

H. C. BUHOUP.

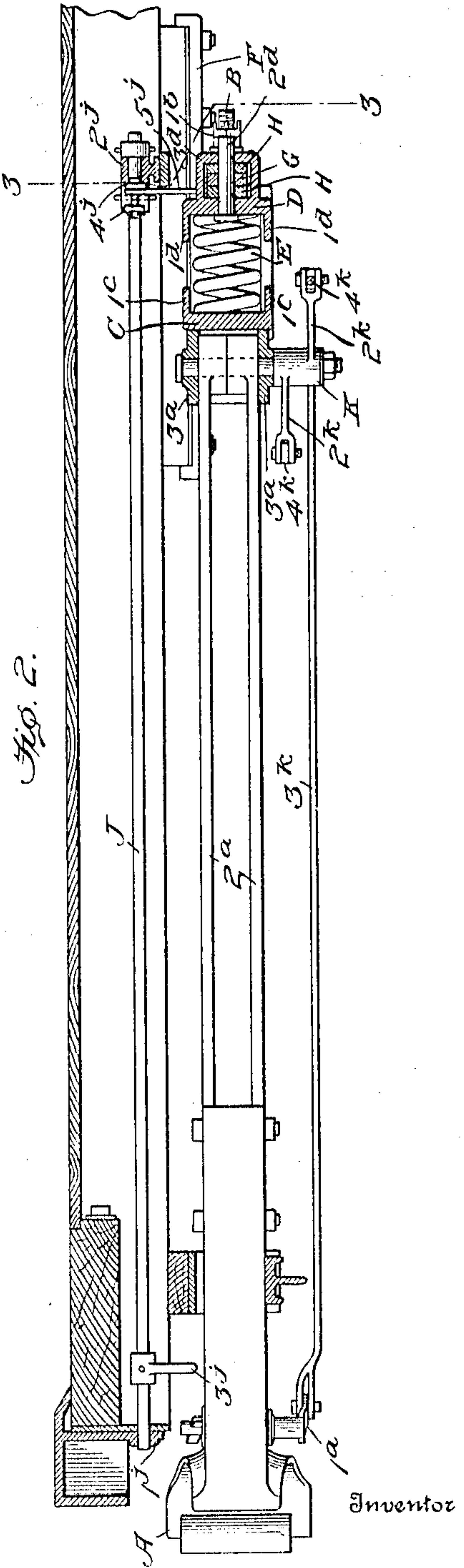
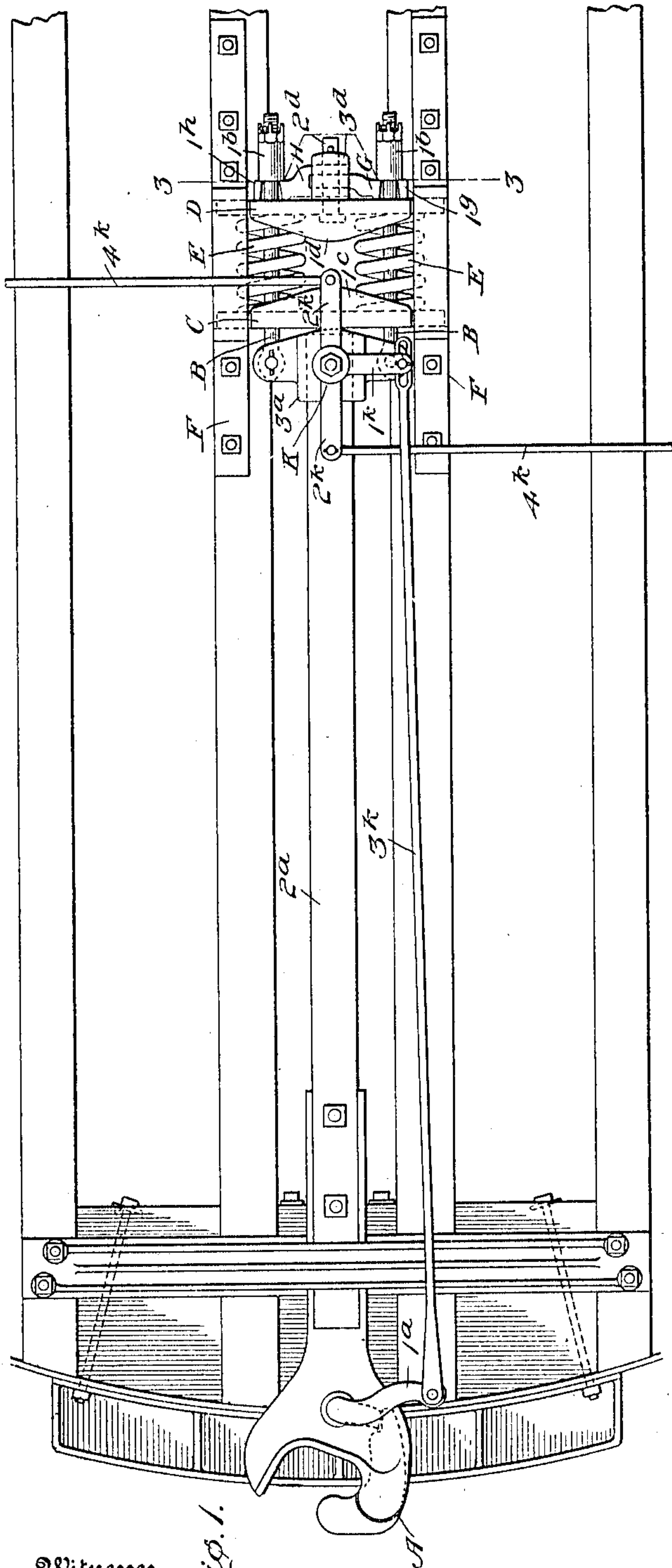
DRAFT GEAR.

APPLICATION FILED NOV. 25, 1908.

Patented Mar. 1, 1910.

4 SHEETS—SHEET 1.

950,472.



Witnesses

Edwin L. Bradford
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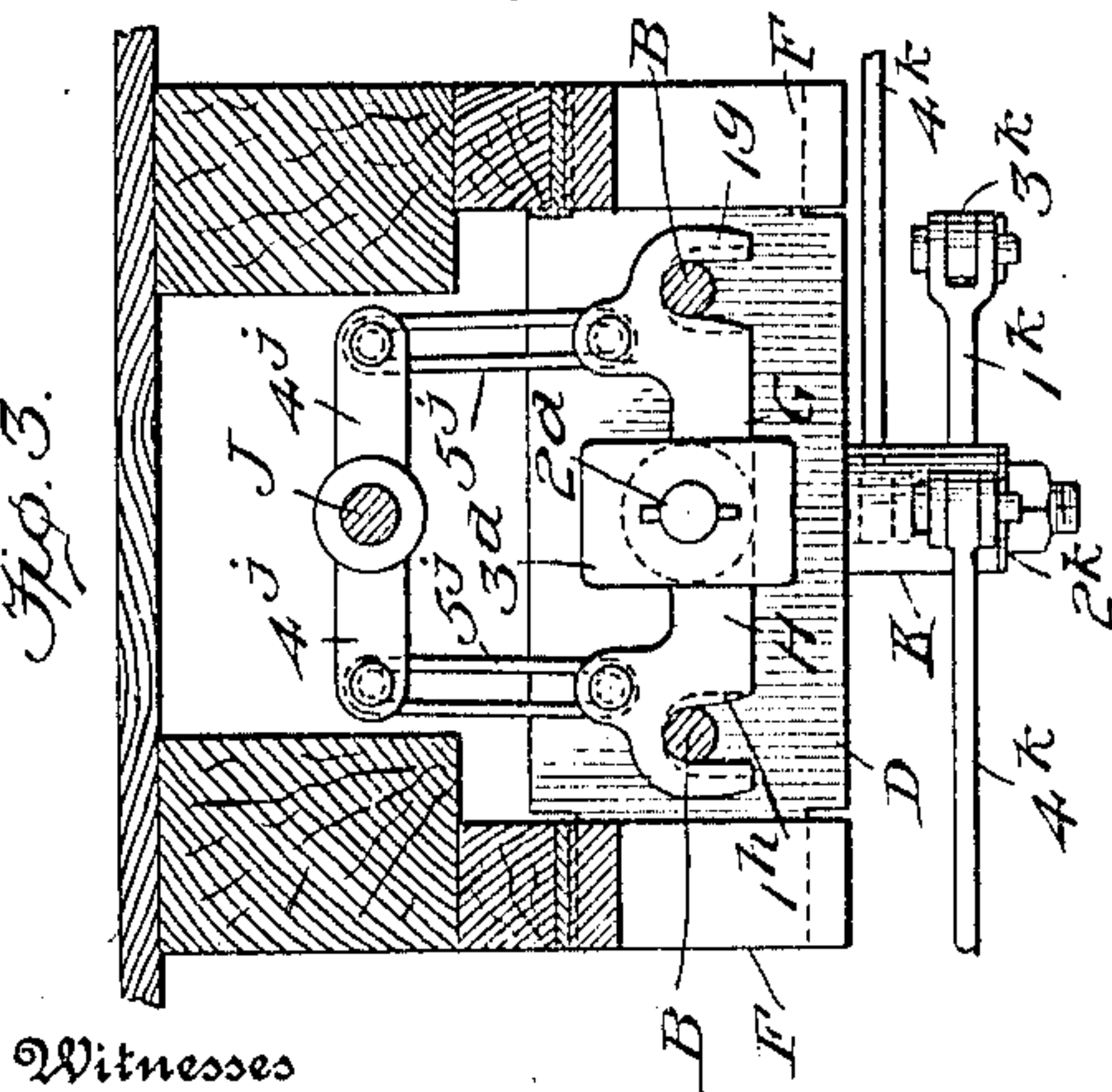
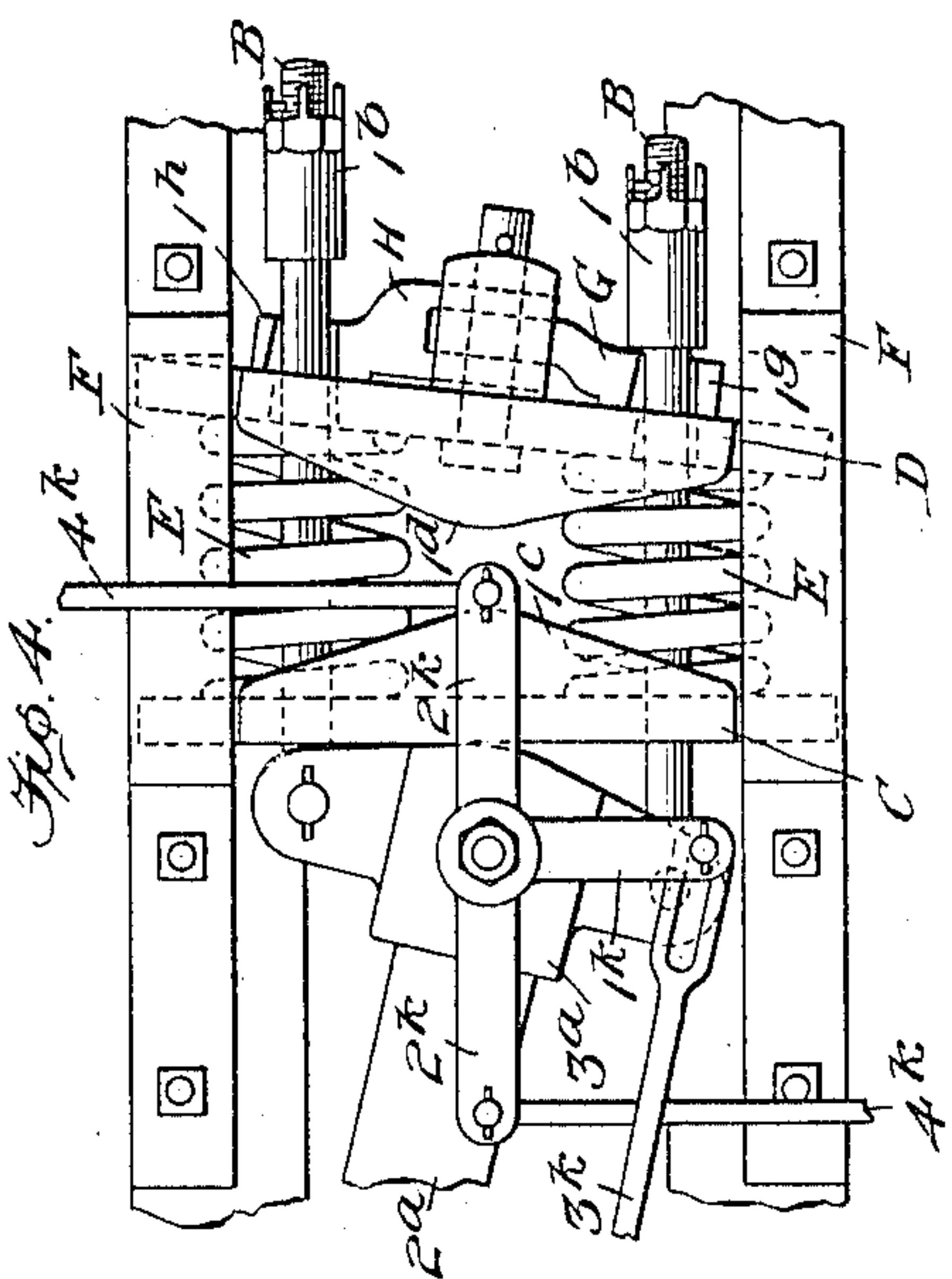
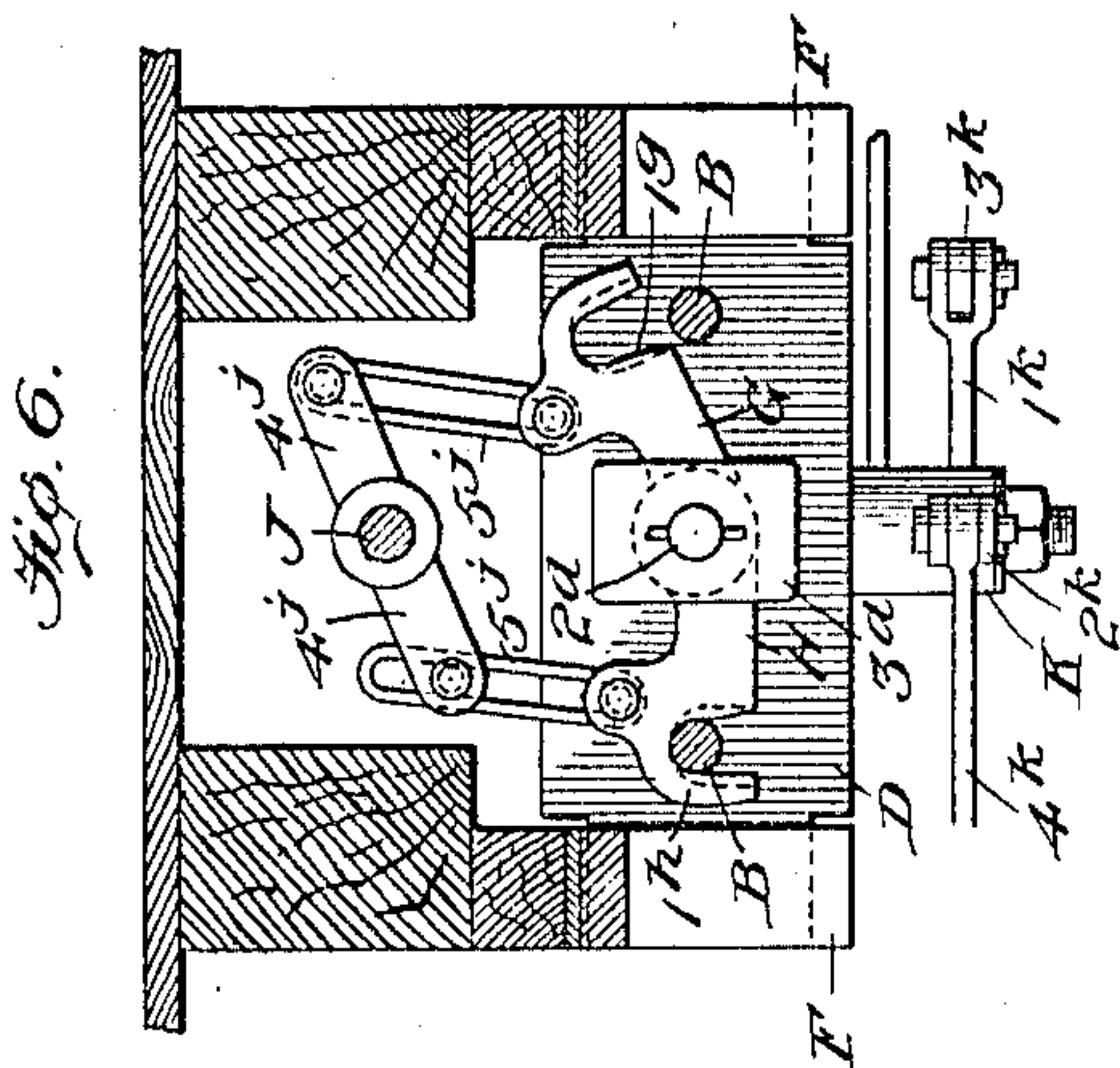
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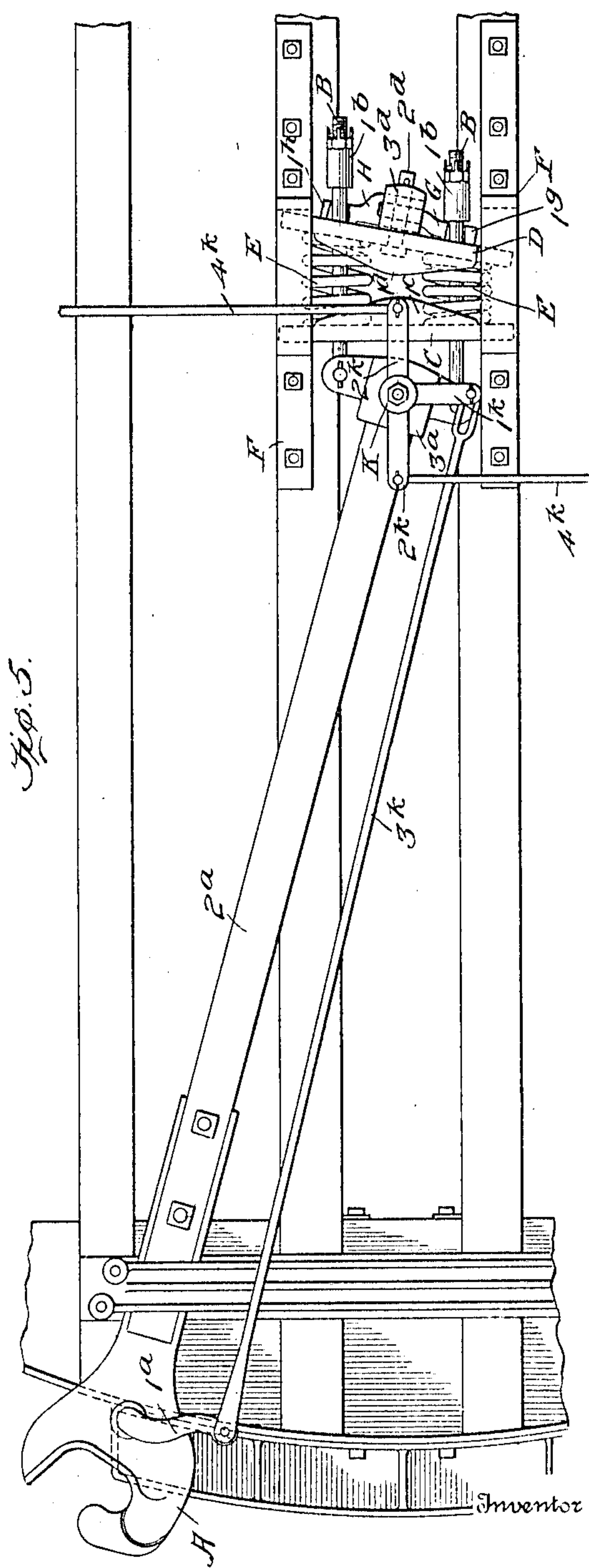
Patented Mar. 1, 1910.

4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

950,472.

Fig. 8.

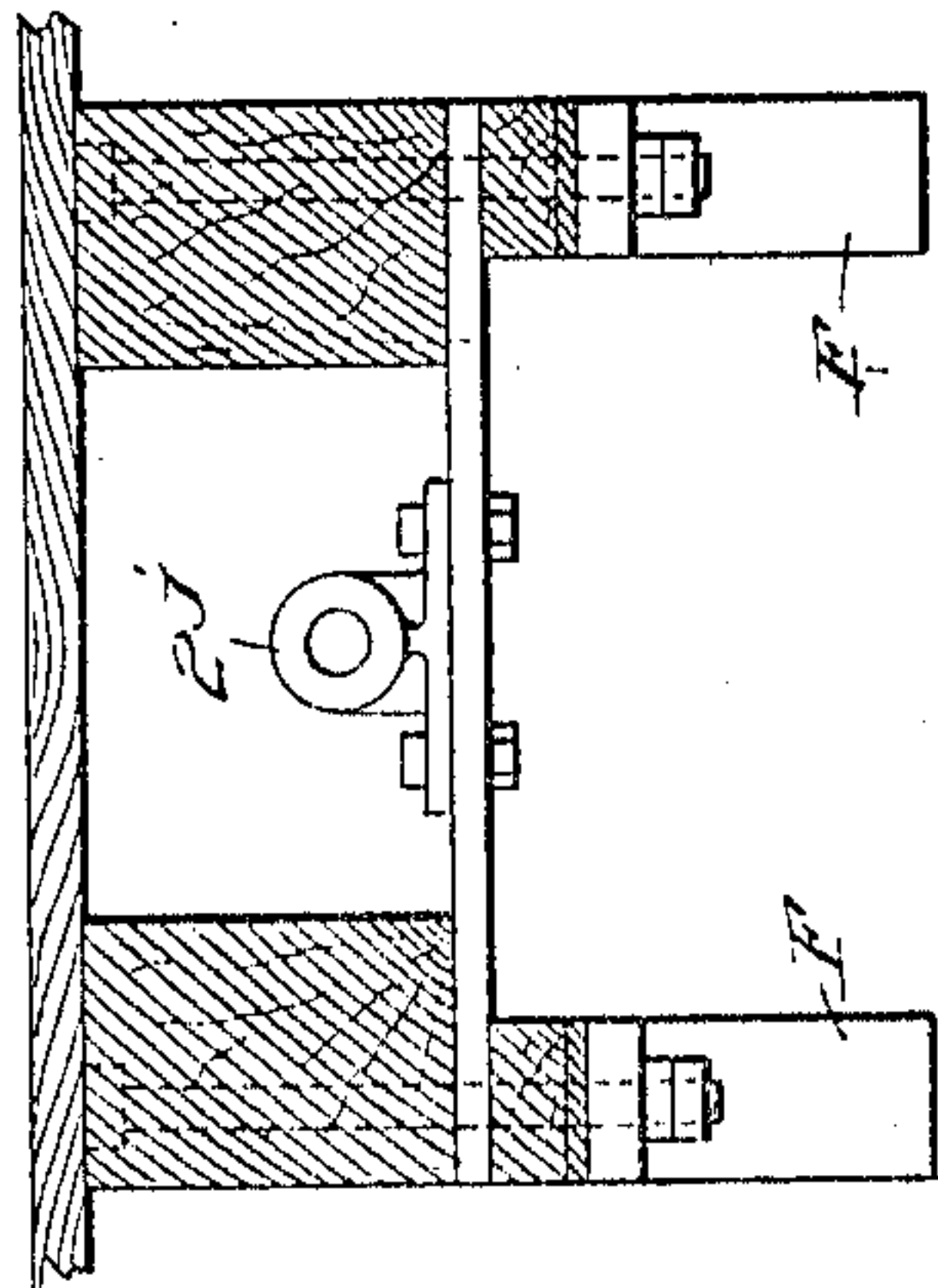


Fig. 10.

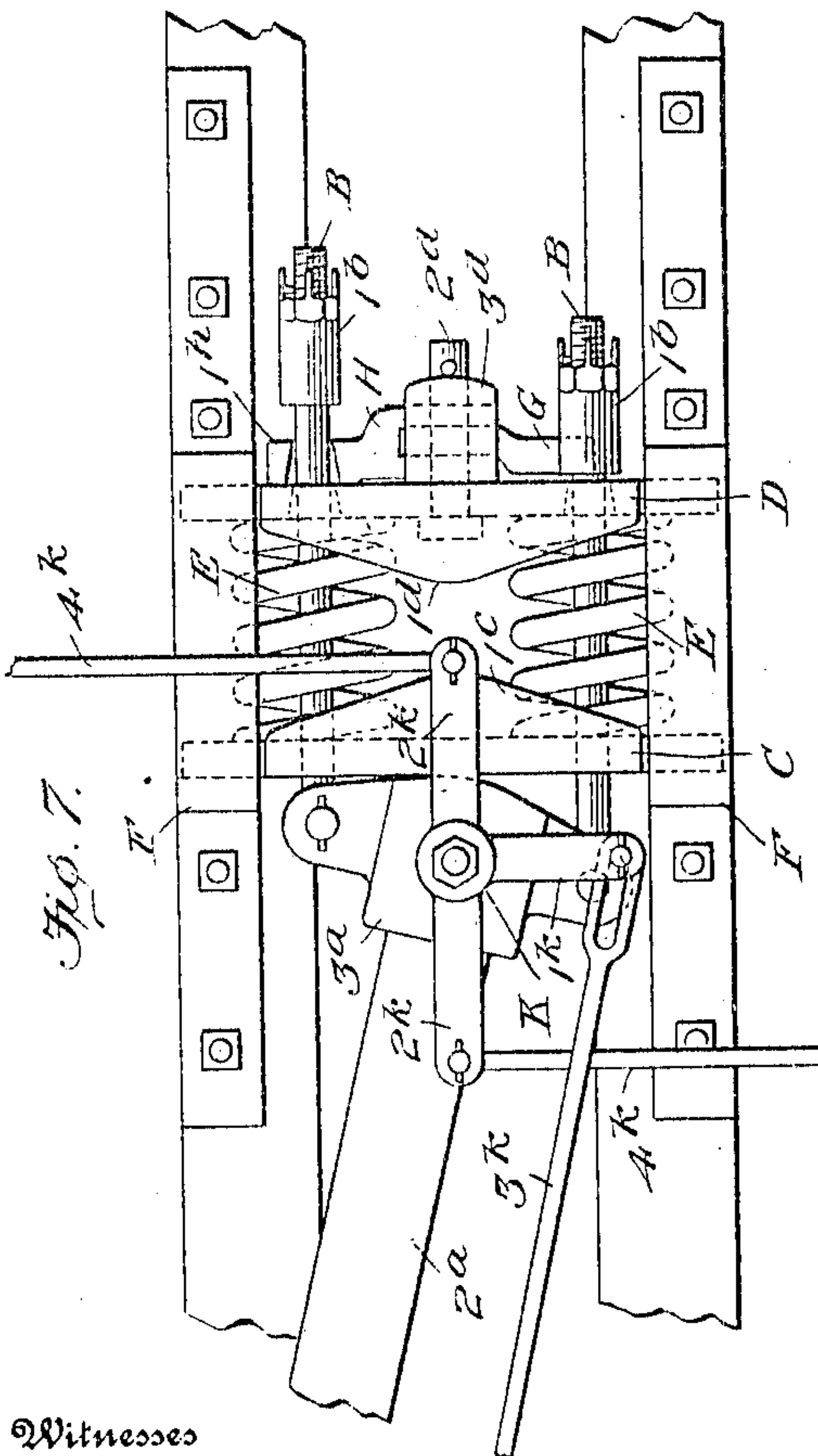
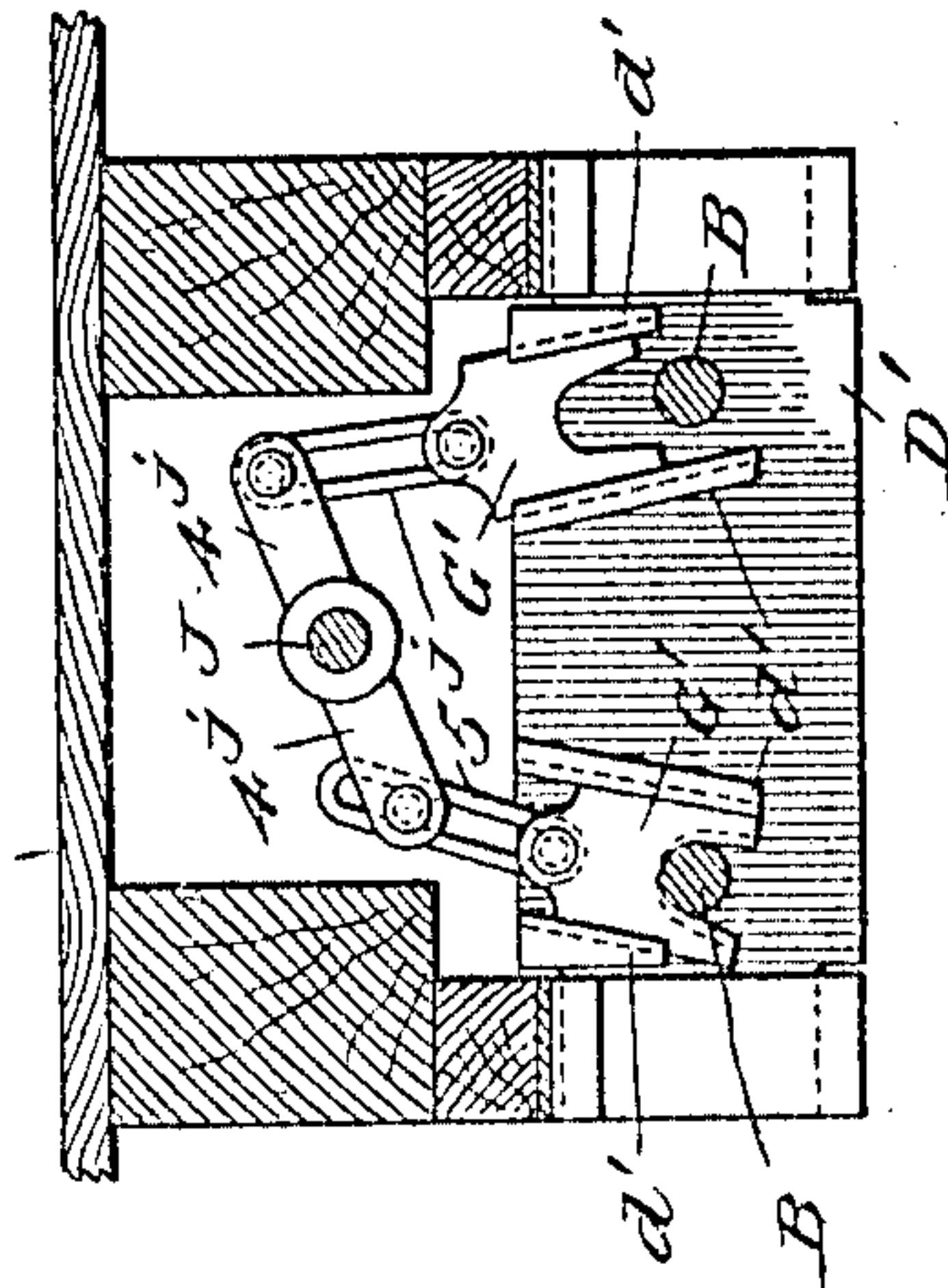
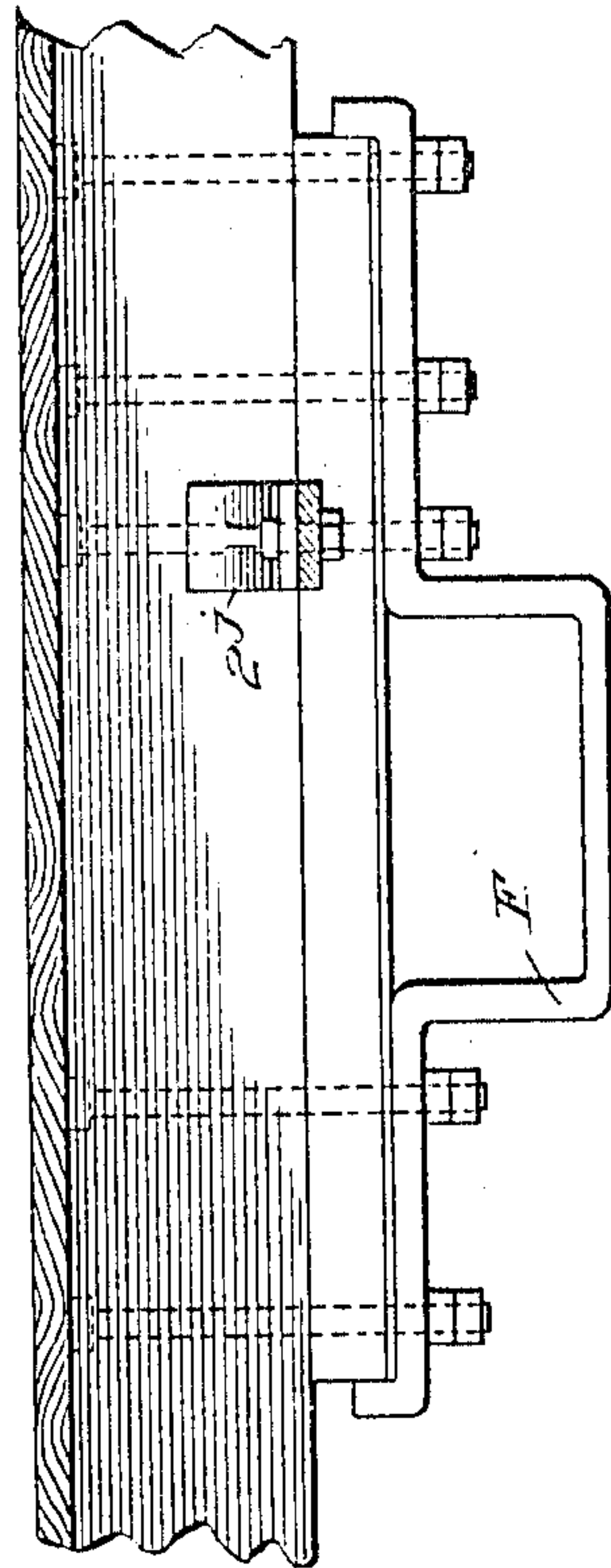


Fig. 9.



Witnesses

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4 SHEETS—SHEET 4.

Fig. 11.

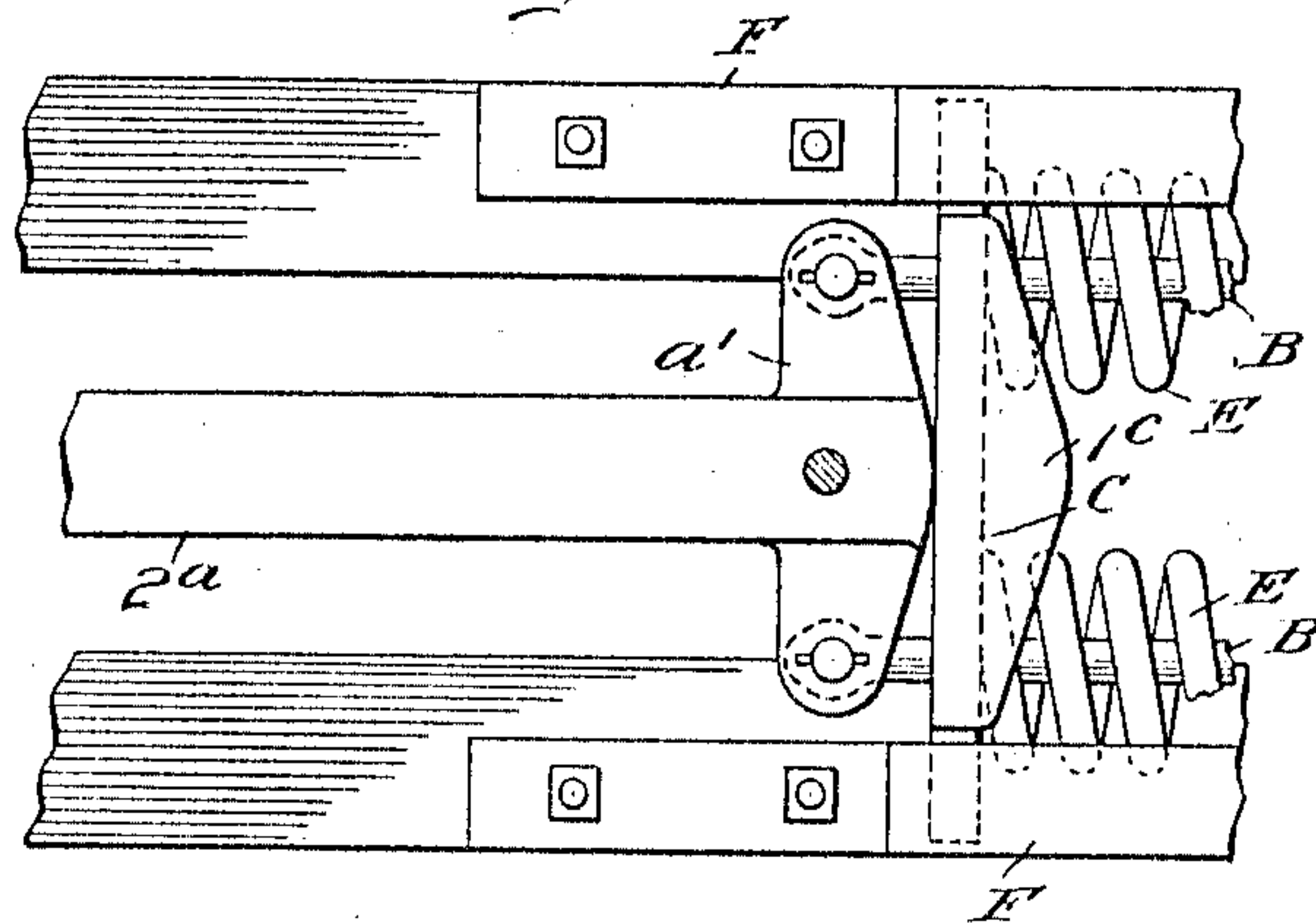


Fig. 12.

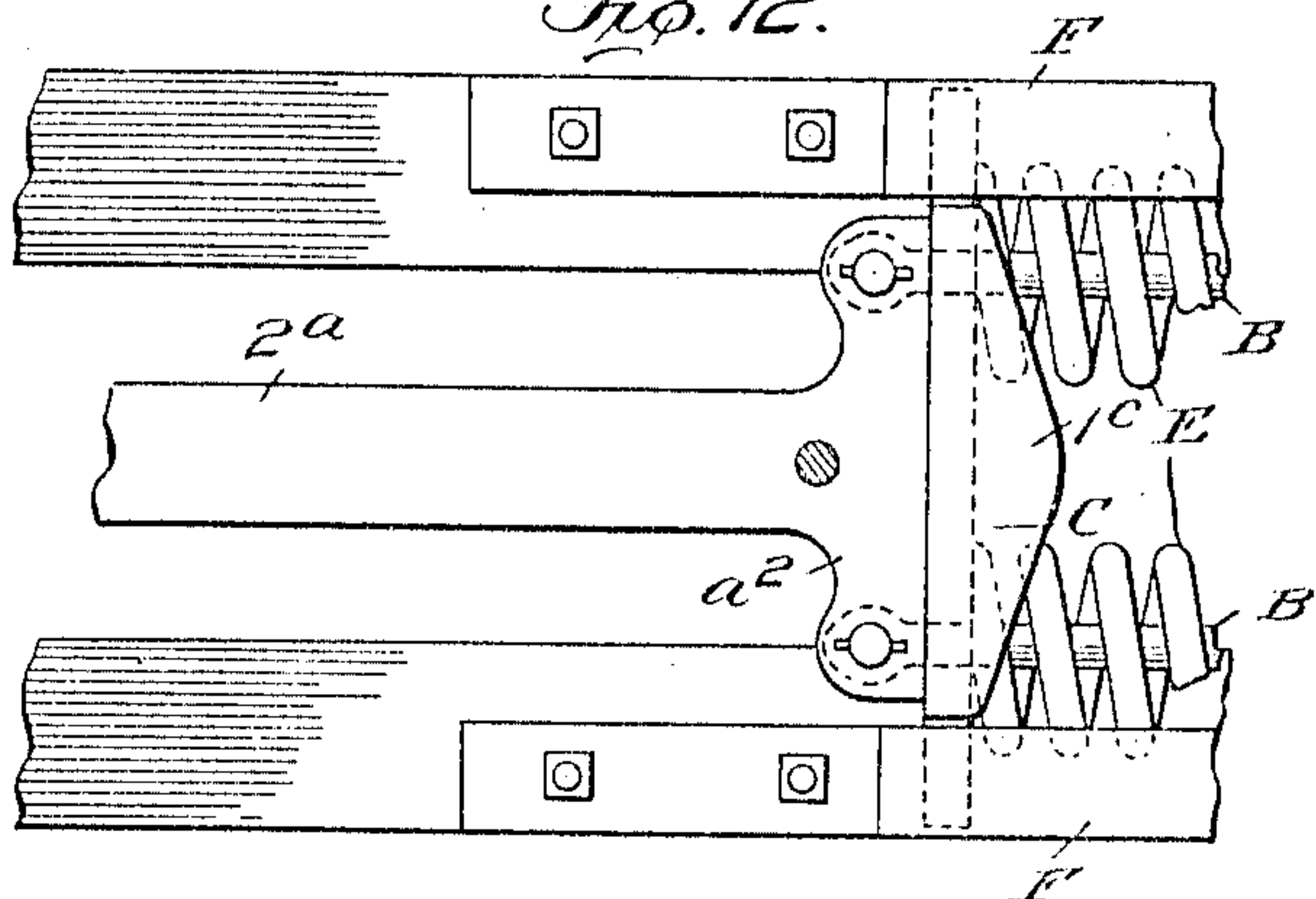
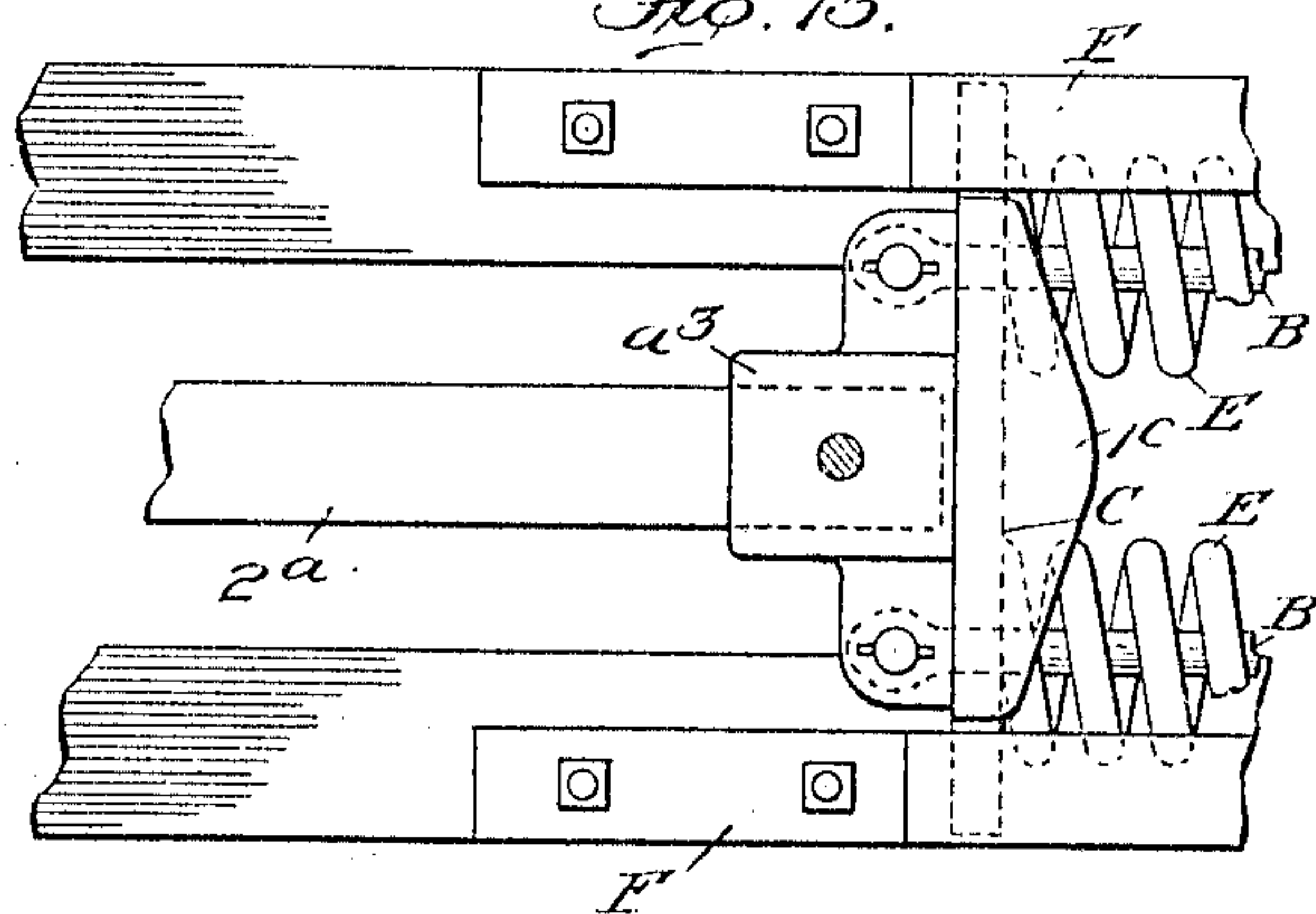


Fig. 13.



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UNITED STATES PATENT OFFICE.

HARRY C. BUHOUP, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE MCCONWAY & TORLEY COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DRAFT-GEAR.

950,472.

Specification of Letters Patent.

Patented Mar. 1, 1910.

Application filed November 25, 1908. Serial No. 464,373.

To all whom it may concern:

Be it known that I, HARRY C. BUHOUP, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Draft-Gear; 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 is particularly designed to afford a simple and efficient equipment of this character for cars which are operated over tracks having sharp curves, but it is to be understood that draft gear constructed in accordance with my invention is applicable to railway vehicles generally.

The principal object of the present invention is to provide a construction and arrangement of draft gear wherein a laterally swinging coupler is normally maintained in the longitudinal axis of the car through the instrumentality of springs which are so related to the coupler that their centralizing effect thereon may be released to permit the coupler to be readily swung to one side in effecting a coupling when the car is upon a curve, the return of the coupler to its position in the center of the car operating to automatically restore to the springs their normal centralizing control of the coupler; and such a construction embodies the main feature of my invention.

A further object of my invention is to provide a draft gear of few and simple parts wherein the draft springs operate to normally maintain the coupler in the longitudinal axis of the car.

There are other, minor, objects and features of invention which are effected by, and reside in, certain elemental constructions and combinations, all as will hereinafter more fully appear.

In the drawings chosen for the purpose of illustrating my invention, the scope whereof is pointed out in the claims, Figure 1 is an inverted plan view of a draft gear embodying my invention, the parts being in the positions they normally occupy when the coupler is in the center of the car; Fig. 2 is a view partly in side elevation and partly in vertical central section showing the devices

illustrated in Fig. 1; Fig. 3 is a vertical section of the device, the portions thereof which are to the rear of the lines 3—3, Figs. 1 and 2, being omitted; Fig. 4 is an inverted plan view of the principal parts of the device shown in Fig. 1, illustrating the positions assumed by the several parts when the coupler is laterally displaced without being subjected to draft or buffing forces; Fig. 5 is an inverted plan view similar to Fig. 1, portions of the coupler and its unlocking mechanism being omitted, and the several parts being in the positions they occupy when the coupler is displaced laterally while subjected to draft forces; Fig. 6 is a view similar to Fig. 3, but showing the devices by which the centralizing effect of the springs is controlled in position to release the coupler from such control; Fig. 7 is an inverted plan view of the draft gear, showing the relative positions which the parts assume when the coupler is swung laterally upon being released from the control of the centralizing springs; Figs. 8 and 9 are detail views, in end and side elevation, respectively, illustrating the devices for supporting the rear end of the draft gear; Fig. 10 is a view similar to Fig. 6, but illustrating a modified construction; Figs. 11, 12 and 13 are inverted plan views illustrating modified forms 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, A is a coupler which, as shown, is preferably of the vertical plane type and is provided with a suitable lock or catch the lever whereof is indicated at 1^a. The rear portion of the stem of the coupler, instead of being formed integral with the coupler head, is preferably constructed of plate-like members 2^a, 2^a, which are suitably connected to the forward part of the coupler. As shown in Figs. 1 and 2 of the drawings, a convenient and efficient manner of forming this connection is to provide that portion of the coupler stem which is integral with the coupler head with depressed seats which conform to and receive the forward ends of the members 2^a that are bolted therein. Such a construction of the coupler stem enables the length

of the coupler over all to be readily changed to meet the requirements of cars of different dimensions.

The rear end of the coupler stem is formed or provided with a lever-head which, through the medium of parts hereinafter described, operates upon a lateral displacement of the coupler to compress one of the springs E to a greater extent than the other. This lever-head, as shown in the principal figures of the drawings, is preferably formed as an independent casting 3^a having a socket in which the rear ends of the coupler-stem members 2^a, 2^a are rigidly secured, its rear face being convexly curved or beveled so as to normally diverge from the adjacent follower C in opposite directions from its point of engagement therewith, thus affording a rocking bearing on said follower C. The lever-head *a'* shown in Fig. 11 is similar in construction to the lever-head 3^a just described, except that it is formed integral with the rear end of the coupler stem. A modified form of lever-head, *a*², having a flat rear face is illustrated in Fig. 12. The lever-head *a*³ shown in Fig. 13 is also provided with a flat rear face, but differs from the modification shown in Fig. 12 in that it is not formed integral with the coupler stem. Each form of lever-head is suitably constructed to permit the members B, B, through which the springs E, E operate to centralize the coupler, to be attached to said lever-head on opposite sides of the longitudinal axis of the coupler.

The members B, B, which are pivotally attached to the lever-head 3^a at opposite sides thereof, are preferably in the form of tail bolts which pass through the followers C and D and through their respective springs E, E. The rear end of each tail bolt B is provided with a sleeve 1^b which preferably has threaded engagement with its tail bolt and which may be also retained in place by means of a nut as shown. These sleeves 1^b, as will hereinafter appear, serve, when it is desired to swing the coupler laterally in making a coupling upon a curve, to retain the devices by which the centralizing effect of the springs E, E on the coupler A is controlled in such position that said centralizing action is released and withheld until the coupler is again returned to its normal position in the longitudinal axis of the car.

The forward follower C and the rear follower D, between which the springs E, E, are interposed, are arranged to have a limited movement toward and from each other between stops or abutments as usual. For this purpose yokes F, which are bolted to the car framing, may be conveniently employed, as they not only act as abutments to limit the movements of the followers C and D, but also serve to support the rear

end of the draft rigging. Both followers are provided with apertures of sufficient size to permit the free movement of the tail bolts B, B therethrough when the coupler is displaced laterally as shown in Figs. 4 and 5, and both followers are, for the sake of strength, preferably formed with horizontally extending flanges 1^c, 1^c and 1^d, 1^d.

As a means for supporting the devices G, H by which the centralizing action of the springs upon the coupler is controlled, it is preferred to provide a centrally disposed, rearwardly extending pivot pin 2^d which is mounted upon the follower D and upon which the members G, H may be conveniently maintained by means of a cotter and pin supporting yoke 3^d cast upon the follower D.

In the principal figures of the drawings, the members G and H are shown as pivoted hooks the respective outer ends 1^s and 1^h whereof form fillers that are normally interposed between the rear face of the follower D and the front ends of the sleeves 1^b carried by the tail bolts B, B. The recesses in the hooked ends 1^s and 1^h of the members G and H are enlarged or splayed so that they may retain their positions on the tail bolts B, B when the coupler is displaced laterally. By forming the member H with a forked end and inserting the pivoted end of the member G therein, as shown, a very effective pivot bearing is obtained.

In Fig. 10 of the drawings a modified form of means for controlling the centralizing action of the springs is exhibited. In this form of construction the rear follower D', instead of being provided with a pin 2^d and a yoke such as 3^d, is constructed with undercut guide ribs *d'* in which the members G', G' are slidably mounted. The lower ends of the members G' are provided with enlarged or splayed recesses and are interposed between the rear face of the follower D' and the forward ends of the sleeves 1^b carried by the tail bolts B, for the same purpose and in the same manner heretofore described.

As a means of releasing the springs E, E from the control of the members G and H, or G', G', as the case may be, it is preferred to employ a rock-shaft J which is suitably journaled on the car as at 1^j, 2^j, and is provided with an operating lever, such as 3^j, and oppositely extending arms 4^j, 4^j between each pair of which links 5^j, 5^j are attached by means of pins, one of said links being similarly attached to each of the members G and H, or G', G', according as one or the other form of these members is employed. As will be readily understood from an examination of Figs. 6 and 10, by turning the rock-shaft J in the appropriate direction either of the spring controlling members G

or H, or G', G', may be withdrawn from its normal position between its rear follower and adjacent sleeve 1^b.

In order to be able to unlock the coupler when it is in any position, it is preferred to employ a coupler release rigging which consists of a double bell crank lever K that is pivotally mounted upon the rear end of the coupler stem so as to be bodily movable therewith. One of the arms 1^k of the member K is connected by a pin and slot connection with a forwardly extending reach rod 3^k that is flexibly connected at its outer end with the lever 1^a of the coupler lock or catch. Each oppositely extending arm 2^k of the double bell-crank lever K is pivotally connected with a pull rod 4^k, the said rods extending in opposite directions so that the coupler may be readily unlocked from either side of the car by simply pulling upon one of the pull rods 4^k, as will be readily understood. As will be seen by reference to Figs. 1 and 5 of the drawings, by mounting the coupler release rigging upon the coupler stem and by providing for lost motion between the reach rod 3^k and the lever arm 1^k of the member K, neither draft, buffing, nor swinging movements of any coupler used in conjunction with my draft rigging operates to unlock the coupler lock.

The construction being substantially such as hereinbefore pointed out, the operation of the draft gear will be as follows: Assuming the several parts to be in their normal positions, as shown in Figs. 1, 2 and 3, draft forces applied to the coupler A in the longitudinal axis of the car will cause the tail bolts B, B with their sleeves 1^b, 1^b to be drawn forward, thus transmitting a corresponding forward movement to the rear follower D through the interposed fillers G and H. The forward follower C being in the meanwhile prevented by the yokes or abutment members F from moving forwardly, the springs E, E are compressed between the two followers. When the coupler A is in a central position and a buffing force is applied thereto, the rear end of the coupler stem forces the front follower C and tail bolts B, B rearwardly, and as the rear follower D is held against retreat by the yokes F, F, the springs E, E are again compressed between the followers C and D.

When draft forces acting at an angle to the longitudinal axis of the car are applied to the coupler, as when the car is passing around a curve, the parts will assume a position such as shown in Fig. 5; that is to say, the force applied to the rear follower D is transmitted thereto from the coupler through only one of the tail bolts B, thus causing said rear follower to assume an angular position with reference to the forward follower C. The angular relation assumed by the two followers under these conditions

results in an unequal compression of the springs E, E, one of them being capable of full compression while the other is substantially uncompressed. This unequal compression of the springs, or unequal resistance which each offers to the lateral displacement of the coupler under such conditions, constantly tends to return the coupler to a centralized position, and does so return it as soon as the laterally displacing force is withdrawn.

When cars which are coupled to each other are standing on a curve, the positions assumed by the several parts will be as illustrated in Fig. 4 of the drawings, the followers C and D making an angle with each other with a resultant unequal compression of the springs E. If, under such circumstances, the coupler is unlocked, the return of the spring member to its normal condition will return the coupler to its central position as soon as the mating coupler is disengaged therefrom.

If a car is standing upon a curve and it is desired to effect a coupling with another car, the hand lever 3^j of the rock-shaft J is moved in the proper direction to elevate that filler member G or H which is farther removed from the side of the car toward which the coupler is to be swung. When this is done the coupler A may be manually swung to one side, as shown in Fig. 7, without compressing either of the springs E, E, the withdrawal of the filler from between the rear follower D and the sleeve 1^b affording the necessary clearance to permit one of the tail bolts B to move forward without resistance as the coupler swings laterally. As one tail bolt B moves forwardly the other tail bolt simultaneously executes a rearward movement, the rocking character of the bearing between the rear end of the coupler stem and the forward follower C permitting such rearward movement without, or substantially without, displacement of said forward follower from its normal position. In the constructions shown in Figs. 12 and 13, however, the character of the bearing between the lever head and the forward follower results in the displacement of said forward follower from its normal position when the coupler is swung to one side. When the coupler has been swung laterally after having been released from the control of the springs E, as previously explained, that controlling member G or H, as the case may be, which has been withdrawn from between the rear follower D and sleeve 1^b rides upon and is supported by its adjacent sleeve 1^b, as shown particularly in Fig. 7, being thus prevented from returning to its normal position until the coupler reassumes a central position. When, however, the coupler is again brought to its central position as the car moves on to straight track, the support

of the sleeve 1^b is withdrawn and the member G or H is automatically restored to its normal spring controlling position, as shown in Figs. 1 to 5 inclusive. It is thus unnecessary for the trainman to go between the cars after a coupling has been made in order to return any of the parts to their normal positions.

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

1. In a draft gear, the combination with a laterally swinging coupler, of spring-actuated means which normally maintain the coupler in a centralized position, means for controlling said spring actuated means, releasing devices whereby said controlling means may be actuated to operatively release said coupler from the said spring actuated means, and means for retaining said controlling means in releasing position when the coupler is in a laterally displaced position, said last-named means operating when the coupler is returned to a central position to allow said controlling means to return to normal position.

2. In a draft gear, the combination with a laterally movable coupler having a lever head at its rear end, of followers, springs interposed between said followers, and means connected to said lever head whereby said springs are unequally compressed when the coupler is displaced laterally, said lever head and one of said followers being in engagement and being provided with co-acting faces which normally diverge from the point of engagement of said lever head and follower.

3. In a draft gear, the combination with a laterally movable coupler having a beveled rear end, of relatively movable followers, said coupler having a rocking bearing on one of said followers, and springs interposed between said followers, said springs being unequally compressed when the coupler is displaced laterally.

4. In a draft gear, the combination with a laterally movable coupler having a lever head at its rear end, relatively movable followers, a spring member interposed between said followers, tail-bolts pivotally attached to the said lever head on opposite sides of the longitudinal axis of the coupler, and means mounted upon one of said followers for operatively connecting and disconnecting said tail-bolts and followers, said tail-bolts being operative to transmit forces from said coupler to said spring member.

5. In a draft gear, the combination with a laterally movable coupler having a convexly curved bearing face at the rear end of its stem, of means for normally maintaining said coupler in a centralized position, said means including a spring member which resists longitudinal and lateral movements of

the coupler and members which are connected to said coupler on opposite sides of the longitudinal axis thereof and which transmit force from the coupler to said spring member.

6. In a draft gear, the combination with a laterally movable coupler, of relatively movable followers, springs interposed between said followers, tail bolts which are connected to said coupler on opposite sides of the longitudinal axis thereof, and fillers movable into and out of operative position between the tail bolts and one of said followers.

7. In a draft gear, the combination with a laterally movable coupler, of a spring member, a plurality of tail-bolts pivotally attached to said coupler and operatively connected to said spring member, and pivoted means for operatively disconnecting said tail-bolts and spring-member.

8. In a draft gear, the combination with a laterally movable coupler, of relatively movable followers, a spring member between said followers, and means operatively connecting said coupler with said followers whereby said spring member normally resists longitudinal and lateral movements of the coupler, said coupler having a rocking bearing on one of said followers permitting said coupler to move laterally without causing displacement of said follower.

9. In a draft gear, the combination with a laterally movable coupler, of followers, a spring member compressible by said followers, and a plurality of tail bolts for transmitting force from said coupler to said spring member, said coupler having a convexly curved face bearing on its adjacent follower.

10. In a draft gear, the combination with a laterally movable coupler provided with a convexly curved lever head, said lever head having laterally extending portions, of tail bolts attached to the said laterally extending portions of the lever head, and a spring member which is operatively connected to said tail bolts and resists longitudinal movements of the coupler.

11. In a draft gear, the combination with a laterally movable coupler, of spring actuated means for centralizing said coupler, devices for controlling said spring actuated means whereby the coupler may be operatively released from said means at will, and a rock-shaft for actuating said controlling devices, said rock shaft extending in the direction of length of the coupler when said coupler is in its normal position.

12. In a draft gear, the combination with a laterally movable coupler, of a plurality of tail bolts connected thereto, followers, springs interposed between said followers, and filler members movable with one of said followers, said filler members being adapted

to operatively connect said tail bolts with or disconnect said tail bolts from said followers and springs.

13. In a draft gear, the combination with
5 a laterally movable coupler, of a plurality of tail bolts pivotally connected thereto, relatively movable followers through which said tail bolts pass, a spring member interposed between said followers, and means
10 whereby the lateral displacement of the coupler causes said followers to change their angular relation, said coupler engaging the central portion of one of said followers.

14. In a draft gear, the combination with
15 a laterally movable coupler, of a spring member, connecting members between said spring member and coupler whereby the said spring member normally operates to centralize said coupler, means whereby said
20 coupler may be released from the centralizing control of said spring member, and means for retaining said last named means in released position when the coupler is displaced laterally.

25 15. In a draft gear, the combination with a laterally movable coupler, of a spring member, and devices operatively connecting said spring member and coupler to cause the said spring member to normally cen-
30 tralize said coupler, said devices including

means movable with and also independently of said coupler whereby the said coupler may be released from the centralizing control of the said spring member.

16. In a draft gear, the combination with 35 a laterally movable coupler, of a plurality of tail bolts connected thereto, relatively movable followers, springs interposed between said followers, devices whereby a lateral movement of the said coupler causes a
40 relative movement of said followers, and means whereby said last named devices may be actuated to permit a lateral movement of the coupler without relative movement of
45 the said followers.

17. In a draft gear, the combination with 45 a laterally movable coupler, of a plurality of tail bolts pivotally connected thereto, front and rear followers, a spring member interposed between said followers, and filler
50 members mounted upon said rear follower and operating to operatively connect and disconnect said tail bolts with said followers and springs.

In testimony whereof I affix my signature, 55 in presence of two subscribing witnesses.

HARRY C. BUHOUP.

Witnesses:

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GUILFORD S. WOOD.