

(No Model.)

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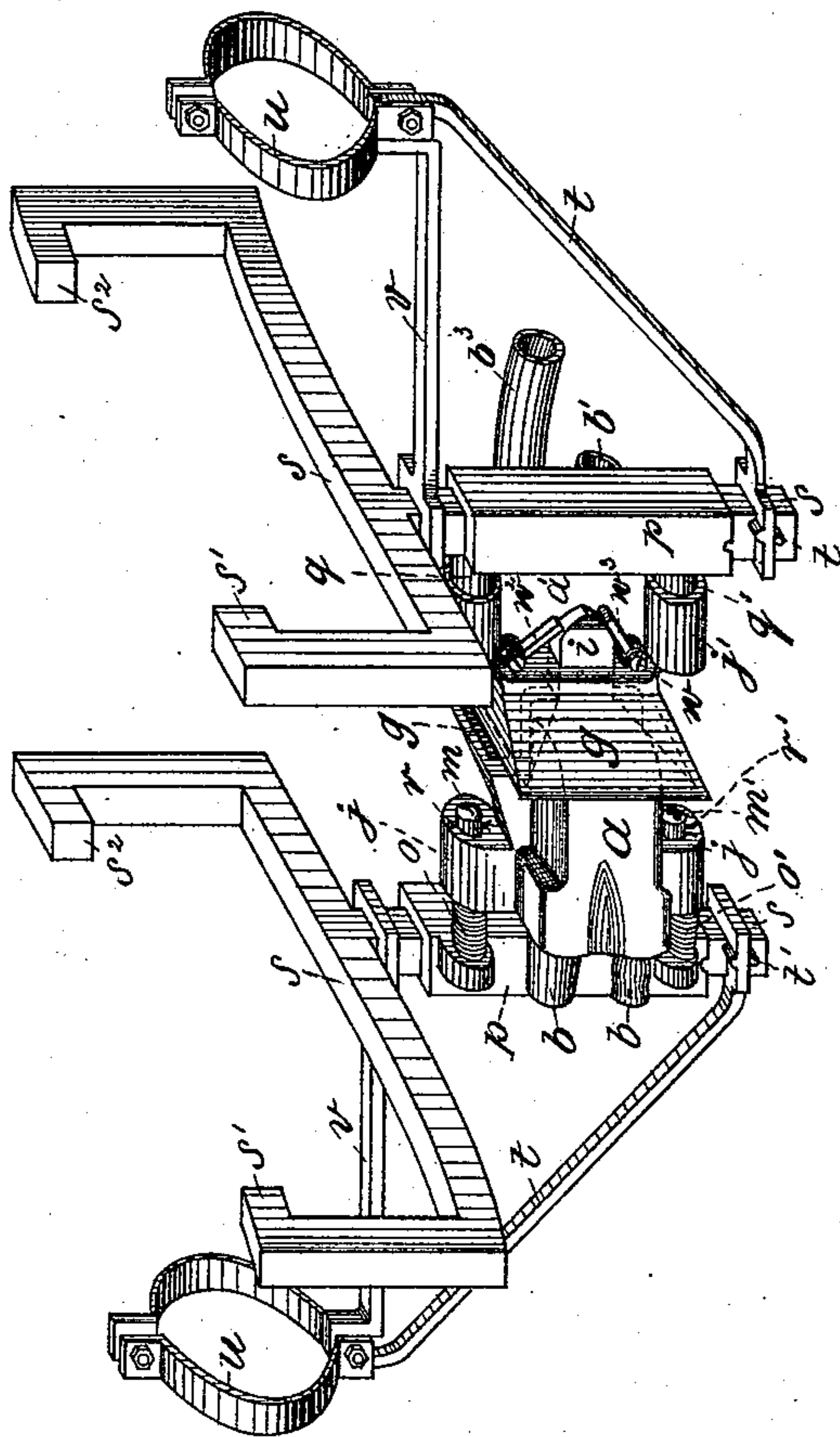
J. T. MELSON.

AUTOMATIC AIR BRAKE COUPLER.

No. 352,927.

Patented Nov. 23, 1886.

Fig. 1.



WITNESSES=

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 9.

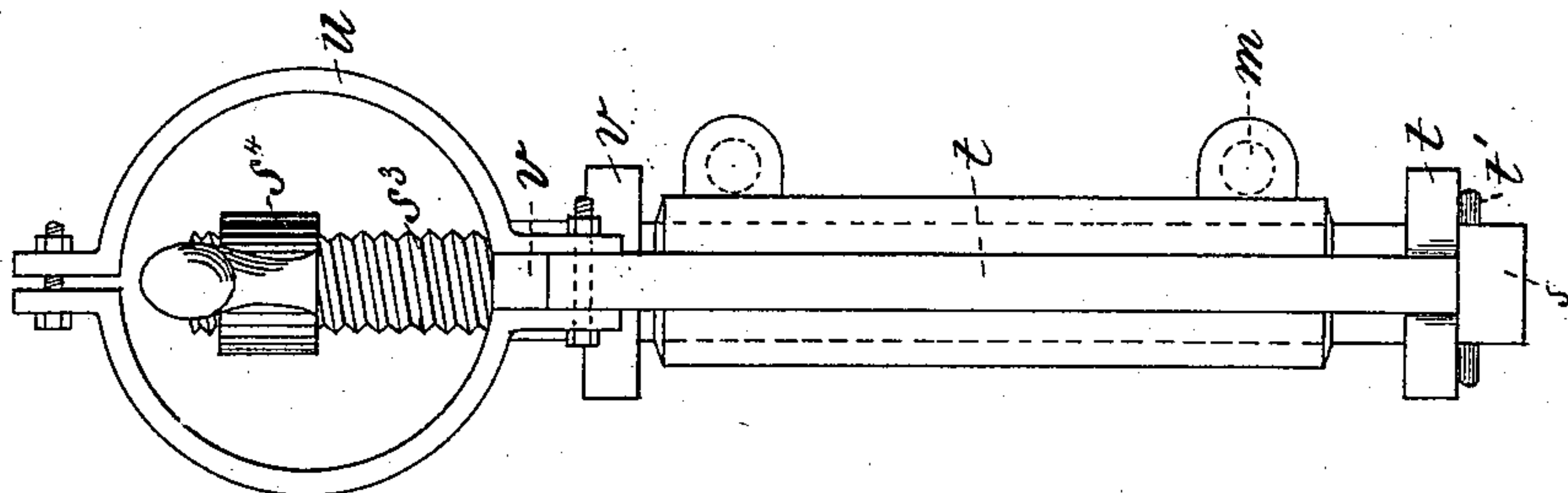


Fig. 7.

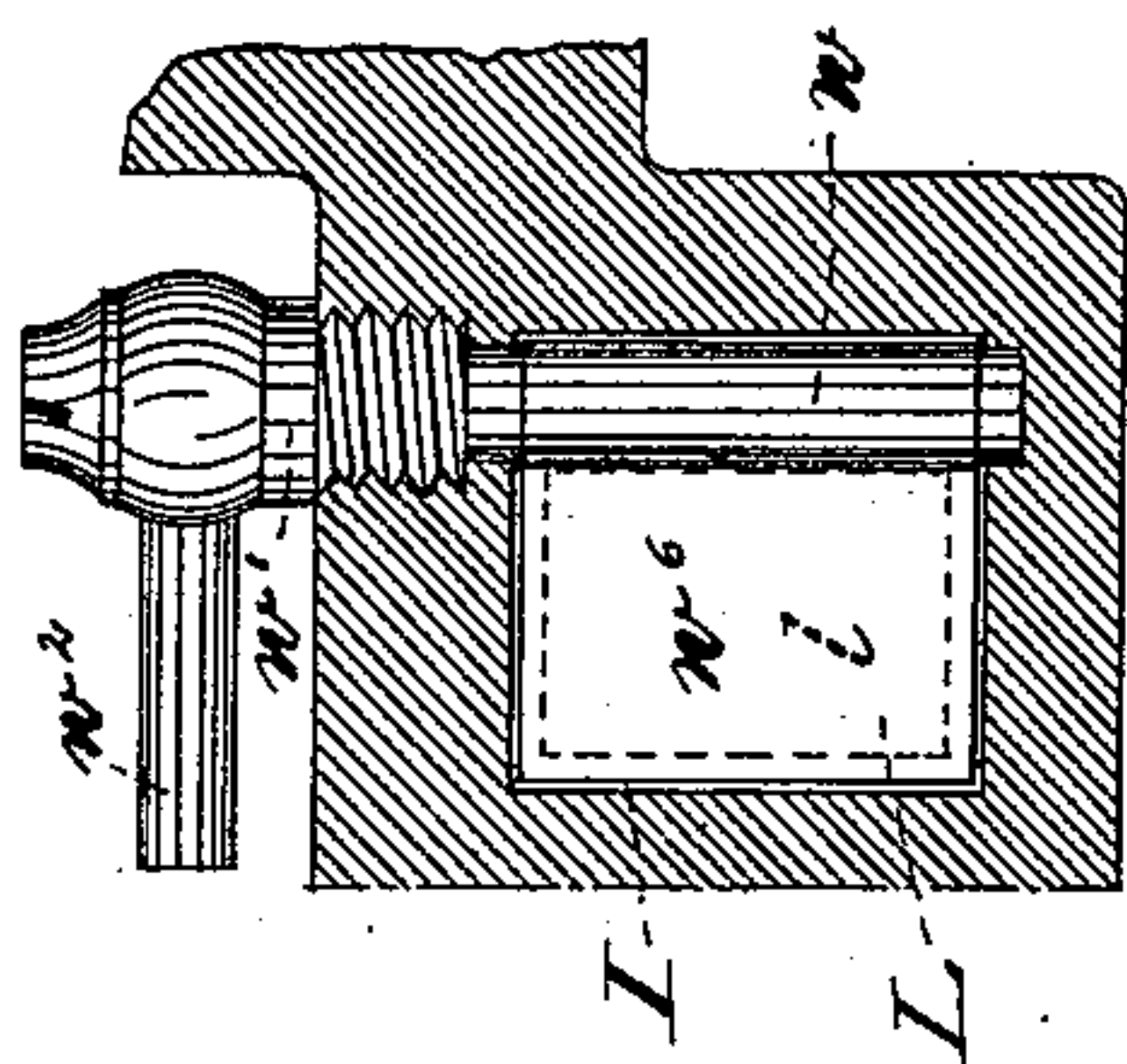


Fig. 8.

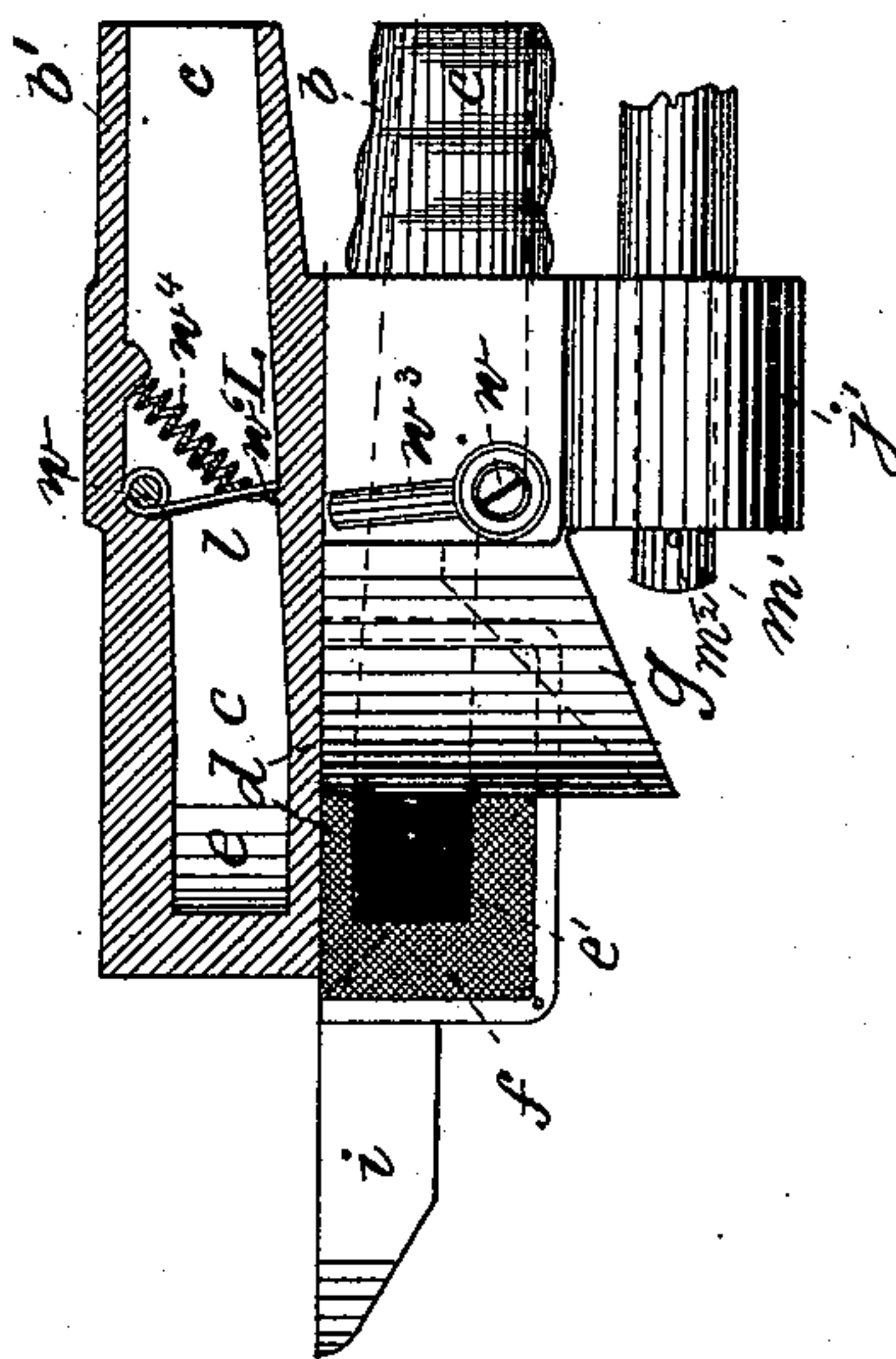


Fig. 4.

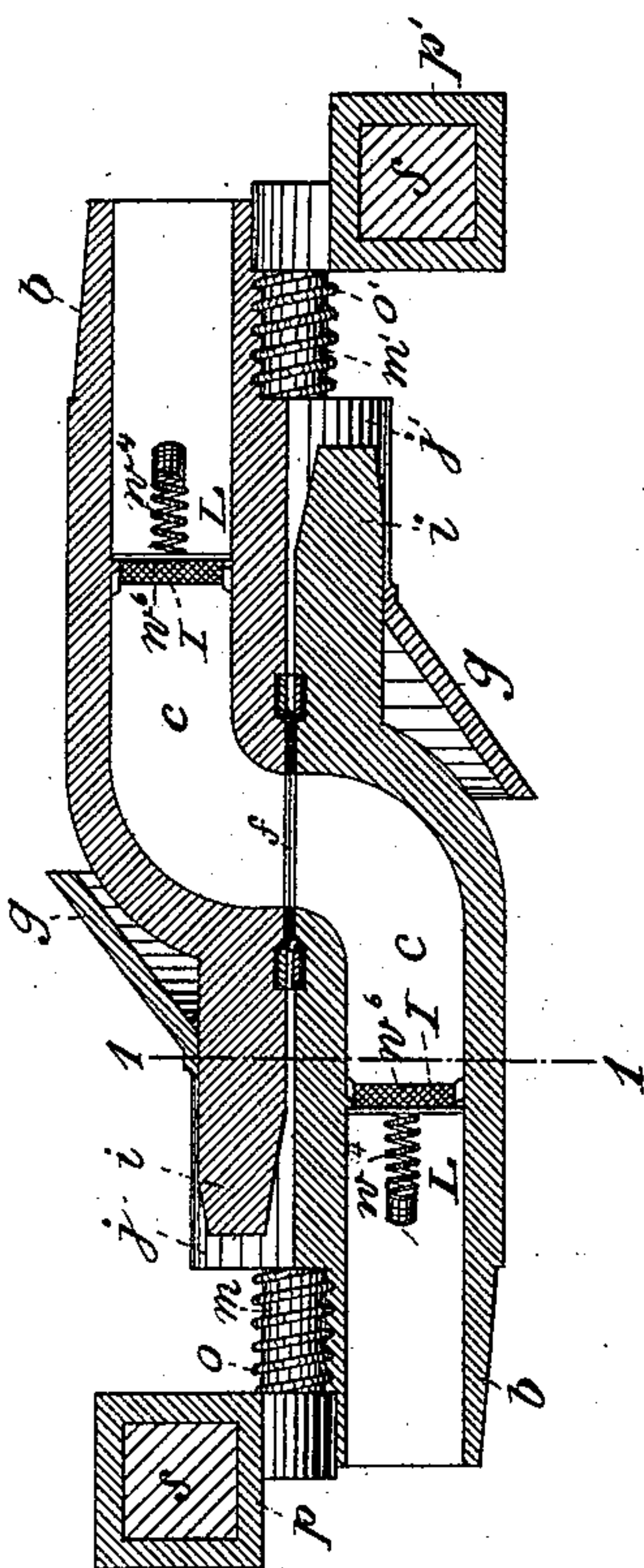


Fig. 6.

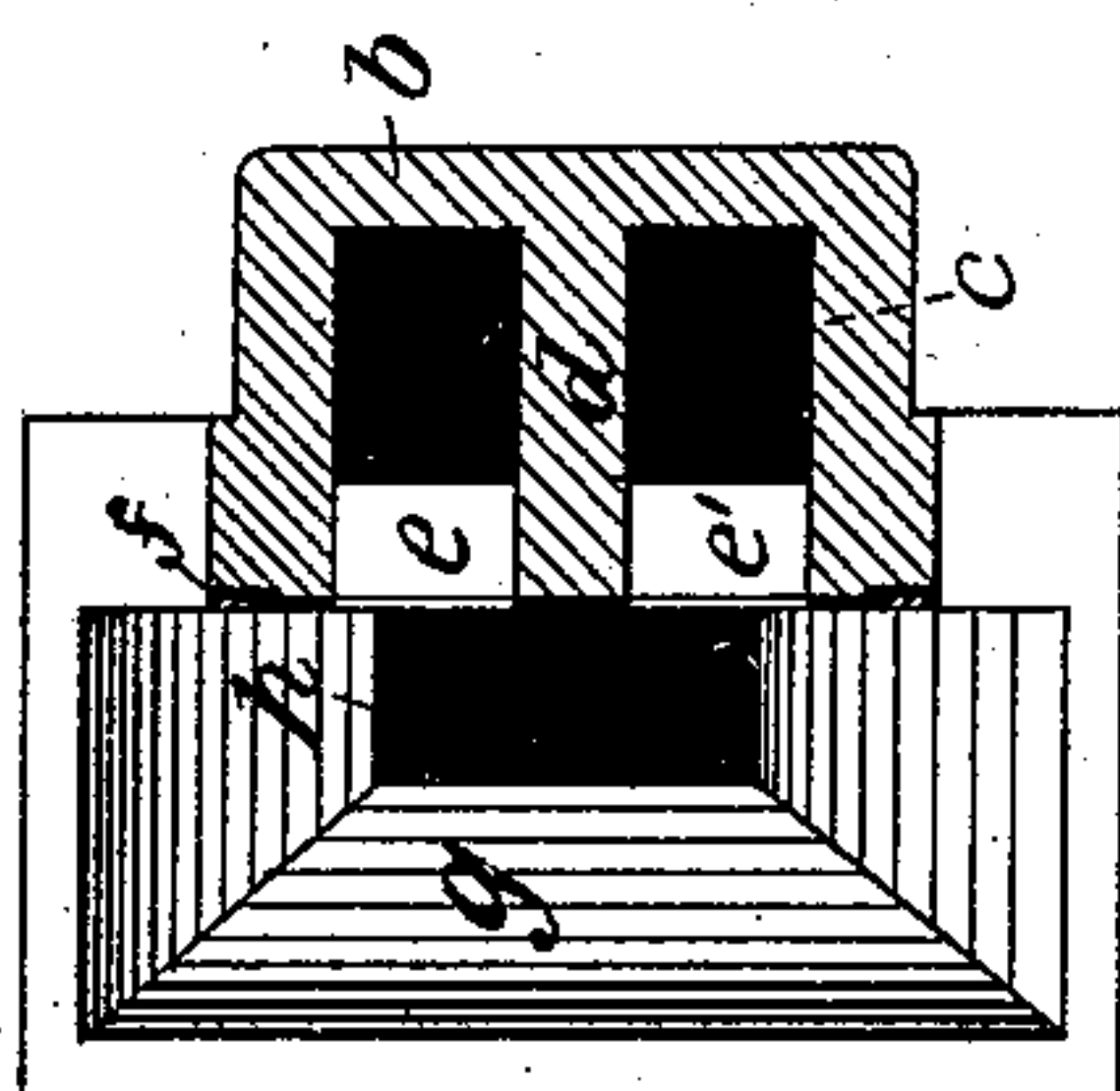
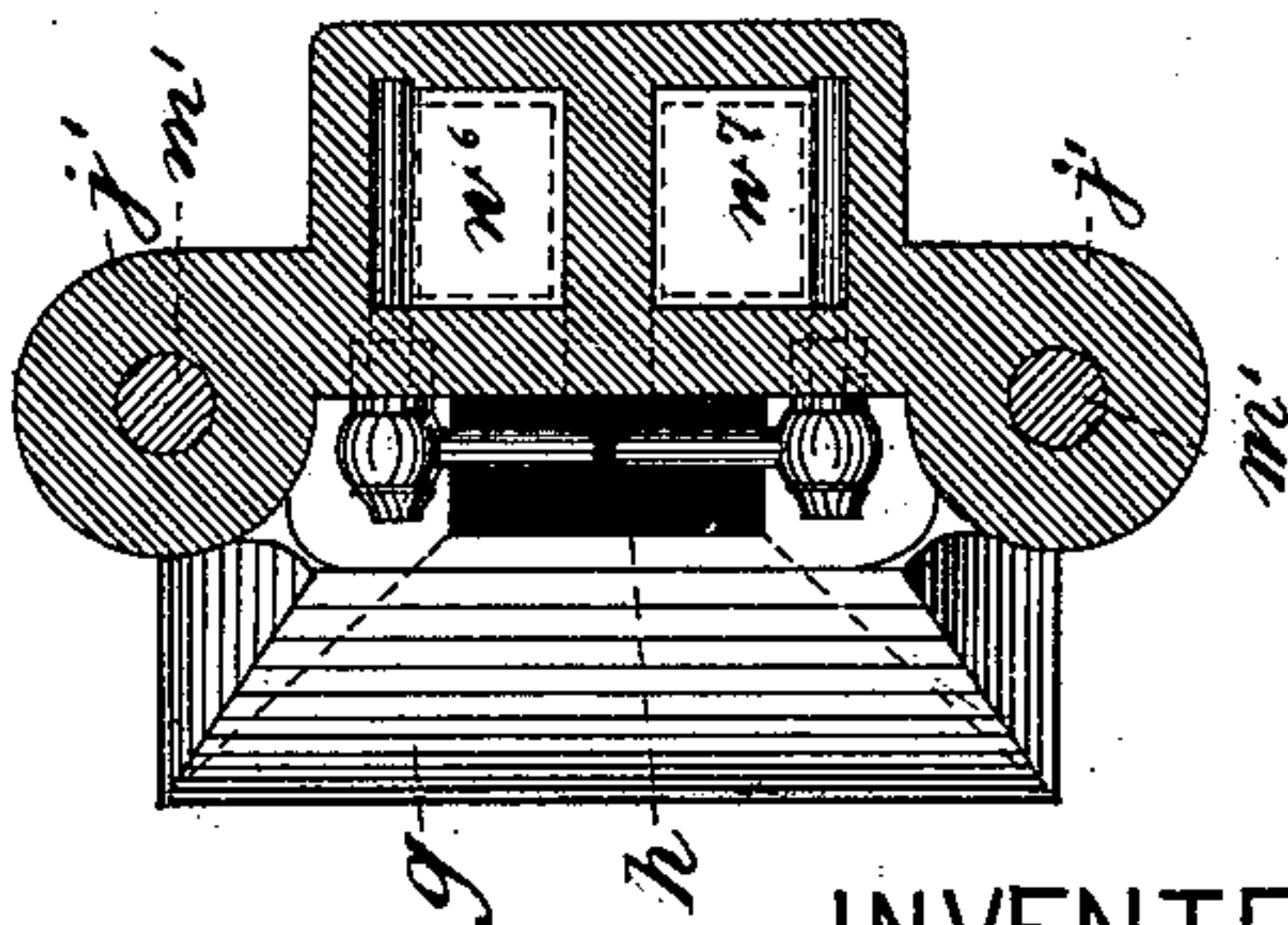


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN T. MELSON, OF LAUREL, DELAWARE, ASSIGNOR OF TWO-THIRDS
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CARRIGAN, ALL OF PHILADELPHIA, PENNSYLVANIA.

AUTOMATIC AIR-BRAKE COUPLER.

SPECIFICATION forming part of Letters Patent No. 352,927, dated November 23, 1886.

Application filed August 14, 1886. Serial No. 210,946. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. MELSON, of Laurel, in the county of Sussex and State of Delaware, have invented certain new and useful Improvements in Automatic Air-Brake Couplers, of which improvements the following is a specification.

My invention relates to apparatus secured to the platforms of railroad-cars in any suitable manner, or preferably to car-couplers, and operating simultaneously therewith for automatically connecting the air-brake mechanism of one railroad-car with another, and thereby dispensing entirely with the ordinary well-known hand mode of coupling the cars by means of short lengths of hose provided with interlocking couplings.

It is well understood by railroad-engineers that the air-brakes of railway-cars have heretofore been operated by an auxiliary steam-engine connected with the locomotive, and which, by means of an air-pump, compressed the air into a main reservoir having in some instances single pipe-connections leading therefrom, but now more generally provided with double pipe-connections leading from the main reservoir to the brake-cylinder located beneath each car and provided with suitable intermediate connections, so that either or both pipes might be in use at one time for conveying the compressed air, or in case of breakage at any point arranged so that communication with the broken point could be automatically closed and the remaining pipe-connection allowed to perform its specific function of supplying compressed air to operate a piston, the stem of which either directly or indirectly actuated any well-known construction of brake-levers, the connections between the respective cars from the locomotive to the end of the train being established by means of short lengths of hose attached to pipes leading from the brake-cylinder of each car, the opposite ends being provided with suitable interlocking couplings, permitting of the coupling and uncoupling of the cars by hand. This, however, as is well understood, involved not only the consumption of considerable time, but, moreover, placed persons having charge of such work in dangerous positions, resulting very often in the loss of both life and limb, and hence such sys-

tem of coupling the air-brake mechanism between cars has been open to objectionable and dangerous contingencies, which it is eminently desirable should be obviated; to which ends my invention consists in securing in any suitable manner to the platforms of railroad-cars, or preferably to the draw-heads and necks of any well-known construction of car-couplers, automatically-operating devices which couple and uncouple simultaneously with the car-couplers, and automatically establish direct communication of the passages for the conduction of the air from one car to another, through the action of valves provided in the respective sections of the coupling device, whereby the application of the air to the brake mechanism of the respective cars may be readily applied and regulated by the engineer in charge of the locomotive. The sections of the coupling device are so constructed that in case of disconnection of one car from another the air will be automatically shut off by the closing of the valve or valves in the section uncoupled.

This automatic air-brake-coupling device consists, preferably, of two sections, designated as "right" and "left" hand members, which are provided with double port-holes and chambers, divided by partition-walls having entrance and exit tubes for the passage of the air therethrough to the brake mechanism beneath the respective cars, for actuating the brakes. Cast with each section of the coupling device is a deflecting-hood, the interior surface of which, by preference, is beveled off and provided at the top thereof with an oblong opening, into which the tongue of each section is inserted. The tongues of the right and left hand sections, respectively, fit snugly into the oblong openings in the hoods, firmly holding these sections together. Surrounding the exterior surface of the port-hole openings of each section leading into the respective chambers is a packing of rubber fiber or other suitable material, forming and maintaining airtight seats between the respective sections of the coupling device while coupled together. The chambers in each section, separated from one another by a partition-wall, taper from the front somewhat to a central four-sided apartment, having front and rear apertures therein for the passage of the air therethrough.

Directly over these apartments, from the outside thereof, are drilled into them annular openings, in which are inserted rods carrying threaded sleeves. These sleeves firmly hold the rods in position, and permit them, provided at their upper portions with arms secured thereto in any suitable manner, to be moved backward and forward in a manner to be presently explained. The lower portions of these rods extend to or near the floors of these apartments, and to which doors are secured having on one side thereof rubber fiber or other similar material, for a purpose to be presently described. These doors open a sufficient distance to permit of the passage of the air through the sections from one car to another when the sections are coupled together, and when uncoupled the doors in the section of the car uncoupled will be closed against the front aperture of the apartments, and the packing around the front sides of the doors, by the pressure of the air against the backs of the doors, will effectually prevent the escape of the air. The respective sections above and below the hoods have cast thereto brackets, through which keyed arms are inserted having spiral springs coiled around them, or, instead thereof, rubber fiber, and the opposite ends secured to projections on an adjustable sleeve. Through this adjustable sleeve the vertical U-shaped rod fitting the draw-head of the car-coupler is attached, or it may be secured directly to the draw-head or to the platform of the car by the drilling of a hole there-through and securing the same thereto by means of nuts. Above and below the adjustable sleeve to the vertical rod are attached supporting-arms, to one of which an adjustable eye or ring for encircling the neck of the draw-head is riveted.

The construction, arrangement, and operation of my invention will be hereinafter more particularly described by reference to the accompanying drawings, wherein I have represented a form of apparatus which I have found practically efficient, embodying the essential features thereof.

Figure 1 is a perspective view of my automatic air-brake-coupling device, showing the right and left members thereof coupled together in an operative position, with the arms which actuate the valves in a position for admitting of the passage of the air through the sections, and also showing the mechanism and manner of attaching the same to the draw-head and neck of any well-known construction of car-couplers. Fig. 2 is a front elevation of the right and left hand sections of the automatic air-brake coupler disconnected, showing the position of the valve-arms when the sections are uncoupled, and also a modified form of the vertical supporting-rod for connecting the apparatus to the car-couplers or the platforms of the cars. Fig. 3 is a top or plan view of the respective sections of the automatic air-brake-coupling apparatus. Fig. 4 is a horizontal section of the respective sec-

tions of the coupler, on the line xx of Fig. 2. Figs. 5 and 6 are respectively vertical sections on the lines yy and zz of Fig. 2, showing in the former view the automatically-operating valve or valves closed. Fig. 7 is a transverse section on the line II of Fig. 4, showing in detail the valve and mechanism connected therewith for opening and closing the air-passages through each section. Fig. 8 is a longitudinal view, partly in elevation and partly in section, of one section of the coupling device, showing the valves and lever-arms for opening and the retracting-spring for returning the valves and lever-arms to their normal position; and Fig. 9 is an end elevation of the eye or ring for encircling the neck of an ordinary car-coupler, the vertical arm extending through the sleeve threaded at its upper end, with a nut thereon, and the adjustable sleeve for supporting one section of the coupling device.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and mode of operation, with special reference to the accompanying drawings.

This automatic air-brake coupler consists of two sections, $a a'$, designated as "right" and "left" hand members, made of malleable or wrought iron, or any other suitable metal, each section of which is provided with two tubes or pipes, $b b'$, cast therewith and in direct communication with the air-chambers $c c'$, divided by a partition-wall, d . At the other extremity of these chambers $c c'$ are deep port-holes $e e'$, around the outer surface of which port-holes rubber fiber f or other similar material is secured, forming seats, whereby an air-tight connection may be established and maintained while the respective sections $a a'$ are coupled together.

The chambers $c c'$ taper from the front extremity of each section to central apartments, $L L'$, having front and rear sides and apertures, $l l'$, therein, for the passage of the air therethrough. Around the front of the doors in each section is secured rubber fiber or other similar material, I , for the purpose of preventing the air from escaping when a section is uncoupled. Directly over these apartments $L L'$, from the outside thereof, are drilled through the metal into them holes, into which are inserted rods or spindles w , carrying threaded sleeves w' , these threaded sleeves w' firmly holding the rods $w w$ in position. To the upper portion of the rods are secured lever-arms $w^2 w^3$, which are free to move backward and forward within the sleeves w' .

Riveted to the coupling, as shown in Figs. 2 and 8, are retracting-springs w^4 , which are attached to the backs of the doors in each section for returning them to their normal positions upon the disconnection of the coupler. To the lower portion of the rods $w w$ are secured in any suitable manner doors $w^6 w^7$, which open automatically by the action of the tongue i of each section-coupling, and close

by the pressure of the air against the backs of the doors, aided by the retracting-springs w^4 , so that when closed against the rubber-fiber facing on the front of the doors air-tight joints will be formed and the escape of air absolutely prevented.

To each section of the coupler is cast or otherwise secured a hood, g , having, preferably, three deflecting exterior sides and a corresponding number of beveled-off interior sides, provided in the top thereof with an oblong opening, h , for the reception and passage therethrough of the tongue i , provided upon the front extremity of each section. Above and beyond the hood g are brackets or sockets $j j'$, for the reception of the arms $m m'$, provided at one end with openings m^2 , for the reception of keys, and rigidly secured at their opposite ends to the sleeves p . Around these arms $m m'$ are coiled spiral springs $o o'$; or, instead thereof, rubber fiber $q q'$ may be used, as shown in Figs. 1 and 2, and through the openings m^2 of the arms $m m'$ are inserted keys $r r'$. This sleeve p supports each section of the coupler by means of the arms $m m'$, held in the brackets or sockets $j j'$ by the keys $r r'$. The sleeves p of the respective sections are so arranged and adjusted that the different lateral and longitudinal movements of the car-couplers caused by sudden jars of the train, or otherwise, will not in the least affect the air-tight connection of the two sections while connected. Through each sleeve p is passed a U-shaped supporting-arm, s , as shown in Fig. 1, having keys $s' s^2$ cast upon the upper ends thereof for holding the coupler securely to the draw-head; or, instead of the U-shaped arm, an arm, s^3 , as shown in Figs. 2 and 9, may be used having its upper end threaded for attachment directly to the draw-head or to the platform of the cars, and secured thereto by means of a nut, s^4 . Below the sleeve p is a supporting bracket-arm, t , fitting snugly around the arm s , and supported thereon by a pin, t' , passing through a slot therein, and the opposite end of this bracket-arm t has riveted to it an adjustable eye or ring, u , for encircling the neck of the draw-head. Above the sleeve p and around the arm s fits snugly a secondary supporting-arm, v , the opposite end of which is substantially in form that of the figure 2, and this arm fits snugly into a recess in the bottom of the adjustable eye or ring.

The mode of operation of the apparatus may be briefly explained as follows: The two sections are secured to the respective car-couplers or to the platform of the cars for operation, and the pipes $b b'$ connected, by means of short lengths of hose b^3 , with the brake-operating mechanism beneath the cars in the well-understood manner, and the cars then coupled together, simultaneously coupling the two sections of the air-coupling apparatus operating the lever-arms, as shown in Fig. 1, which opens the doors in the respective apartments of the sections sufficiently to allow of the free passage

of the air through them. The air is then turned on by the engineer from the locomotive and regulated by him, as usual, and hence it will be observed that air-tight connections between the respective cars will be established and maintained until the car-couplings are disconnected, which will simultaneously release the air-brake couplers; but, however, the escape of air from the remaining cars of the train will not in the least be affected by such disconnection, because the release of the coupler automatically closes the valves of the disconnected end section of the coupler.

While I have described the best means known to me at the present time for accomplishing my object, yet, nevertheless, I desire it to be distinctly understood that I do not wish to limit myself to the precise mechanism hereinabove described, as it is obvious that the same may be altered without departing from the spirit of my invention, which is to automatically couple the air-brake mechanism of one railroad-car with another, and in so doing regulate the passage of the air through the respective sections of the coupler automatically and close the valves therein in a similar manner when uncoupled, whereby the escape of air may be entirely prevented.

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

1. An automatic air-brake coupler consisting of two sections provided with entrance and exit tubes in communication with chambers in said sections separated from one another by partition-walls, said chambers opening into central apartments, and valve-doors attached to vertical rods carrying lever-arms playing freely within threaded sleeves secured to said sections, in combination with brackets and arms keyed to said brackets, carrying spiral springs, sleeves secured to said arms, and vertical supporting-arms passing through said sleeves, substantially as and for the purposes set forth.

2. The combination of an automatic air-brake coupler consisting of two sections provided with entrance and exit tubes, chambers in communication therewith, central apartments in the respective sections, valve-doors therein attached to vertical rods carrying lever-arms, retracting-springs secured in said chambers and to the valve-doors, and means, as described, for attaching the respective sections to the cars, substantially as and for the purposes set forth.

3. An automatic air-brake coupler consisting of two sections having ports and chambers therein and entrance and exit pipes in direct communication therewith, in combination with adjustable sleeves supported upon U-shaped arms, substantially as and for the purposes set forth.

4. The combination, with an automatic air-brake coupler, of a vertical supporting-arm, a bracket attached thereto and supporting an adjustable eye or ring, and a secondary arm

supported upon said vertical arm and held in a recess in said adjustable ring or eye, substantially as and for the purposes set forth.

5 5. The combination of an automatic air-brake coupler consisting of the sections *a a'*, sockets *j j'*, arms *m m'*, springs *o o'*, sleeves *p*, vertical arms *s*, brackets *t*, secondary arms *v*, and adjustable ring *u*, substantially as and for the purposes set forth.

10 6. The combination, with automatic air-brake-coupling apparatus, of vertical supporting-arms, sleeves supported thereon, brackets secured to said arms, and eyes or rings attached to said brackets, substantially as and
15 for the purposes described.

20 7. An automatic air-brake coupler consisting of two sections provided with port-openings, the surrounding surfaces of which are covered with rubber fiber or similar material, in combination with central apartments in the sections divided by partition-walls and entrance and exit tapering tubes connected therewith, brackets, arms cast to sleeves carrying helicoidal springs keyed to said brackets, ver-

tical supporting-arms to which sleeves and 25 brackets are secured, and adjustable eyes or rings attached to said brackets, substantially as and for the purposes described.

8. Automatic air-brake-coupling apparatus, substantially as described, provided with di- 30 vided central apartments in the respective sections thereof, in combination with valve-doors therein provided with suitable packing on one of the sides thereof and retracting-springs se- 35 cured within the sections and to the opposite sides of the doors, and vertical rods supported in threaded sleeves secured to the sections carrying lever-arms, and operating automatically by the coupling and uncoupling of the sections, substantially as and for the purposes set forth. 40

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN T. MELSON.

Witnesses:

JOSEPH T. HASTING,
G. A. HITCHENS.