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Patented June 13, 1899.

E. C. WASHBURN.

DRAFT RIGGING.

(Application filed Jan. 16, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

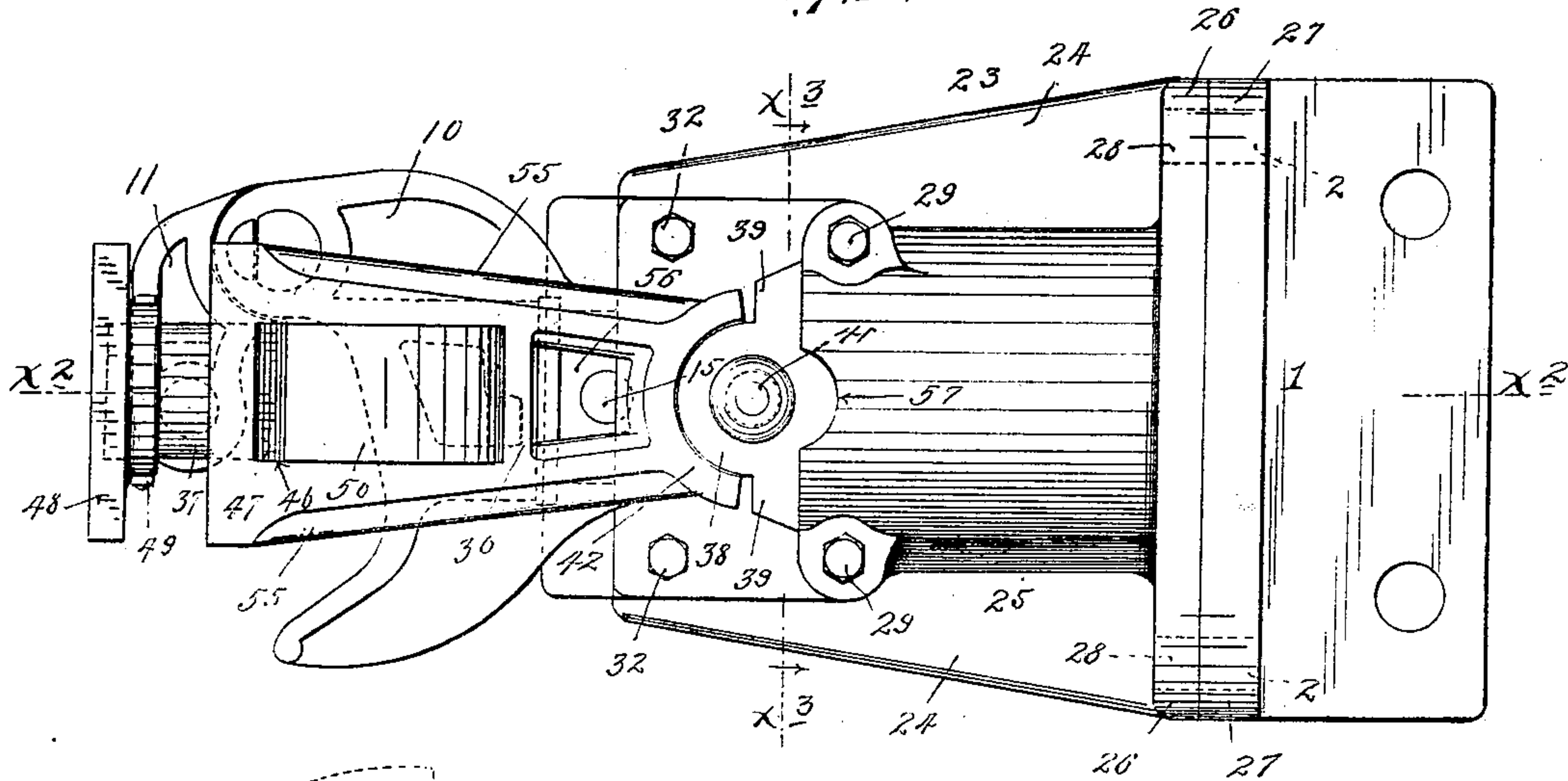
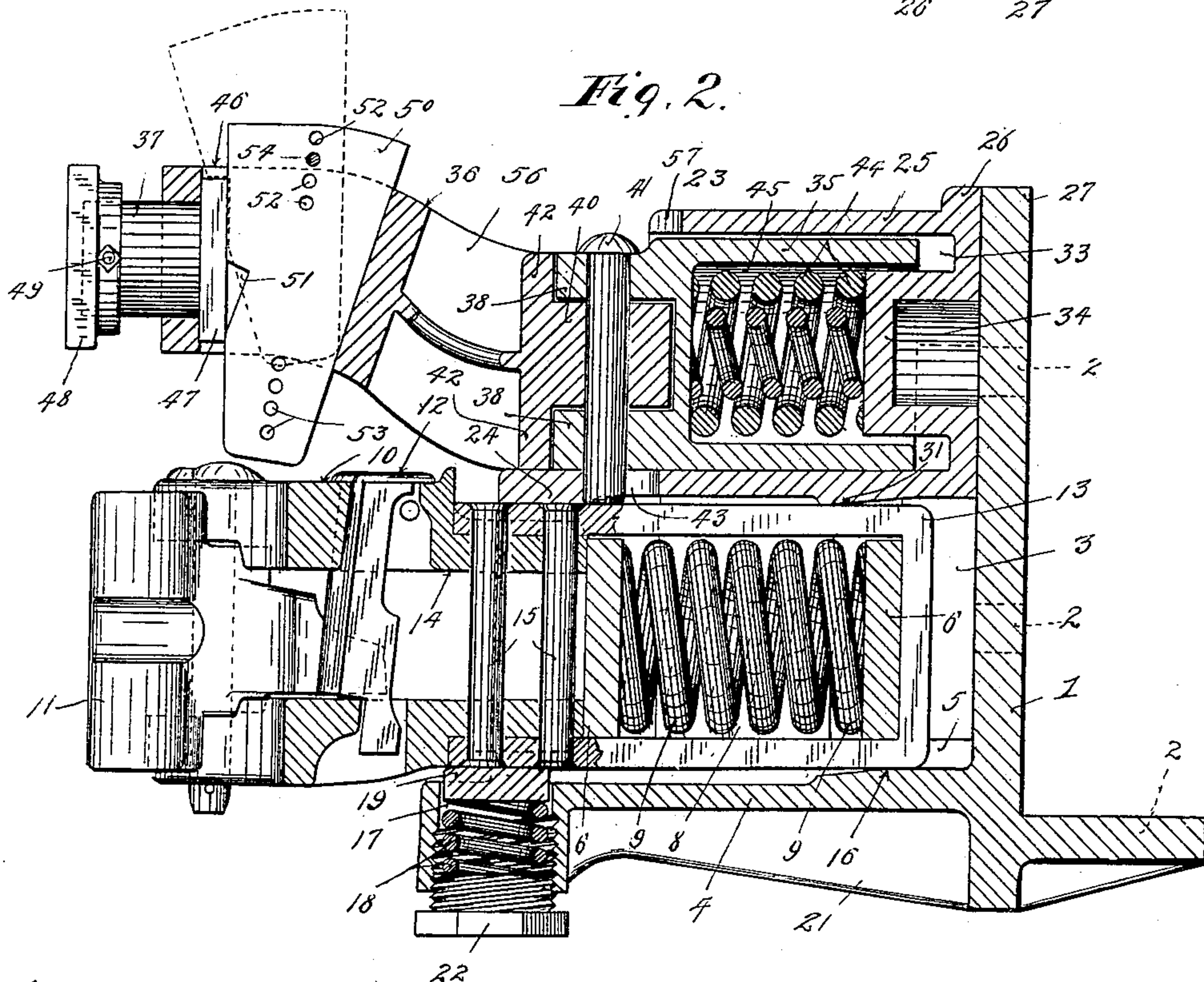


Fig. 2.



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DRAFT RIGGING.

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2 Sheets—Sheet 2.

Fig. 3.

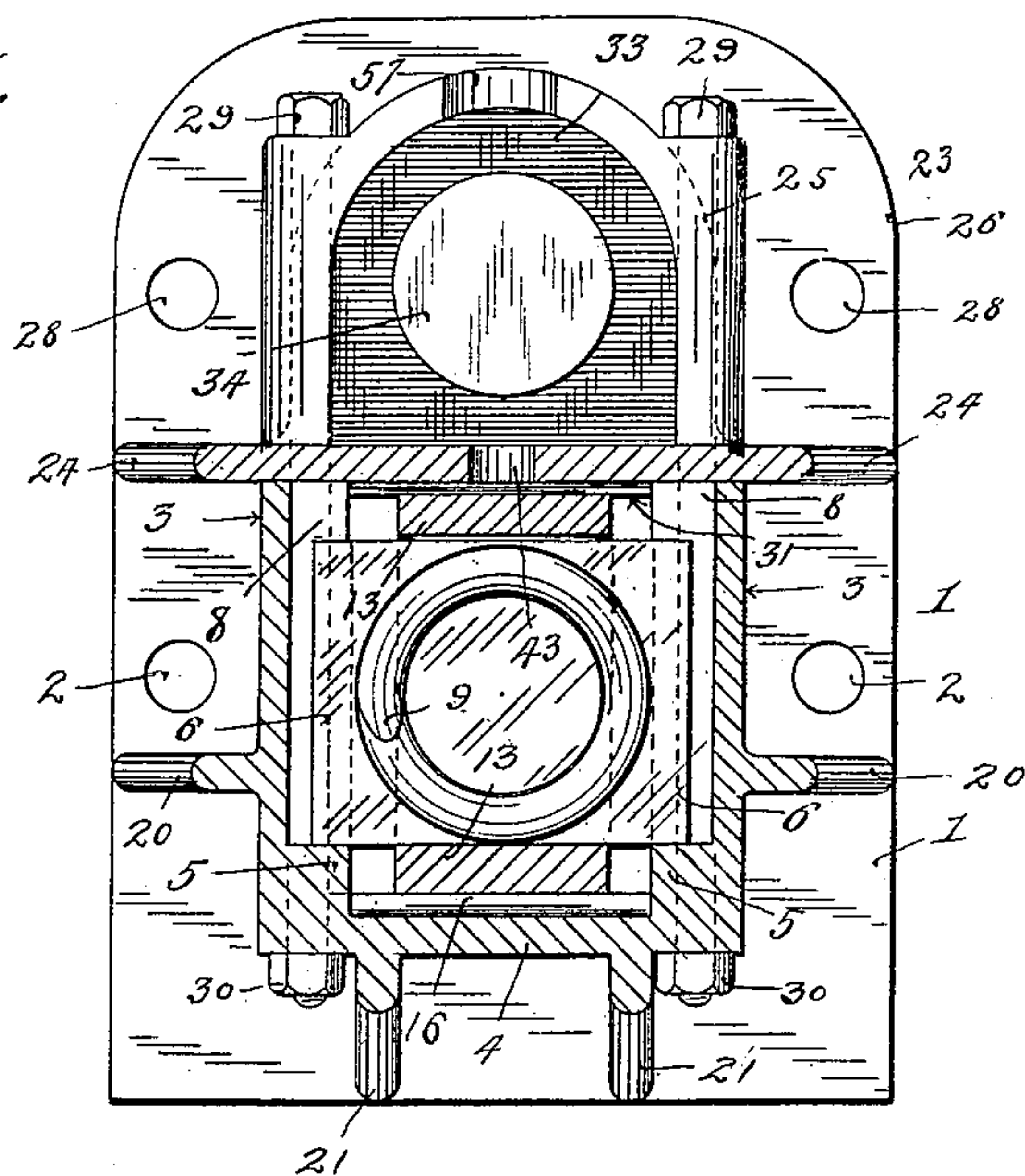


Fig. 4.

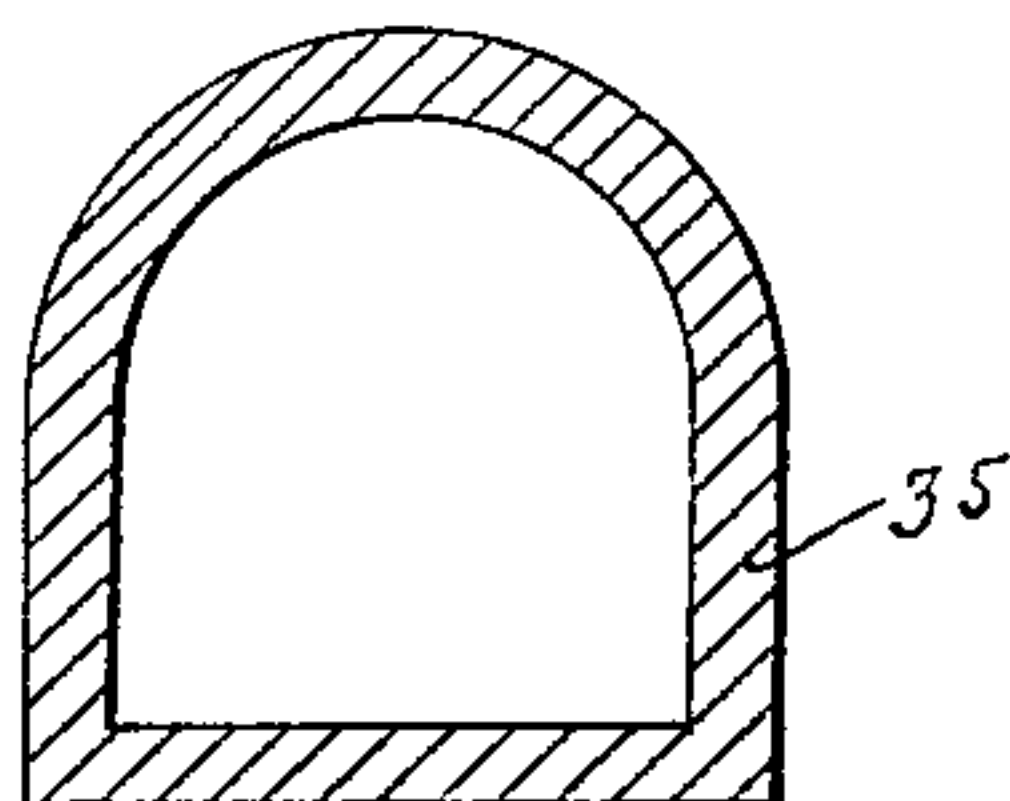
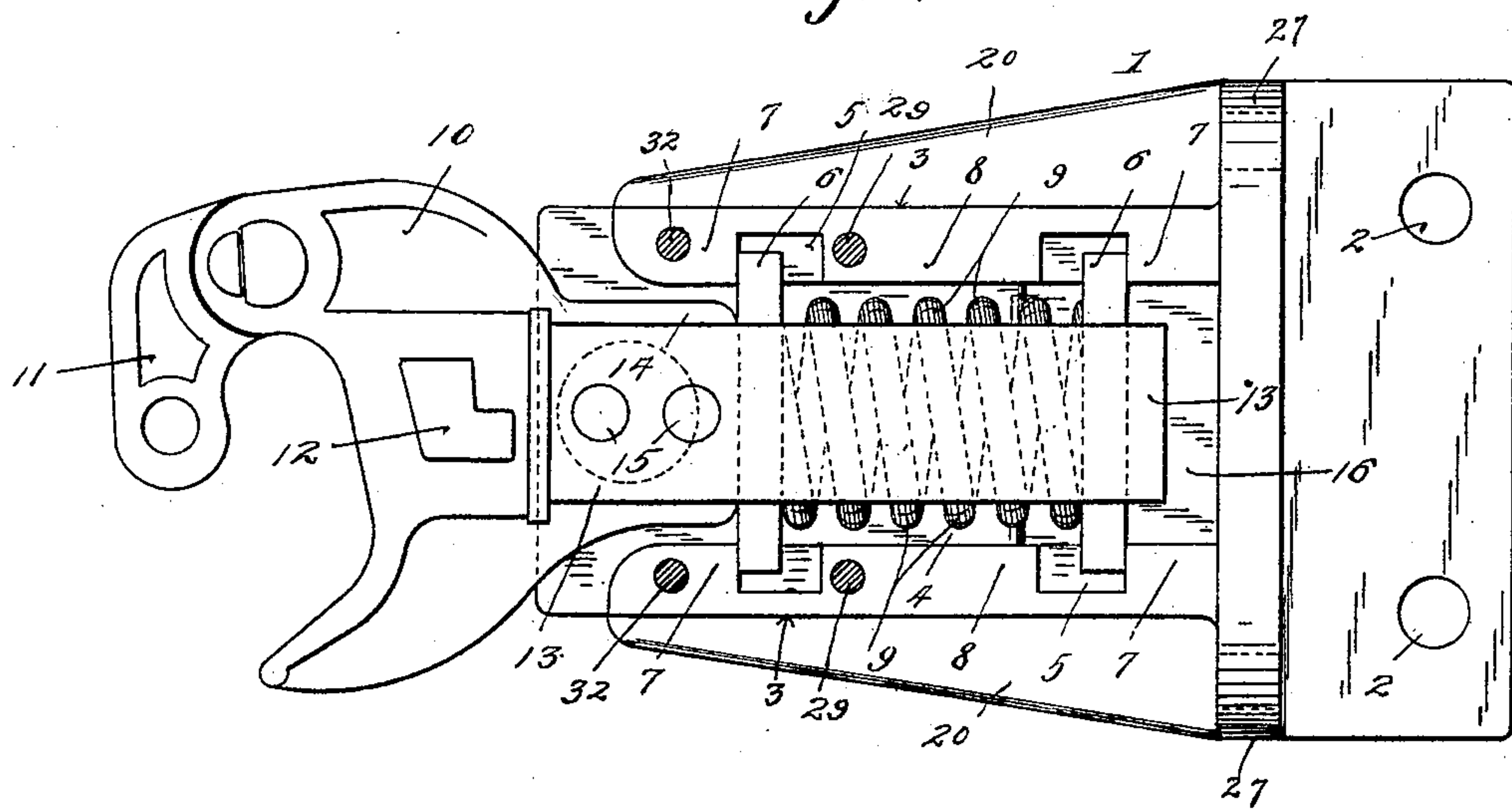


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## DRAFT-RIGGING.

SPECIFICATION forming part of Letters Patent No. 626,881, dated June 13, 1899.

Application filed January 16, 1899. Serial No. 702,233. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN C. WASHBURN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Draft-Rigging; 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 present invention relates to draft-rigging for cars or other sections of a train and is primarily directed to the production of an improved draft-rigging especially applicable to engine-tenders.

To such ends my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, and the illustrations given show the device designed for application to an engine-tender or to an engine.

In the drawings like characters indicate like parts throughout the several views.

Figure 1 is a plan view of the device, the same being shown as removed from working position. Fig. 2 is a vertical longitudinal section taken on the line  $x^2 x^2$  of Fig. 1, some parts being shown in full. Fig. 3 is a transverse vertical section taken approximately on the line  $x^3 x^3$  of Fig. 1, some parts being removed. Fig. 4 is a transverse vertical section taken through the inner section of the bumper; and Fig. 5 is a plan view of the coupling devices, the bumper or bumping device being removed therefrom.

The so-called "draft-bracket," which in the construction illustrated is intended to be in the form of a malleable casting, is indicated by the numeral 1. This draft-casting is provided with bolt-holes 2, through which bolts (not shown) may be passed to rigidly secure the same to the draft-beam of the tender. Between side walls 3 and a bottom plate 4 of the said casting 1 a socket or seat for the inner end of the draft-bar or spring-pocket of the coupler is formed, and within this socket the bottom plate 4 is formed with longitudinal ledges 5, on which the followers 6 slide,

and the side plates 3 are provided with draft-lug portions 7 and 8, with which said followers cooperate in the draft and bumping actions.

9 indicates a heavy draft-spring which is compressed between the followers 6 and normally presses the same against the cooperating draft-lugs 7.

The coupler employed is of the Master Car-Builders' type and involves a coupler-head 10, a pivoted knuckle 11, and locking-dog 12. To adapt this coupler for application to an engine-tender, the U-shaped or yoke-like spring pocket or strap 13 is secured directly to a stub projection 14 of the coupler-head 10, as shown, by means of a pair of heavy rivets 15. When placed in working position, as shown in the drawings, the spring pocket or strap 13 embraces the followers 6 and the spring 9, with the innermost follower standing adjacent to the inner and vertical portions of said spring-pocket and the outermost follower 6 standing adjacent to or bearing against the said stub projection 14 of the coupler-head. The inner end of the pocket 13 is loosely held between a raised portion 16 on the bottom 4 of the draft-casting 1 and a similar depending portion of a top plate, to be hereinafter noted, and in such manner that the coupler-head is free to move up and down with an oscillatory movement.

The bottom plate 4 of the draft casting or bracket 1 is provided at its forward portion with a depending seat or socket 17, in which a spring device for normally holding the coupler-head upward is mounted. As shown, this spring device consists of a coiled spring 18 and a heavy washer or follower 19, the latter of which bears directly against the intermediate and under portion of the stub draft-bar formed by the coupler-head and spring pocket or strap 13. It will be noted that the side sections 3 and bottom plate-section 4 of the draft bracket or casting are provided, respectively, with longitudinally-extended stiffening-flanges 20 and 21. A screw-threaded plug 22, which works through the bottom of the spring-socket 17, serves to vary the tension of the spring 18 on the draft-bar or draft connection, and it will be noted that the pair of flanges 21 join or run into the said socket 17,



and thus serve to more rigidly secure the said socket, as well as to otherwise strengthen the draft casting or bracket 1. In this preferred construction the bumper is mounted to work directly over the coupler just described, and to these ends a supplemental bracket or casting 23 is provided. This supplemental casting 23 in this preferred construction involves a plate-like section 24 and a hollow superimposed section 25, which is cast integral therewith, and it will be noted that the sides of the plate-section 24 project beyond the section 25 to form strengthening ribs or flanges and that the hollow section 25 is provided with a transversely and outwardly projected flange 26, that terminates on the outer line of the vertical end flange 27 of the draft bracket or casting 1. Said flange 26 has bolt-holes 28, that register with the bolt-holes 2 of said flange 27, so that bolts may be passed through both of the flanges 26 and 27 and through the draft timber or beam of the tender to secure the said parts together. Long vertically-disposed bolts 29 are passed through the sides of the hollow section 25 and the sides 3 of the draft-bracket 1, said bolts, as shown, being provided with nuts 30 at their lower ends, which serve to draw the parts together. When secured as above described, the plate portion 24 serves as a cover to hold in place the followers 6 and the spring pocket or strap 13, and attention is here called to the fact that the said plate 24 has a depending bearing or fulcrum lug 31, against which the upper surface of the inner end of the spring pocket or strap 13 is held by the gravity of the parts of the coupler. Another pair of nutted bolts 32 is passed through the flange or cover plate 24 and through the side flanges 3 of the draft-bracket to still more rigidly secure the said parts together.

Within the hollow section 25 of the supplemental casting or bracket a seat or socket 33 is formed, which seat or socket is of cylindrical form throughout its upper portion and of rectangular form throughout its lower portion. A cylindrical boss or projection 34 is formed integral with said supplemental casting 23 and projects into the seat or socket 33. In this preferred construction the body of the bumper is made up of three sections 35, 36, and 37. The section 35 is hollow and in cross-section corresponds in form to the cross-section of the seat or socket 33, but is of sufficiently less diameter to permit it to work freely with a telescopical movement with said seat or socket 33. At its outer end said section 35 is provided with a pair of ears 38 with stop-shoulders 39. The inner end of the section 36 is provided with a single ear or pivot-lug 40, that fits between the pair of ears 38. A pivot pin or bolt 41, passed vertically through the ears or lugs 38 and 40, serves to pivotally connect the section 36 to the section 35, and thereby permits the former a limited oscillatory movement in an approximately horizontal plane. Adjacent to the ears 38

the bumper-section 36 is provided with segmental flanges 42, which under bumping strains bear against the outer surfaces of the said ears 38. The extremities of these flanges 42 cooperate with the stop-shoulders 39 to limit the oscillatory movements of the bumper-section 36. The depending end of the pivot pin or bolt 41 works in an elongated slot or perforation 43 in the plate or cover-section 24, and thus limits the longitudinal movements of the bumper-sections 35 and 36. A coiled bumper-spring 44 is located in the cylindrical spring-seat 45 of the section 35. This bumper-spring 44 reacts against the boss or projection 34 and the head of the section 35 and normally forces the depending end of the pivot-pin 41 against the outer extremity of the slot 43.

The outer or free end of the pivoted bumper-section 36 is provided with a vertical seat or recess 46, the front wall of which is approximately vertical and the rear wall of which is inclined. The section 37 will be hereinafter referred to as the "distensible" section on account of the function which it performs. In the construction illustrated this distensible section is in the form of a short and heavy plunger mounted to slide through the web formed at the free end of the bumper-section 36 and provided with a rectangular head 47, which works in the recess or seat 46. At its outer end the plunger-section 37 is provided with a removable but rigidly-secured bumping-head 48, which, as shown, is secured by a nutted bolt 49. It will of course be understood that when the head 47 is removed from working position the plunger 37 may be placed in working position or removed therefrom by drawing it back into the seat 46.

Again, in my preferred construction I provide a take-up device in the form of a heavy wedge 50, which normally bears against the head 47 of the distensible section and the inclined rear wall of the seat 46 and under the action of gravity holds the distensible section distended. This wedge 50 is provided with a notch or detent 51, which adapts it to be set and held by the head 47 in the manner illustrated by dotted lines in Fig. 2 and as will more clearly appear in the description of the operation. The said wedge 50 is further preferably provided with a series of perforations 52 in its upper end and with a similar series of perforations 53 in its lower end. By placing a pin or cotter 54 through one of the perforations 52 the downward movement of the wedge may be limited, and thereby the amount of slack which it will be permitted to take up may be variably limited. By passing a similar pin or cotter through one of the perforations 53 the upward movement of the wedge 50 may be also limited. To give the bumper-section 46 a maximum of strength with a minimum of weight, it is provided with side flanges 55 and is recessed back of the seat 46, as shown at 56. As shown, the supplemental casting-



section 25 is provided with a notch 57, which permits the rearward movement of the head of the pivot-pin 41 without binding.

To railway men and others familiar with this art it is a known fact that breakages are often occasioned by vertical strains put upon the couplers and their draft connections, due to the fact that in running over a rough track and rough rail-joints and by other causes the connected couplers are frequently caused to move, the one up and the other down, with a quick jerking action. Breakage from the above causes occurs more frequently between the draft-riggings of a tender and of an engine, for the reason that these draft-riggings are always short and as hitherto constructed have not been permitted a yielding up-and-down movement.

It has been one of the principal objects of my invention to obviate the above defective construction, and this I have accomplished by mounting the coupler for a limited up-and-down movement and applying a spring or yielding device thereto for holding said coupler upward.

While it would be within the scope of my invention and would be a decided improvement over prior constructions to mount the couplers for limited up and down movements without the spring or yielding device applied thereto to hold the same upward, the addition of such a spring device is nevertheless a very important additional improvement.

We will now consider the action of the specific construction illustrated. As already stated, the spring device 17 18 normally holds the coupler-head upward to its limit, and the tension of this spring device may be varied by means of the screw-threaded plug 22. If the coupler of the coupled car or engine is moved suddenly downward, this spring device will yield to permit a corresponding downward movement of the coupler shown, while, on the other hand, if the coupler of the said coupled car or engine is thrown suddenly upward its spring device will yield in a similar manner. In brief, if a pair of coupled couplers are provided with these spring-supporting devices the spring device of the one or the other will always be free to yield to permit up or down movements of either of the said couplers, thus preventing abnormal strains from being thrown upon the draft connections, and particularly upon the draft brackets or castings. Under the above movements the coupler and its stub draft-bar are oscillated or vibrated on the depending lug or bearing-surface 31, acting as a fulcrum therefor. The bumping and draft actions on the coupler and its connections are approximately those of an ordinary draft connection employing a spring-pocket and followers, and, further, this action is obvious from an inspection of Fig. 5. As the outer section of the bumper is pivoted for movement in an approximately horizontal plane, the outer or bumping face of the head

48 is free to engage with flatwise contact the cooperating bumping-surface of the bumper of the connected car, and this is true when the cars are standing on a curve as well as when they are standing on a straight track.

It is, as is well known, ordinary to provide yielding or spring-pressed bumpers for cooperation with the couplers. In order that these spring-pressed bumpers shall act when a train is connected to put the couplers under spring tension, and thereby to take up the slack between the cars, or between the tender and the engine, or the tender and a car, it has been hitherto the practice to set the bumpers with respect to the couplers, so that the springs of the bumper must be compressed to a considerable extent in order to permit the coupling actions of the couplers. As one of the principal features of my invention I provide a construction which renders it unnecessary to compress the springs of the bumpers in order to permit the couplers to couple, thus rendering the coupling action easy to accomplish, and which at the same time will automatically take up the slack between the cars and put the couplers under a frictional tension, so as to prevent rattling. The preferred form of this device has already been described in detail, and its action may now be considered.

Before the cars are coupled or bumped together the distensible section 37 is forced outward and the take-up wedge 50 is raised, and its notch or detent 51 is engaged with the upper portion of the head 47 of the said section 37. The take-up wedge 50 will be held in this position by gravity and the frictional engagement of the parts. Now the relation of the distensible sections of the bumpers to the cooperating couplers and to each other are such that when the distensible sections 37 are forced inward to their limits the couplers which are to be coupled may be coupled without compressing or materially compressing the springs of the said bumpers. Hence when the bumpers are brought together their distensible sections 37 will be forced inward, and under this action the take-up wedges 50 will be straightened up and their notches or detents 51 will be disengaged from the cooperating heads 47, so that the said wedges will be free to fall whenever space is given them between the said heads 47 and the inclined rear walls of the seats 46. When the draft strains are put upon the coupled couplers, their draft-springs will be compressed and they will be drawn outward, thereby relieving the distensible bumper-sections from strains, and thus permitting the take-up wedges to slip downward and take up whatever slack has been given. Under the above action it follows that after a train has been started and run the springs of the bumpers will be set under tension to push the cars and tender or tender and engine apart against the resisting forces of the draft-springs and that in this manner the said connected sections of



the train are so connected that both the draft and bumping strains will be cushioned and all slack between same prevented.

Attention is called to the fact that the form of the bumper-section 35 is such that while it is free for a telescopic movement in its seat 33 it cannot turn or rotate therein and at its flattened lower surface affords a very extended wearing-surface. As already indicated, under bumping strains on the bumper the segmental flanges 42 are forced into engagement with the ears 38, thus relieving the pivot-pin 41 to a very considerable extent from the said bumping strains.

From the foregoing description and statements made it will of course be understood that my invention above described is capable of a very large range of modification. A coupler or draft-bar connection mounted for up-and-down movements and a bumper provided with a distensible section and a take-up device I consider broadly new with my present invention, and desire to claim the same generically.

By a "distensible bumper" I do not intend to define or include a bumper which has simply a longitudinal springing action; but, on the contrary, this expression is intended to define and include a bumper or similar device whether spring-mounted or not, but provided with a section which may be variably distended or projected to change the length of the bumper independent of its spring action, if, in fact, it has such spring action.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with a draft-bracket provided with a seat or socket that incloses the draw-bar, of a draft-bar mounted in said seat or socket, with freedom for a limited up-and-down movement, and provided at its free or outer end with a coupler-head, substantially as described.

2. The combination with a draft-bracket provided with a seat or socket that incloses the draw-bar, of a draft-bar mounted in said seat or socket, with freedom for a limited up-and-down movement and provided at its free end with a coupler-head, and a spring or elastic device applied between said bracket and said draft-bar, and serving to yieldingly hold said draft-bar upwardly, substantially as described.

3. The combination with a draft-bracket provided with a seat or socket that incloses the draw-bar, of a draft-bar provided at its outer end with a coupler-head, and fulcrumed at its inner end for a limited up-and-down movement in the said seat or socket of said bracket, and a spring or elastic device applied between said bracket and said draft-bar and serving to yieldingly hold said draft-bar, substantially as described.

4. The combination with the draft bracket or casting 1 formed with the sides 3, draft-lugs 7 and 8, ledges 5, bottom 4 and spring-seat 17, of the spring 18 in said seat 17, and

the draft-bar having the spring-pocket 15 and spring-pressed followers 6, said parts operating substantially as and for the purposes set forth.

5. The combination with the draft bracket or casting 1, formed with longitudinally-extended pocket for the draft-bar, and the lower bearing-surface 16, of the removable top plate 24, having the bearing or fulcrum lug 31, and the draft-bar fulcrumed at its inner end between the said bearing-surfaces or lugs 16 and 31, and free for a vertical oscillatory movement, substantially as described.

6. The combination with the draft bracket or casting 1 formed with the sides 3 and bottom 4, draft-lugs 7 and 8, bearing-surface 16 and spring-seat 17, of the removable top plate 24, having the fulcrum or bearing surface 31, the spring 18 in said spring-seat 17, and the draft-bar, involving the spring-pocket 13 fulcrumed between said bearing-surfaces 16 and 31 and subject to the action of said spring 18, and the spring-pressed followers 6 cooperating with said draft-lugs and said spring-pocket, substantially as described.

7. A draft-rigging involving the casting 1, formed with the sides 3, bottom 4 having the vertical spring-pocket 17 depending from the bottom 4, and the removable top plate 24, rigidly but removably bolted to said sides 3, substantially as described.

8. The combination with a draft-bar or draft connection provided with a coupler-head and mounted for a limited up-and-down movement, of a spring device applied to yieldingly hold said draft-bar upward, and means for varying the tension of said spring device, substantially as described.

9. The combination of a draft bracket or casting, formed with primary and secondary seats or sockets, of a draft-bar provided with a coupler-head, and mounted for a limited up-and-down movement in said primary seat or socket, a spring in said secondary seat or socket, acting on said draft-bar, and a screw-threaded plug working through the bottom of said secondary seat or socket for varying the tension of said spring, substantially as described.

10. The combination with the draft bracket or casting 1 formed with the integrally-formed sides 3 and bottom 4, and the draft-lugs 7 and 8, of the removable top plate 24, the spring-pressed followers 6 cooperating with said draft-lugs, and the coupler-head 10 provided with the spring-pocket 13, directly and rigidly secured thereto, and embracing said followers, substantially as described.

11. In a draft-rigging, the draft casting or bracket 1, formed with sides 3, bottom 4, depending spring seat or socket 17 and the depending stiffening ribs or flanges 21 running from said socket 17 to the rear of said bracket, substantially as described.

12. In a draft-rigging, the draft bracket or casting 1 involving the rear end plate securable to the draft-timber, the side plates 3



formed integral with said rear plate and with the bottom plate 4, and provided with the ledges 5 for supporting the follower-plates, and spring-pressed followers mounted to work within said draft-bracket, and supported by said ledges 5, substantially as described.

13. The combination with a draft-bracket, provided with a pair of seats or sockets, located directly one over the other, of a coupler having a draft bar or connection, spring-mounted, in one of said seats or sockets, and a bumper-spring mounted in the other seat or socket, substantially as described.

14. A draft-bracket the parts of which are directly and rigidly secured together provided with a pair of horizontally-extended seats or sockets located one directly over the other, of a coupler, having a draft-bar portion spring-mounted in one of said seats, and a bumper provided with a pivoted outer end section and having its inner section spring-mounted for telescopic movement in the other seat of said bracket, substantially as described.

15. The combination with the primary draft-bracket, 1, having the side pieces 3 and bottom 4, of the supplemental bracket 23 and 25 rigidly but detachably securable together by vertical bolts, the draft-bar mounted in said primary bracket, and the bumper mounted to move in the hollow section 25 of said supplemental bracket, substantially as described.

16. The combination with the primary bracket 1, having the sides 3, draft-lugs 7 and 8 and bottom 4, of the spring-pressed followers 6 working between said draft-lugs 7 and 8, the draft-bar involving the spring-yoke 13, embracing said followers, the supplemental bracket 24, 25, bolted to said primary bracket, and serving to hold the said followers 6 and spring-pocket in working positions, and the bumper with its inner end mounted to work in the section 25 of said supplemental bracket, substantially as described.

17. The combination with the bracket involving the plate-section 24 and hollow section 25, of the bumper made up of two sections, pivotally connected by a vertical pin or bolt 41, the lower end of which depends and works in an elongated perforation 43 and said plate portion 24, substantially as described.

18. The combination with the bracket 24, 25, provided with the internal boss or projection 34, of the bumper involving the sections 35 and 36, pivotally connected by the pin 41, said section 35 being recessed to receive the projection 34 and the bumper-spring 44, substantially as described.

19. The combination with the bracket 24, 25, formed with the seat 33, boss or projection 34, and slot 43, of the bumper-section 35 fitting and working in said seat 33 and formed with spring-seat 45 and ears 38, the bumper-section 36 provided with the lug 40, and the pivot-pin 41 passed through said ears 38 and

lug 40, and working as a stop in said slot 43, substantially as described.

20. The combination with a bracket, having a seat or socket, of a bumper formed in pivotally-connected sections, a pin connecting said sections and engaging said bracket to form a stop, substantially as described.

21. The combination with a bracket, having a seat or socket, of a bumper formed in pivotally-connected sections, a pivot-pin connecting said sections and engaging said bracket to form a stop, and a spring device applied between said bumper and said bracket, substantially as described.

22. A bumper or similar device, having a longitudinally-distensible section and a take-up device arranged to be set to permit the contracting movement of said section, and to be tripped into action to hold the same distended under the subsequent bumping action.

23. The combination with a bumper, having a distensible outer end section, of a take-up wedge operating normally to hold said outer end section distended or projected, but adapted to be set in advance to permit the inward movement of the same and to be tripped or thrown into action by the subsequent bumping action, substantially as described.

24. In a bumper or similar device the combination with a distensible outer end section, of a take-up device arranged to take up the slack and hold said distensible section distended, and means for variably limiting the take-up action of said take-up device, substantially as described.

25. The combination with a bumper, having a distensible outer end section, of a take-up wedge operating normally to hold said distensible section distended or projected, and provided in its upper portion with a series of perforations or seats, and a pin or similar device cooperating with said perforations or seats to variably limit the downward movement of said wedge, substantially as described.

26. The combination with a bumper, having a distensible outer end section, of a take-up wedge, operating normally to hold said distensible section distended or projected, and provided at its lower portion with a series of perforations adapted to be engaged by a pin or similar device to variably limit the upward movement of said wedge, substantially as described.

27. The combination with a bumper having a distensible outer end section, of a take-up wedge normally operating to hold said distensible section distended or projected, and provided with a notch or detent in one side adapted to be engaged with said distensible section when the bumper is out of action, and to be tripped back into action by the subsequent bumping action, substantially as described.

28. The combination with a bumper formed with the seat or recess 46, having the inclined rear wall, of the distensible bumper-section



or plunger 37, having the head 47 working in said seat 46, and the take-up wedge 50 working in said seat 46 as described, and provided with a notch or detent 51, as and for the purposes set forth.

29. The combination with a bumper formed with the seat 46, having the inclined rear wall, of the distensible bumper-section or plunger 37 provided at its inner end with the head 47 and at its outer end with the removable bumper-head 48, and the take-up wedge 50 working in the said seat 46, and acting on the said distensible section, substantially as described.

30. The combination with a bumper formed with the seat 46 having the inclined rear wall, of the distensible bumper-section or plunger 37, provided at its inner end with the head 47 and at its outer end with the bumper-head 48 removably secured by a pin or bolt 49, and the take-up wedge 50, working in said seat 46, as described, and provided with the notch 51, adapting it to be temporarily set to permit the contracting movement of said dis-

tensible bumper-section, and to be thrown or tripped back into action by such contracting movement, substantially as described.

31. A bumper involving the pivoted section 36 formed with the seat 46, the recess or perforation 56 and the side flanges 55, the distensible bumper-section 37 working through the outer end of said section 36 and provided with the head 47 working in said recess 46, and the take-up wedge 50 working in said seat 46 and acting upon said head 47, substantially as and for the purposes set forth.

32. The combination with a distensible bumper, of means for automatically distending said bumper and holding the same distended, substantially as described.

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

EDWIN C. WASHBURN.

Witnesses:

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F. D. MERCHANT.