(No Model.) 2 Sheets—Sheet 1.

J. B. THOMAS.

AUTOMATIC COMBINED CAR AND AIR BRAKE COUPLING.

No. 603,824. Patented May 10, 1898.

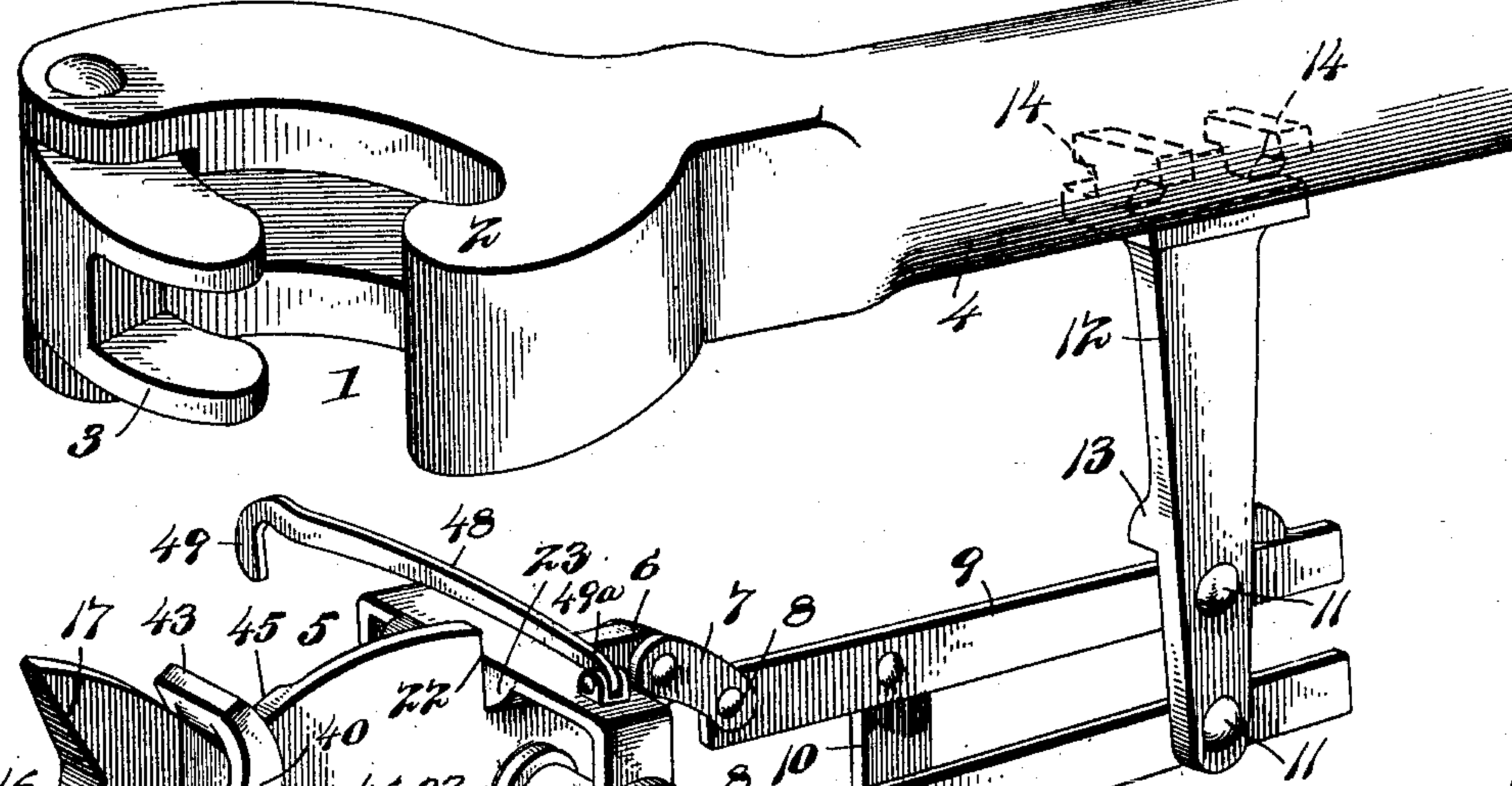


Fig. 1.

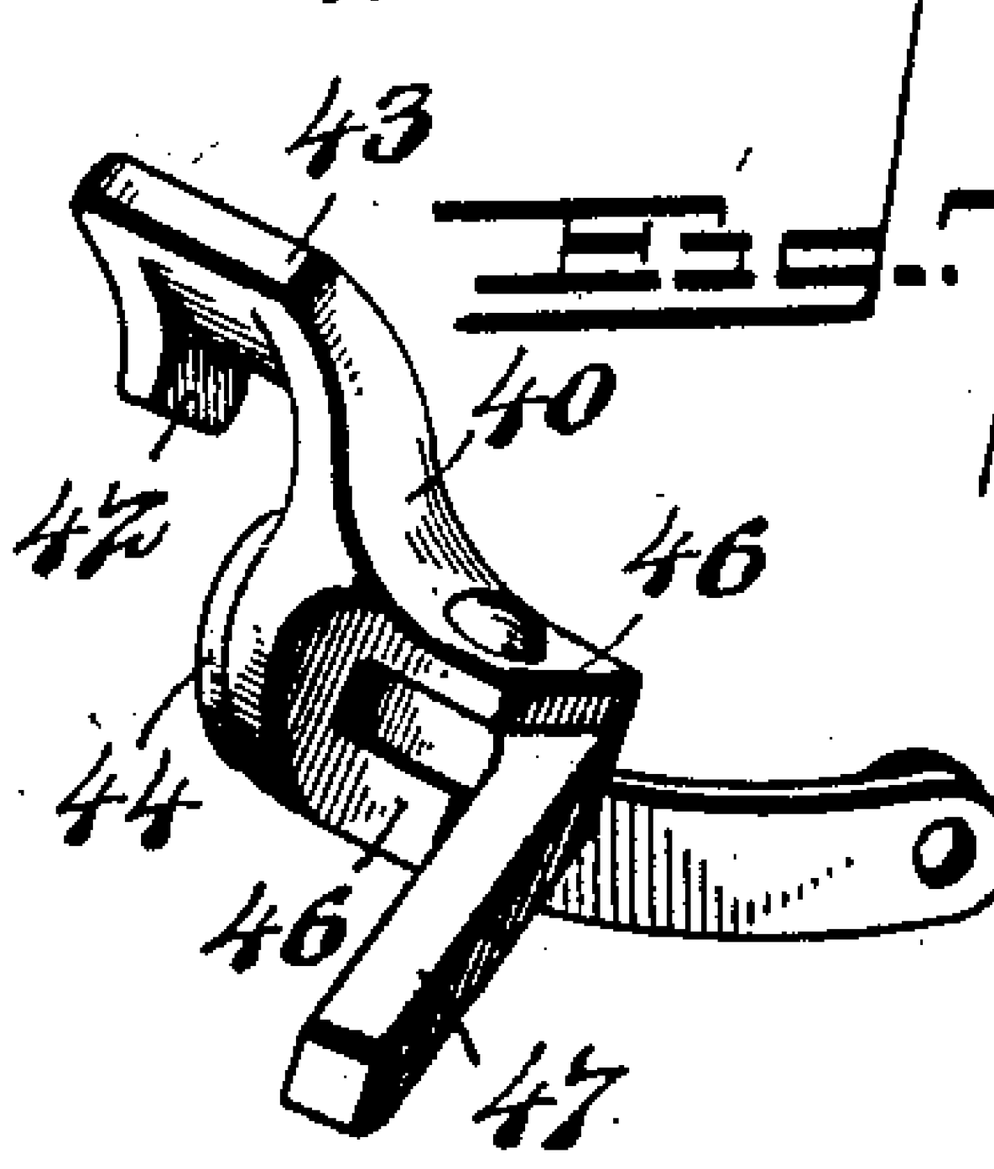
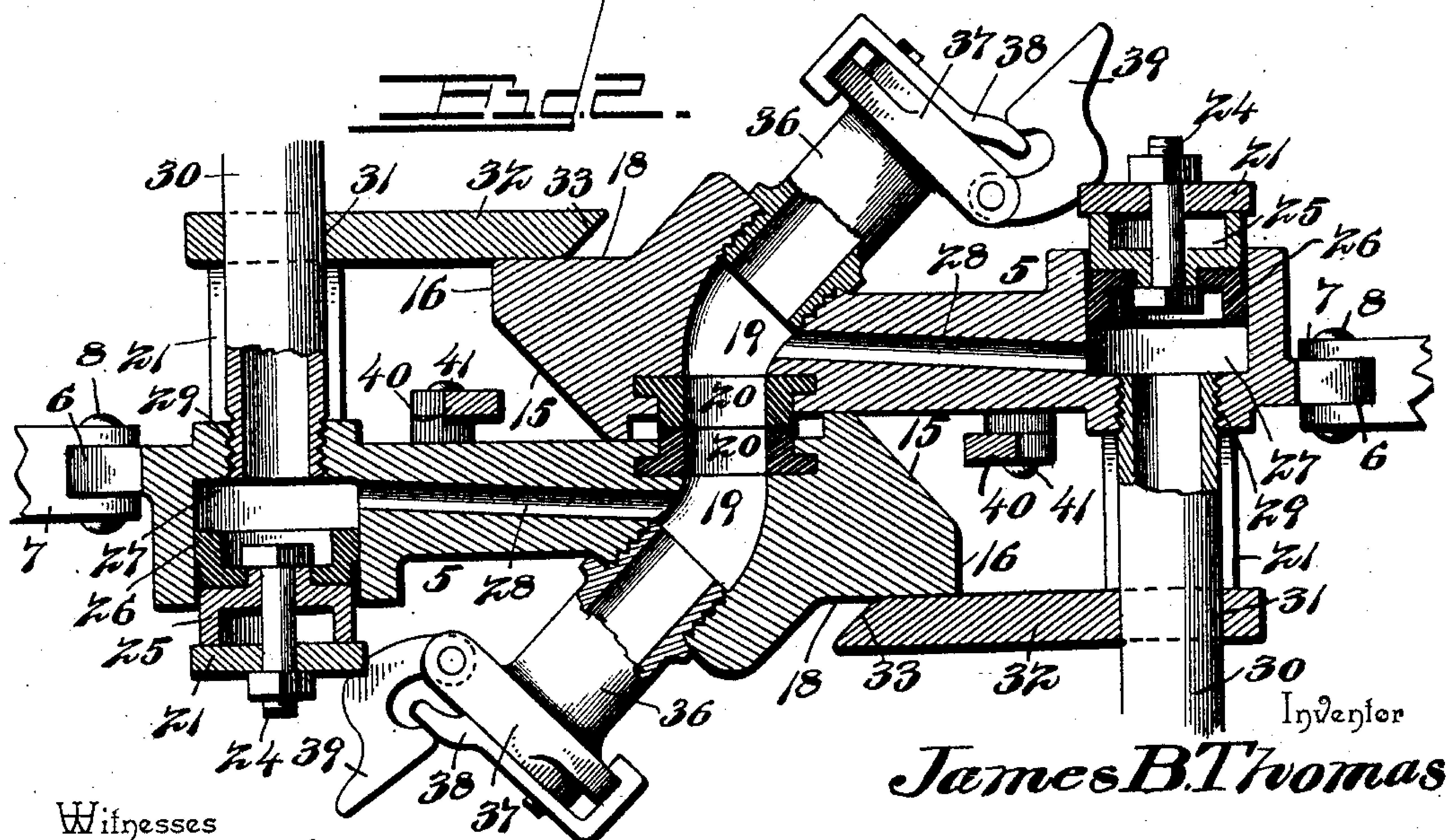


Fig. 7.

Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

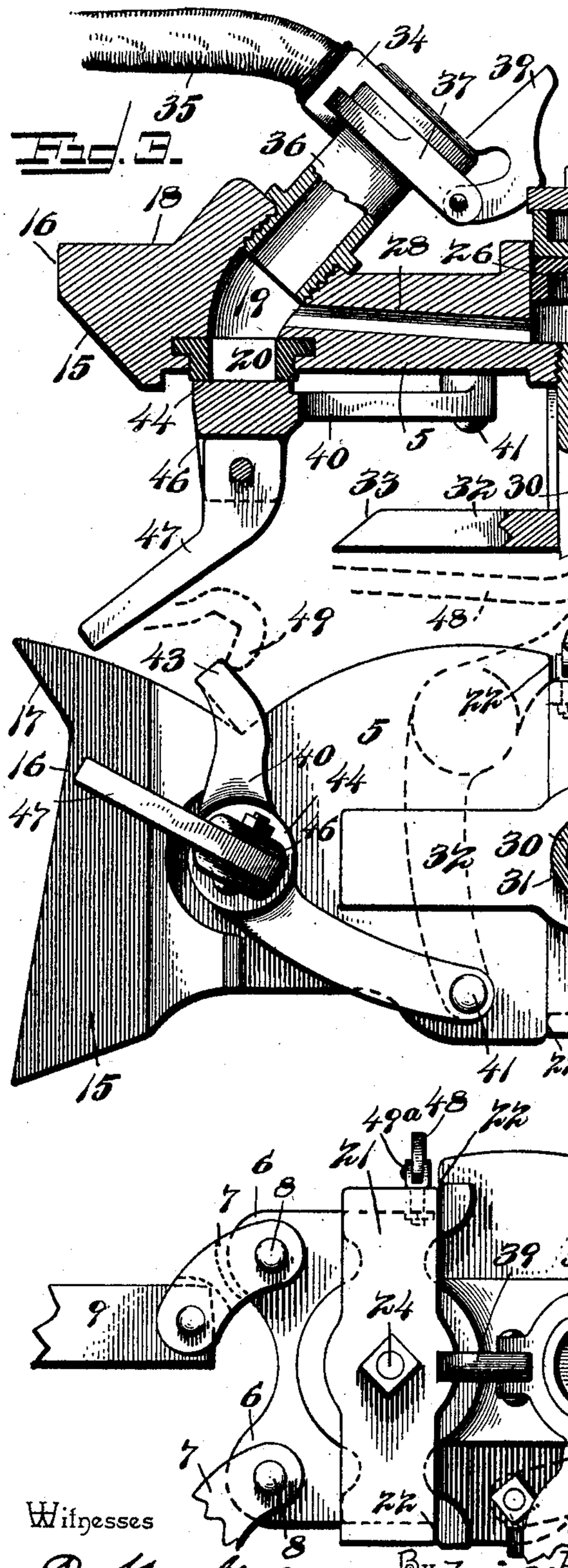


Fig. 4.

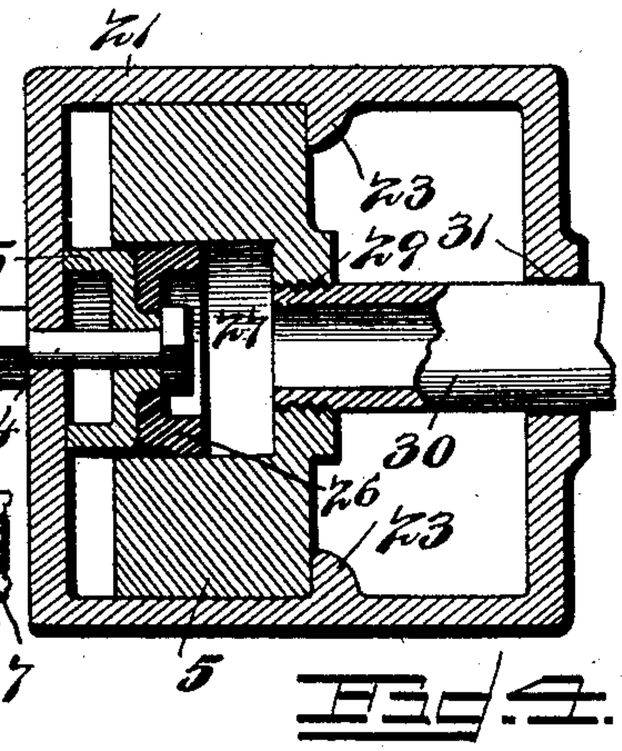


Fig. 5.

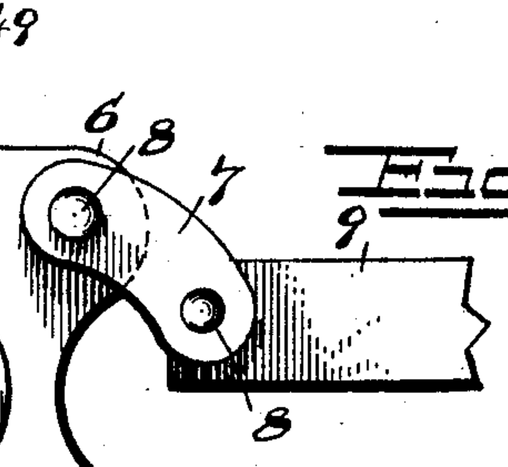
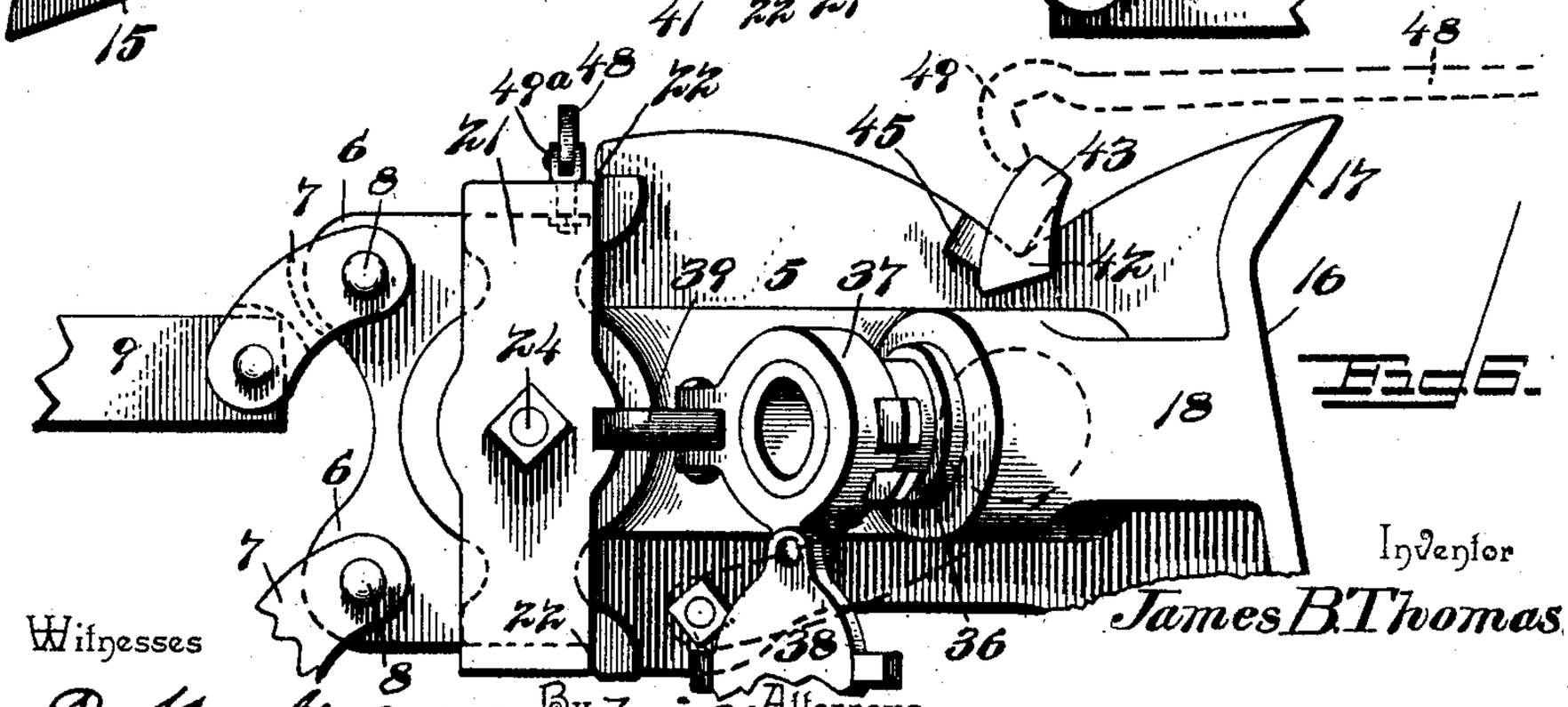


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES BRYANT THOMAS, OF ST. LOUIS, MISSOURI.

AUTOMATIC COMBINED CAR AND AIR-BRAKE COUPLING.

SPECIFICATION forming part of Letters Patent No. 603,824, dated May 10, 1898.

Application filed May 13, 1897. Serial No. 636,391. (No model.)

To all whom it may concern:

Be it known that I, JAMES BRYANT THOMAS, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a new and useful Automatic Combined Car and Air-Brake Coupling, of which the following is a specification.

This invention relates to automatic combined car and air-brake couplings; and it has for its general object to effect certain improvements in the air-brake coupling heads or shoes and the different attachments thereof, whereby the same shall be rendered more positive and efficient in operation.

The invention primarily embraces a general improvement of the combination and construction of parts embodied in my application Serial No. 622,346, and specifically contemplates improvements upon the constructions disclosed in my former patents, Nos. 581,890 and 581,891.

To this end the invention provides a new and useful form of self-adjusting hanging device or bracket for the air-brake coupling heads or shoes, whereby such heads will positively interlock or couple irrespective of the variance in height between two cars.

A further object of the present invention is to provide a new and useful form of clamp for the companion head or shoe which is used in connection with the pressure-adjusted connection set forth in one of the patents referred to, and another improvement contemplated by the present invention is in the construction and operation of the swinging or pivotal dust-shield arm, which is employed in connection with the orifice of the inner coupling-face of the head or shoe.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of an automatic combined car and air-brake coupling embodying the improvements contemplated by the present invention. Fig. 2 is a horizontal longitudinal sectional view of a pair of companion air-brake coupling heads or shoes constructed in accordance with this invention and shown coupled together. Fig. 3 is a similar view of one of the air-brake coupling heads or shoes shown connected with a Westinghouse or other unlike brake hose-coupling. Fig. 4 is a cross-sectional view on the line 4 4 of Fig. 3, showing the form and mounting of the laterally-movable pressure-adjusted clamp for the companion head or shoe. Fig. 5 is an elevation of the inner coupling-face of one of the air-brake coupling heads or shoes, showing the two positions occupied by the swinging pivotal dust-shield arm, which carries the offstanding angled guide or guard tongue for the companion head or shoe. Fig. 6 is an elevation of the outer side of one of the air-brake coupling heads or shoes. Fig. 7 is a detail in perspective of the dust-shield arm for the orifice in the inner coupling-face of the head or shoe.

Referring to the accompanying drawings, the numeral 1 designates an ordinary automatic car-coupling head having the usual guard-arm 2 and knuckle 3 and arranged at the front end of the draw-bar 4.

The present invention contemplates for use in connection with the car coupling-head 1 the automatic air-brake coupling head or shoe 5, arranged below and in vertical alinement with the car coupling-head, said automatic air-brake coupling head or shoe 5 being adapted to automatically couple and uncouple with a companion head or shoe at the same time the companion car coupling heads or shoes couple and uncouple.

To provide for permitting the air-brake coupling head or shoe to have the necessary up-and-down and back-and-forth movement, an improved form of self-adjusting hanging device or bracket is employed in connection therewith, and to provide for the proper connection between the coupling head or shoe and said hanging device or bracket the shoe is provided at its inner or rear end with a pair of spaced perforated ears 6, which are bolted or otherwise pivotally secured in the outer bifurcated end of the pivotal segmental link-blocks 7, which are bifurcated at both their outer and inner ends, the inner bifurcated ends of the upper and lower segmental link-blocks 7 being pivotally bolted or secured at 8 to the outer extremities of a pair of spaced upper and lower parallel bracket-arms 9. The spaced parallel bracket-arms 9

are pivotally connected together near their forward ends by an intermediate link-plate 10, which insures the movement of said bracket-arms in unison and maintains the parallelism thereof, thereby preventing the air-brake coupling head or shoe from careening, so that such head or shoe will always preserve a horizontal position beneath the car coupling-head ready for coupling with the companion head or shoe. The end portions of the parallel pivotal bracket-arms 9, opposite their connection with the spaced link-blocks 7, are pivoted, as at 11, to the pendent hanger-post 12, which post is provided at one side, immediately above the uppermost bracket-arm 9, with a lateral stop-lug projection 13, against which the inner end of the uppermost arm 9 normally bears, so as to prevent the coupling head or shoe from dropping below its proper coupling position. The pendent hanger-post 12 is arranged in a vertical plane and is provided at its upper end with a pair of T-shaped locking-heads 14, adapted to be secured in correspondingly-shaped recesses or sockets formed in the upper side of the draw-bar 4 of the car-coupling.

By reason of the specific form of hanging device for the air-brake coupling head or shoe it will be obvious that such shoe can readily adjust itself upward to engage or couple with a companion head or shoe in a higher plane, while at the same time the pivotal link-blocks 7 permit of the necessary longitudinal play of the head or shoe to relieve the same from the strain or jar incident to coupling.

The automatic air-brake coupling head or shoe 5 is provided at its forward end with an inner beveled side portion 15, which facilitates the head or shoe sliding into engagement with the companion head or shoe, and the extreme front edge of the head or shoe is formed with an obtuse-angled indentation 16, which produces a beveled bill 17 at the front upper corner of the head or shoe, and the function of which will be hereinafter more particularly referred to. On its outer face, directly opposite the inner front beveled side portion 15, the head or shoe is further provided with a solid surface 18, which is engaged by the clamp of the companion head or shoe in the manner to be presently explained, and in addition to the structural features referred to the head or shoe is formed intermediate its ends with a transverse fluid-passage 19, opening at its inner end into an orifice formed in the inner coupling-face of the head or shoe, and within which orifice is fitted an ordinary gasket 20, which projects beyond the plane of the inner coupling-face of the head or shoe, so as to form an air-tight joint with the corresponding gasket of the companion head or shoe in the usual way.

To provide for clamping the air-brake coupling head or shoe 5 to a companion head or shoe, there is employed a laterally-movable rigid clamp-yoke 21, which loosely embraces the rear end portion of the head or shoe and has a sliding movement on the upper and lower edges of the head or shoe at one side of the guide-shoulders 22, formed at said upper and lower edges of the head or shoe. The laterally-movable clamp-yoke 21 is substantially rectangular in form and is provided on the inner faces of its upper and lower side portions intermediate the ends of said side portions with the stop-lugs 23, arranged to work against the inner side of the coupling head or shoe to limit the movement of the yoke in one direction, and the outer side portion of the rectangular yoke 21 has bolted centrally thereto, by means of the bolt 24, the movable piston 25, carrying a packing-washer 26 and working in the circular air-chamber 27, formed in the outer side of the coupling head or shoe and communicating with one end of a longitudinally-arranged air-port 28, formed within the coupling head or shoe and also communicating with the transverse fluid-passage 6 through the head or shoe. The air-chamber 27 is also in direct communication with the train-pipe orifice 29, formed in the inner side of the head or shoe near the rear end thereof and having fitted therein the usual train-pipe 30, which train-pipe is designed to occupy its usual position under the body of the car and extends through a pipe-opening 31, formed centrally in the inner side portion of the rectangular yoke 21. The said rectangular yoke 21 has projected from its vertically-disposed inner side portion a forwardly-extending rigid clamping-arm 32, having a beveled front end 33 and adapted to be drawn into clamping engagement with the solid clamping-surface 18 of a companion head or shoe. The action of the piston 25 in connection with the clamp 21 is the same as the corresponding construction disclosed in Patent No. 581,891 in connection with the clamping-spring. It is understood that when the cars are uncoupled the clamp 21 will be free to move in a lateral direction and spread away sufficiently from the inner coupling-face of the head or shoe, so as to engage with the companion head or shoe, and when the heads or shoes are coupled together the air will exert an outward pressure against the pistons of the coupled heads or shoes, thereby drawing the clamping-arms of the clamp-yokes inward, so as to tightly clamp the coupling-faces of the opposing heads or shoes together, as clearly illustrated in Fig. 2 of the drawings.

To adapt the air-brake coupling head or shoe for use in connection with an unlike air-brake coupling 34—such, for instance, as the Westinghouse air-brake hose-coupling, which is fitted to a brake hose-pipe 35—a short off-standing interchange coupling-nipple 36 is employed. This coupling-nipple is fitted at its inner end in the orifice at the outer end of the fluid-passage 19 and is provided at its outer end with an annular coupling head or ring 37, constructed similar to the corresponding part disclosed in my pending application Serial

No. 622,346, and having fitted thereto a pivotal dust-cap 38, secured in its closed position by means of the locking-dog 39, which dog also serves to clamp the coupling 34 onto the head or ring 37. It will be understood in this connection that when the unlike air-brake hose or similar coupling 34 is coupled to the head 37 the cap 38 is lowered out of the way, and vice versa.

To provide for the total exclusion of dust from the interior of the air-brake coupling head or shoe when not in use a swinging dust-shield arm 40 is employed in connection with the orifice of the inner coupling-face of the head or shoe. This swinging dust-shield arm 40 acts as a cut-off valve and is pivoted at its lower end, as at 41, to the inner side of the coupling head or shoe, at the lower edge thereof, and at its upper end, opposite the pivot thereof, the dust-shield arm is provided with a laterally-disposed hook 42, having a beveled upper side 43 and adapted to straddle and engage with the top edge of the coupling head or shoe. At a point intermediate its ends the said pivotal swinging dust-shield arm 40 is provided with a cap projection 44, adapted to fit tight against the gasket 20 to make an air-tight joint therewith, and to insure the firm contact of the projection 44 with the gasket 20 the coupling head or shoe 5 is formed at one side of its upper edge with a wedge projection 45, with which the hook 42 engages when the arm 40 is in its normal closed position.

The swinging pivotal dust-shield arm 40 is provided intermediate of its ends at its outer side with a pair of lugs 46, between which is secured the inner end of an obtuse-angled offstanding guide or guard tongue 47, lying opposite and beyond the front beveled side portion 15 of the head or shoe and adapted to be engaged by the front edge of the companion head or shoe. Normally the dust-shield arm 40 occupies the position illustrated in Fig. 1, and thereby disposes the guide or guard tongue 47 in the position just described, so that when the front edge of the companion head or shoe strikes the tongue 47 the latter serves to deflect the heads or shoes into proper coupling engagement, while at the same time the arm 40 is thrown back to the position indicated in Fig. 5, so as to uncover the coupling-orifice of the head or shoe.

When it is desired that the shield-arm 40 be thrown forward to its normal position, so as to cover the coupling-orifice when the cars are uncoupled, there may be employed an adjusting-hook 48, swiveled at one end, as at 49[a], to the upper side of the clamp-yoke 21 and provided at its free end with a beveled beak or nose 49, engaging with the beveled upper side 43 of the hook 42. With the beak of the hook 48 engaged with the upper end of the shield-arm 40 said hook will draw or pull the shield-arm to its forward closed position when the cars are uncoupled, it being understood that the beak 49 automatically rides out of engagement with the beveled upper end 43 of the arm 40. The said hook 48 is adjusted manually to its operative position just before the uncoupling takes place.

With the shield 40 in its closed position and the dust-cap 38 closed it will be observed that dust is completely excluded from the interior of the coupling head or shoe, while at the same time the necessity of the usual cut-off cock in the train-pipe is dispensed with, as explained in the application herein referred to.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a coupling of the class described, the combination with the car coupling-head, and the air-brake coupling head or shoe arranged therebelow, of a pair of pivotally-supported bracket-arms, and movable link connections between the forward ends of said arms and the inner or rear end of the air-brake coupling head or shoe, substantially as set forth.

2. In a coupling of the class described, the combination with the car coupling-head and draw-bar, and the air-brake coupling head or shoe arranged therebelow, of a pendent hanger-post provided at its upper end with a pair of T-shaped locking-heads secured in correspondingly-shaped recesses or sockets formed in the draw-bar, a pair of connected swinging bracket-arms pivoted to said hanger-post, and pivotal link connections between the forward ends of said bracket-arms and the rear end of the air-brake coupling head or shoe, substantially as set forth.

3. In a coupling of the class described, the combination with the car coupling-head, of the air-brake coupling head or shoe arranged below the car coupling-head and provided at its rear end with a pair of perforated ears, a pair of connected pivotally-supported bracket-arms, and pivotal segmental link-blocks provided with bifurcated ends and pivotally connecting the forward ends of said arms with the ears of the air-brake coupling head or shoe, substantially as set forth.

4. In a coupling of the class described, an automatic air-brake coupling head or shoe provided at its forward end with an inner beveled side portion and at its front upper corner with a beveled bill, an offstanding guide or guard tongue normally lying opposite and beyond said front beveled side portion, and a clamp mounted on the head or shoe and adapted to engage with the outer side of a companion head or shoe, substantially as set forth.

5. In a coupling of the class described, an automatic air-brake coupling head or shoe, a laterally-movable rigid clamp-yoke loosely embracing the rear end portion of the head or shoe, and means for tightening said clamp-

yoke against the companion head or shoe, substantially as set forth.

6. In a coupling of the class described, an automatic air-brake coupling head or shoe, a laterally-movable rigid clamp-yoke slidably embracing the rear end portion of the head or shoe, and means for tightening said clamp-yoke against a companion head or shoe by the air-pressure of the air-brake system, substantially as set forth.

7. In a coupling of the class described, an automatic air-brake coupling head or shoe, a rectangular laterally-movable clamp-yoke slidably embracing the rear end portion of the head or shoe and provided with a forwardly-extending rigid clamping-arm projected centrally from the inner side portion of the yoke and adapted to engage against the outer side of the companion head or shoe, and a pressure-adjusted connection between the outer side of said yoke and the coupling head or shoe, substantially as set forth.

8. In a coupling of the class described, an automatic air-brake coupling head or shoe, having an interior fluid-passage and an orifice in its coupling-face, and a dust-shield arm pivotally supported at the inner side of the coupling head or shoe and carrying an offstanding guide-tongue for receiving the impact of the companion head or shoe, substantially as set forth.

9. In a coupling of the class described, an automatic air-brake coupling head or shoe having an interior fluid-passage and an orifice in its coupling-face, and a swinging dust-shield arm adapted to work over said orifice and pivoted at its lower end to the inner side of the coupling head or shoe, said dust-shield arm being provided at its upper end with a laterally-disposed hook adapted to straddle and engage with the top edge of the coupling head or shoe, and carrying at a point intermediate of its ends an offstanding forwardly-disposed guide or guard tongue, substantially as set forth.

10. In a coupling of the class described, an automatic air-brake coupling head or shoe having an interior fluid-passage and an orifice in its coupling-face, a swinging shield-arm adapted to work over said orifice and carrying at a point intermediate its ends an obtuse-angled offstanding guide or guard tongue, said shield-arm being provided at its upper end with a hook having a beveled upper side and engaging with the top edge of the head or shoe, and an adjusting-hook having a swiveled support at one end on the head or shoe and provided at its free end with a beveled beak or nose adapted to be engaged with the beveled upper side of the shield-arm hook of the companion head or shoe, substantially as set forth.

11. In a coupling of the class described, an automatic air-brake coupling head or shoe having an interior fluid-passage and an orifice in its coupling-face, and a movable dust-shield arm supported at the inner side of the head or shoe and carrying a tongue for receiving the impact of the companion head or shoe, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES BRYANT THOMAS.

Witnesses:
JOHN H. SIGGERS,
HAROLD H. SIMMS.