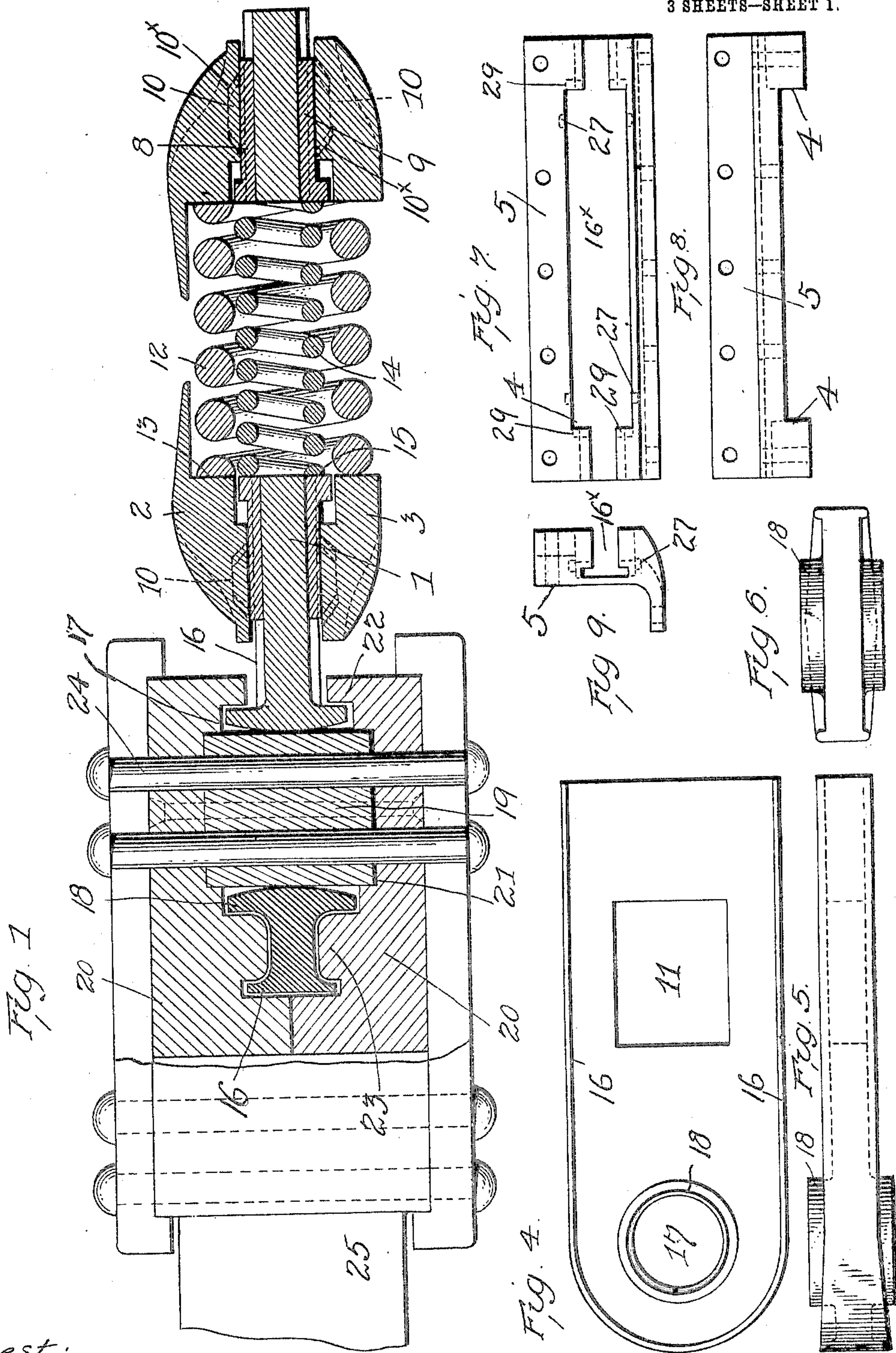


J. F. COURSON.
DRAW GEAR.

APPLICATION FILED FEB. 10, 1905.

3 SHEETS—SHEET 1.



Attest:
C. S. Middleton
Edward Sartou

Inventor:
John F. Courson.
By Spear, Middleton, Donaldson & Spear
ATTY.

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3 SHEETS—SHEET 2.

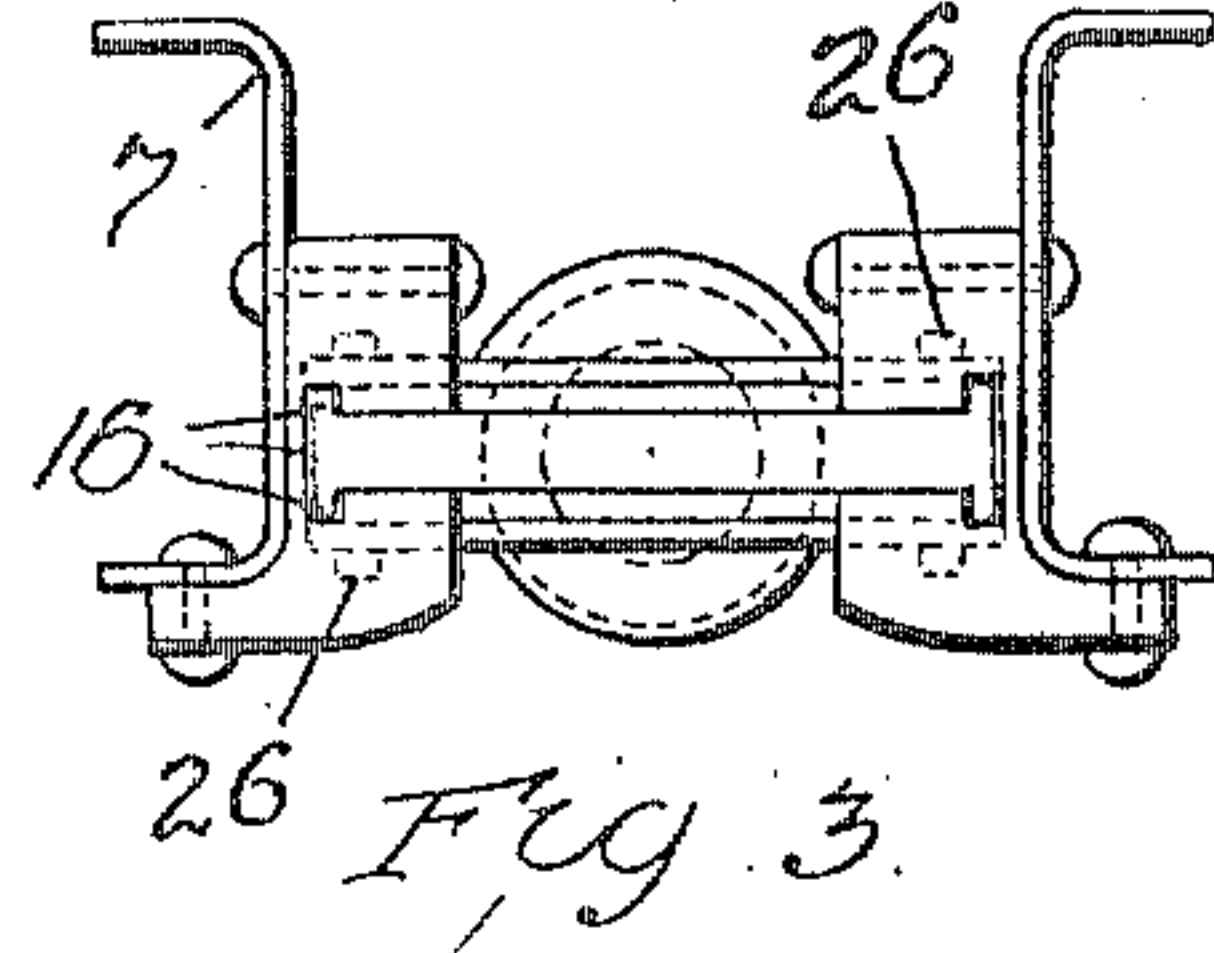
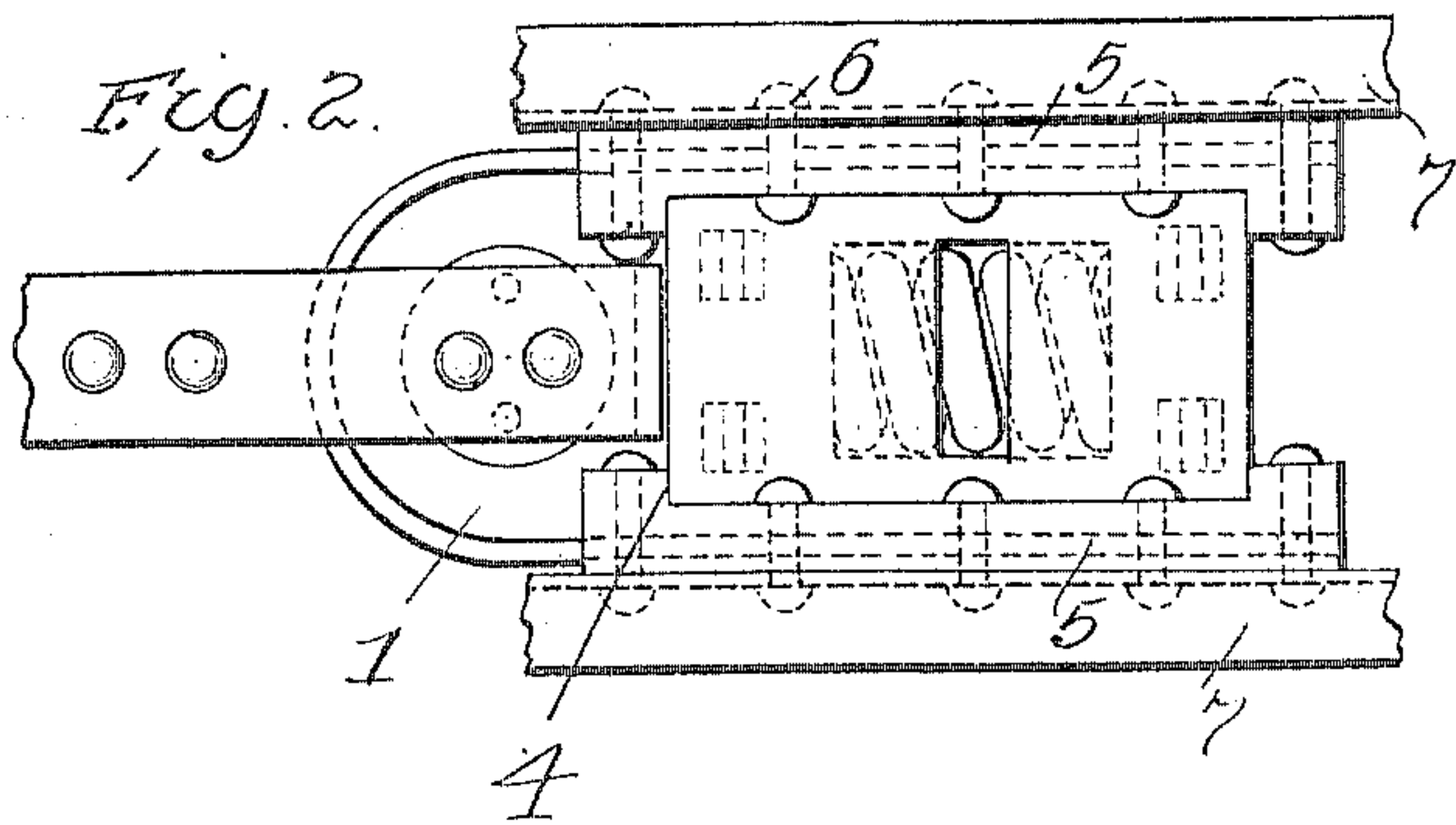


Fig. 11.

Fig. 12.

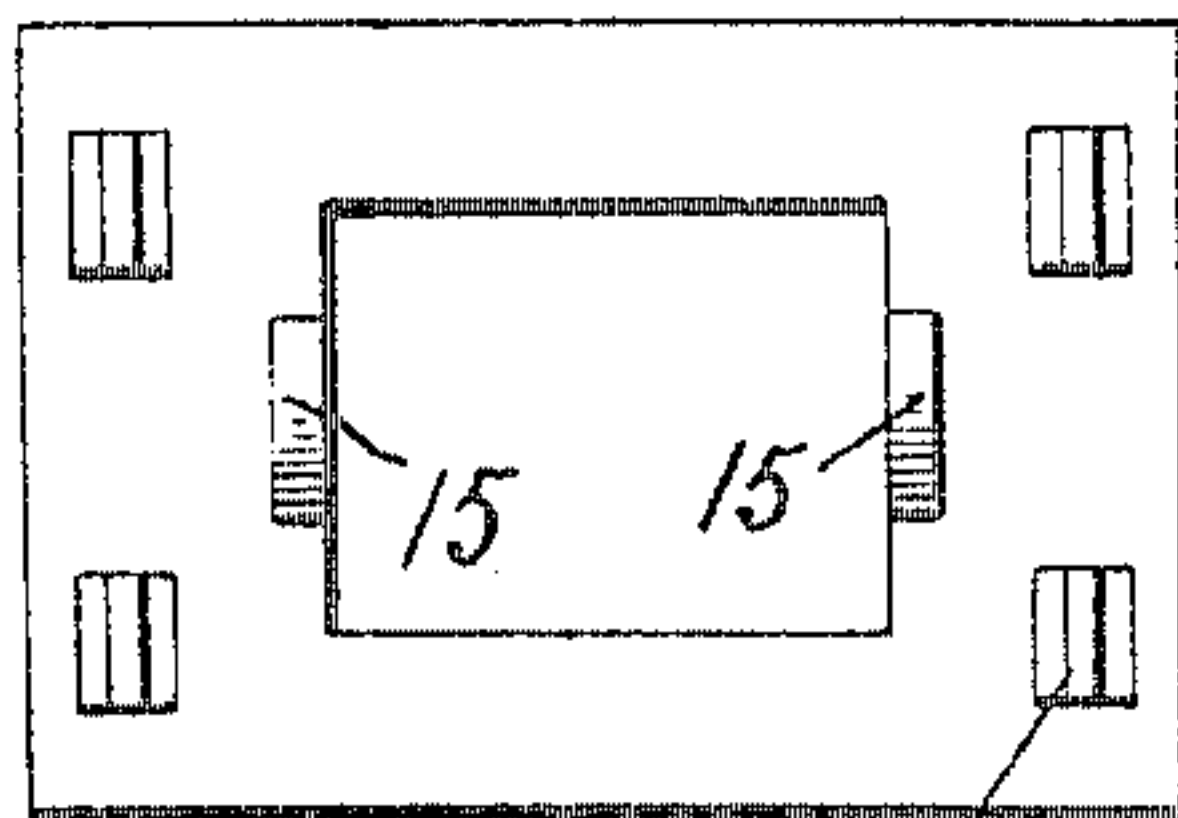


Fig. 10.

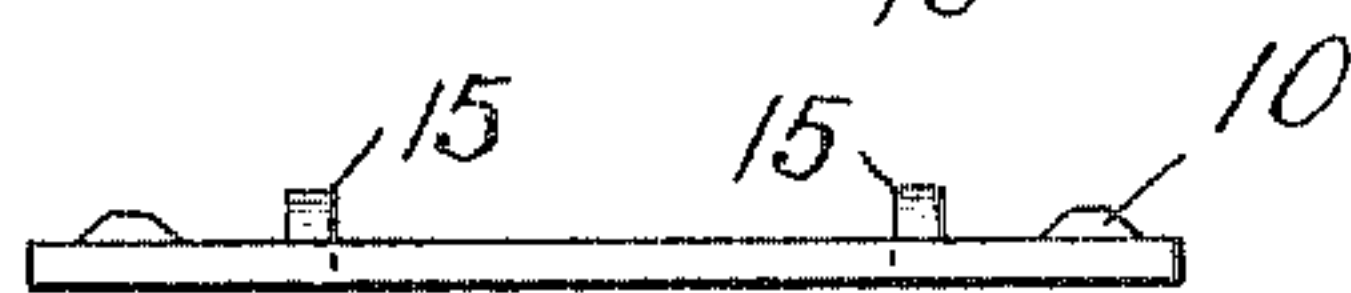


Fig. 13.

Fig. 16.

Fig. 18.

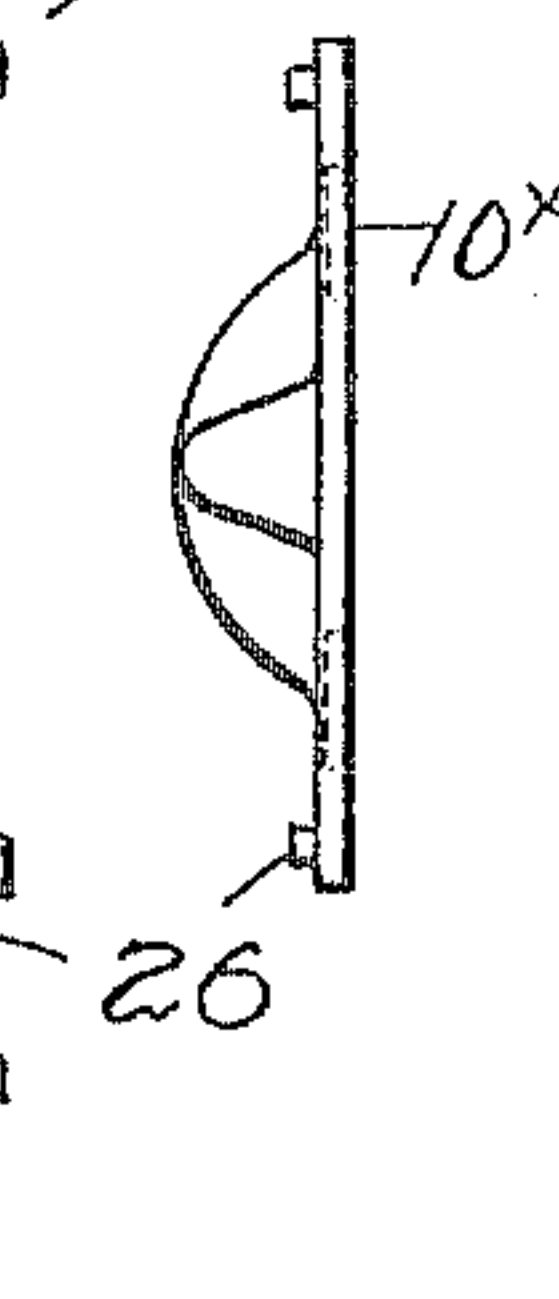
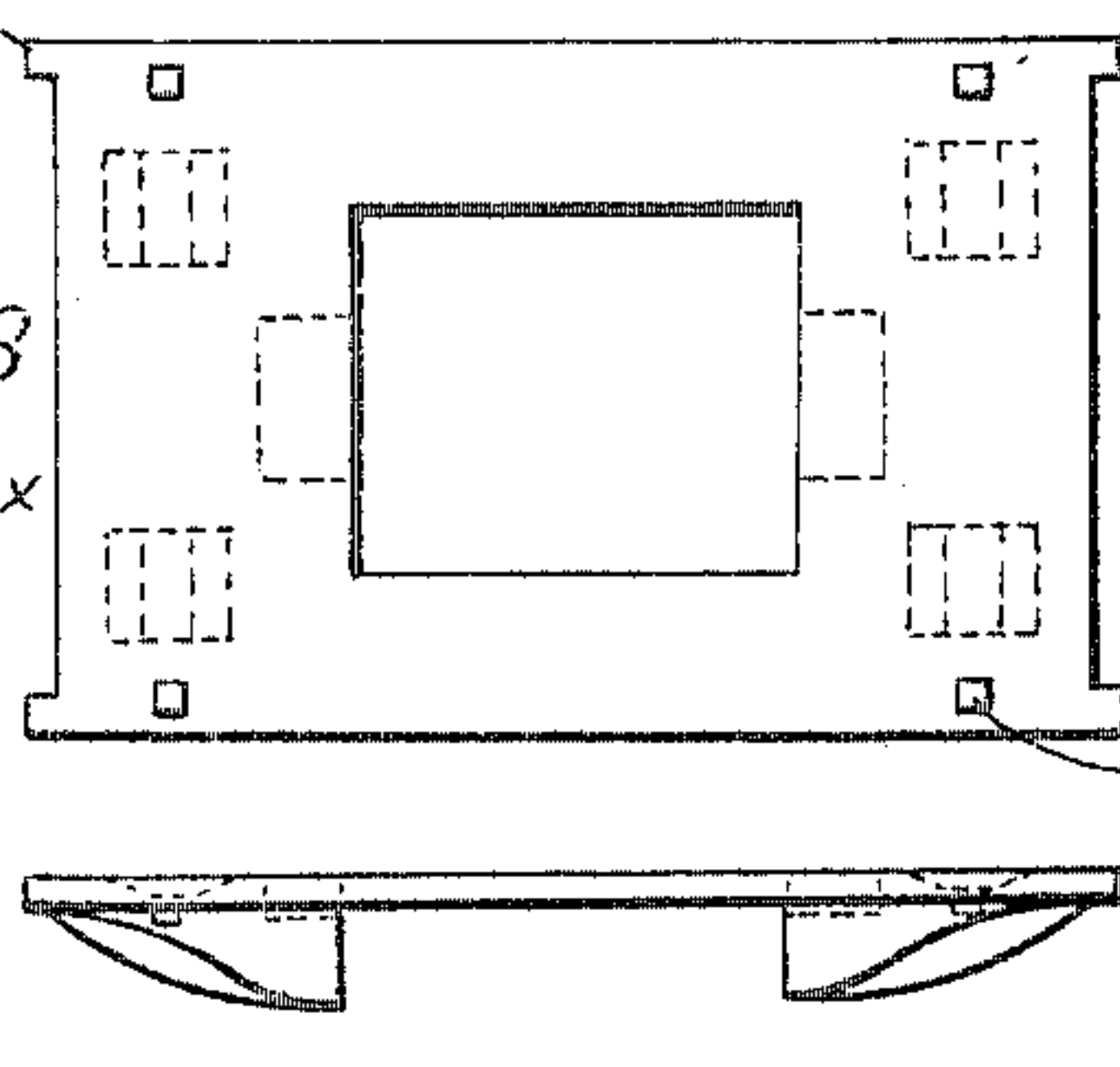
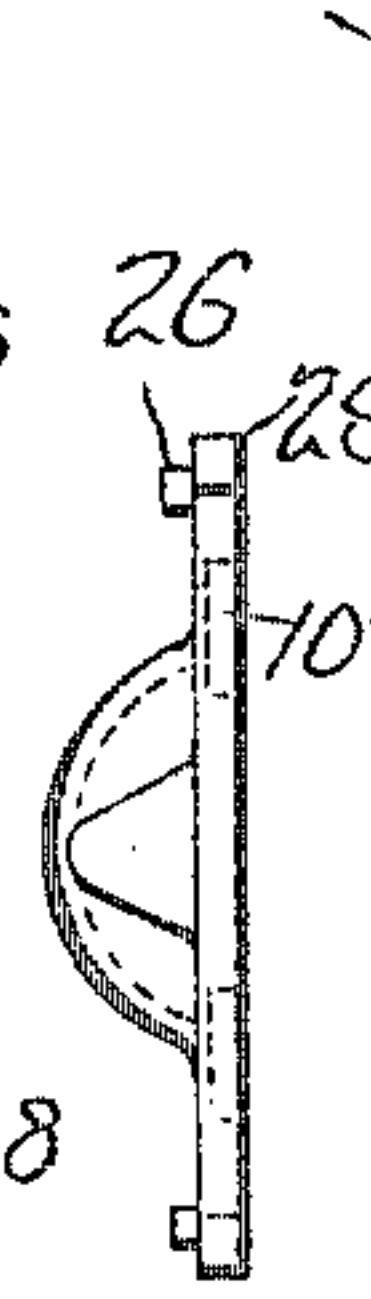
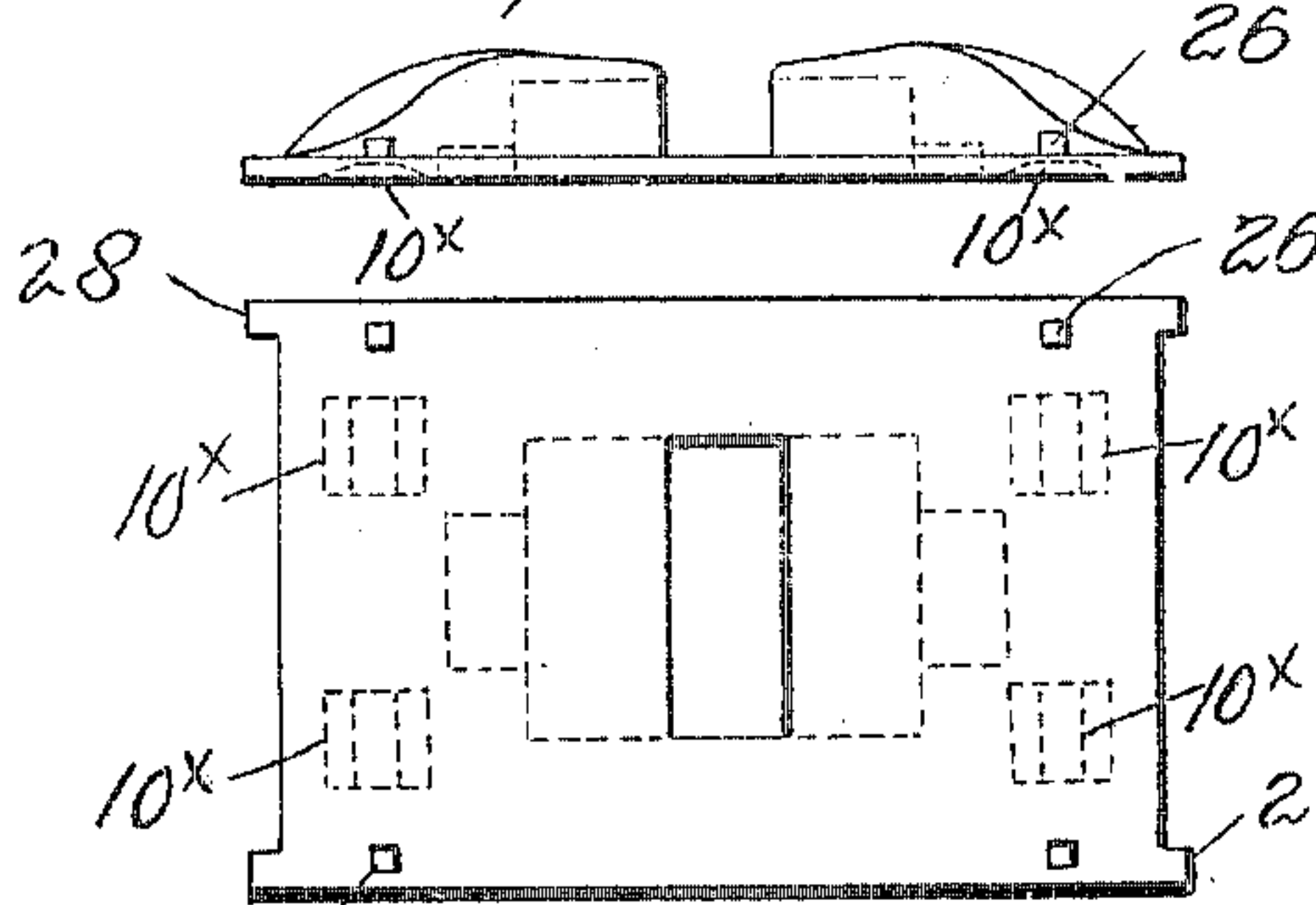


Fig. 14.

Fig. 15.

Fig. 17.

Attest:

C. S. Middleton
Edward Sartow

Inventor:
John F. Courson.

By Spear, Middleton, Donaldson & Spear,
Attys.

No. 804,521.

PATENTED NOV. 14, 1905.

J. F. COURSON.

DRAW GEAR.

APPLICATION FILED FEB. 10, 1905.

3 SHEETS—SHEET 3.

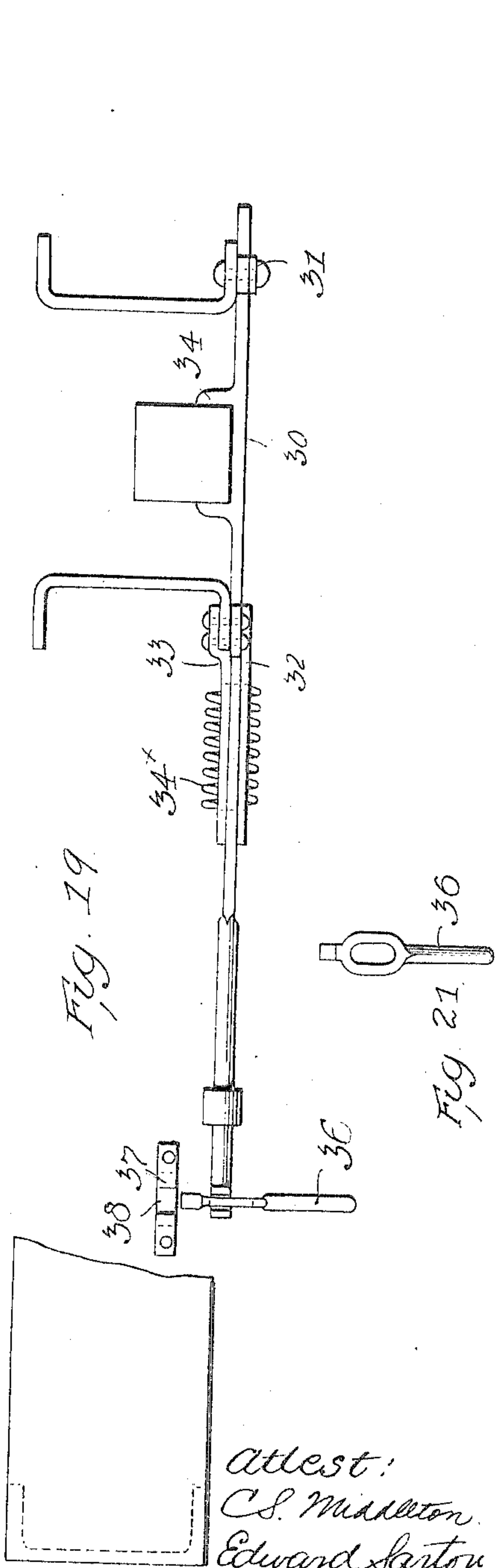
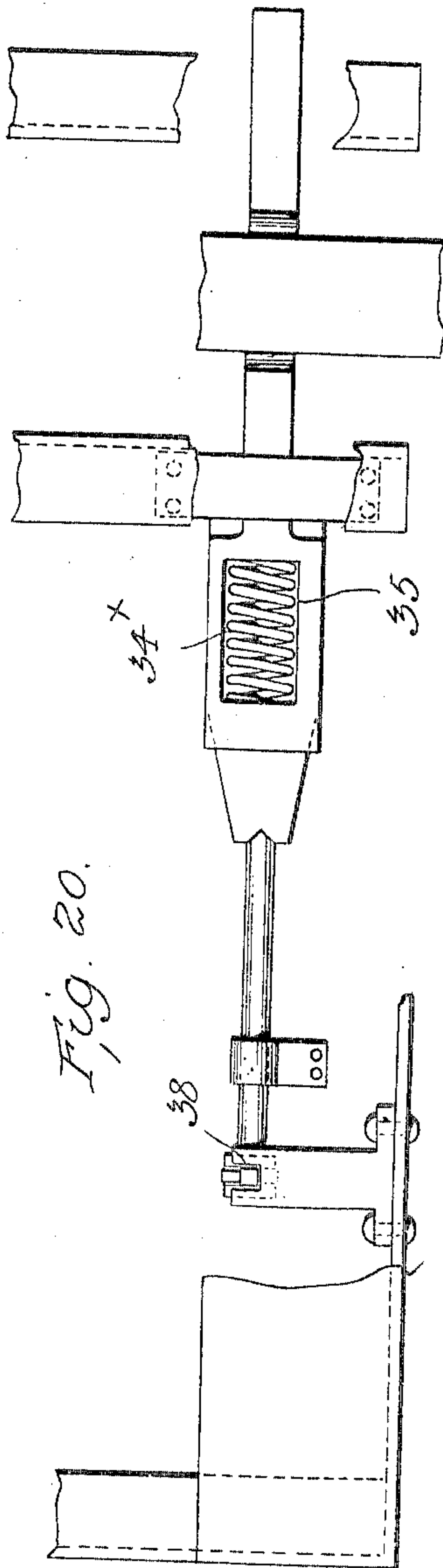


Fig. 21.



Inventor.
John F. Courson.
Spear, Middleton
D. Middleton & Spear
ATTYS.

UNITED STATES PATENT OFFICE.

JOHN FRANKLIN COURSON, OF PITCAIRN, PENNSYLVANIA.

DRAW-GEAR.

No. 804,521.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed February 10, 1905. Serial No. 245,161.

To all whom it may concern:

Be it known that I, JOHN FRANKLIN COURSON, a citizen of the United States, residing at Pitcairn, Pennsylvania, have invented certain new and useful Improvements in Draw-Gears, of which the following is a specification.

My invention relates to that class of draw-gear disclosed in Letters Patent of the United States granted to me June 30, 1903, No. 732,521, and August 18, 1903, Nos. 736,823 and 736,824, and also disclosed in an application for Letters Patent of the United States filed by me September 8, 1904, Serial No. 223,726.

The invention consists in the features and combination and arrangement of parts hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a central vertical longitudinal section through a draw-gear embodying my invention. Fig. 2 is a plan view of Fig. 1. Fig. 3 is an end view of Fig. 2. Fig. 4 is a plan view of the center draft bar or plate. Fig. 5 is a side view of the said plate. Fig. 6 is an end view of the plate shown in Fig. 5. Fig. 7 is a side view of the abutment-plate attached to one of the draw-sills. Fig. 8 is a plan view of Fig. 7. Fig. 9 is an end view of the abutment-plate shown in Fig. 7. Figs. 10, 11, and 12 are detail views relating to the friction-plate. Figs. 13, 14, and 15 are detail views relating to the top plate of the gear. Figs. 16, 17, and 18 are detail views relating to the bottom plate of the gear. Fig. 19 is a cross-sectional view of the draw-sills, with the coupler-bar shown between them and the means for controlling the said coupler-bar. Fig. 20 is a plan view of the parts shown in Fig. 19. Fig. 21 is a detailed view of a lever.

Referring to Figs. 1 and 2, the central draft plate or bar 1 is arranged to move between top and bottom plates 2 3, which, as shown in Fig. 2, are held by engaging at their ends the abutments 4 on the abutment-plates 5, which plates are bolted or riveted, as at 6, to the center or draw sills 7 of the car, these sills being preferably of channeled metal. The center bar is borne upon both upon its upper and lower sides by friction-plates 8 and 9, the said plates having inclines or cams 10, adapted to fit in recesses in the top and bottom plates or sections 2 3.

As shown in Fig. 4, the center plate or draft-bar is provided with a center rectangu-

lar opening 11, and a heavy spring 12 is arranged within this opening, bearing upon the front and rear edges thereof, and also bearing upon the vertical faces 13 of the top and bottom sections or plates. Within this heavy spring there is a weaker spring 14, which is also arranged within the opening 11 of the center bar or plate and bears at its ends upon the ends of the friction-plates, which, as shown in Fig. 1 and Figs. 10, 11, and 12, are provided with projections or lips 15 to afford bearing-surfaces for the said weak inner spring. A movement of the center draft-bar 1 will compress the heavy outside spring, and the friction-plates, together with the inner spring, will be carried along bodily by the center bar until the cams or inclines of the friction-plates contact with the walls of the recesses 10^x in the top and bottom sections 2 and 3, dotted lines, Fig. 1, when the friction-plates will be pressed hard upon the center bar or plate to resist the movement thereof, and if the movement of the center bar or plate continues despite this frictional resistance the inner spring will add its resistance to the resistance of the outer spring and to the frictional resistance, for at this time the pair of friction-plates will be held stationary and will thus answer as fixed abutments or stops for holding the front end of the inner spring, while the said spring is borne upon at its rear end by the edge of the center bar at the rear of the opening 11, and thus this spring will be compressed. Of course a similar action takes place in buffing, as when the center bar is pulled, as just described. The construction is such that a heavy friction-spring is not required, for the friction-plates, together with the inner spring, afford friction means to be taken up in succession should the pulling or buffing be sufficiently heavy to require this. The center bar or plate is strengthened by flanges or ribs 16 about its edge, as shown in Fig. 3. The opening or ways through the abutment-plates are formed to correspond with the edges of the center bar or plate, thus presenting ways T shape in cross-section. The center bar is also provided with an opening of circular form 17, surrounded by a reinforced rib or flange 18, and the inner face of the said opening is rounded vertically, as shown in Fig. 1. Within this opening a metal piece or block 19 is arranged of cylindrical form. It projects slightly above and below the center plate and its flange, and over these projecting ends

a casting 20 is placed, one for each end of the cylindrical block. Each casting has a circular cavity 21 to receive the end of the block, and it also has a projection or flange 22 to fit
 5 down over the flange 18, at the rear thereof, Fig. 1, and each is also provided with a projecting portion 23 to fit between the flange 18 and the edge flange 16. The castings fit
 10 loosely about the parts of the plate or center bar and its flanges, but closely engage the projecting ends of the block or piece 19. Through this block and the castings bolts 24
 15 are passed, which connect the castings to the block and connect the castings and block to the parts of the coupler 25. From this construction it will be seen that a blow in either
 20 direction is taken up by the projecting ends of the filling piece or block, and through this block the stress or blow is transmitted to the strengthened or enlarged part of the center
 25 bar. This is because the castings fit the center piece or block closely and fit loosely over the flanges of the center bar upon which they ordinarily do not bear, but provide a safety
 30 device to contact with the parts of the center bar in case of breakage. The fitting of these castings loosely, as shown in Fig. 1, allows the coupler to move laterally freely and also
 35 allows the coupler to rock, as it is not bound in its movement except at the center upon the filling-block. It will be seen from Figs. 14 and 16 that the top and bottom plates or
 40 sections 2 and 3 are provided with projections 26, adapted to fit in recesses 27 in the overhanging portions of the abutment-plates
 5. By this means the parts of the draft-gear are bound together, as well as the center sills, without the use of any through-bolts or
 45 cross-bolts. A similar effect is secured by the projections or offsets 28 at the corners of the top and bottom plates, which are adapted to fit in recesses in the abutment-plates at 29.

The draft-gear is put in place on the car by first fastening the abutment or stop plates 5
 45 to the center or draw sills with rivets or bolts. The bottom section or plate 3 is then pushed through the ways in the opposing abutment-plates and is allowed to drop into place with the projections 26 thereon fitting in the re-
 50 cesses 27 in the abutment-plates. Next the bottom friction-plate is placed in position on the bottom plate or section with its cam or inclined projections engaging the recesses in the bottom plate. The top section and the
 55 upper friction-plate are next applied in the order named, and then the center bar is pushed in between the friction-plates and the springs are put in from the bottom and the spring-carrying plate is applied to hold
 60 them in place. The coupler can be applied to the center bar either before or after it is put in place by the draft-gear.

In order to provide means for centering the coupler in relation to the draft-sills, I
 65 provide, as shown in Figs. 19 and 20, a bar

30, extending transversely below the center sills, guided in a bracket 31 on one sill and between plates 32 33, suitably secured to the other sill and extending laterally in relation thereto. This plate has projections 34 en-
 70 gaging the coupler to move the same laterally in relation to the draw-sills, so as to center the same.

A spring 34^x is adapted to hold the bar 30 in normal position with the coupler centrally
 75 arranged, the said spring being located in an opening 35 in the centering-bar, which spring engages the ends of the said opening and also is confined by the edges or openings in the
 80 upper and lower plates 32 33. The opening in the upper plate is made small enough so that the spring cannot be forced up through the same, and the opening in the lower plate is made smaller than the width of the spring,
 85 and the said spring is held thereby. With this arrangement a movement of the coupler compresses the spring, and the said spring tends to return the coupler to central position. The centering-bar 30 extends trans-
 90 versely of the car, so as to be outside of the track, and a lever 36, carried by its end, can be operated to move the centering-bar without requiring the attendant going between the cars. To afford a fulcrum for this lever,
 95 a casting 37 is secured to the car, and if the lever is raised so that its end is put into the opening 38 on the casting it may be pushed or pulled to force the centering-bar, and thus
 100 move the coupler in the desired direction to allow the car to be coupled on a curve, this action taking place against the resistance of the spring 34^x. This centering device can
 105 be placed at the bottom of the coupler, as shown, or at the top thereof, if desired.

It will be understood that the operating-
 105 lever 36 has an elongated eye or slot receiving the end of the centering-bar, so that the lever may be moved laterally on the said bar in order that its end may be engaged with or
 110 disengaged from the fulcrum or casting on the car.

I claim as my invention—

1. In combination, in a draft-gear for rail-
 115 way-cars, a draft-bar, a friction-plate arranged to move in the same direction there- with freely to a certain extent, means for ar- resting the movement of the friction-plate and pressing it upon the bar, and a spring
 120 also moving bodily with the draft-bar and friction-plate, which latter when arrested acts as an abutment or stop therefor at one end to cause the compression of the said
 125 spring by contact of the draft-bar with its other end, substantially as described.

2. In combination in apparatus of the
 130 class described, a draft-bar, a friction-plate to bear thereon, means for arresting the fric- tion-plate after it has moved with the draft- bar, a spring bearing upon the draft-bar to be compressed thereby, a second spring ar-

ranged to move bodily with the draft-bar and friction-plate and to be held at one end by the said friction-plate when arrested and to permit the spring to be compressed by the draft-bar acting upon the opposite end, substantially as described.

3. In combination in apparatus of the class described, a draft-bar, upper and lower friction-plates to move bodily with the draft-bar in the same direction therewith, means for arresting the friction-plates after they have moved freely a certain distance, a spring to move bodily with the draft-bar and friction-plates and to be arrested by the friction-plate when the latter is stopped in its movement whereby the continued movement of the draft-bar will be against the resistance of this spring, substantially as described.

4. In combination, a draft-bar, a friction-plate to bear on the bar, a spring bearing on the friction-plate and movable bodily therewith, and a spring inclosing the one first mentioned to resist the movement of the draft-bar, the first-mentioned spring affording resistance to the movement of the draft-bar when the friction-plate is arrested and presses upon the draft-bar, substantially as described.

5. In combination in a draft-gear, a draft-bar, a plurality of springs one within the other, the resistances of which are applied successively to the draft-bar, the spring applied last moving bodily with the draft-bar substantially as described.

6. In combination with a draft-bar, a pair of coterminous springs one within the other arranged in an opening in the draft-bar and means for applying the resistances of the said springs in succession to the draft-bar, the spring applied last moving bodily with the draft-bar substantially as described.

7. In combination in a draft-gear, a draft-bar, the top and bottom plates, a spring within an opening in the draft-bar engaging the edges of openings in the said top and bottom plates, upper and lower friction-plates, means between the friction-plates and top and bottom plates for pressing the friction-plates upon the draft-bar, a spring within the spring first mentioned bearing upon the friction-plates to move bodily therewith and be

arrested and subjected to compression when the friction-plates are arrested, substantially as described.

8. In combination in a draft-gear, a draw bar or plate having an opening therein, a filling-block in the said opening projecting above and below the same, castings arranged over the said filling-block and fitting the projecting ends closely, said castings fitting loosely the parts of the draw-bar, substantially as described.

9. In combination, a draw bar or plate having an opening and having flanges around the opening and around its edges, a filling-piece in the opening projecting above and below the flanges, castings or blocks secured to the coupler fitting loosely the parts of the draw bar or plate, substantially as described.

10. In combination in apparatus of the class described, a centering-bar having means to engage the coupler to center the same, a pair of plates between which the centering-bar passes, openings in the said plates, a spring held in said openings to hold the centering-bar centrally, and means for operating the centering-bar, substantially as described.

11. In combination, the coupler, the centering-bar, the lever carried on the end thereof and having sliding connection therewith across the same and a fulcrum on the car with which the said lever will be engaged and disengaged by sliding it across the centering-bar, substantially as described.

12. In combination a draft-bar having an opening flaring from the center toward its ends, a block arranged to rock in said opening and bearing on the flaring sides and a coupler connected with the said block, substantially as described.

13. In combination a draft-bar having an opening, a block arranged to turn about its own axis and rock in respect to the axis of said opening and a coupler connected with the said block, substantially as described.

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

JOHN FRANKLIN COURSON.

Witnesses:

HARTMAN STEHLEY,
SAML. M. HINDMAN.