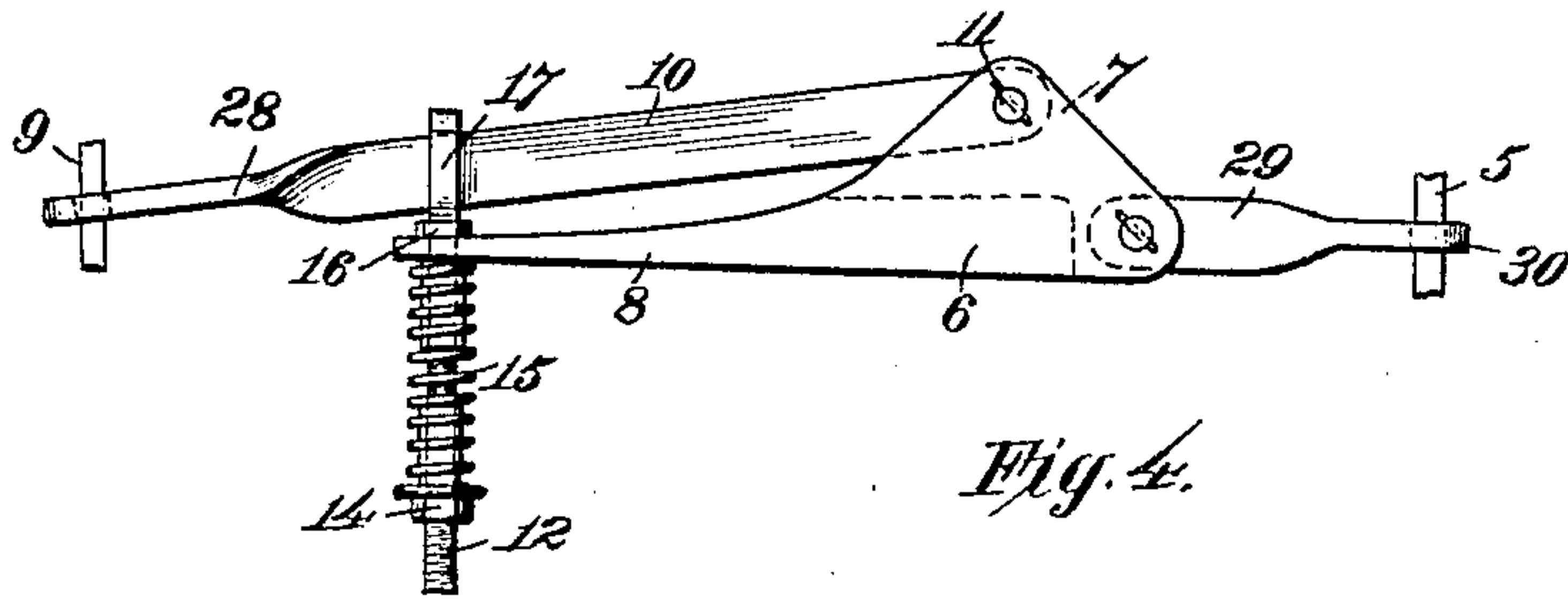


Fig. 4.

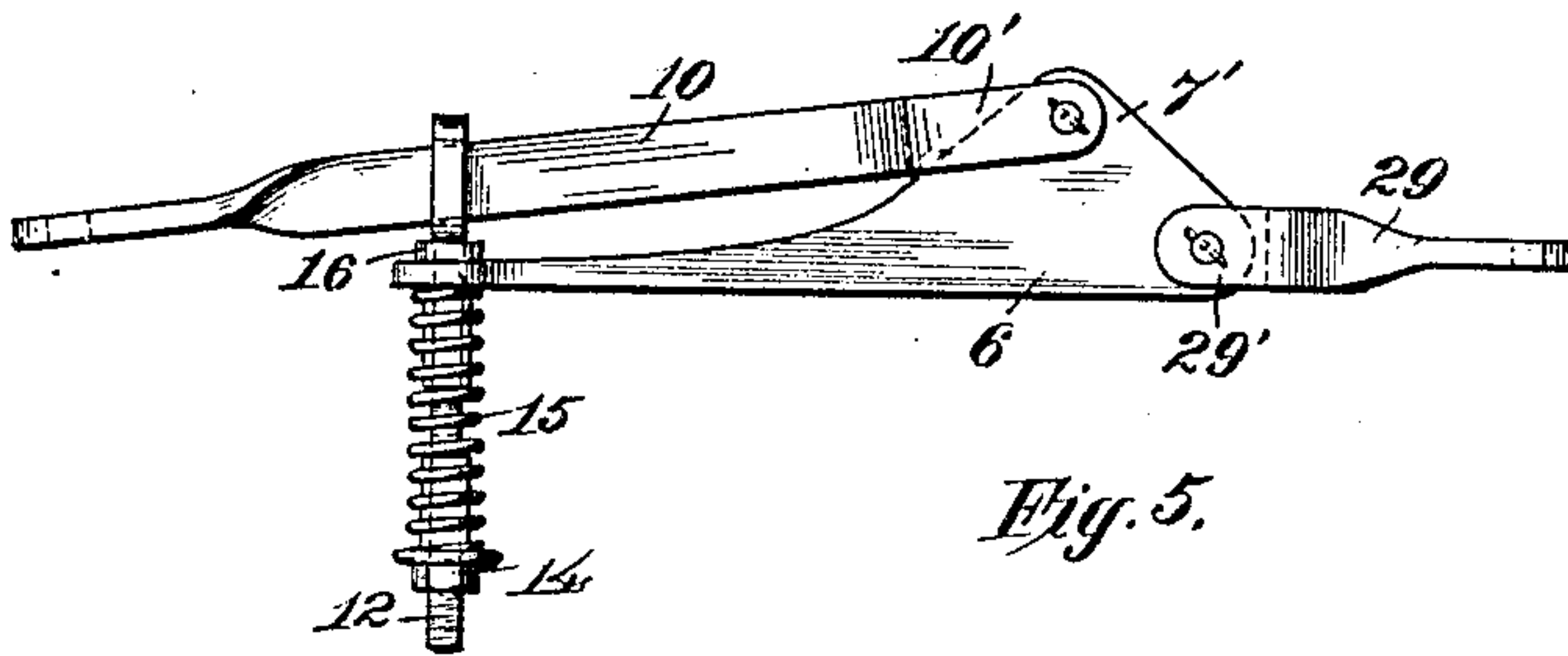


Fig. 5.

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# UNITED STATES PATENT OFFICE.

EDWARD RYAN, OF CHICAGO, ILLINOIS.

## SLACK-ADJUSTING DRAW-BAR.

No. 906,563.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed November 16, 1907. Serial No. 402,372.

*To all whom it may concern:*

Be it known that I, EDWARD RYAN, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Slack-Adjusting Draw-Bars, of which the following is a specification.

My invention relates to draw-bars for connecting the tender to a locomotive and particularly to slack-adjusting draw-bars.

The object of my invention is to provide a slack-adjusting draw-bar which shall exert a constant pull upon the coupling pins of greater force than the traction power of the locomotive to the end that all the wear on the chafing plates and the pins shall be reduced to a minimum.

A further object of my invention is to provide a device of the character mentioned, equipped with means for adjusting the same to take up the wear on the chafing plates in order to maintain a constant normal pull on the coupling pin.

A further object of my invention is to provide a device as mentioned equipped with means for regulating the tension of the parts and so constructed as to prevent increasing the tension to such an extent as to form a rigid device.

Other objects will appear hereinafter.

With these objects in view my invention consists generally in a bell crank lever pivotally connected to a locomotive by a suitable coupling pin, a draw-bar arranged substantially parallel with the long arm of said lever and connected at one end by a coupling pin to the tender and at the other end to the short arm of the lever, and a yielding connection between the long arm of said lever and the draw-bar.

My invention further consists in a device as mentioned, provided with means for adjusting the normal position of the long arm of the lever with relation to the draw-bar, in order to regulate the normal distance between the coupling pins.

My invention further consists in various details of construction and arrangements of parts all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which,

Figure 1 is a side elevation of a device embodying my invention in its preferred form,

the same being illustrated as connected to the underframes of a tender and a locomotive, portions of the frames being shown in section, Fig. 2 is a bottom plan view thereof, Fig. 3 is a view similar to Fig. 2 illustrating the parts in the positions they assume when the locomotive and tender are passing around a curve, Fig. 4 is a side elevation of a modified form of my invention, and, Fig. 5 is a similar view of a further modification.

Referring to the drawings, 1 and 2 indicate portions of the frames of the locomotive and its tender, each provided with a chafing plate, indicated at 3 and 4 respectively. Pivotaly connected to the frame of the locomotive as by the coupling pin 5, is a bell crank lever 6, of which a pair of lugs 7, constitute the short arm and 8 the long arm. Pivotaly connected to the tender as by a coupling pin 9, is a draw-bar 10. The opposite end of the draw-bar from the pin 9, is connected by a pin 11, to the short arm of the bell crank lever 6, in other words between the lugs 7.

Connected to the draw-bar 10, is a rod 12, which passes through a hole or aperture 13, in the end of the long arm 8, of the lever. The rod 12, is threaded and near its outer end is provided with a nut 14, between which and the end of the arm 8 is interposed a spring 15. By adjusting the nut 14, on the rod the tension of the spring may be regulated. The tension of the spring 15, is always greater than the traction force of the locomotive, hence, it is obvious that the chafing plates 3 and 4, will be maintained in constant contact. 16 is a nut arranged on the rod 12, between the end of the lever 6, and the draw bar 10. By adjusting the nut, 16 on the rod, the normal relative position or distance between the coupling pins 5 and 9 may be regulated. This also serves as means to take up all the wear of the chafing plates. When the plates become somewhat worn the nut 16 may be moved nearer to the draw-bar permitting the coupling pins to be drawn closer together to take up the wear, the nut 14 being also adjusted at such times to maintain the pressure of the spring 15. When the plates become too much worn for further use they may be replaced by fresh ones, the nuts 16 and 14, being adjusted further out on the rod for obvious reasons. By keeping the chafing plates and the various portions of the draft mechanism drawn together under constant tension, relative vi-



bration of the parts is prevented, and consequently the wear upon the various parts is reduced to a minimum. I prefer to slidably connect the rod 12, to the bar 10, and to this  
 5 end, provide the bar with a head 17, having a transverse hole or passageway 18, therein for the bar, 10.

When the locomotive is passing around a curve, there is a greater distance between the  
 10 pins 5 and 9, than when on a straight track, and it is for this reason that I provide the yielding connection between the arm 8, of the lever and the draw-bar. In practice the nut 14, is adjusted until the tension of the spring  
 15 is greater than the traction power of the locomotive. It is obvious that if the movement of the nut 14, should be unlimited, it might be tightened until the convolutions of the spring 15, would rest against each other or so  
 20 nearly approach as to destroy the elasticity of the connection. To obviate this I provide the nuts 14 and 16, with the extensions or sleeves 19 and 20, respectively. These limit the movement of the nuts toward each other  
 25 and are of sufficient length as to permit ample movement or compression of the spring after their adjacent ends are in contact.

To prevent separation of the locomotive and its tender, should either of the pins, 5 or  
 30 9, or other parts of the device give way, I provide an auxiliary or safety draw-bar 21. This is connected by a pin 22, to a casting 23, upon the tender, said casting having a recess or pocket 24 to receive the end of the bar.  
 35 The casting is bolted or otherwise secured to the frame of the tender and to its outer end is detachably secured the chafing plate 4. The other end of the bar 21, is arranged in a pocket 25, formed in the frame of the loco-  
 40 motive and is provided with an elongated aperture or slot 26, through which passes a coupling pin 27. The slot 26, is of sufficient length to prevent the bar 21, from interfering with the aforescribed draft mechanism,  
 45 but should such mechanism break, said bar will prevent separation of the locomotive and its tender.

It should be noted that the draft mechanism illustrated in Figs. 1 to 3 is horizontally  
 50 disposed; however, in some instances and with certain types of locomotives it may be desirable to have the same arranged vertically and in Figs. 4 and 5 I have illustrated such a device. In the device shown in said  
 55 figures, the end of the bar 10, is turned as at 28 in order that the pin 9, may be arranged parallel with the bar 12, and instead of connecting the lever 6, directly to the locomotive by the coupling pin 5, a link 29, is pivot-  
 60 ally connected thereto and has a vertically disposed eye 30, to receive the pin 5.

In Figs. 1 to 4 I have illustrated the short arm of the lever 6, as consisting in a pair of  
 65 lugs 7, adapted to receive the end of the bar 10, between them. It is obvious that in-

stead of this arrangement the lever 6, may be formed of a single flat plate, and that the end of the bar 10, may be bifurcated to receive the short arm of the lever, without departing from the scope of my invention. In Fig. 5 I  
 70 have illustrated such a construction 7' indicating the short arm of the lever arranged between the bifurcated ends 10' of the bar, 10. When the device is arranged in a vertical plane and the link 29 employed, the end  
 75 of the link may be bifurcated as at 29' to receive the lever 6.

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

1. A slack-adjusting draw-bar comprising the coupling pins, in combination with a bell crank lever adapted to be pivotally connected to one thereof and a draw-bar connected at one end to the other and having its  
 80 free end connected to the short arm of said lever, and a yielding connection between the long arm of said lever and said draw-bar, substantially as described.

2. In a device of the class described, the  
 90 coupling pins, in combination with a bell crank lever pivotally mounted upon one of said pins, a draw-bar pivotally mounted on the other and having its opposite end connected to the short arm of said lever, a yield-  
 95 ing connection between the long arm of said lever and said draw-bar and means for adjusting the normal position of the end of the long arm with relation to said bar to vary the distance between said pins, substantially as  
 100 described.

3. In a device of the class described, the coupling pins, in combination with a bell crank lever pivotally connected to one thereof and a draw-bar pivotally connected to the  
 105 other, said draw-bar being arranged substantially parallel with the long arm of said lever and having its free end connected to the short arm of said lever, a rod connected to said draw-bar and extending through the end of  
 110 said long arm, a nut threaded on said rod and a spring interposed between said nut and the end of said arm, substantially as described.

4. In a device of the class described, the  
 115 coupling pins, in combination with a bell crank lever pivotally connected to one thereof and a draw-bar pivotally connected to the other, said draw-bar being arranged substantially parallel with the long arm of said lever  
 120 and having its free end connected to the short arm of said lever, a rod connected to said draw bar intermediate of its ends and extending through the end of said long arm, a nut threaded on said rod and a spring inter-  
 125 posed between said nut and the end of said arm, substantially as described.

5. In a device of the class described, the coupling pins, in combination with a bell  
 130 crank lever pivotally connected to one thereof



and a draw-bar pivotally connected to the other, said draw-bar being arranged substantially parallel with the long arm of said lever and having its free end connected to the short arm of said lever, a rod slidably connected to said draw-bar and extending through the ends of said long arm, a nut threaded on said rod and a spring interposed between said nut and said arm substantially as described.

6. In a device of the class described, the coupling pins in combination with a bell crank lever pivotally connected to one thereof and a draw-bar pivotally connected to the other, said draw-bar being arranged substantially parallel with the long arm of said lever and having its free end connected to the short arm of said lever, a rod connected to said draw-bar and extending through an aperture in the end of said long arm, a nut threaded on said rod, a spring interposed between said nut and said arm and a second nut threaded on said arm between the end thereof and said draw-bar, substantially as and for the purpose specified.

7. In a device of the class described, the coupling pins, in combination with a bell crank lever pivotally connected to one thereof and a draw-bar pivotally connected to the other, said draw-bar being arranged substantially parallel with the long arm of said lever and having its free end connected to the short arm thereof, a rod connected to said draw-bar and extending through the end of said long arm, a nut threaded upon said rod, a spring interposed between said nut and the end of said long arm, and a second nut threaded on said rod between the end of said arm and said draw-bar, each of said nuts being provided with means for limiting their movement toward each other, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD RYAN.

Witnesses:

HOWARD S. AUSTIN,  
FRANCES E. SHEEHY.