

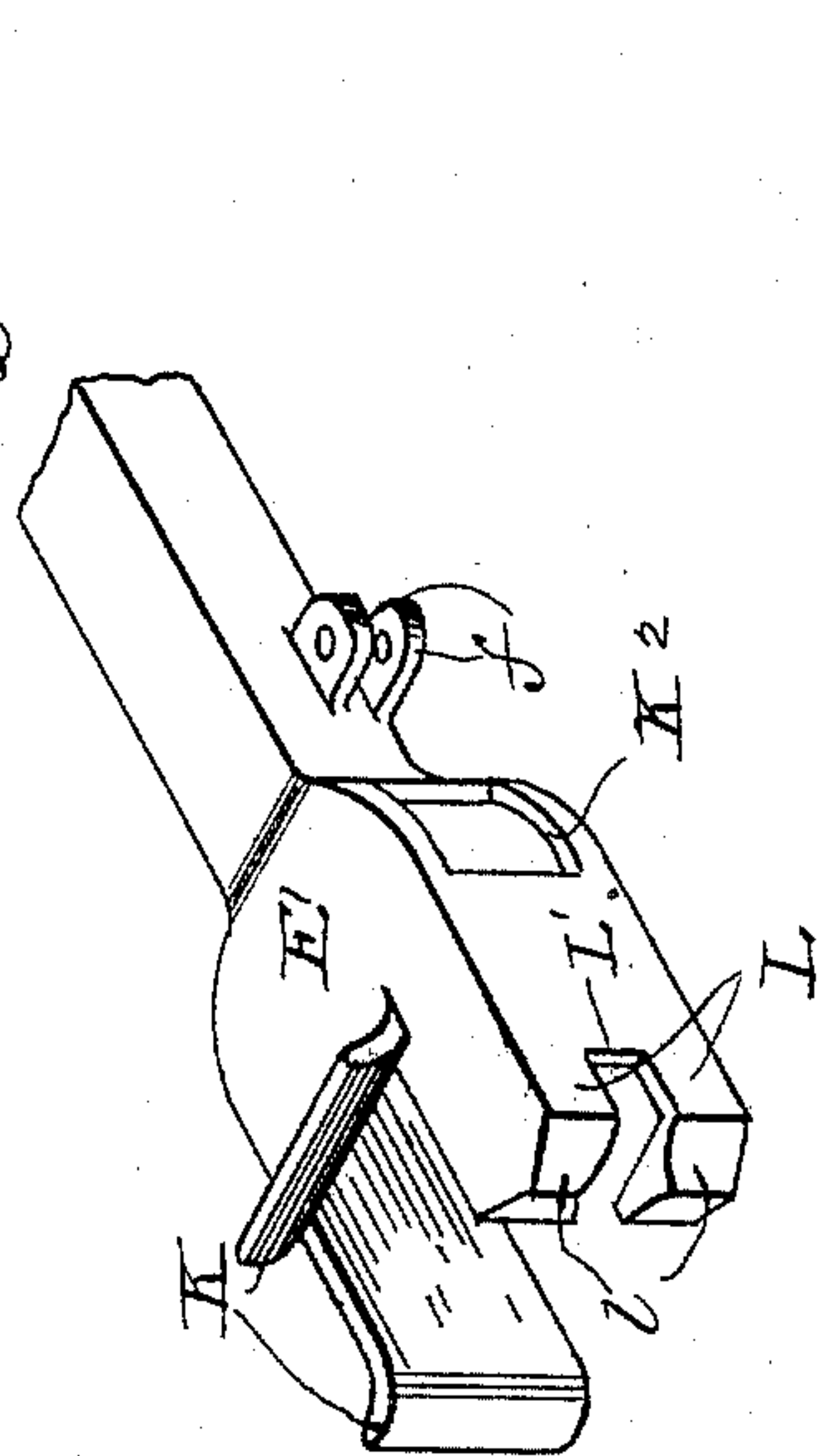
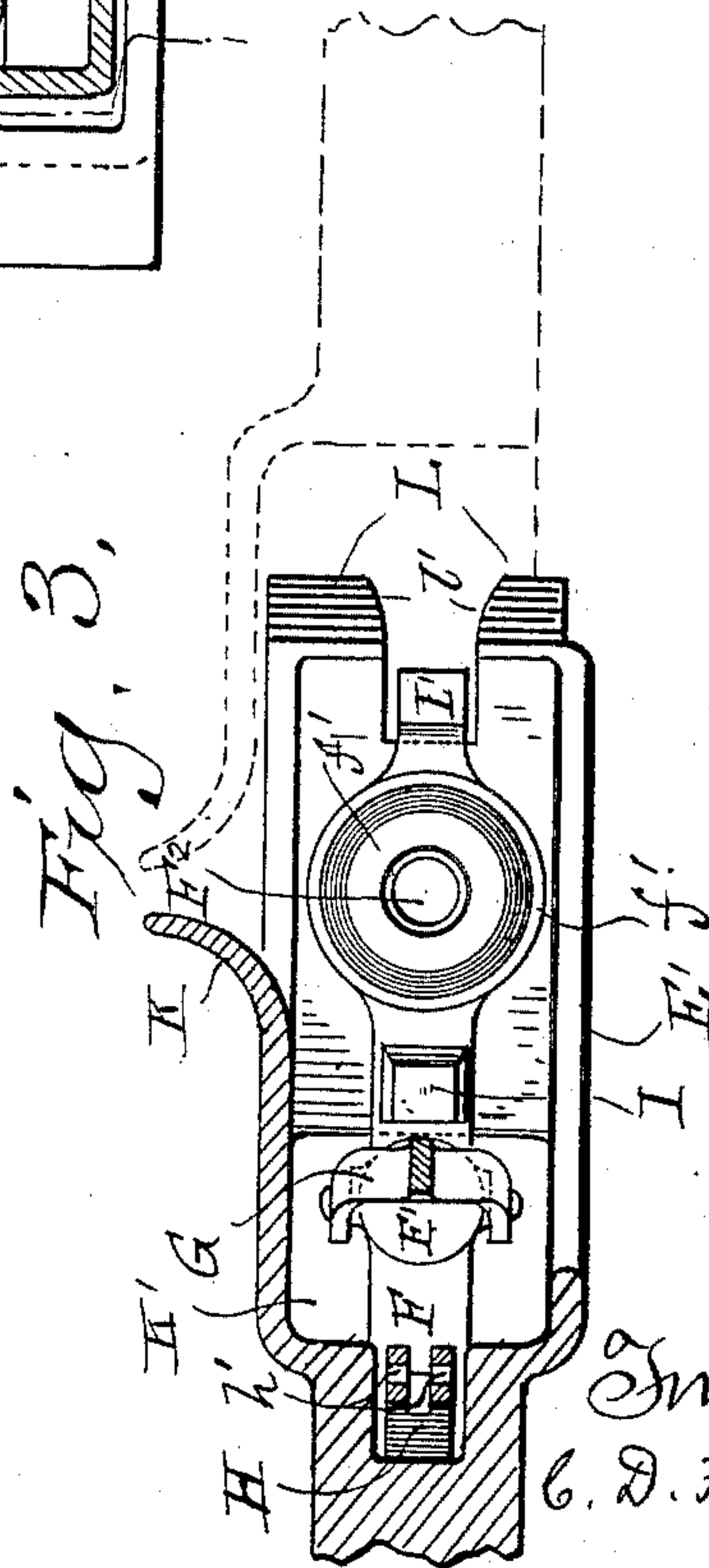
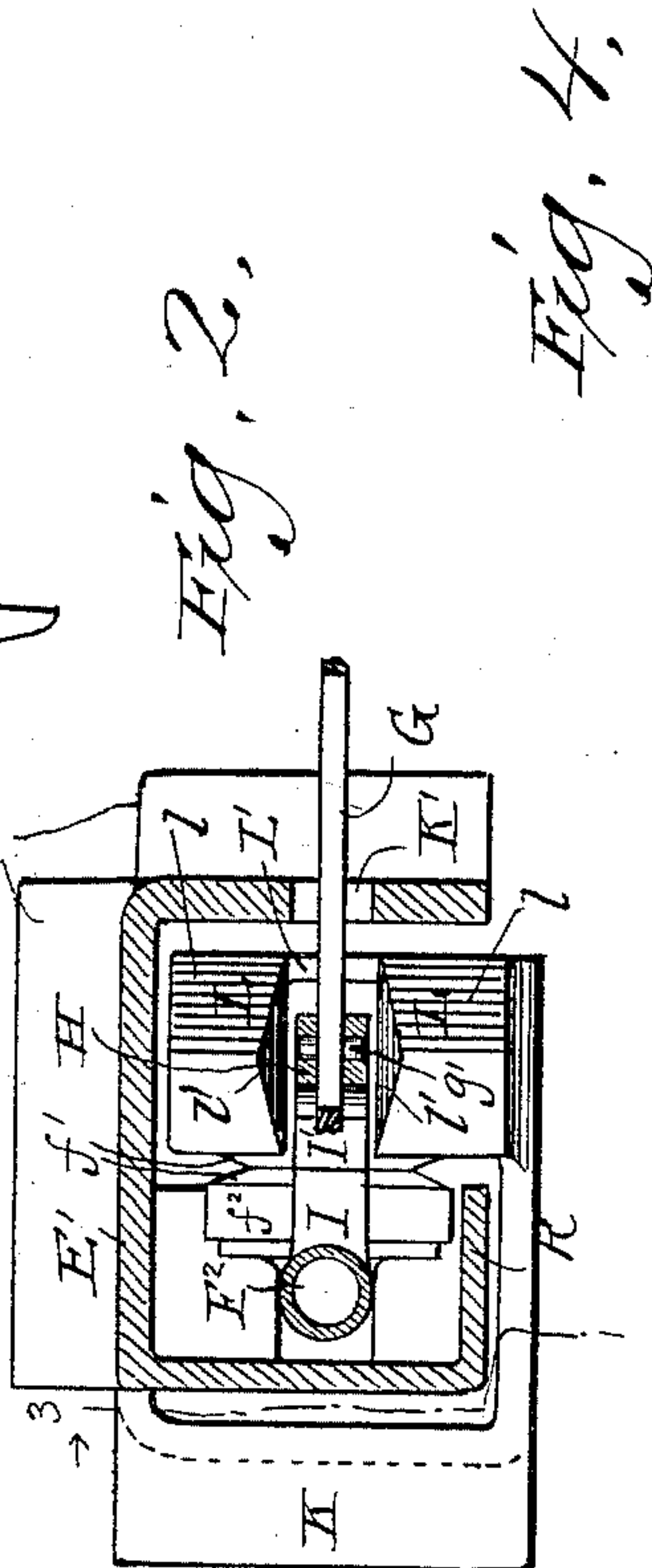
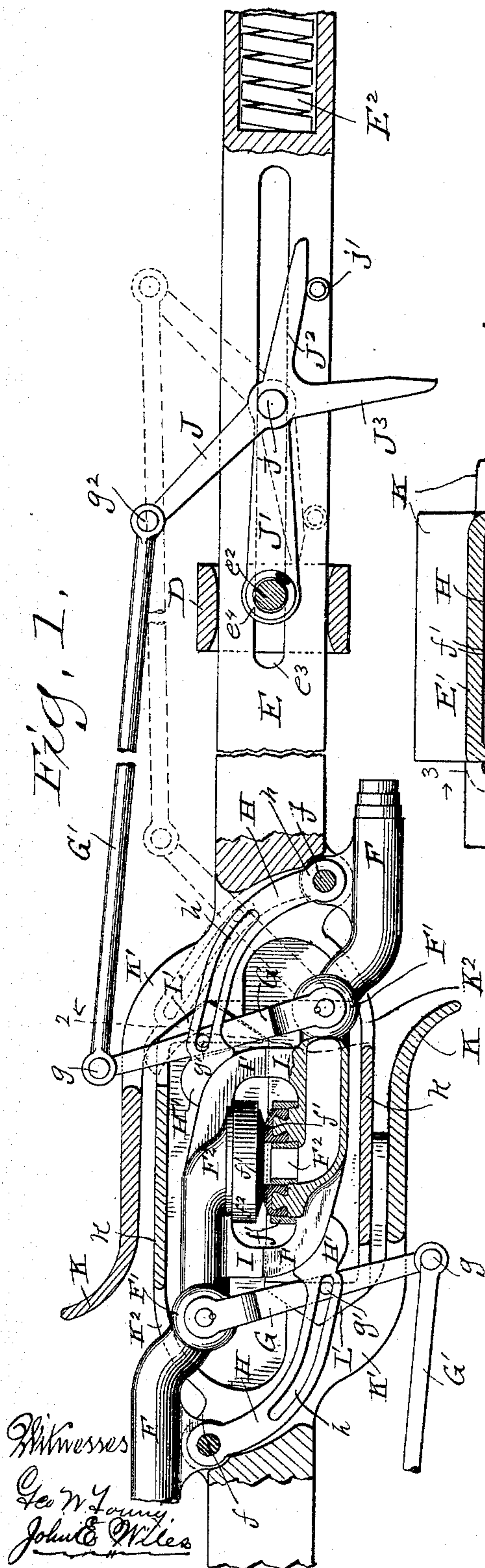
(No Model.)

2 Sheets—Sheet 1.

C. D. FAHRNEY.
COUPLING FOR AIR BRAKE PIPES.

No. 485,182.

Patented Nov. 1, 1892.



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(No Model.)

2 Sheets—Sheet 2.

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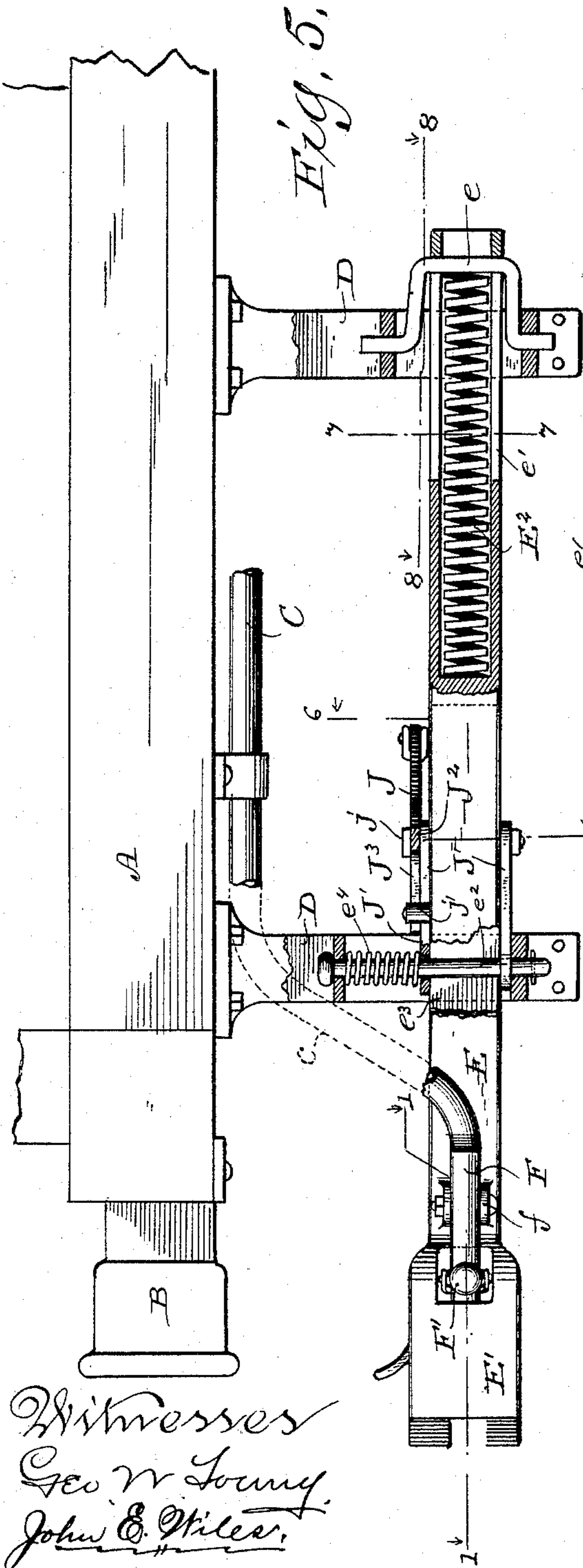


Fig. 8.

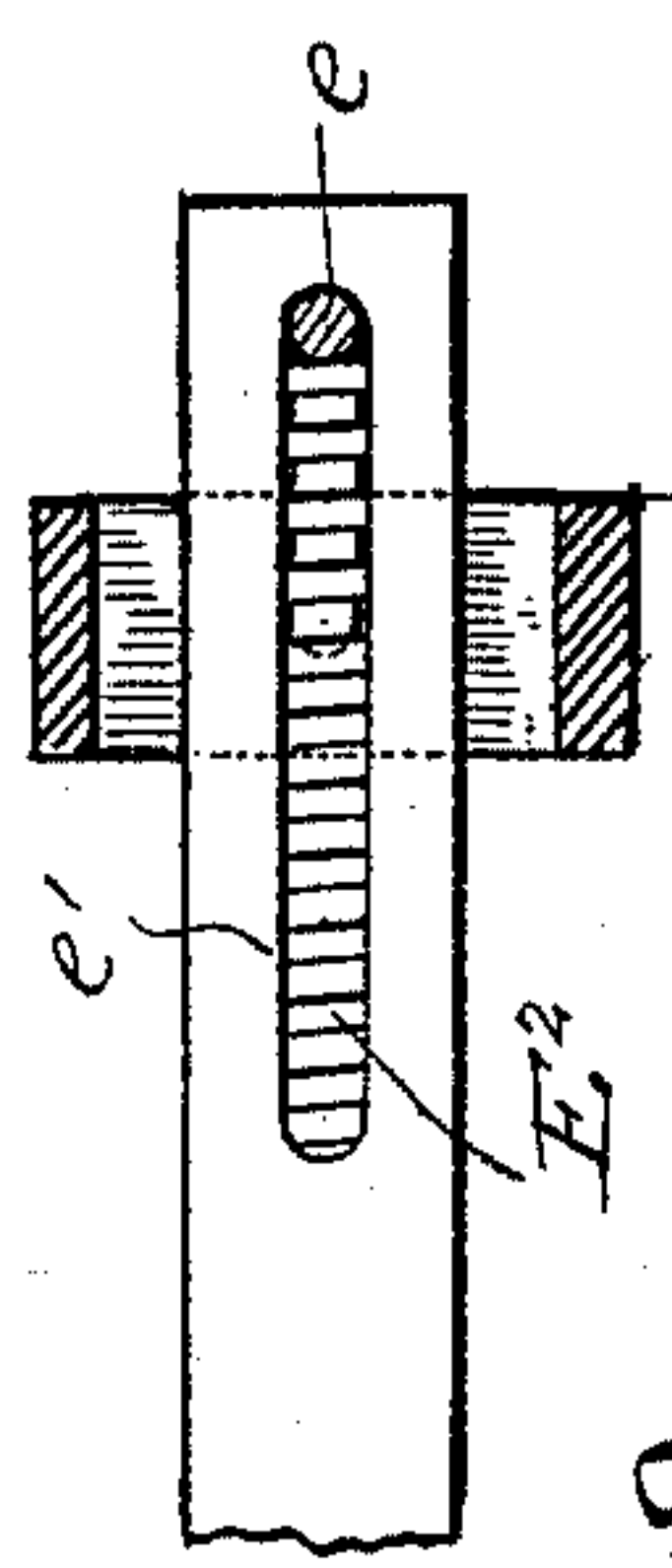


Fig. 1.

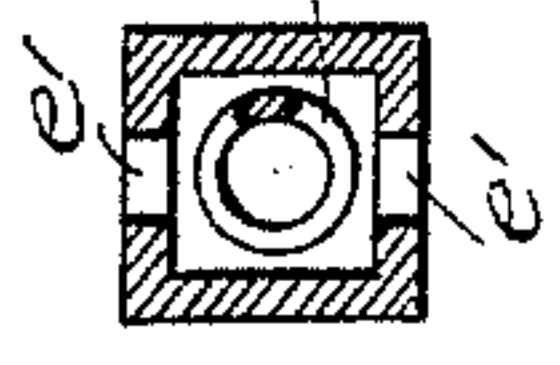


Fig. 9.

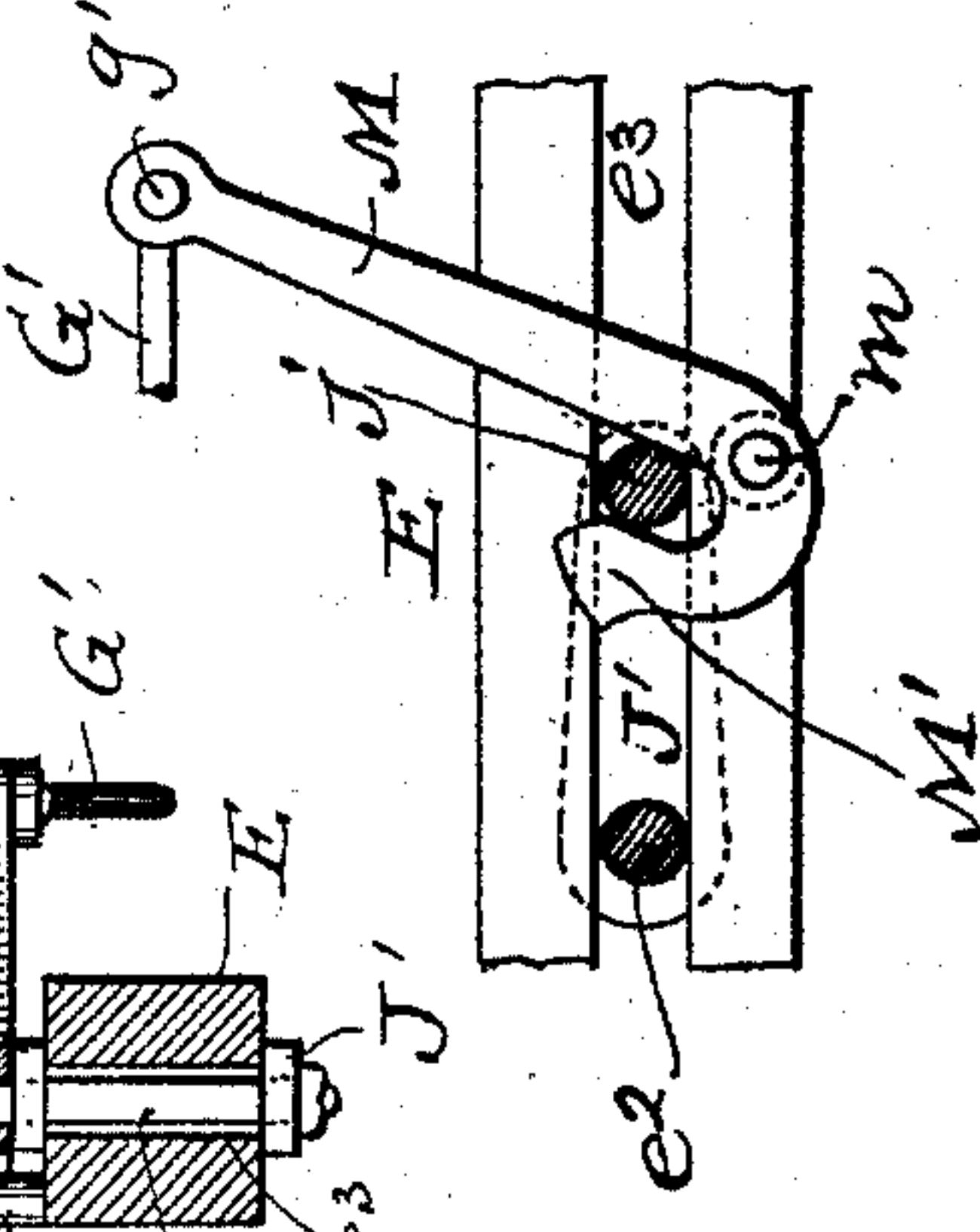
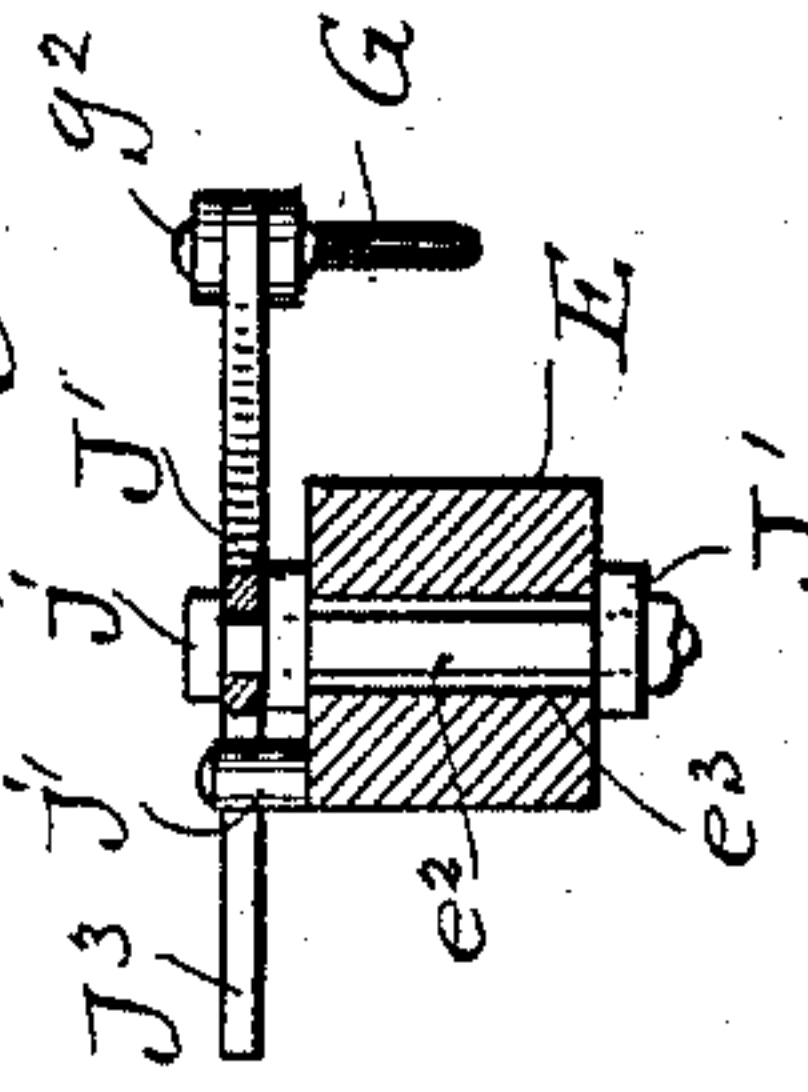


Fig. 6.



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UNITED STATES PATENT OFFICE.

CALLO D. FAHRNEY, OF MANITOWOC, WISCONSIN.

COUPLING FOR AIR-BRAKE PIPES.

SPECIFICATION forming part of Letters Patent No. 485,182, dated November 1, 1892.

Application filed February 15, 1892. Serial No. 421,659. (No model.)

To all whom it may concern:

Be it known that I, CALLO D. FAHRNEY, a citizen of the United States, and a resident of Manitowoc, in the county of Manitowoc, and in the State of Wisconsin, have invented certain new and useful Improvements in Couplings for Air-Brake Pipes; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to certain new and useful improvements in hose-couplings for air-brakes; and it consists in the matters hereinafter described, and pointed out in the appended claims.

The object of my invention is to provide an improved hose-coupling of such construction that as the cars to which said couplings are attached come together the coupling of the hose will be automatically effected and when the said cars are separated the coupling between said hose will be automatically broken.

The various features of my invention will be more fully hereinafter described with reference to the accompanying drawings, in which—

Figure 1 is a horizontal longitudinal section of a pair of coupling devices constructed in accordance with my invention and illustrating the said devices in engagement with each other. Fig. 2 is a vertical cross-section of the same, taken on line 2 2 of Fig. 1. Fig. 3 is a vertical longitudinal section taken on line 3 3 of Fig. 2. Fig. 4 is a perspective view of one of the housings within which the coupling devices are supported. Fig. 5 is a side elevation of one of the devices, showing the same in position upon the car and having portions broken away to better illustrate the construction. Fig. 6 is a vertical cross-section taken on line 6 6 of Fig. 5. Fig. 7 is a similar view taken on line 7 7 of said Fig. 5. Fig. 8 is a horizontal sectional view taken on line 8 8 of Fig. 5, and Fig. 9 represents a different form of one of the parts.

In said drawings, A represents the framework of a railway-car, B the draw-head, and C the usual air-brake pipe extending lengthwise of the car beneath the floor of the same.

D D represent suitable hangers for supporting my improved coupling apparatus in position beneath the car; E E, suitable bars movably supported in said hangers and pro-

vided at their outer ends with suitable housings E' E', within which the coupling devices are supported. The rear ends of these bars E E are preferably made hollow to contain suitable spiral springs E², which bear at their forward ends against the end walls of the openings in said bars, and at their rear ends are engaged with stirrups e e, each of which is preferably movably engaged with one of the hangers D. These stirrups are passed through slots e' in the rear ends of the bars E, as shown, so as to permit of a longitudinal movement of said bars, as will presently be described.

As illustrated more particularly in Fig. 5 of the drawings, the bars E E are made of such a length as to cause the forward ends E' E' to extend somewhat beyond the ends of the draw-heads B B, so as to cause the two coupling devices at the ends of the pipes beneath the cars to come together before the said draw-bars come into engagement with each other.

Sections of metallic pipe F F are pivotally secured, as at f f, to the bars E E, said sections F being provided with suitable valves F' F' for controlling the flow of the compressed air or other fluid under pressure, and the ends of said sections are curved laterally and provided with broad bearing-faces, as shown, the laterally-directed portions F² F² being arranged to come into a position to bring their openings into communication with each other when the device assumes the position illustrated in Fig. 1 of the drawings. Suitable packings f' f' are preferably provided upon the faces of the lateral portions of said pipes, said packings being held in position by any suitable means, such as the rings f² f². (Shown in Figs. 1, 2, and 3 of the drawings.) Levers G G are engaged with the stems of the valves F' F', as shown, and extend through suitable slots in the housings E' E' and are pivotally engaged at their outer ends, as at g g, with rods G' G', which extend rearwardly and are connected with suitable actuating-levers by pivotal connections g² g². Arms H H are pivotally secured within the housings E' E', as at h h, and are arranged to engage with the ends of the sections F² F² of the pipes within said housings, said arms H H being provided with suitable slots h' h' for

engaging with pins $g' g'$ on the levers $G G$, for a purpose to be hereinafter described. Upon the inner ends of the sections $F F$, and upon opposite sides of the openings in their ends, are provided suitable projecting lugs $I' I'$, adapted to come into engagement with each other, so as to bring the abutting faces of said sections squarely together when the connection is made between the two pipe ends, and the levers or arms $H H$ are conveniently arranged to bear upon the outside surfaces of said projecting lugs $I' I'$, as shown.

Suitable actuating-levers are provided for giving motion to the rods G' , which levers may be either of the form illustrated in Figs. 1 and 5, in which figures they are shown as oscillating levers $J J$, pivotally secured at $j j$ to the ends of arms $J' J'$, which extend from pins e^2 in the forward ones of the hangers $D D$ on the respective cars, said levers being bifurcated at their lower ends and the two furcations $J^2 J^3$ of each lever arranged to come alternately into engagement with a pin j' on the side of the bar E , so as to rotate said lever about its pivotal connection j and to thereby impart a longitudinal motion to said rod G' ; or said levers may be made in the form illustrated in Fig. 9, in which each lever is made in the form of a hook M , pivoted at or near its lower end to the bar E , as at m , and having an up-turned end M' adapted for engagement with the pin j , to which in the other form of construction the lever J is secured. A rearward movement of the bar E will obviously oscillate the lever M about the pivot m , so as to throw its upper end forward until freed from engagement with said pin, while a reverse motion will obviously bring said pin into engagement with the long part of the lever, so as to rock it in the opposite direction.

The housings $E' E'$ at the ends of the bars $E E$ are each provided with flaring edges upon the top and one side, as at $K K$, the arrangement being such that when two housings come together the flaring edge on one housing will come upon the side opposite to the flaring edge on the other housing, and the said flaring edges on the tops of the housings are located at a considerable distance from the front of the same, the forward portions of the upper walls of the housings being cut away, so as to enable the housings to move into operative position before said edges come together. The construction of the housings is shown more particularly in Fig. 4.

The vertical side wall of each of the housings $E' E'$, opposite to the flaring side wall of the same, is provided with an inwardly-directed flange k , as illustrated in Figs. 1 and 2 of the drawings. Suitable slots K' and K^2 are provided in each one of the housings at the points where the pipe-sections F and the levers G respectively pass through said housing, said slots being of sufficient size to permit of the necessary movement of said parts in the operations of coupling and uncoupling the hose. Flexible sections of hose connect

the pipes C with the movable metallic sections F , as illustrated at c in Fig. 5 of the drawings.

The slot e^3 in the bar E , through which the pin e^2 is passed, is made of sufficient length to permit of a considerable degree of longitudinal motion of said bar, and a spring e^4 is preferably provided upon said pin and arranged to bear against the upper side of the said bar, so as to normally depress the same, but when occasion requires to permit the outer end of said bar to be elevated. The stirrup e , against which the rear end of the spring E^2 bears, is preferably provided with crank-shaped ends, as shown in Fig. 5, which ends are engaged in bearings in the hanger D , so as to permit of a lateral vibration of the rear end of the bar E within said hanger, and, as illustrated in Fig. 8, said hanger is made of sufficient size to permit of a free motion of the rear end of said bar.

The end walls $L L$ of each of the housings $E' E'$ are suitably beveled, as at $l l$, so as to insure the proper operation of the two housings as they come together, the beveled surface of each of said housings being arranged to come into engagement with the flaring edge of the opposing housing, so as to guide the two housings into proper relative position. A suitable slot L' is made in each of said walls of the housings at the point where the lever G of the opposing housing is designed to project through the wall of the same, the opposite walls of said slot L' being properly beveled, as at $l' l'$, to guide said lever G into operative position.

The operation of my improved apparatus is as follows: When the pipes are uncoupled, the several parts will occupy the relative positions illustrated by the dotted lines in Fig. 1, the levers G being retracted and the movable sections of the pipe swung backward upon their pivotal connections $f f$, so as to retract their inner ends within the housings between the flanges $k k$ and the opposing surfaces of said housings. When two cars equipped with my improved devices are brought into position for coupling, the bars $E E$ being so arranged as to cause the housings $E' E'$ at their ends to project beyond the draw-heads, said housings will obviously come into engagement and be compressed before said draw-heads are brought into position for engagement, said bars being forced back beneath the cars to which they are attached. By this movement of said bars the pin j' upon each of the bars will be brought into engagement with the rear one J^2 of the furcations of the lever J , so as to rock said lever about its pivotal connection j with the arm J' and cause its upper end to move forward into the position illustrated by the full lines in Fig. 1. This motion of the lever J will obviously serve to push the rod G' forwardly, so as to rock the lever G about its pivotal connection with the valve-stem, thereby operating to open the valve F' at the time when the parts are

brought together. Simultaneously with this movement of the housings and levers, the bearing-surfaces of the inner ends of the sections F^2 are brought into firm engagement 5 with each other by means of the arms or levers H in the following manner: By the engagement of the pins g' on the levers G with the slots h' in said arms, as said levers are crowded forward by the rods G' , said arms H 10 will obviously be pressed inwardly by said pins, and by the engagement of the ends of said arms with the projections I' on the ends of the pipes this inward pressure will be obviously communicated to the bearing portions 15 of the said pipes, so as to press the packings $f' f'$ firmly together and effectually prevent leakage of air through the joint thus formed. By the arrangement of the projections $I' I'$ on each of the inwardly-directed ends of the pipes 20 the bearing-faces of the same are brought squarely together, so as to insure an even bearing of the packings against each other. In this condition the two pipe ends will be firmly coupled together and will remain so until the 25 draw-heads of the respective cars are freed from engagement with each other and the cars are moved apart sufficiently to enable the springs E^2 to project the bars E forward into their initial positions, so as to produce a reverse movement of the rocking lever J and the parts actuated thereby.

Suitable provision must be made for keeping the coupling devices in firm engagement with each other notwithstanding the movement of the cars in the ordinary handling of the same upon the road, and to this end the 35 inner surface of the arm J^2 of said lever is made of such shape that after the parts are brought into the positions illustrated in Fig. 1, said surface will occupy a position parallel to the line of motion of the pin j' with which it is engaged, so that as the springs in the draw-bars of the connected cars yield the bars E will be permitted a corresponding 45 yielding motion without change of the position of said lever J and the coupling device actuated thereby.

By the arrangement of the spring e^4 upon the pin e^2 , as before described, the bar E is permitted to have a sufficient amount of vertical 50 play to accommodate any vertical movement of the car without affecting the engagement of the bearing-faces of the coupling devices. By this construction, also, the housing upon the bar attached to one car may be elevated 55 or depressed so as to bring it into proper position to form a coupling with the corresponding device upon a car of different height.

By the arrangement of the stirrup e with 60 crank-shaped ends engaged within bearings in the hanger D said stirrup is permitted to move laterally, so as to provide for the necessary lateral play of the bar E . It will thus be seen that the bar has a sufficient amount 6 of play in every direction to accommodate the various movements of the cars.

When the cars are uncoupled, the bars E

will be automatically projected by the springs E^2 as the cars separate, thus bringing the pin j' into engagement with the forward one of 70 the furcations of the lever J and rocking said lever in the opposite direction from the movement before described, thus retracting the rod G' and rocking the lever G into the position indicated in Fig. 1 by the dotted lines. This 75 movement of the parts will obviously raise the arms H out of engagement with the projections I' on the ends of the pipes, and as said levers reach the limit of their movement, the pins g' , continuing their movement within 80 the slots in said arms, will operate to produce an outward pressure upon the connections of said levers G with the valves, so as to cause the sections $F F$ to oscillate upon the pivotal connections f to separate the bearing portions 85 of said pipes in an obvious manner, the ends of said pipes being retracted within the housings in the manner before described. In this condition the coupling devices will be sheltered from the weather and the liability of 90 the accumulation of snow or ice around the operating parts will be obviated.

By my improvements I am enabled to provide a coupling for air-brake and other pipes which is entirely automatic in its operation, 95 simple in its construction, and not liable to get out of order. It will also be observed that the operations of opening or closing the valves for governing the flow of air are automatically performed at the time when the 100 cars are coupled together or uncoupled, so that no attention is required on the part of the trainmen.

Having thus described my invention, what I claim as new, and desire to secure by Letters 105 Patent of the United States, is—

1. A coupling for air-brake pipes, comprising a pair of opposing bars provided upon their ends with sections of pipe pivotally secured to said bars and having laterally-directed 110 openings adapted to come into engagement with each other, and levers for moving said sections into engagement with each other, substantially as described.

2. A coupling for air-brake pipes, comprising a pair of opposing bars movably engaged 115 with suitable hangers and provided with suitable housings on their ends, sections of pipe pivotally secured to said bars and arranged to have a lateral movement within said housings, laterally-directed openings in said sections of pipe, adapted to be moved into or 120 out of engagement with each other, and suitable actuating-levers pivotally supported upon said hangers or bars and operatively engaged with said movable sections of pipe, 125 substantially as described.

3. A coupling for air-brake pipes, comprising a pair of opposing longitudinally-movable bars engaged with suitable hangers and provided with suitable housings upon their ends, 130 adapted to come into engagement with each other when the cars are coupled together, sections of pipe carried by said bars and pivot-

ally engaged therewith, said sections of pipe being each arranged to communicate at one end with the air-brake pipe and provided at its other end with a laterally-directed opening adapted to be moved into a position to register with a similar opening in the opposing pipe, suitable packings on the abutting surfaces of said pipes, valves in said pipes, levers for operating said valves, and suitable pivoted arms movably engaged with said levers and adapted to bear upon the ends of said sections of pipe to crowd them toward each other, and suitable actuating-levers pivotally secured to the hangers or bars and operatively engaged with said first-mentioned levers, substantially as described.

4. A coupling for air-brake pipes, comprising a pair of opposing longitudinally-movable bars provided with suitable housings upon their ends, sections of pipe pivotally engaged with said bars and arranged to have a lateral movement within said housings, laterally-directed openings in said pipe-sections, adapted to be brought into register with each other, valves in said pipes, levers for operating said valves, pivoted arms adapted to engage with the ends of said pipe-sections to crowd the same toward each other, slots in said arms movably engaged with pins upon said valve-operating levers, rocking levers pivotally supported upon the hangers for said bars and adapted to engage with suitable projecting

pins upon said bars, and rods connecting said actuating-levers with said valve-operating levers, substantially as described.

5. A coupling for air-brake pipes, comprising a pair of opposing longitudinally-movable bars supported within suitable hangers depending from the cars and provided with suitable housings upon their ends, sections of pipe having laterally-directed apertures and pivotally engaged with said bars, the ends of said pipe-sections being arranged to have a lateral movement within said housings, suitable packings located around said apertures, valves in said pipe-sections, levers for operating said valves and provided with studs or pins upon their sides, pivoted arms arranged to move into engagement with projections upon the ends of said pipe-sections and provided with slots for engaging with said pins or studs upon said levers, springs for normally extending said bars beyond the ends of the cars, and suitable actuating-levers having operative connections with said valve-operating levers, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand, at Manitowoc, in the county of Manitowoc and State of Wisconsin, in the presence of two witnesses.

CALLO D. FAHRNEY.

Witnesses:

JOHN C. DEDRICKS,

JOHN W. RAPPLE.