

W. J. MACK.

DRAFT APPLIANCE FOR RAILWAY CARS.

APPLICATION FILED SEPT. 16, 1907.

995,474.

Patented June 20, 1911.

6 SHEETS—SHEET 1.

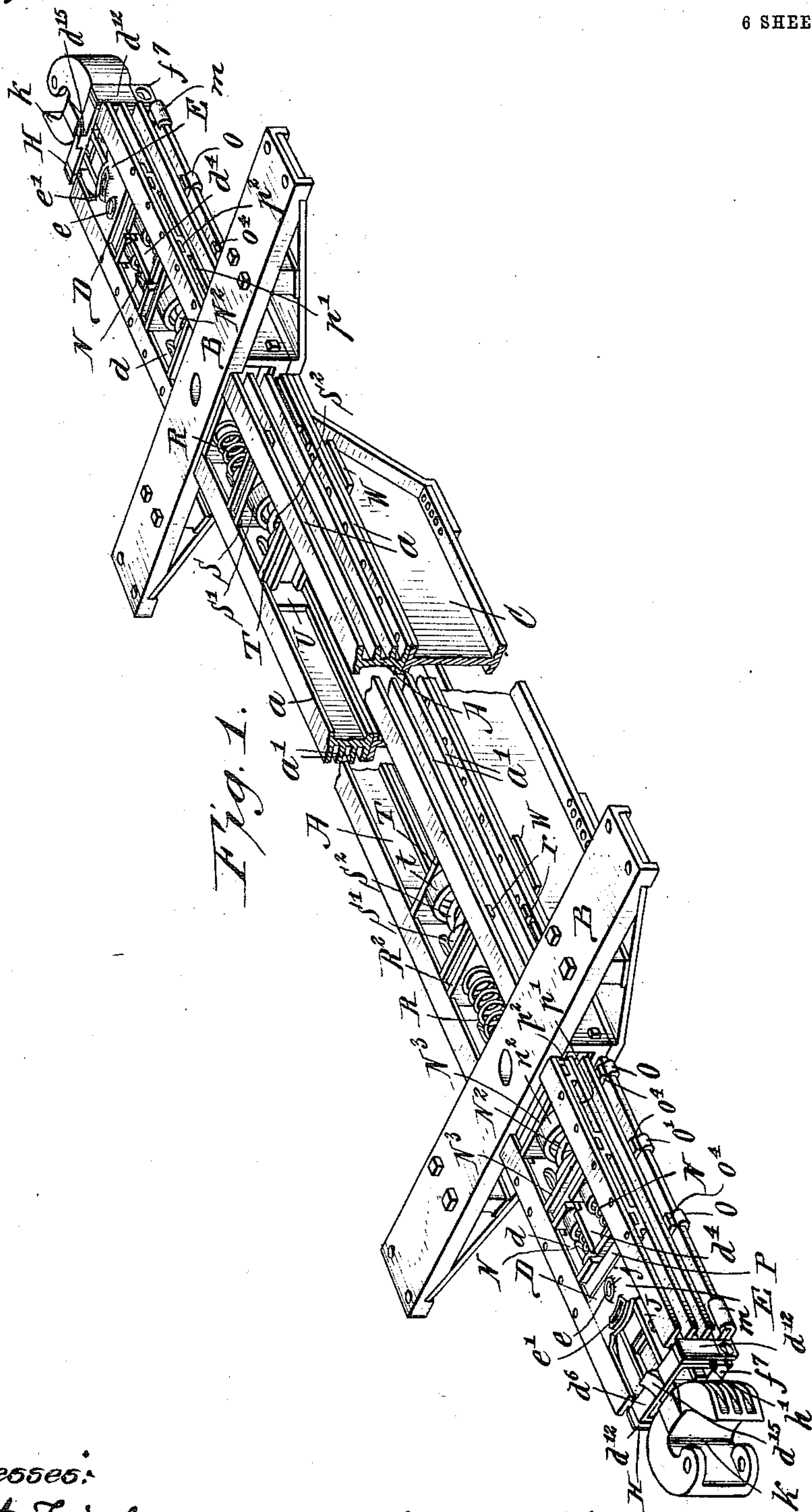


Fig. 1.

Witnesses:

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Harry D. Rapp

William J. Mack, Inventor.

By Emil Neubart,

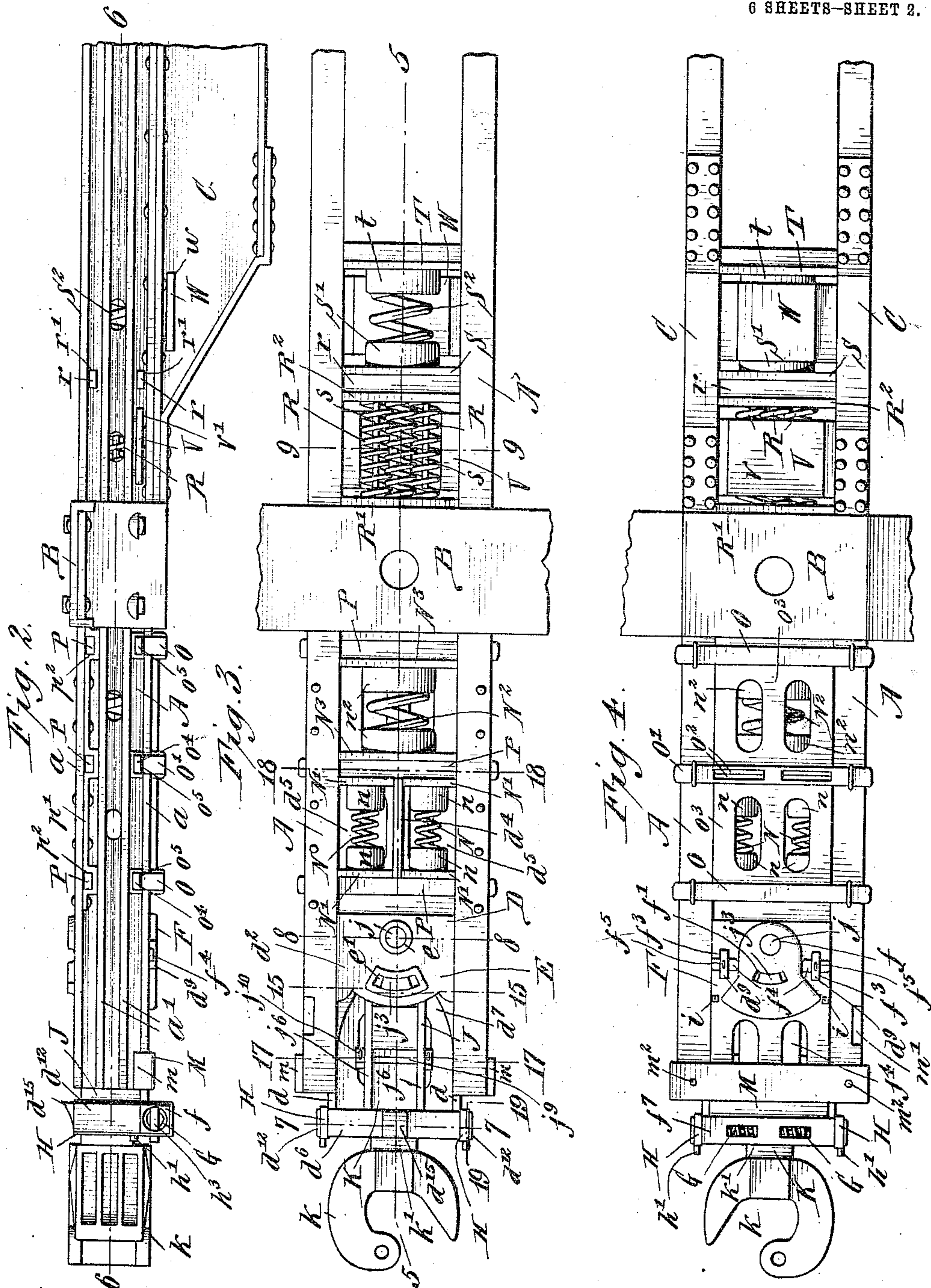
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6 SHEETS—SHEET 2.



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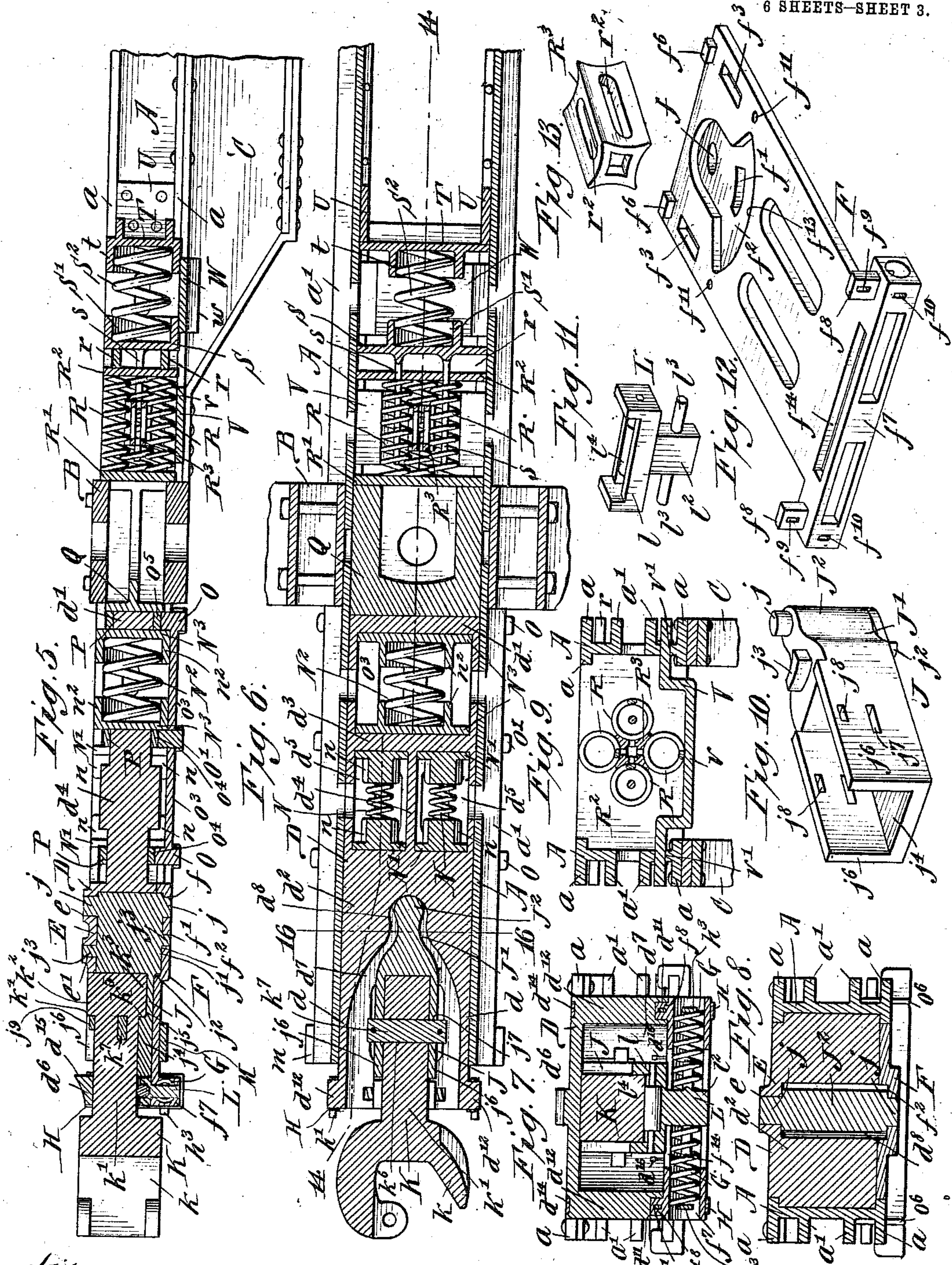
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6 SHEETS—SHEET 3.



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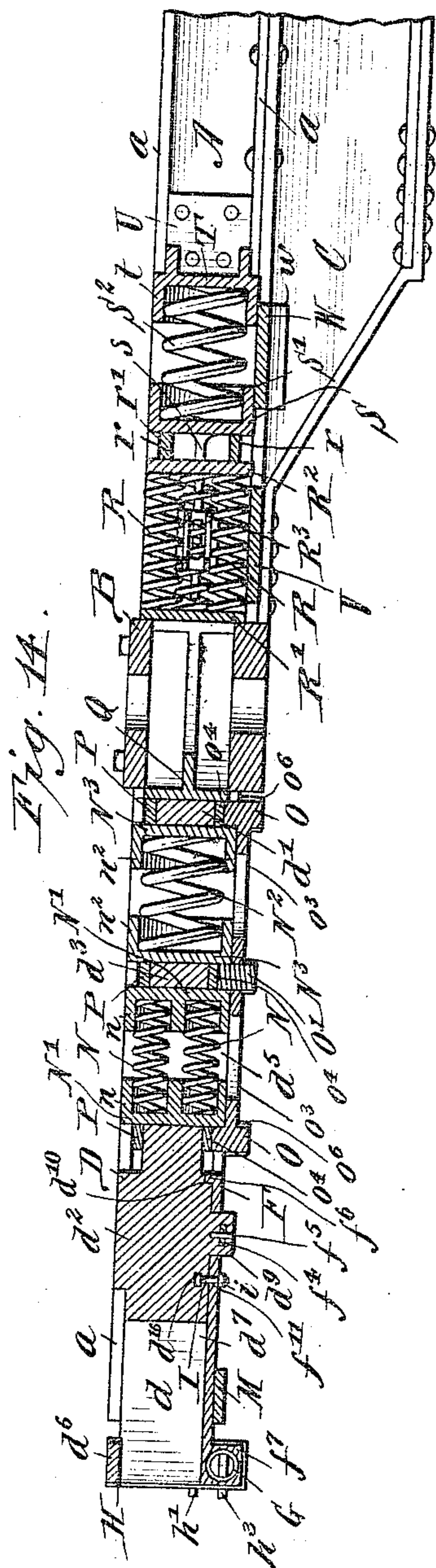


Fig. 14.

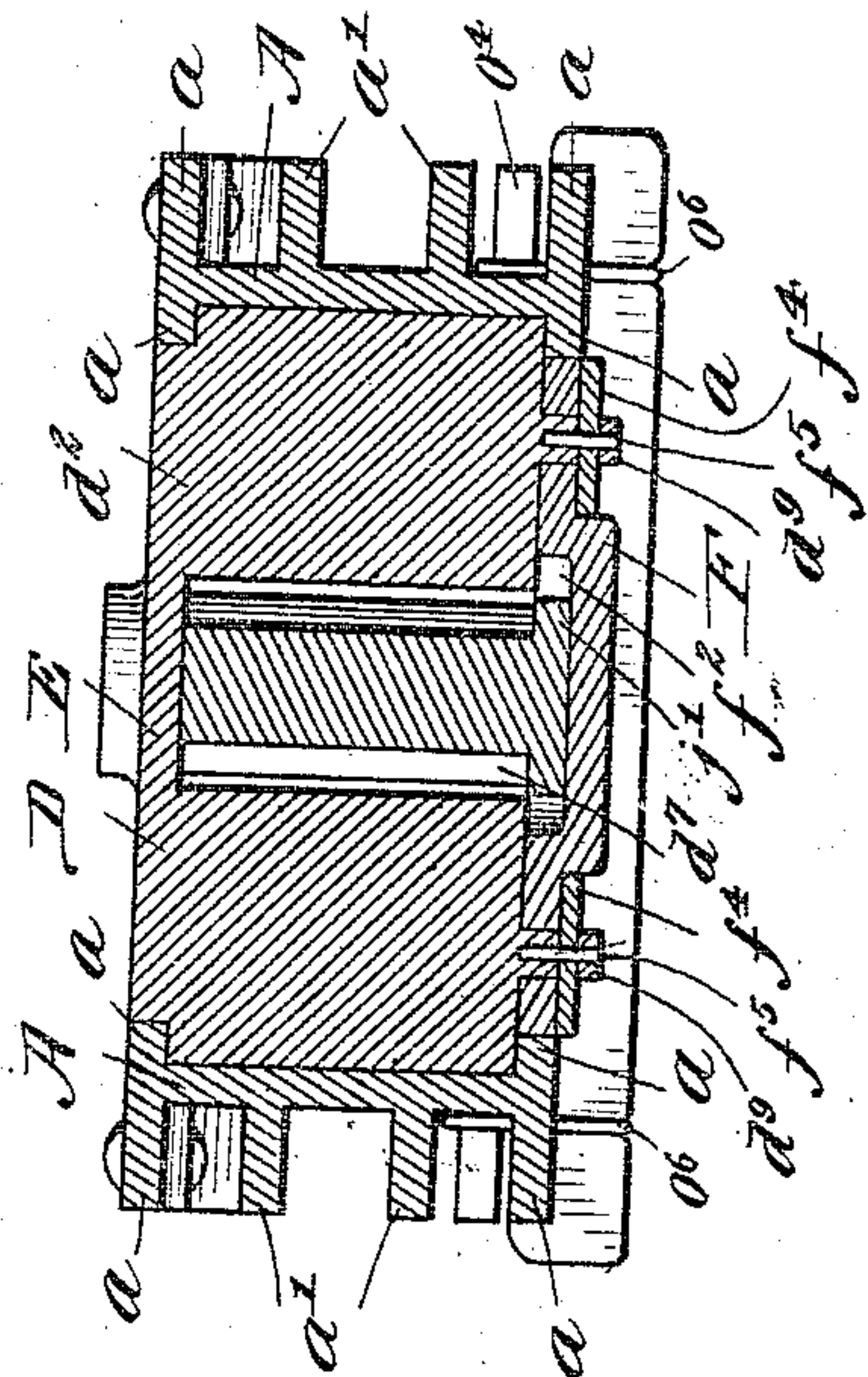
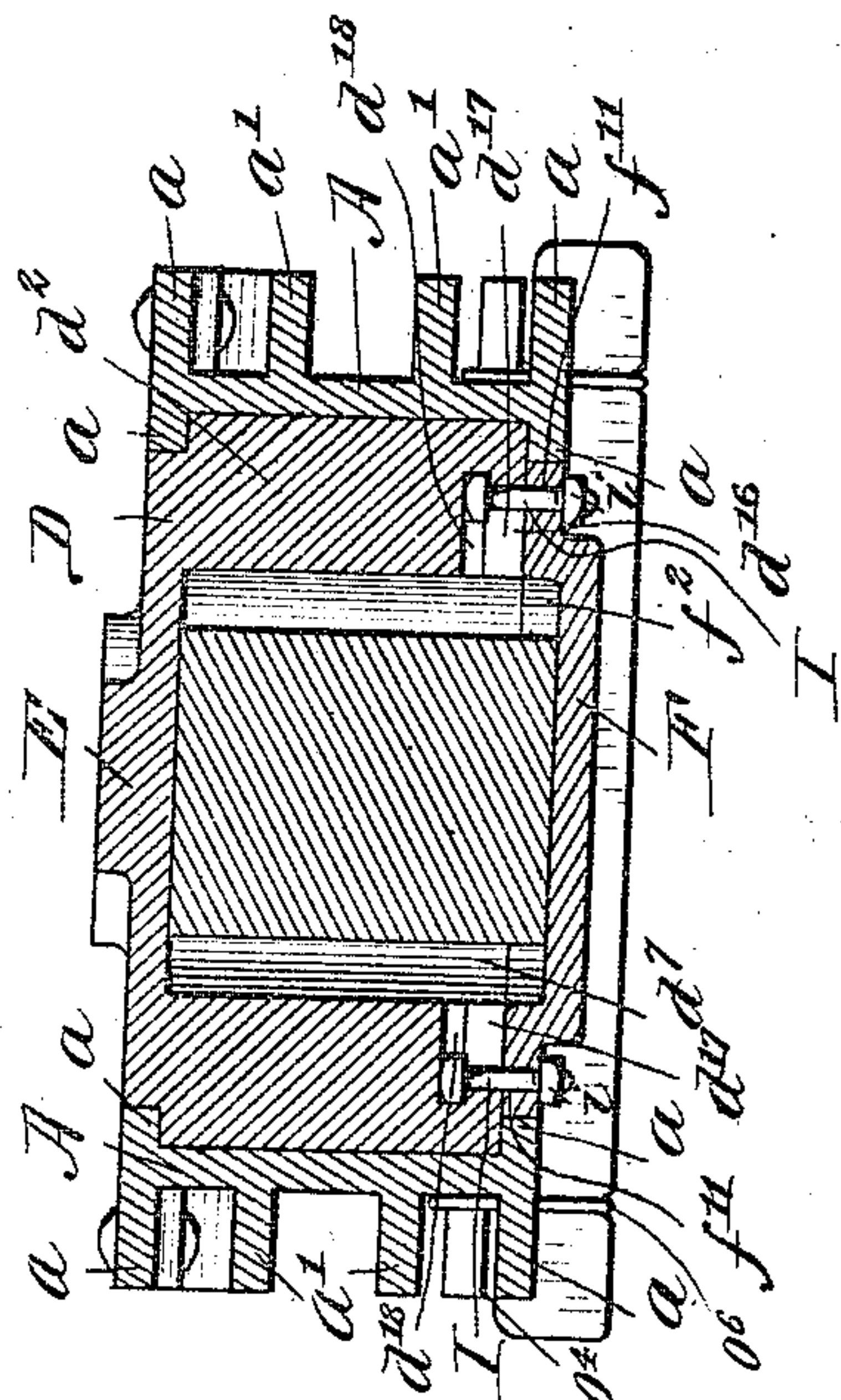


Fig. 15.



Witnesses:  
Christ Feinle.  
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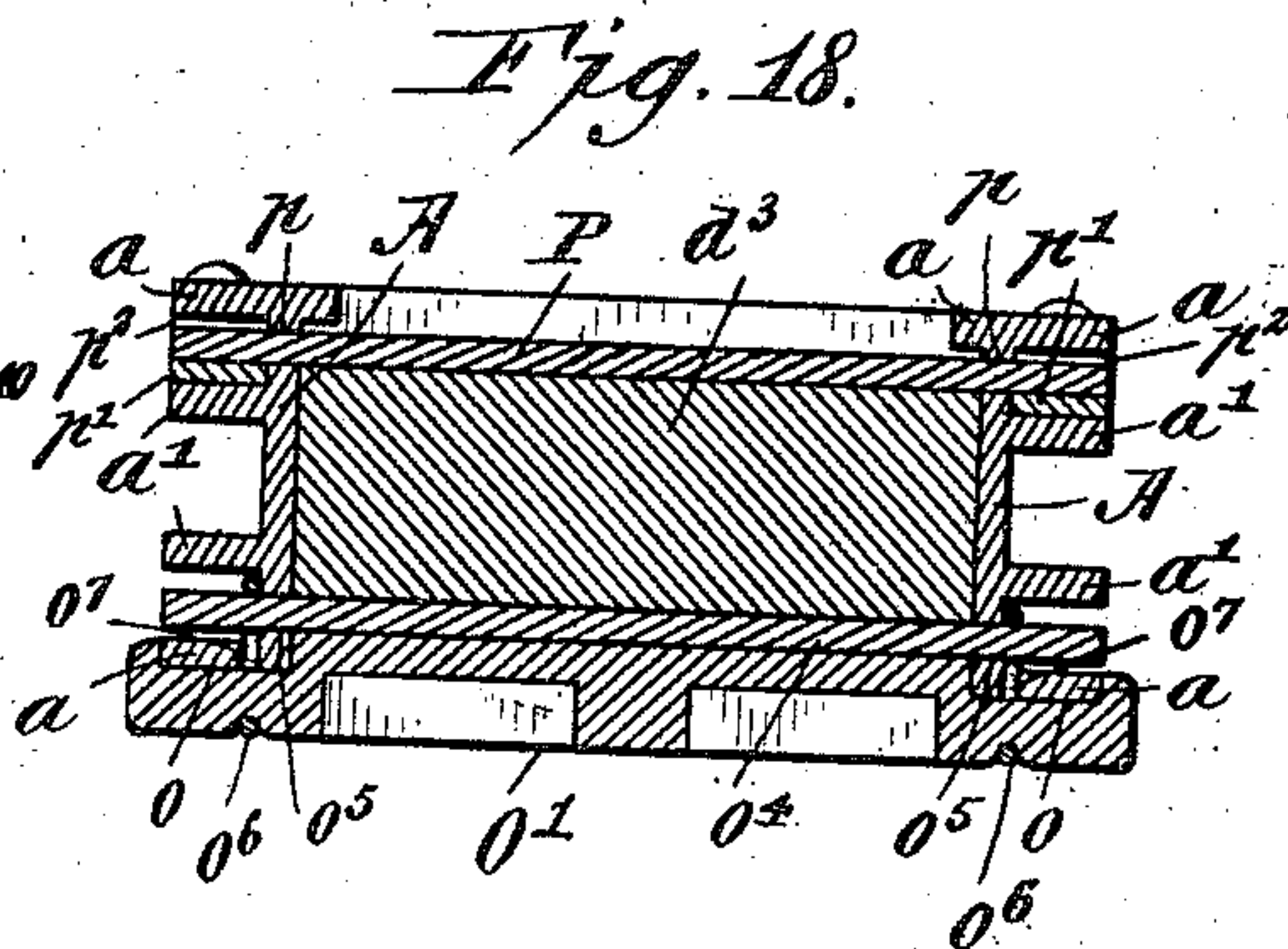
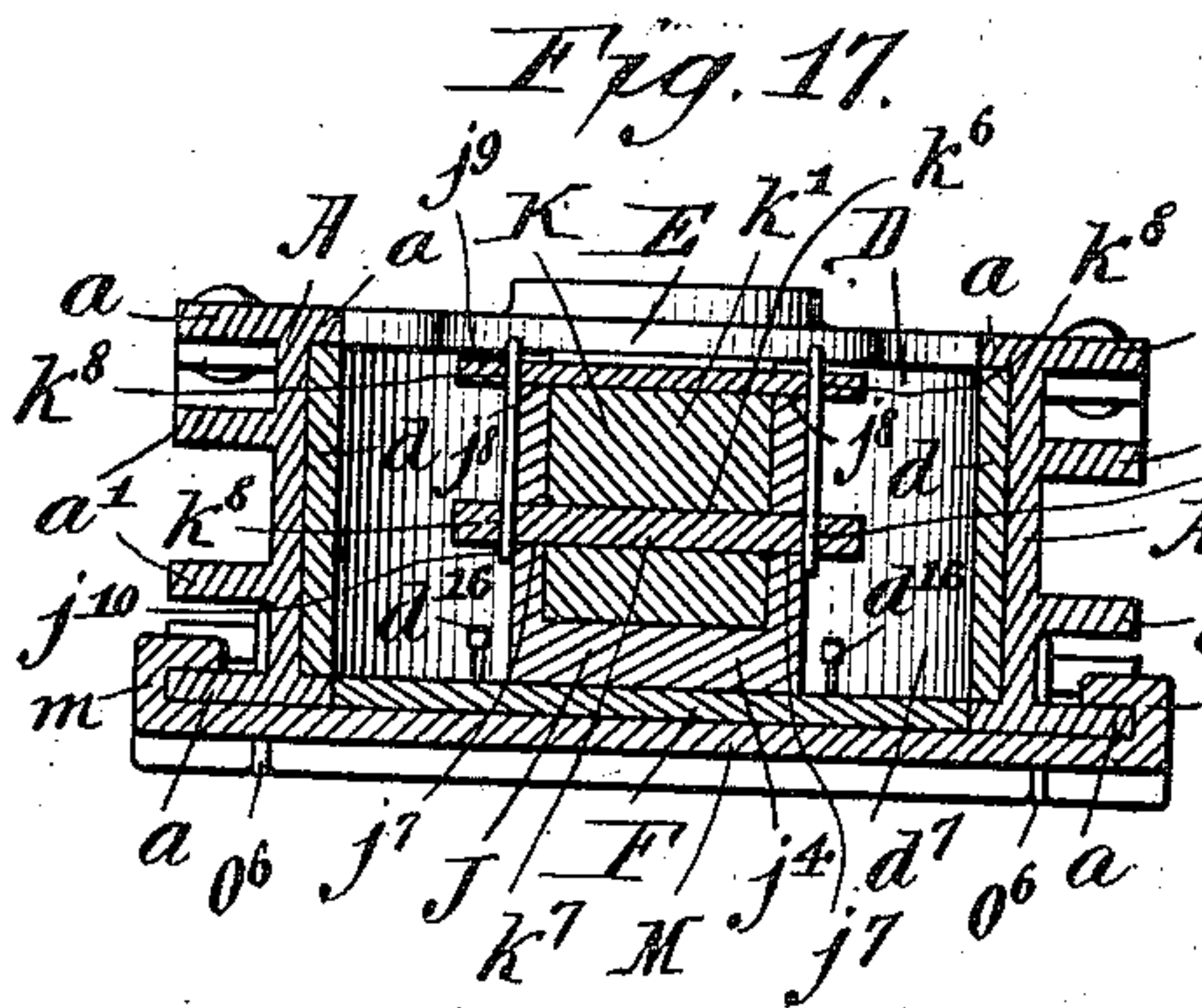
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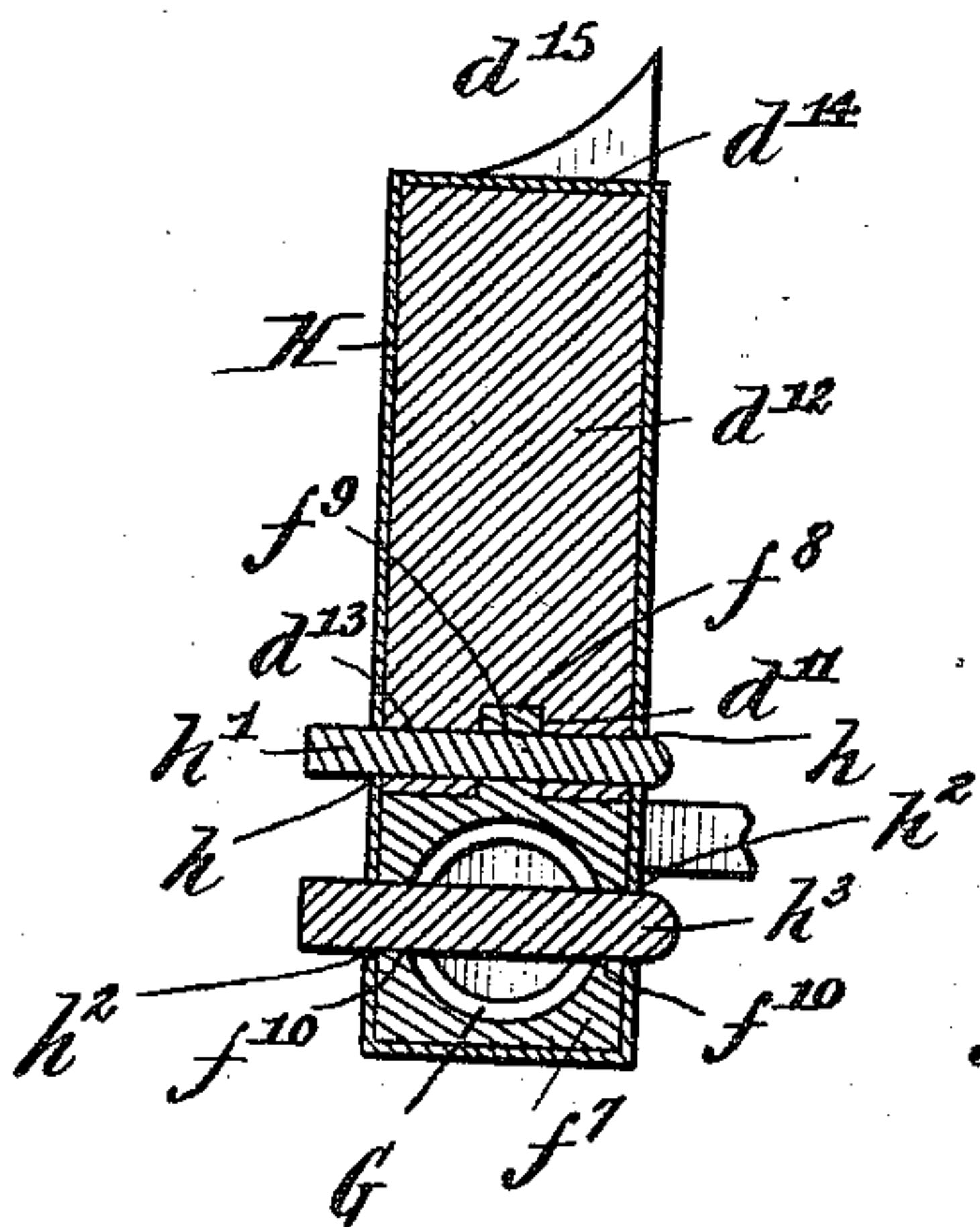
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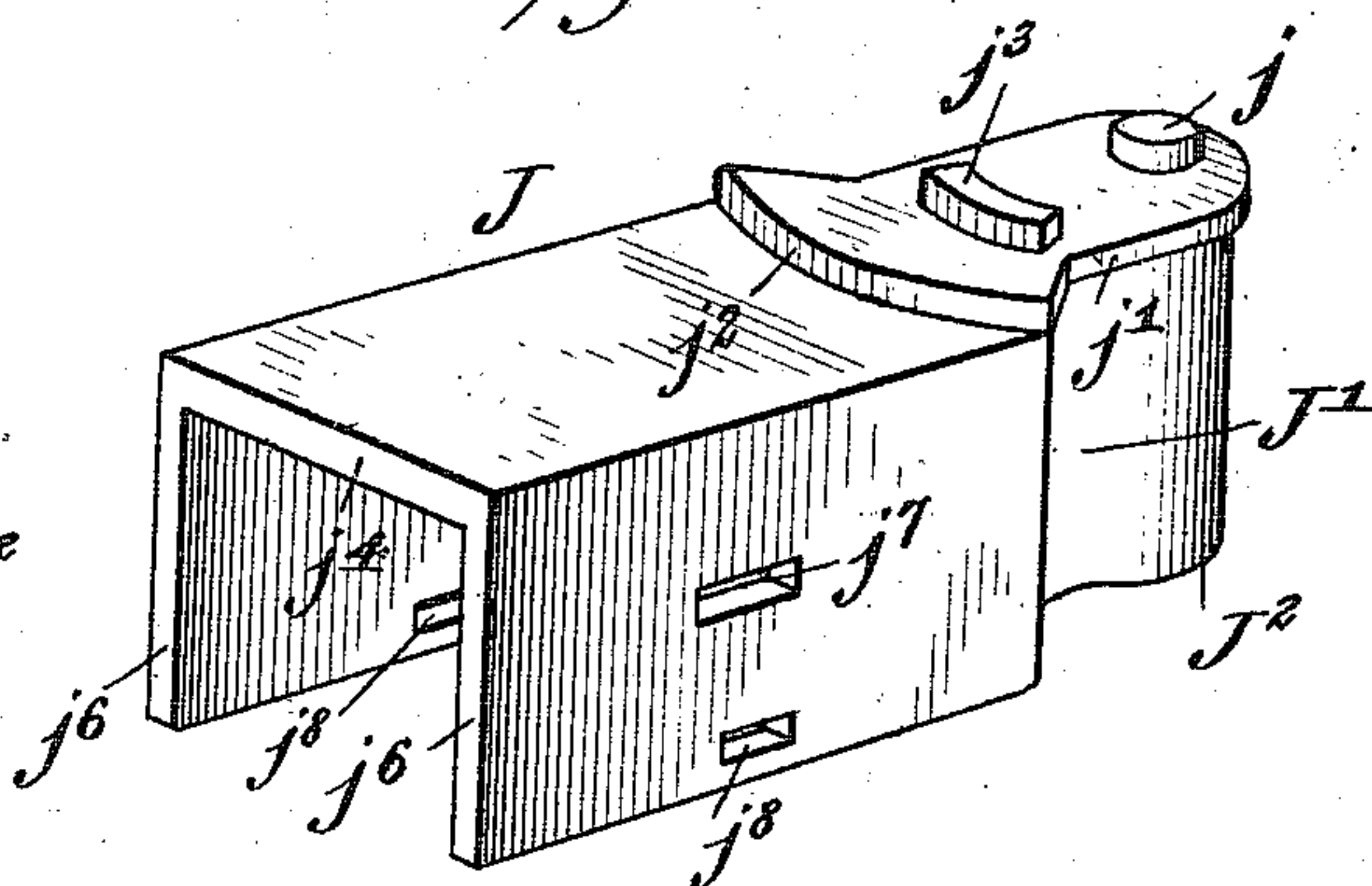
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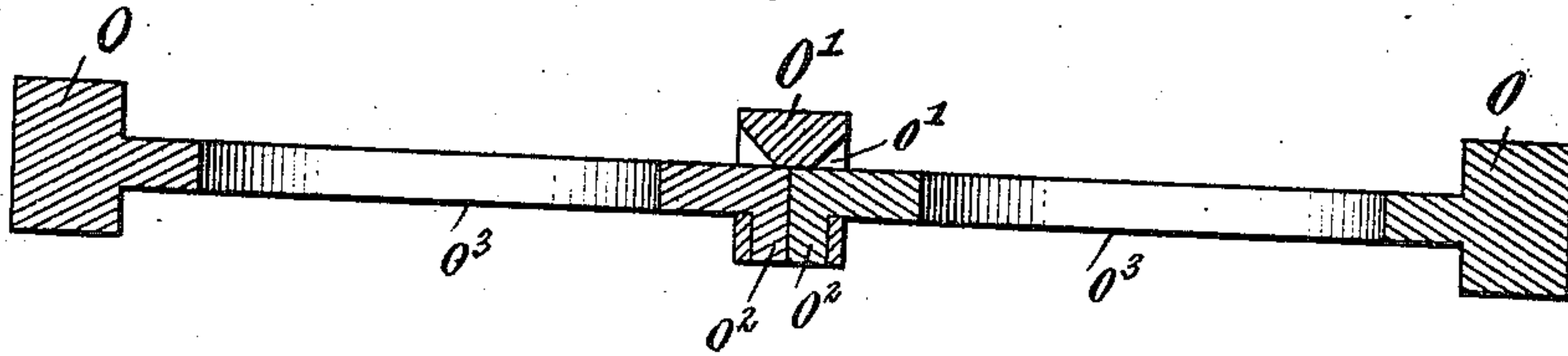
*Fig. 19.*



*Fig. 20.*



*Fig. 21.*



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6 SHEETS—SHEET 6.

Fig. 22.

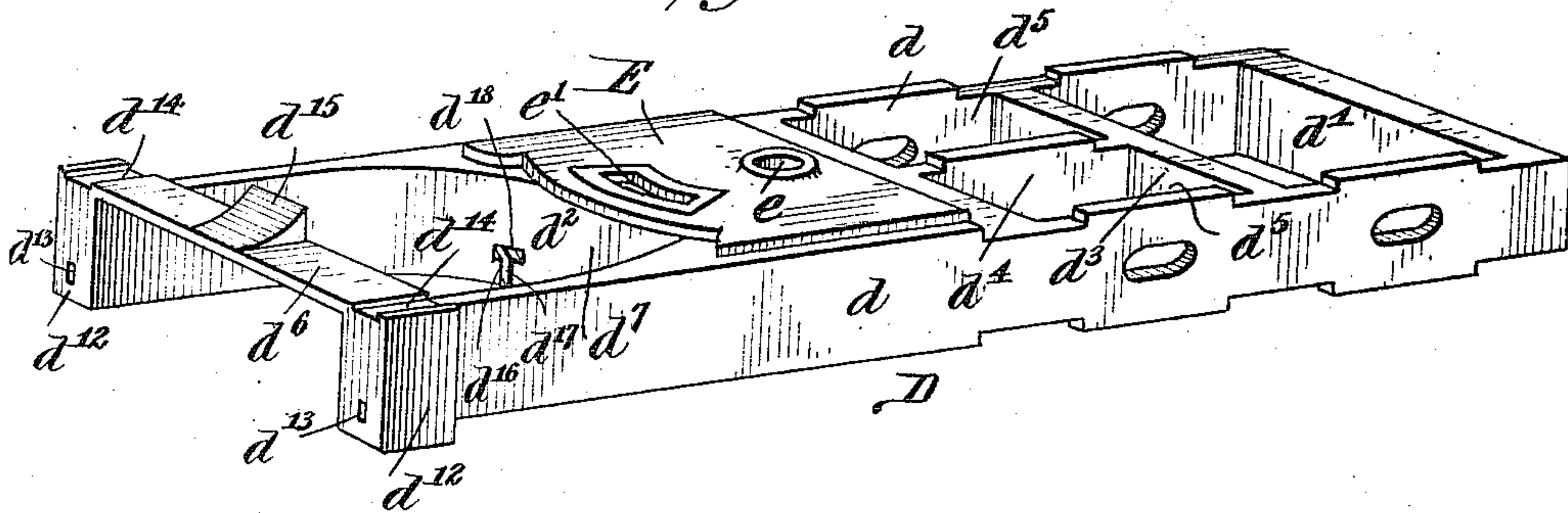


Fig. 23.

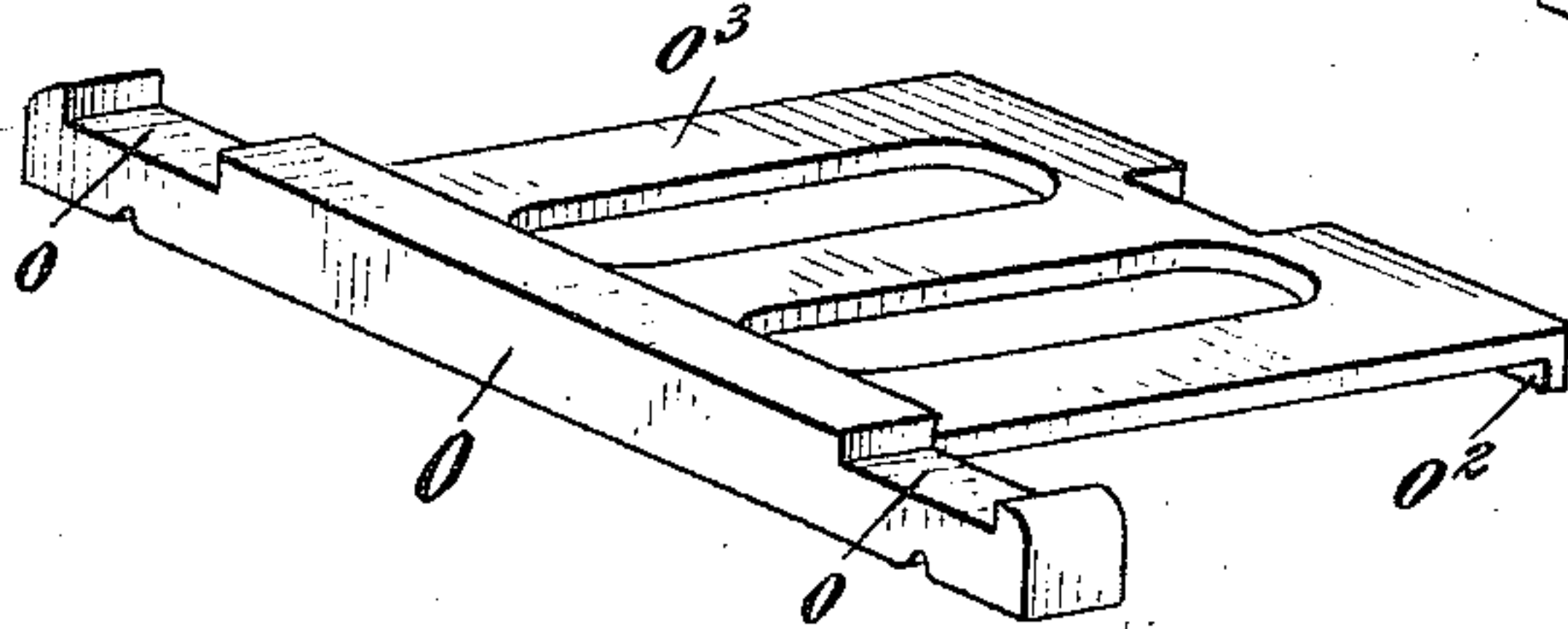


Fig. 24.

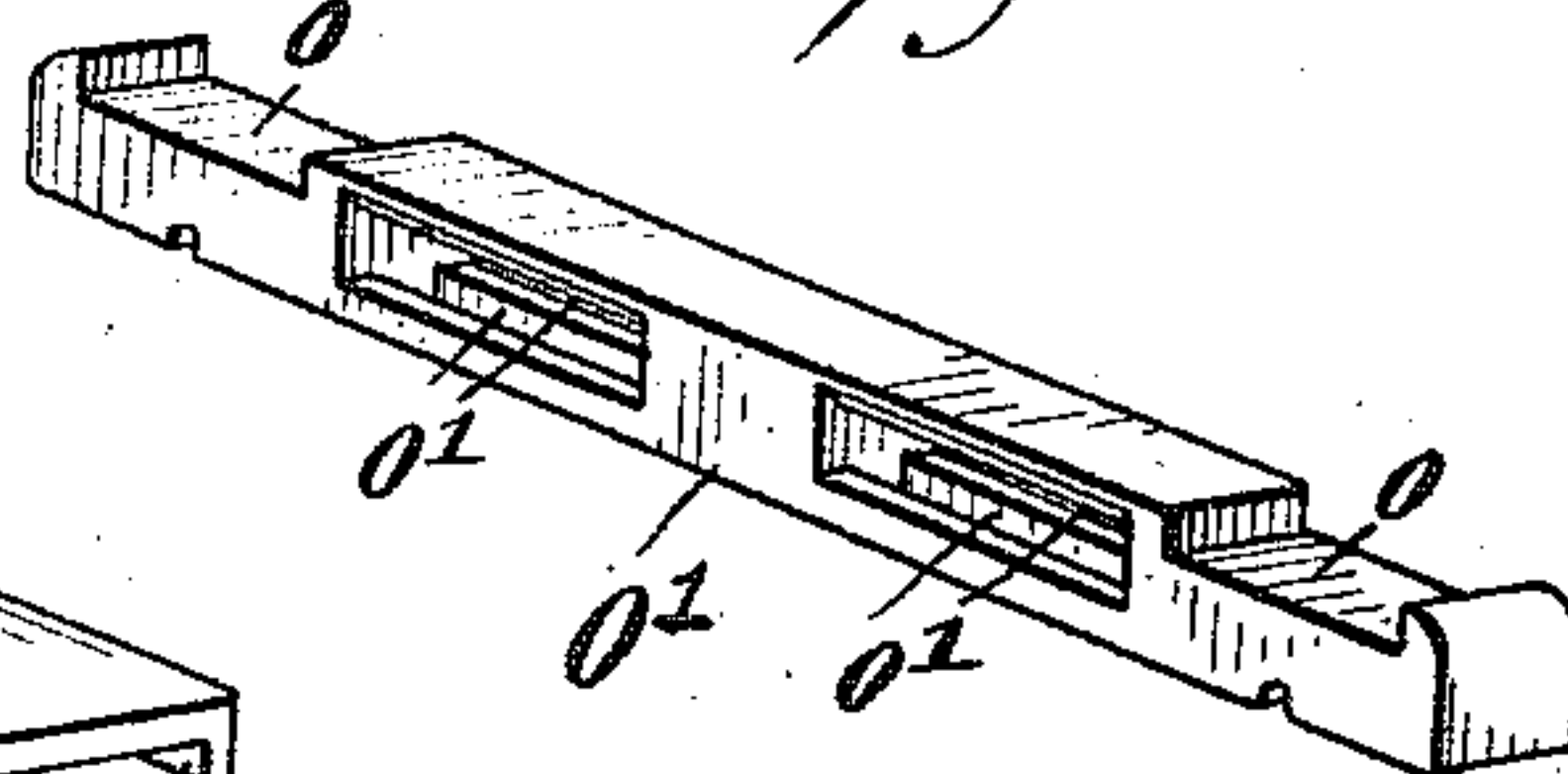


Fig. 25.

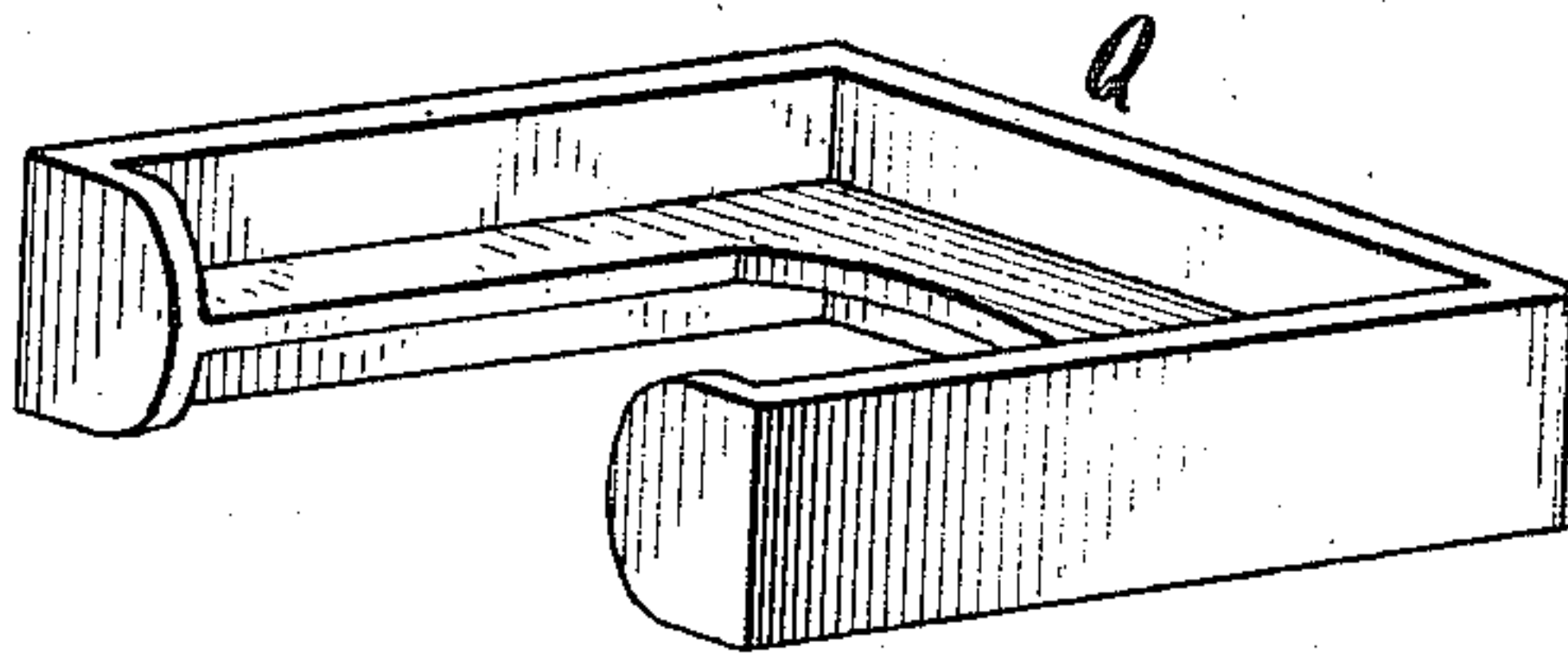


Fig. 26.

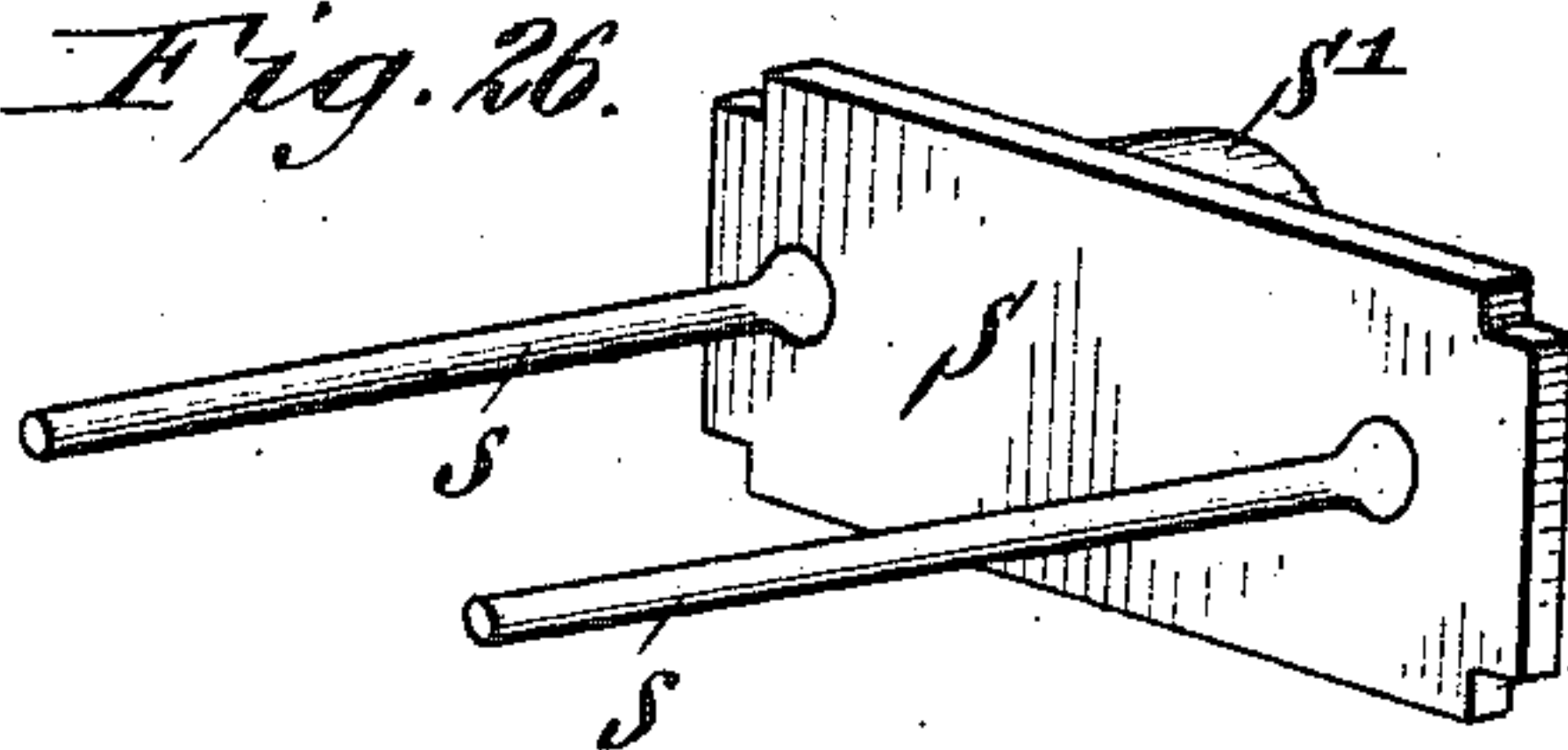


Fig. 27.

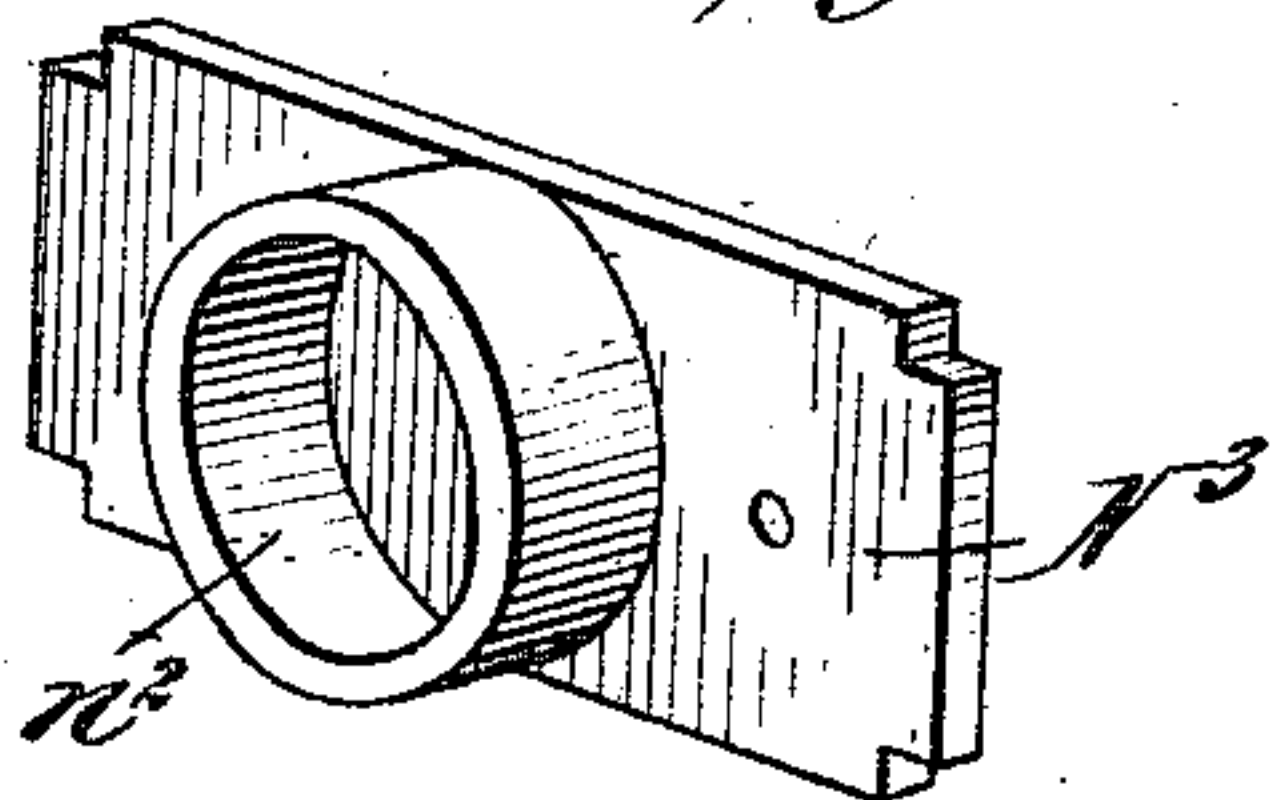
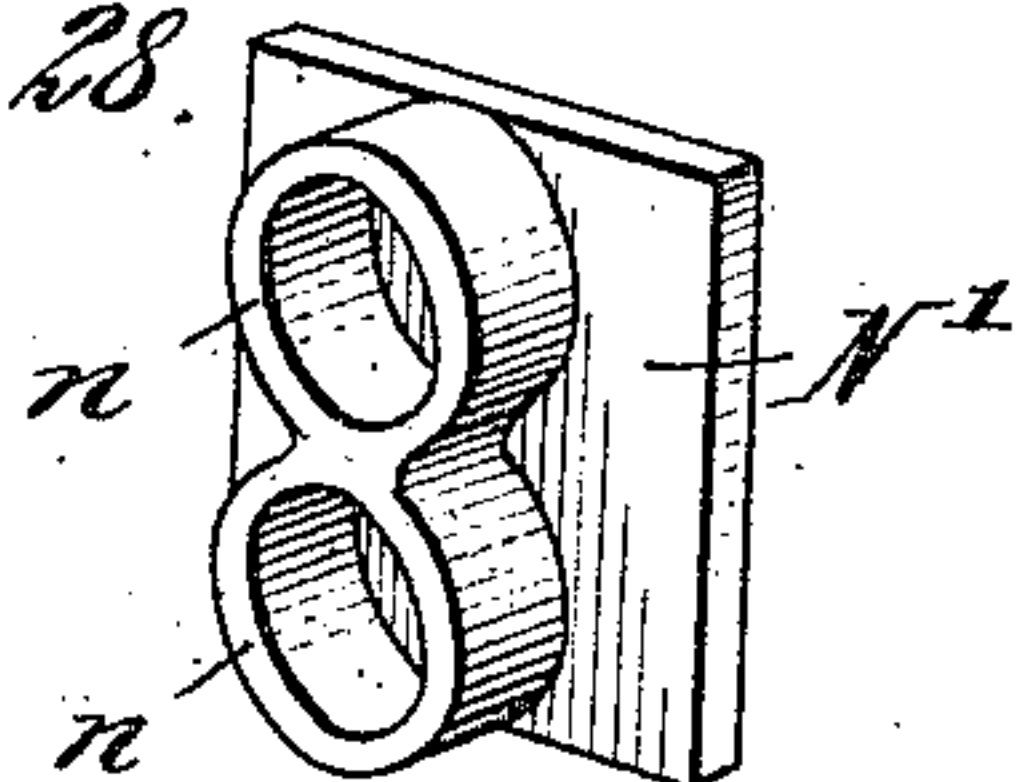


Fig. 28.



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# UNITED STATES PATENT OFFICE.

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DRAFT APPLIANCE FOR RAILWAY-CARS.

995,474.

Specification of Letters Patent. Patented June 20, 1911.

Application filed September 16, 1907. Serial No. 393,213.

*To all whom it may concern:*

Be it known that I, WILLIAM J. MACK, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Draft Appliances for Railway-Cars, of which the following is a specification.

My invention relates to improvements in draft appliances for railway-cars.

The primary object of my invention is the construction of an appliance in which any one of the various parts may be removed without removing associated parts, and in which the various members are assembled and connected without the use of rivets which are always subjected to strain and likely to shear and in consequence of which the various members of a draft-appliance become loosened and often twisted and displaced under strain, resulting at times in serious accidents.

Another object of my invention is to so construct the appliance that all parts or members are easily accessible and removable from the bottom, so that the loosening of the entire appliance from the body of the car is unnecessary.

Other objects are to provide a series of buffer-springs so arranged that the end thrusts or shocks to which they are ordinarily subjected will be insufficient to set the entire series in action, but upon subjecting the appliance to undue thrusts, the entire series will act to resist the same; to improve and simplify the manner of securing the draw-bar; to tie the sills of the appliances together without the use of rivets with a view of preventing spreading of the same; and to otherwise improve on draft appliances as will be disclosed in the description of the embodiment of my invention illustrated in the accompanying drawings which form part of this specification.

My invention consists in the arrangement and combination of parts and in the construction thereof, as will be hereinafter described and more particularly pointed out in the subjoined claims.

In the drawings,—Figure 1 is a perspective view of a draft-appliance embodying my invention; the same being shown in continuous form in which the sills extend from end to end of the car and the draft-riggings duplicated and

one applied to each end. Fig. 2 is a side elevation of approximately one-half of the appliance. Fig. 3 is a plan view of the same. Fig. 4 is a bottom plan view of the same. Fig. 5 is a central longitudinal section taken on line 5—5, Fig. 3. Fig. 6 is a horizontal section taken on line 6—6, Fig. 2. Fig. 7 is an enlarged transverse section taken on line 7—7, Fig. 3. Fig. 8 is an enlarged transverse section taken on line 8—8, Fig. 3. Fig. 9 is an enlarged transverse section on line 9—9, Fig. 3. Fig. 10 is a detached perspective view of the draw-bar pocket. Fig. 11 is a detached perspective view of the draw-bar centering-device. Fig. 12 is a detached perspective view of the draw-bar pocket supporting-plate. Fig. 13 is a detached perspective view of the spring-diver for the rear series of springs. Fig. 14 is a longitudinal section taken on line 14—14, Fig. 6. Fig. 15 is an enlarged transverse section taken on line 15—15, Fig. 3. Fig. 16 is an enlarged transverse section taken on line 16—16, Fig. 6. Fig. 17 is an enlarged transverse section taken on line 17—17, Fig. 3. Fig. 18 is an enlarged transverse section taken on line 18—18, Fig. 3. Fig. 19 is an enlarged section taken on line 19—19, Fig. 3. Fig. 20 is an inverted perspective view of the draw-bar pocket. Fig. 21 is a longitudinal section through the combined follower abutments and sill-binders. Fig. 22 is a perspective view of the draw-bar and spring-housing. Fig. 23 is a perspective view of one of the combined follower-abutments and sill-binders. Fig. 24 is a perspective view of the intermediate follower-abutment and sill-binder. Fig. 25 is a perspective view of the plunger. Fig. 26 is a perspective view of the rearmost follower which acts in conjunction with the plunger. Fig. 27 is a perspective view of one of the single spring-followers. Fig. 28 is a perspective view of one of the double spring-followers.

Referring now to the drawings in detail, corresponding letters of reference refer to corresponding parts in the several figures.

The reference letter A designates the longitudinal sills of the car, formed preferably of rolled iron or steel having upper and lower marginal flanges *a*; and in addition thereto, each sill has two intermediate flanges *a*<sup>1</sup> which greatly strengthen the sills and counteract the tendency of their buc-



klings laterally. These sills are connected to the body of the car in any desired manner, and underneath said sills between the bolsters B are supplemental sills C which are secured to the lower flanges of the sills A by means of rivets or otherwise, the ends of said supplemental sills serving as abutments for the bolsters which lie transversely thereof and in contact with said ends.

Further description will relate to the various associated parts at one end of the appliance, the description of one sufficing for both, as they are exact duplicates.

D represents a draw-bar and spring housing preferably cast in one integral piece and comprising side members  $d$ , a rear transverse wall  $d^1$ , a solid portion  $d^2$ , a transverse wall  $d^3$  between said rear wall and said solid portion and connected with both by a longitudinal partition  $d^4$  forming two spring pockets  $d^5$ ; and a front cross-bar  $d^6$ . The front of the housing is open, and the side walls of this portion gradually thickened rearwardly to form a substantially V-shaped pocket  $d^7$  having a parti-cylindrical recess  $d^8$  at its rear end. Overhanging the rear end of said V-shaped pocket is a wall E having a pivot-hole  $e$  whose axis is coincident with the axis of the recess  $d^8$ . Wall E also has a segmental slot  $e^1$  having the axis of the pivot-hole  $e$  as its center. The bottom of said V-shaped pocket is closed by a removable supporting-plate F having a pivot-hole  $f$  coinciding with the pivot-hole  $e$  in wall E, and a segmental slot  $f^1$  in advance of said pivot-hole having its center coincident with the axis of said hole. On the inner face of said plate is a depression  $f^2$  and on opposite sides of said depression, openings  $f^3$  are formed through which extend lugs  $d^9$  depending from the bottom of the housing D. Keys  $f^4$  are passed through said depending lugs and are held against displacement by pins  $f^5$  passing through said lugs and keys, as best shown in Figs. 14 and 16. At the rear end of said supporting-plate, upstanding lugs  $f^6$  are provided which enter recesses  $d^{10}$  in the underside of the housing. A depending transverse housing  $f^7$  is provided at the front end of the plate, the interior being cylindrical to receive two coil springs G. The ends of said housing, which for convenience of description I will term a "spring-housing" extend beyond the sides of the main portion of the supporting-plate and have upstanding lugs  $f^8$  which enter downwardly-opening pockets  $d^{11}$  in enlargements  $d^{12}$  at the front ends of the side walls of the housing D. Said enlargements and the entered lugs  $f^8$  are pierced with coinciding apertures  $d^{13}$  and  $f^9$ , respectively. Surrounding the ends of the spring-housing and the enlargements  $d^{12}$  at the front end of housing D are retainer-bands H which have

apertures  $h$  that register with the apertures  $d^{13}$  and  $f^9$ ; a key  $h^1$  being passed through each set of registering apertures, as clearly shown in Fig. 19. Said retainer-bands are held in place at their upper ends by their being confined within grooves  $d^{14}$  which are formed on the upper faces of the enlargements  $d^{12}$ , and they are also provided with apertures  $h^2$  which register with apertures  $f^{10}$  in the ends of the spring-housing. Passed through said registering apertures  $h^2$  and  $f^{10}$  are keys  $h^3$ , which in addition to locking the band H in place, also serve as abutments for the springs G. The front cross-bar  $d^6$  is provided with a horn  $d^{15}$  which is designed to strike the end sill of the car and limit the inward movement of the housing D.

The walls of the V-shaped pocket in the housing D are provided with T-shaped notches  $d^{16}$ , each comprising a vertical portion  $d^{17}$  and a horizontal portion  $d^{18}$ . Bolts I are held in said notches, the heads thereof being confined in the horizontal portions  $d^{18}$  and the shanks passed through the vertical portions  $d^{17}$  and through apertures  $f^{11}$  in the supporting-plate F, best shown in Fig. 15; nuts  $i$  being applied to the outer threaded ends.

From the foregoing it is clearly apparent that by means of the lugs  $d^9$  and their cooperating keys, the bands H and the bolts I, the plate F is securely held in place, the three forms of fastenings insuring against dislodgment under all conditions of usage, and in conjunction with the lugs  $f^6$  and  $f^8$ , breaking or straining of the plate under the crushing and drawing action of coupled cars is impossible.

Within the V-shaped pocket of the housing D, the draw-bar pocket J is removably held; said pocket having a reduced inner end portion  $J^1$  terminating in an enlarged substantially cylindrical portion  $J^2$  which fits into the parti-cylindrical recess  $d^8$  in the housing and has pivot-trunnions  $j$  which enter the pivot-holes  $e$  and  $f$  in the overhanging wall E of said housing and the supporting-plate F, respectively. The rear end of the drawbar pocket has an extended power portion  $j^1$  which enters the depression  $f^2$  in plate F, the shoulder  $j^2$  formed by said extended portion being in contact with the front curved wall  $f^{13}$  of said depression, thus relieving the pivot-trunnions  $j$  of considerable strain. Lugs  $j^3$  are formed on the upper and lower sides of the draw-bar pocket which extend through the segmental slots  $e^1$  and  $f^1$ , serving under severe strain to relieve the trunnions. Lugs  $j^3$  and the shoulder  $j^2$  on said pocket positively prevent shearing of the pivot-trunnions, and are so arranged that the pocket can be easily removed from the housing D; it being simply necessary to remove the supporting-plate F.



The open front end of said draw-bar pocket comprises a bottom wall  $j^4$  recessed at its inner end, as at  $j^5$ , and side walls  $j^6$ ; said walls forming the pocket proper, and the reduced rear end previously described forming the means of retaining said pocket within the housing.

K designates the draw-bar comprising a coupler-head  $k$  of any desired construction and a shank  $k^1$  having its rear end enlarged; said enlarged end being formed by extensions  $k^2$ ,  $k^3$  at the top and bottom, respectively, forming shoulders  $k^4$ ,  $k^5$ . The extension  $k^3$  at the bottom of the shank enters the recess  $j^5$  in the bottom wall of the pocket, the shoulders  $k^5$  bearing against the front wall of said recess. The shank of the draw-bar is pierced transversely to form a key-way  $k^6$ , see Figs. 6 and 17, and the side walls of the draw-bar pocket have openings  $j^7$  which register with said key-way; the shank and pocket being secured together by a key  $k^7$  passing through said openings and key-way, the ends of said key projecting at opposite sides. Formed in the side-walls of said pocket are coinciding openings  $j^8$  which are in advance of the enlarged rear end of said shank and in a plane directly above the main portion of said shank. Passing through these openings and bearing against the top of the shank and the shoulder  $k^4$  is a key  $j^9$  which has its ends protruding from the walls of said pocket. To prevent accidental dislodgment of the keys  $k^7$  and  $j^9$ , opposite ends of both are provided with apertures  $k^8$ , best shown in Fig. 17; the apertures of corresponding ends coinciding; and through coinciding apertures, pins  $j^{10}$  are placed.

The spring-housing  $f^7$  at the front end of the supporting-plate F has a slot  $f^{14}$  in its upper wall through which extends a centering-bracket L. This bracket comprises a yoke-member  $l$  which rides on the top of said housing and receives the shank of the draw-bar, and an arm  $l^2$  depending from said yoke-member and passing through slot  $f^{14}$  into said housing; pins  $l^3$  extend from opposite sides of arm  $l^2$  and enter the inner ends of the spring G, which latter serve to center the arm  $l^2$  within said housing. Said springs bear at their inner ends against the arm  $l^2$  of the centering-bracket and at their outer ends against the keys  $h^3$ , previously referred to. By this arrangement, the draw-bar is normally held in a central position. With a view of reducing the friction of the draw-bar when moving over the bracket, I provide a roller  $l^4$  which is revoluble in the yoke-member of said bracket. To prevent spreading of the sills, which should always be retained in proper position to provide for properly guiding the housing D in its movements, I employ a transverse retainer-bar M at the front ends of the sills; said bar hav-

ing opposite ends bent upward and inward to provide hooks  $m$  which hook over the lower outer marginal flanges of the sills. Said bar in addition to preventing spreading of the sills incidentally serves as a support for the bearing-plate F. In order that this bar may be quickly and conveniently applied or removed without disturbing other parts of the appliance, the flange of one sill is notched, as at  $m^1$ , to permit one of the hooked ends of the bar to be engaged with or disengaged from the sill. As shown in Fig. 4, the bar and cooperating flanges are provided with coinciding apertures through which pins  $m^2$  are passed which serve to lock the retainer-bar against movement lengthwise of the sills.

Within each of the pockets  $d^5$  of the housing D, I insert two springs N having opposite ends confined within annular flanges  $n$  formed on followers  $N^1$ , and within said housing between its rear transverse wall  $d^1$  and the transverse wall  $d^3$  is a spring  $N^2$  having opposite ends confined within annular flanges  $n^2$  on followers  $N^3$ .

O O<sup>1</sup> designate combined follower-abutments and sill retainers which have their opposite ends notched, as at  $o$ , to fit over the lower flanges of the sills and to bring the intermediate portions thereof between the inner lower flanges of said sills. These abutments are located beneath the transverse walls  $d^1$  and  $d^3$  and beneath the rear extremity of the solid portion  $d^2$  of the draw-bar and spring-housing D; the intermediate abutment O<sup>1</sup> being hollow and provided on its front and rear sides with elongated openings  $o^1$ , which receive the flanged ends  $o^2$  of follower supports  $o^3$  formed integral with the front and rear abutments, as best shown in Figs. 4 and 21. Between the rear and intermediate abutments and the walls  $d^1$  and  $d^3$ , respectively, and between the front abutment and the rear end of the solid portion  $d^2$  of the housing D, lock-keys  $o^4$  are located which extend through openings  $o^5$  in the sills A. The abutments and keys  $o^4$  are locked together by means of clips  $o^6$  that surround the ends of the abutments and keys, said clips being passed through openings  $o^7$  in the lower outer flanges of the sills. In order to remove the abutments, the lock-keys  $o^4$  are forced from their seats until free of the clips, after which the abutments can be removed with the clips. When applying the abutments, it is simply necessary to slip the clips over the ends of the abutments, force the clips  $o^6$  through the openings  $o^7$  in the flanges of the sills, and insert the lock-keys  $o^4$  through the openings  $o^5$  in the sills and through the clips held in position for the purpose of receiving the lock-keys. Said lock-keys all act in conjunction with the abutments to check the movement of the spring-followers, and the connections



of the abutments by means of the follower-supports  $o^2$ , act to tie them together and prevent forward and rearward deflection of the same under the thrust and drawing strain to which they are subjected. The spring-followers also bear against abutments P that are located above the transverse walls  $d^1$  and  $d^2$  and above the rear end of the solid portion  $d^2$  of the housing D; said abutments being in the form of bars that are disposed transversely and are held in openings  $p$  in the side-sills, see Fig. 18. I have provided straps  $p^1$  and bent the same to form pockets  $p^2$  in which the ends of the abutments are held; said straps are secured to the underside of the upper outer flanges of the sills. These straps serve to relieve the sills of strain and prevent wearing at the ends of the openings  $p$ .

Q represents a plunger which is guided between the inner flanges of the sills and bears against the rear transverse wall of the draw-bar and spring-housing D and against the abutments P located above and below said rear wall, respectively. Said plunger is in the form of a yoke having an open center through which may be passed the king-bolt of a truck beneath. When the various parts are in normal condition, or when the housing D is drawn forward, the plunger bears against the abutments P associated with the rear transverse wall of said housing; but when the housing is thrust rearward, it moves between said abutments and forces the plunger rearward; the latter causing buffer springs R to be compressed. Said last-mentioned springs herein shown as four in number, are confined between followers  $R^1$ ,  $R^2$ , which are normally in contact with the rear end of the plunger Q and with abutments  $r$ , respectively; said abutments being also in the form of bars disposed transversely and passed through openings  $r^1$  in the sills. Between the springs R, a divider  $R^3$  is located; it having four concave sides against which the springs R bear. Said divider is preferably hollow and provided with elongated openings  $r^2$  with a view of reducing its weight.

S designates a follower bearing against the rear sides of the abutments  $r$  whereby its forward movement is limited and it has forwardly extending stems  $s$  which extend into the side springs R, as clearly shown in Fig. 6. Said stems are adapted to receive the thrust of the plunger Q after the springs R are compressed to a certain extent. Follower S has an annular flange  $S^1$  which forms a pocket on its rear side in which the front end of a stiff buffer-spring  $S^2$  is held; the rear end of said spring being confined in a pocket  $t$  formed on the front side of an abutment T held between the flanges of the sills A and bearing against stop-plates U riveted to said sills on the inner sides thereof.

Underneath the buffer springs R is a spring-retainer V in the form of a bar having a depressed intermediate portion  $v$  and its ends passed through openings  $v^1$  in the sills A, best shown in Fig. 9. A follower-support W is located underneath the buffer-spring  $S^2$ ; the ends thereof being passed through openings  $w$  in the supplemental sills.

From the foregoing description it is apparent that the springs confined within the housing D are compressed by both the outward and inward movement of said housing, and that the springs R are merely compressed on the slightest inward movement of the housing D, but always in proportion to said movement, while the spring  $S^2$  is designed to take up severe shocks only and is not placed into action until after the springs R are compressed to a certain extent.

It is to be understood that the arrangement herein shown and described may be modified in many ways without departing from my invention or sacrificing any of the advantages thereof, and that any part or parts of the appliance may be omitted and the remaining parts used in operative association or in connection with other parts.

Having thus described my invention, what I claim is,—

1. In a draft-appliance for railway-cars, the combination with sills, a draw-bar, a housing in which said draw-bar is pivotally secured and springs to receive the thrust and tensile strain to which the draw-bar is subjected, of detachable means whereby the draw-bar may be removed from said housing without disturbing parts associated therewith.

2. In combination in a draft-rigging for railway-cars, longitudinal sills, a housing slidable between said sills, springs within said housing, a draw-bar pocket pivotally held in said housing, a draw-bar secured to said pocket, and detachable means for retaining said draw-bar pocket within the housing whereby said pocket and the draw-bar may be removed without disturbing other associated parts.

3. In a draft-appliance, the combination of longitudinally disposed sills, a housing slidable between said sills, springs associated with said housing, a draw-bar pocket entirely within said housing and removable therefrom, and a draw-bar removably held in said pocket.

4. In a draft-appliance for railway-cars, the combination with two sills, of a housing between said sills having an open outer end and its side walls converging to form a substantially V-shaped pocket, said pocket being provided at its inner end with a part-cylindrical recess, a draw-bar pocket entirely within said V-shaped pocket and having a substantially cylindrical inner end fitting



ting said V-shaped pocket, a draw-bar detachably secured to said draw-bar pocket, and springs cooperating with said housing.

5. In a draft appliance for railway-cars, the combination with two longitudinally-disposed sills, of a housing slidable between said sills and being open at the bottom, a supporting-plate detachably secured to the bottom of said housing, a draw-bar pocket pivotally held within said housing and receiving support from said plate, a draw-bar secured to said pocket, and springs cooperating with said housing.

6. In a draft-appliance for railway-cars, the combination with two longitudinally-disposed sills, of a housing slidable between said sills and having a pocket in its front end and a wall overhanging the rear end of said pocket, said pocket being open at the bottom, a detachable supporting-plate closing the open bottom of said pocket, a draw-bar pocket having pivot-trunnions entering coinciding openings in said overhanging wall and said supporting-plate, respectively, a draw-bar secured in said draw-bar pocket, and springs cooperating with said housing.

7. In a draft-appliance for railway-cars, the combination with two sills, of a housing slidable between said sills and having a pocket open at its bottom and two recesses at its underside, a bearing-plate closing the bottom of said pocket and provided with up-standing lugs fitting into said recesses, a draw-bar secured within said pocket, and springs cooperating with said housing.

8. In a draft-appliance for railway-cars, the combination with two sills, of a housing slidable between said sills and having a pocket open at its bottom, a supporting-plate closing the bottom of said pocket and having a depression on its upper side, a draw-bar pocket in the pocket of said housing having an extension on its underside fitting into the depression of said supporting-plate, a draw-bar secured to said draw-bar pocket, and springs cooperating with said housing.

9. In a draft-appliance for railway-cars, the combination with two sills, of a housing slidable between said sills and having a pocket open at the bottom and a wall overhanging the rear end of said pocket, said wall having a pivot-hole and a segmental slot, a supporting-plate closing the bottom of said pocket and provided with a pivot-hole coinciding with the pivot-hole in said overhanging wall, a draw-bar pocket having pivot-trunnions fitting said pivot-holes and a lug entering said segmental slot, a draw-bar secured to said draw-bar pocket, and springs cooperating with said housing.

10. In a draft-appliance for railway-cars, the combination with two sills, of a housing slidable between said sills and having a pocket open at the bottom, a supporting-plate closing said bottom and having a seg-

mental slot, a draw-bar pocket pivotally secured within the pocket of said housing in rear of said segmental slot and having a lug fitting into said segmental slot, a draw-bar secured in said draw-bar pocket, and springs cooperating with said housing.

11. In a draft-appliance for railway-cars, the combination with a housing and springs cooperating with said housing, of a draw-bar pocket secured within said housing and having coinciding openings in its side-walls, a draw-bar within said housing having a shouldered rear end, and a key passing through said coinciding openings in said draw-bar pocket and bearing against the shouldered rear end of said draw-bar.

12. In a draft-appliance for railway-cars, the combination of a housing, a draw-bar attached thereto, a hollow cross-bar at the front end of said housing having a longitudinal slot, springs within said cross-bar, a yoke slidable on said cross-bar having a depending arm extending into said bar through said slot and against opposite sides of which the inner ends of said springs bear, a band at each end of said cross-bar surrounding it and a portion of said housing, and keys passing through said bands and said cross-bar against which the outer ends of said springs bear.

13. In a draft-appliance for railway-cars, the combination of a housing having pockets at its outer end, a draw-bar attached to said housing, a cross-bar at the front end of said housing having lugs at its ends which enter said pockets, a band at each end of said cross-bar surrounding it and a portion of the housing, and keys passed through said bands, the portions of the housing surrounded thereby, and the lugs entering the pockets in said housing, and having self-contained retaining-means.

14. In a draft-appliance for railway-cars, the combination with two sills having outwardly directed flanges, the flange of one of said sills being notched, of a draw-bar, a spring cooperating with said draw-bar, and a retainer-bar connecting said sills and having its ends bent into the form of hooks to engage the flanges of said sills, one end of said retainer-bar being adapted to pass through the notch in one of said sills when applying said bar to or detaching it from said sills.

15. In a draft-appliance for railway-cars, the combination with two sills, of a housing slidable between said sills and having spring-pockets, a draw-bar secured to said housing, followers in said pockets arranged in pairs, a spring between each pair of followers, and abutments connecting said sills against which said followers bear.

16. In a draft-appliance for railway-cars, the combination with two sills, of a housing slidable between said sills and comprising



side-members; a solid portion connecting said side-members, a rear transverse wall and a transverse wall between said solid portion and said rear transverse wall, a  
 5 draw-bar secured to said housing, followers arranged in pairs and normally held against said solid portion and said transverse walls, a spring between each pair of followers, and  
 10 abutments arranged above and beneath said solid portion and said transverse walls and having their ends secured to said sills, said abutments cooperating with said followers to allow compression of said springs.

17. In a draft-appliance for railway-cars,  
 15 the combination with two sills having alined openings and lateral flanges provided with slots, of a draw-bar, springs compressed by the action of said draw-bar, followers at opposite ends of each spring, abutments  
 20 against which said followers bear, keys passing through the alined openings in the sills, and loops connecting corresponding ends of said abutments and keys and passing through the slots in the flanges of said sills.

18. In a draft-appliance for railway-cars,  
 25 the combination with two sills having alined openings and flanges at their lower edges provided with slots, of a housing slidable between said sills and having spring pockets  
 30 formed by transverse walls, a draw-bar secured to said housing, springs in the pockets of said housing, followers at opposite ends of each spring, abutments above and beneath the transverse walls of said housing against  
 35 which said followers act, the abutments above said transverse walls passing through alined openings in the sills and the abutments beneath said walls being notched to fit the lower flanged edges of said sills, keys  
 40 between said last-mentioned abutments and said transverse walls passing through alined openings in said sills, and loops fitting over the ends of said last-mentioned abutments and said keys and being passed through the  
 45 slots in the flanges of said sills.

19. In a draft-appliance for railway-cars,  
 the combination with two sills having alined openings and flanges at their lower edges,  
 50 of a housing slidable between said sills and having pockets formed by transverse walls, a draw-bar secured to said housing, springs in the pockets of said housing, followers at opposite ends of each spring, abutments above and beneath the transverse walls of  
 55 said housing against which said followers bear, the abutments beneath said walls being notched to fit the flanged lower edges of said sills to prevent inward and outward deflection of the latter, keys between said  
 60 last-mentioned abutments and said transverse walls passing through the alined openings in said sills, and means for connecting

said keys with said last-mentioned abutments.

20. In a draft-appliance for railway-cars, 65  
 the combination with two sills having alined openings and flanges at their lower edges, of a housing slidable between said sills and having pockets formed by transverse walls, a draw-bar secured to said housing, springs 70  
 in the pockets of said housing, followers at opposite ends of each spring, abutments beneath said transverse walls against which said followers act, means for connecting said  
 75 abutments, and means for detachably securing said abutments to the sills.

21. In a draft-appliance for railway-cars,  
 the combination with two sills having alined openings and flanges at their lower edges,  
 80 of a housing slidable between said sills and having pockets formed by transverse walls, a draw-bar secured to said housing, springs in the pockets of said housing, followers at opposite ends of each spring, abutments beneath said transverse walls against which 85  
 said followers act, alternate abutments having follower supports formed integrally therewith adapted for connection with the abutment between them, and means for detachably connecting said abutments to the 90  
 sills.

22. In a draft-appliance for railway-cars,  
 the combination with two sills, of a draw-bar, a plunger movable by the action of said  
 95 draw-bar, a spring placed in action by said plunger, an abutment for said spring, a follower having stems passing through said abutment and adapted to be engaged by said plunger after the latter has been moved a certain distance, a second abutment and a 100  
 spring between said follower and said second abutment.

23. In a draft-appliance for railway-cars,  
 the combination with two sills, of a housing  
 105 slidable between said sills, a draw-bar secured to said housing, springs within said housing placed in action to receive the tensile and buffing strain of said draw-bar, a plunger in rear of said housing and actuated thereby, a spring in rear of said plunger 110  
 and placed in action on movement of said plunger, a follower in rear of said last-mentioned spring having stems adapted to be engaged after said last-mentioned spring is placed in action, and a spring in rear of said 115  
 follower.

In testimony whereof, I have affixed my signature in the presence of two subscribing witnesses.

WILLIAM J. MACK.

Witnesses:

ELLA C. PLUECKHAHN,  
 EMIL NEUHART.



It is hereby certified that in Letters Patent No. 995,474, granted June 20, 1911, upon the application of William J. Mack, of Buffalo, New York, for an improvement in "Draft Appliances for Railway-Cars," errors appear in the printed specification requiring correction as follows: Page 2, line 116, the word, "power" should read *lowered*; page 5, lines 106-107, the comma and the words "and having self-contained retaining means" should be stricken out and a period inserted after the word "housing"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 25th day of July, A. D., 1911. •

[SEAL.]

E. B. MOORE,

*Commissioner of Patents.*