

P. BEAHM.
 AUTOMATIC CONNECTOR FOR TRAIN PIPES.
 APPLICATION FILED JAN. 21, 1910.

956,468.

Patented Apr. 26, 1910.

10 SHEETS—SHEET 1.

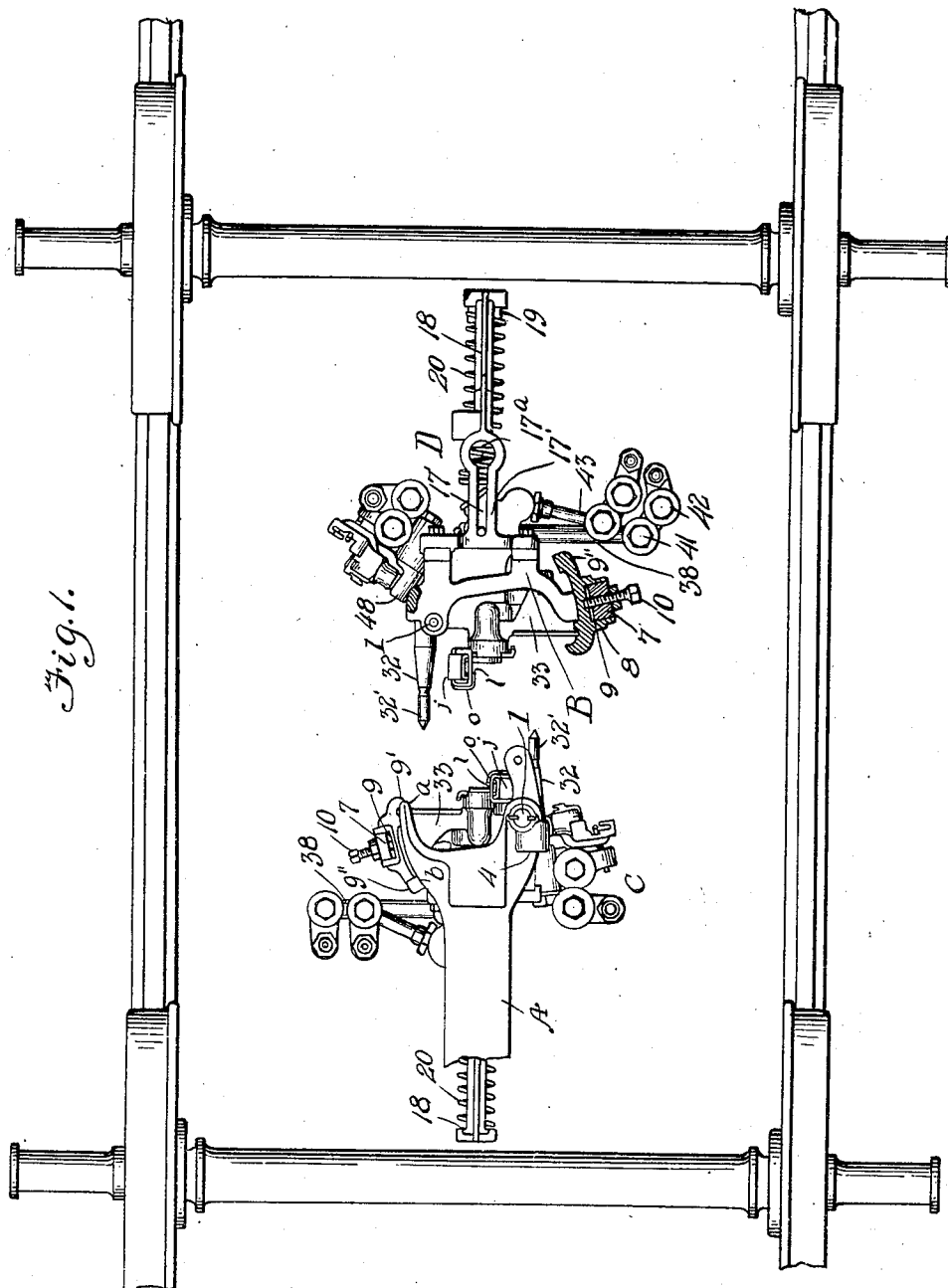


Fig. 1.

WITNESSES

G. M. Spring
 Ralph Stealy

INVENTOR

Peter Beahm
 by David B. Moore
 his Attorney

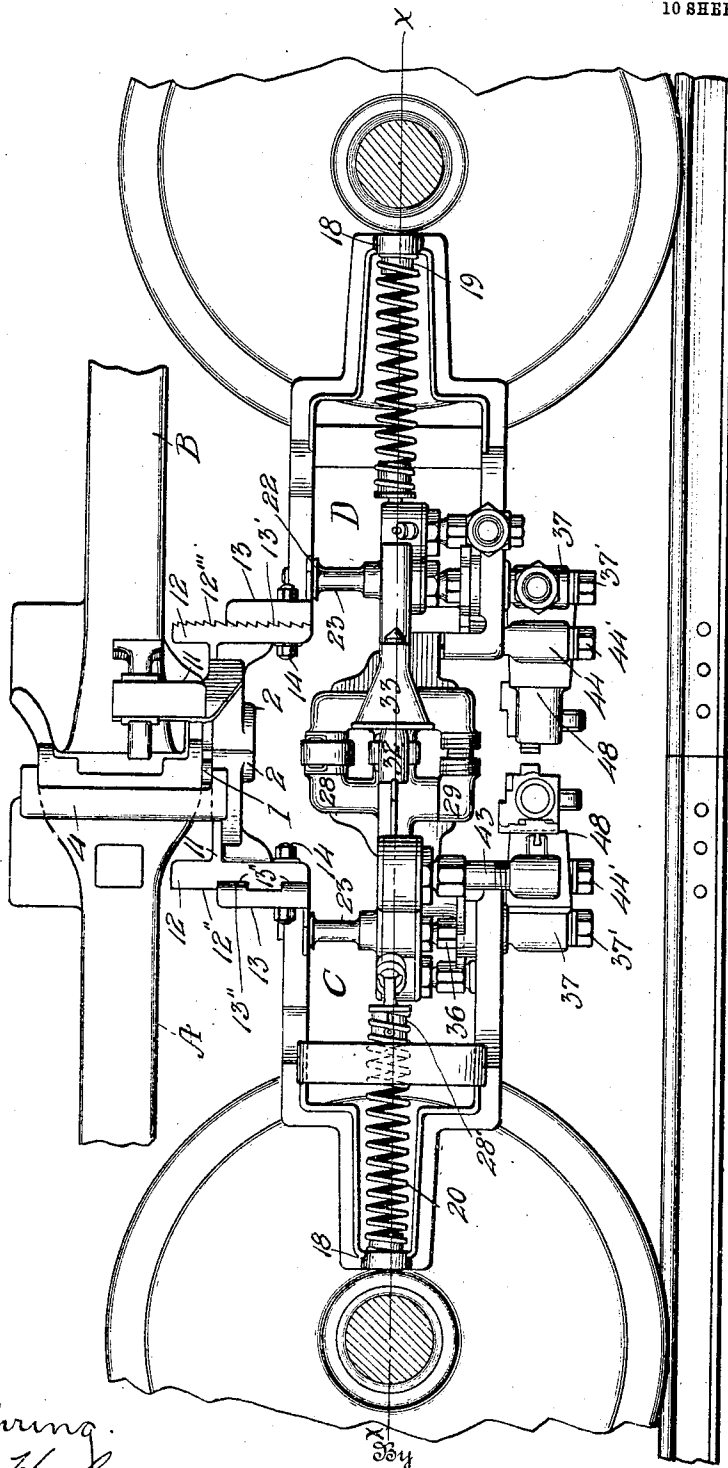
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10 SHEETS—SHEET 2.

Fig. 2.



Witnesses
 G. M. Spring.
 Ralph Heady

Inventor
 Peter Beahm
 David T. Moore.

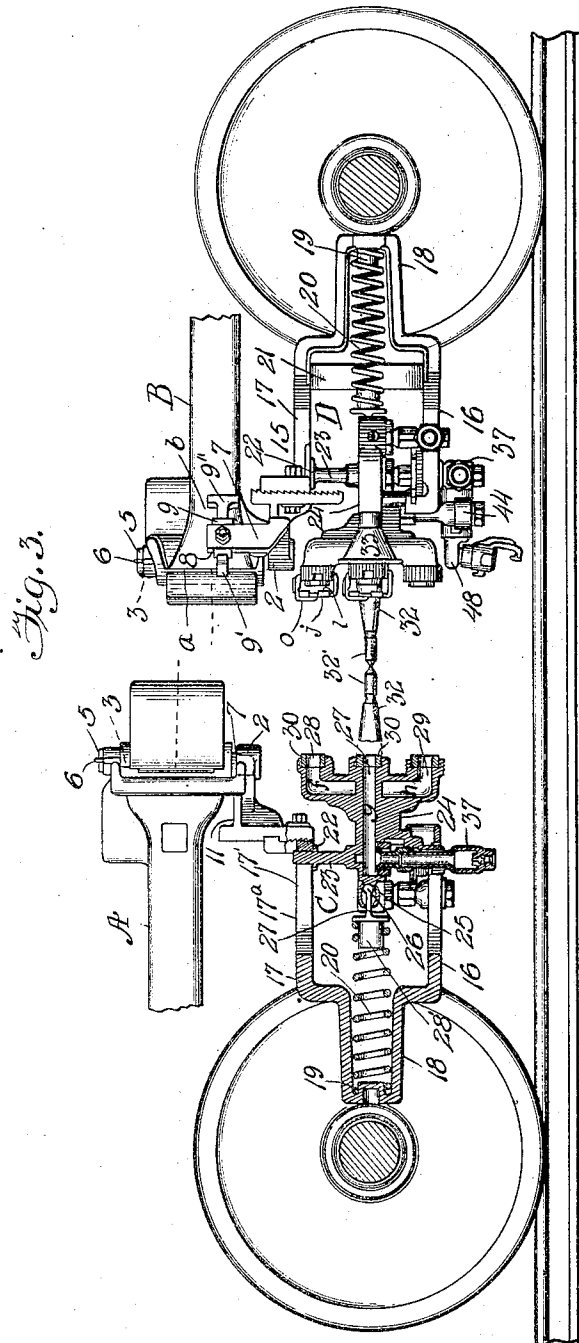
his Attorney

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10 SHEETS—SHEET 3.



Witnesses

G. M. Spring
 Ralph Healy

Inventor

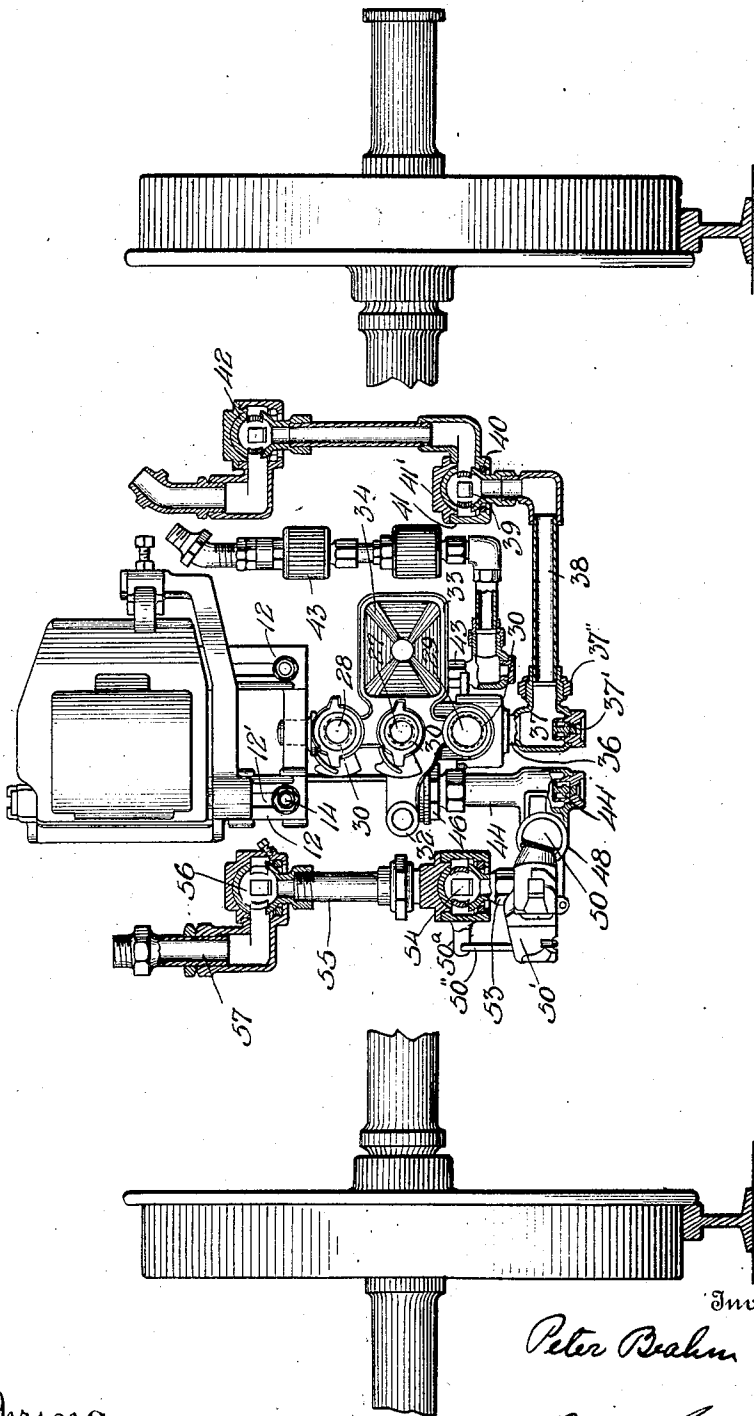
Peter Beahm
 by *Wm. D. Moore*
 his Attorney.

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 10 SHEETS—SHEET 4.

Fig. 4.



Inventor

Peter Beahm

By

Rand. D. Moore.
 His Attorney

Witnesses
 G. M. Sprung.
 Ralph Healy

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10 SHEETS--SHEET 5.

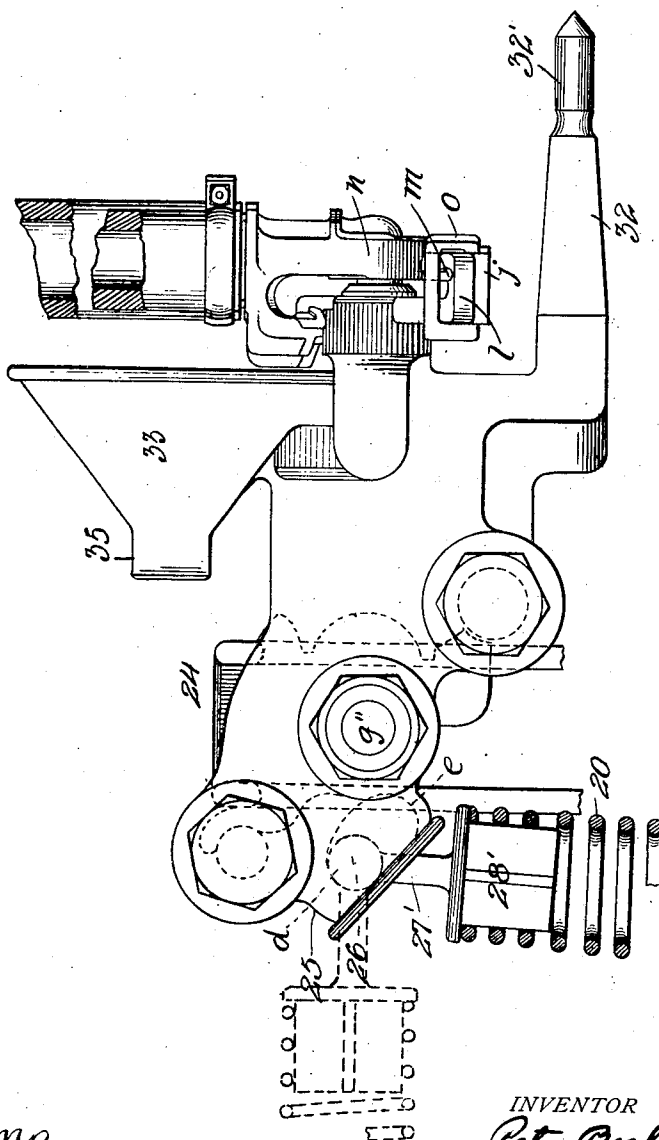
INVENTOR
Peter Beahm
by David Moore
his Attorney

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P. BEAHM.
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 10 SHEETS—SHEET 6.

Fig. 6.



WITNESSES
 G. M. Spring.
 Ralph Healy

INVENTOR
 Peter Beahm
 by David C. Moore
 his Attorney

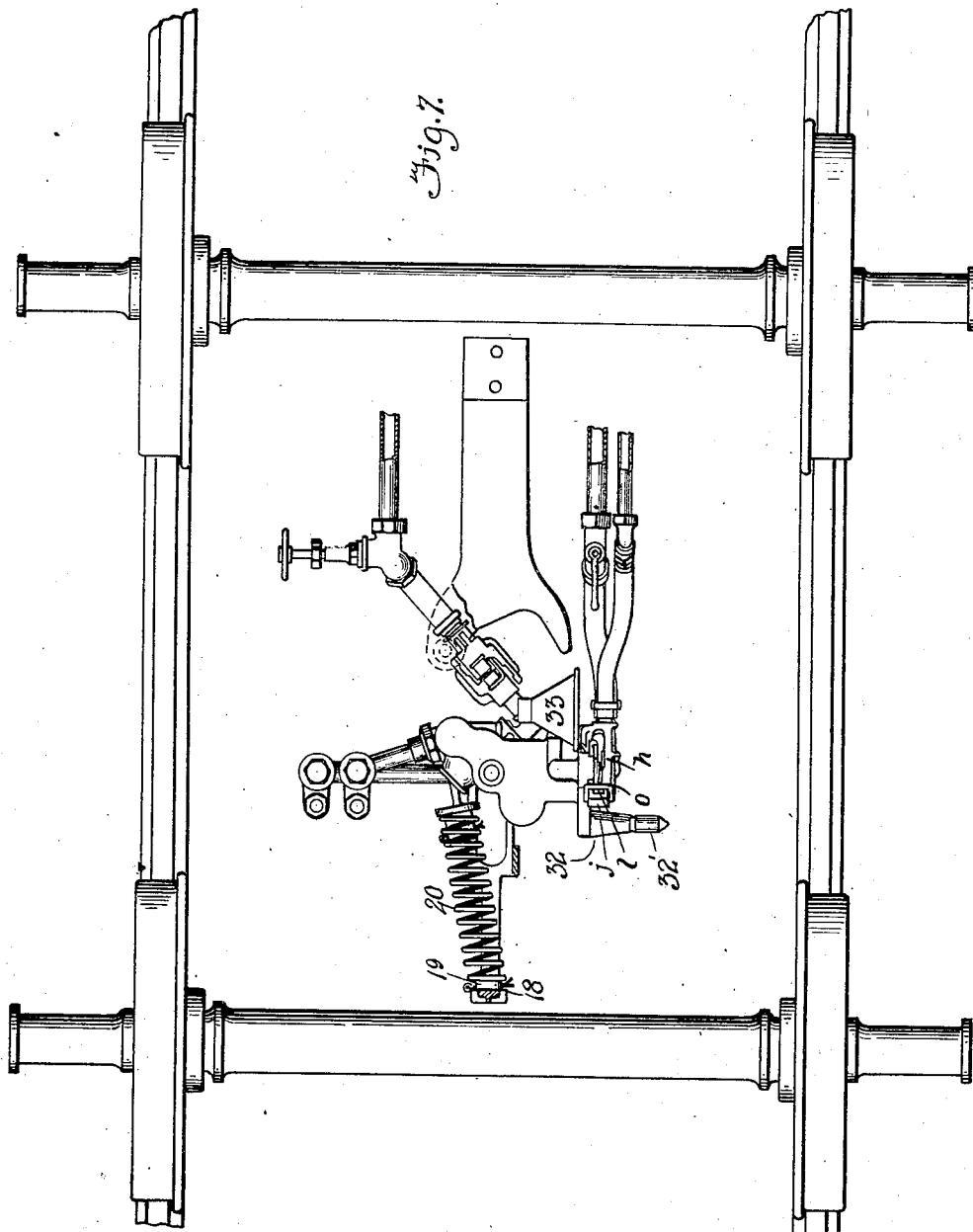
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WITNESSES
G. M. Spring.
Ralph Healy

INVENTOR
Peter Beahm
by Wm. D. Moore
his Attorney

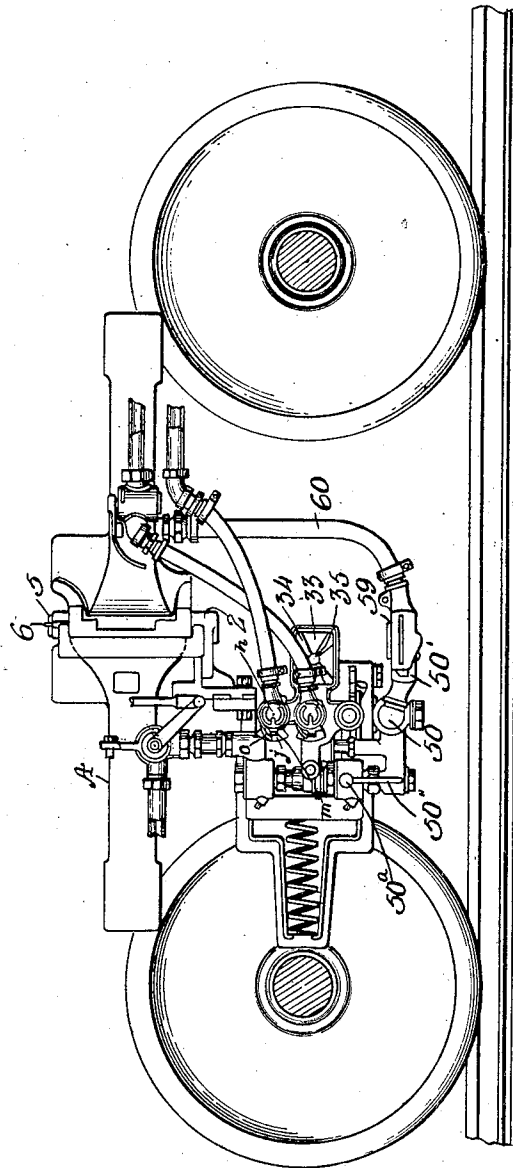
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Fig. 8.



WITNESSES
G. M. Spring.
Ralph Healy

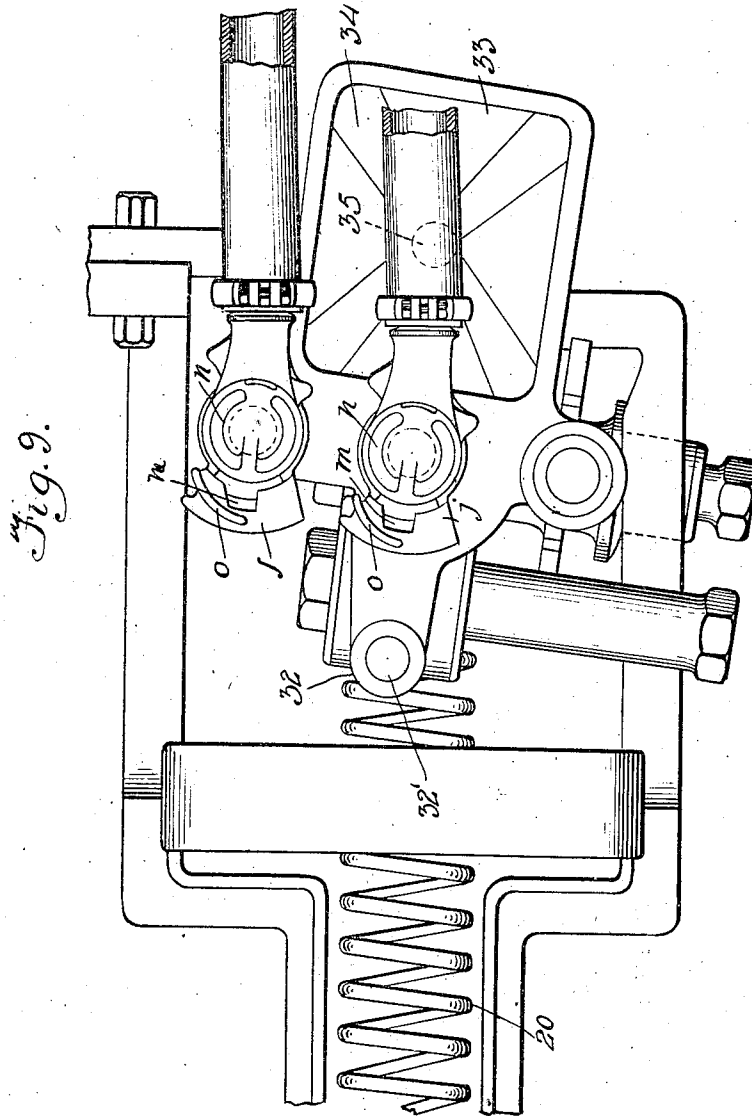
INVENTOR
Peter Beahm
by David D. Moore
his Attorney

P. BEAHM.
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10 SHEETS—SHEET 9.



WITNESSES
G. M. Spring
Ralph Healy

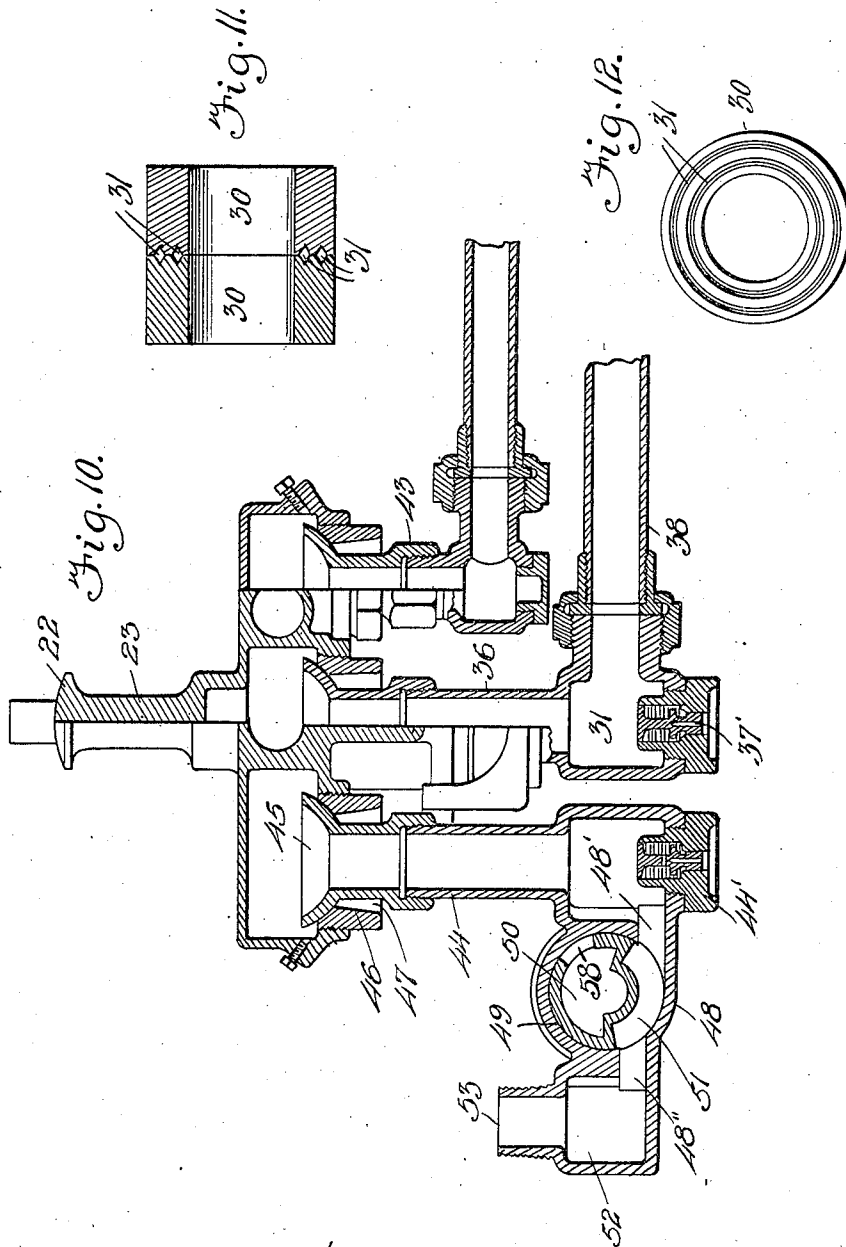
INVENTOR
Peter Beahm
by David Moore
his Attorney

P. BEAHM.
 AUTOMATIC CONNECTOR FOR TRAIN PIPES.
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10 SHEETS—SHEET 10.



WITNESSES

G. M. Spring
 Ralph Healy

INVENTOR

Peter Beahm
 by *David Moore*
 his Attorney

UNITED STATES PATENT OFFICE.

PETER BEAHM, OF ALTOONA, PENNSYLVANIA.

AUTOMATIC CONNECTOR FOR TRAIN-PIPES.

956,468.

Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed January 21, 1910. Serial No. 539,430.

To all whom it may concern:

Be it known that I, PETER BEAHM, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Connectors for Train-Pipes, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in automatic connectors for train-pipes, this particular invention being a more perfect embodiment of the connector, as set forth in my U. S. Letters Patent No. 872,707, dated December 3rd, 1907. In this instance, I have aimed to produce a connector, which holds and is held by the knuckle-pin of the car-coupler, that is it is provided with a supporting bracket, which fits adjustably upon the car-coupler and upon both ends of the pin, so that should the pin break, the pin could not drop out and render my connector unfit or inoperative. I also provide an adjustable means whereby the pin-and-funnel collector, as sanctioned by the Master Car-Builders' Association, can at all times be supported the universal distance above the rails of the track, and thereby insure the proper co-action of the meeting connectors of any car, whose car-coupler may be various permitted distances above the rails. By this means it is never necessary after once adjusting the connector to alter the adjustment. I have also provided against the possibility of my connector not being used upon cars having the present manually connected train pipe connections, and where a full train may be supplied with my connector, and the locomotive is not, the locomotive may be manually connected and the complete train be controlled through the pipes from the locomotive as is usual.

To more clearly bring out these most important features of my invention, attention is invited to the accompanying drawings, in which:—

Figure 1 is a top plan view of two members of my connector prior to coupling. Fig. 2 is a side elevation coupled. Fig. 3 is a view showing the connector as applied to the ends of two cars, whose couplers are at various heights from the rails, one of the members being shown in longitudinal section, while the other is in elevation, both assum-

ing the position just prior to connecting. Fig. 4 is an end view of one member of the connector, the flexible air signal conduit being in elevation, while the flexible air brake and steam heat conduits are in section. Fig. 5 is a section taken on line *x—x*, Fig. 2. Fig. 6 is an enlarged top plan view of one member of the connector, showing the same held, when connected to train pipes manually. Fig. 7 is a top plan view of one member of my connector connected to the train pipes of another car, not equipped with my connector. Fig. 8 is a side elevation thereof. Fig. 9 is a side elevation on an enlarged scale of one member, more particularly illustrating the manual train pipe connections. Fig. 10 is a detail section of the flexible conduits and the various joints thereof. Fig. 11 is an enlarged section through two of the coupling rings, and Fig. 12 is a front elevation of one of them.

Referring to the drawings:—the letter A designates one car coupler and B the other or co-acting car coupler, while C and D, designate the two similarly constructed co-acting automatic connectors, constructed according to and embodying my invention. Each one of the car couplers is provided with the knuckle pin 1, which as shown has its ends projecting above and below the top and bottom of the coupler or knuckle-joint. Each member of my connector is supported by the coupler and is held in place by and in turn holds the pin 1 in place, this being accomplished by the lower socket 2, and the upper aligned socket or opening 3, which permits the bracket or frame 4, to straddle the car coupler from the side and rear, the socket 2 being below the pin opening of the knuckle, while the opening 3 is above the same. The pin 1 is then inserted through the opening 3, the opening of the knuckle and seats within the socket 2, the head or cap 5 closing the opening 3 and held in place by the retaining wire 6. Thus should the pin 1 be snapped during traveling of the cars, the same will at all times be held within the knuckle of the car coupler, and also in the opening and socket of the frame 4, so that there is no danger of the connector falling when this happens. Formed integral with the frame 4 and adapted to extend substantially in opposite directions thereto, is an arm 7, upon whose inner face near the

upper end is provided a slot 8, in which is adapted to fit the knuckle engaging shoe or clamp 9, whose forward hooked end 9', engages the portion *a*, of the knuckle, while the enlarged bracing rear substantially T-shaped end or head 9'', rests against the knuckle at *b*, the set screw 10, mounted in the arm 7 binding the clamp 9, in place. By this means the connector member is rigidly carried, supported and guided by the car-coupler. Carried upon the rear under portion of the frame, or rather formed integral therewith, is a bracket 11, which is provided with the two vertical plates 12, each one of whose rear faces is divided by the vertical slot 12', into the smooth member 12'' and the toothed member 12'''. In order to properly support my connector and prevent any torsional action thereof, I provide the co-acting member 13, which is provided with the toothed portion 13', which engages the portion 12''' of the plate 12, while the hooks 13'', fit about the outside of the member 12'', so that the bolt or adjusting screw 14, will pass through the slot 12', and secure the plate and co-acting member 13 in the desired adjustment. It will thus be seen that my connector may be set at any adjustment above the rails, as for instance as shown in Fig. 3, where the car-coupler A has its center line above the center line of the car-coupler B, it always being necessary that the connector portions be in alinement.

The member 13 supports and carries the main connector frame 15, which consists of the two parallel slotted members 16 and 17, which terminate in the reduced yoke 18, in which is mounted the boss 19, for the reception of the rear end of the coiled spring 20. The members 16 and 17 are reinforced by the cross-bar or brace 21. The upper slot 17', of the frame is provided with the enlarged rear portion 17^a, by means of which the headed portion 22, of the guiding stem 23 is inserted between the members 16 and 17, and permitted to slide within the slots thereof, and also have a pivotal movement therein. Carried by this stem 23 is the carriage 24, of the connector, and upon the rear face thereof in the same horizontal plane as the boss 19, is a socketed boss 25, whose socket is adapted to receive the knob 26 carried upon the pin 27', which in turn is carried by the winged portion 28', and in the outer end of the coiled spring 20, which exerts a tension to hold the carriage outwardly and the stem 23 in engagement with the outer end of the slots of the members 16 and 17. As shown in Fig. 6, the socketed boss 25 is slightly off center of the carriage so that when the carriage is in the position shown, the knob 26 will engage the portion *d*, of the socket, or when the knob is in the position as shown in dotted lines, it will engage

the portion *e*, of the socket, this action of the knob with the spring holding the carriage in either one of two positions, that is so that the connectors are directly in line with the knuckle joint or to one side thereof, the purpose of which will presently appear.

The carriage 24 is preferably a solid casting, and is provided with the three channels *f*, *g*, *h*, Fig. 5, the center one of which terminates in the central air-brake supply port 27, while the channel *f*, terminates in the upper air signal port 28, and the channel *h*, terminates in the lowermost steam heat supply port 29, all three of which are arranged in the same facial plane in a vertical line. In each face of the port is mounted a metal packing or coupling ring 30, which is provided with the several concentric grooves 31, whereby should any dirt or grit be upon the smooth portion of the ring 30, the action of the co-acting or opposite ring of the opposing connector will cause the said dirt or grit to be rubbed into the grooves, and thus permit the rings of opposing connectors to meet snugly and without leaking, the main coiled springs 20 holding these rings into close contact. Upon the ends of the carriage opposed to the air brake and signal ports *g* and *f*, respectively, is a lip *j*, provided with a recess *l*, for the reception of the lug *m*, of a manually operated pipe coupler *n*, the wire lock or bail *o*, being connected to the lip, to assist in locking the pipe coupler *n*, as shown in Figs. 7, 8 and 9, in place.

When the connectors are provided upon the abutting ends of two cars, the carriage assumes the position as shown in Fig. 1, the pin 32 of the collector, and the funnel 33, thereof, being mounted upon each side of the ports and integral with the carriage, so that the pin of one connector will align with and point at the funnel of the other connector. As the cars approach each other the pins of the respective connectors will strike at some point upon the interior of the funnel, which as shown in Fig. 4, is provided with the rectangular opening or mouth having the curved recesses 34 in the corners, and leading to and terminating in the cylindrical opening or bore 35. The shape of the funnel will then guide the pins so that their cylindrical portion 32', will enter the bore 35, the knuckle joints of the car-couplers finally coupling just after the packing rings of the ports of the automatic connector have seated, this final coupling of the car-couplers causing the springs 20 to exert a greater tension toward each other, due to the compression of the springs, thus assuring the complete coupling of the connector and preventing any leakage therein.

In order to employ my connector in combination with ordinary pipes of a train as now used, see Figs. 7, 8 and 9, the carriage

is turned to one side until the coiled spring 20 and its knob or boss will hold the carriage so that it is an easy matter to place the couplers *n*, in proper position, the steam heating pipe being manually connected, as will presently appear.

The channel *g*, is provided at its rear end with the vertical bore *g'*, in whose upper end is mounted the cap or plug *g''*, while secured to the underside of the carriage in the lower end of the bore *g'*, is the metal pipe 36, at whose lower end is the coupling 37, provided with the condensation exit valve 37', to which is connected by means of a union 37'', the horizontal pipe 38. The pipe 38 has an elbow carrying the ball coupling 39, whose under face rests upon the soft metal gasket 40, in the casing 41, which is closed by the plug 41'. By this means, and the upper ball and socket joint 42, thereof, any play or movement in the twisting of the connector of the cars, is taken care of. The air signal pipes 43, are constructed similarly to the air brake pipes, except that no condensation valve is necessary. The steam heating connection consists of the vertical pipe 44, having the condensation outlet valve 44', at the lower end and the semi-spherical upper end 45, which of its own weight forms a tight joint in the sleeve 46, which is provided with the downwardly flaring bore 47, as is also the supports for the air brake and air signal pipes. By this means the pipes are allowed slight gyratory movement, which is necessary in my connector. Leading from the lower end of the pipe 44, is a casing 48, having the lower inlet port 48' and the outlet port 48'', the center being a cross-wise bore 49, in which is rotatably mounted the valve 50, having the cut-away portion 51, so that when the valve 50 is in the position shown in Fig. 10, steam is permitted to pass from the pipe 44, through the port 48', cut-away portion 51, port 48'' into the chamber 52, and up into the pipe 53, ball-and-socket joint 54, vertical pipe 55, ball-and-socket joint 56, and connecting pipe 57 to the pipes of the car. This is the case when the connectors are automatically connected, and the valve 50, has its handle 50', held by the link 50'', and the rigid arm 50^a, but when the connector is used with an ordinary form coupler, the handle 50', is turned a complete half circle, or until it assumes the position shown in Fig. 8, when the port 58, of the valve 50 will aline with the port 48'', prevent the steam escaping to the automatic connector and permit the steam to enter the interior of the valve and pass through the port in the handle 50', which is the other member of a manually operated pipe coupler, and into the other member 59, of the manually operated pipe coupler, and

through the flexible pipe 60. By this means it is evident that my connector is adapted for use with manually operated pipe couplers either for the air brake, air signal or steam pipes and for all of them. This also provides a throughout metallic connection with the connector and pipes on the car, this being of the utmost importance.

The specific form of metallic pipe connection between the automatic connector and the car, as above described is more particularly set forth in my divisional application filed February 8th, 1910, Serial No. 542,687.

As shown when the connector is ready for manual connection with pipe couplers, the carriage is turned and held at approximately right angles to the path of travel; and that by mounting the connector on a knuckle of the car-coupler, in the manner that I do, the connector is bound to follow the direction of the car-coupler, thus insuring the proper alining of the ports, and also a non-leakage of the joints between the ports.

In constructing this automatic connector, I have endeavored to meet every contingency, and it will be evident that should a train be equipped entirely with my connector, including the locomotive, and should the locomotive be put out of commission, a locomotive with the present form of pipe couplers could be used without any serious delay, other than the disconnecting of the first locomotive and the manually connecting of the latter one. Also should the pin of the car-coupler break in two or more pieces, the particular form of frame that I employ will retain the pin in the car-coupler and also be held itself upon the knuckle of the car-coupler by the broken pin and the clamping device of my connector. In other words to equip cars with my automatic pipe connector, it is simply necessary to remove the old or present form of pin, and employ a longer one, that will extend through the car-coupler into the lower socket of my connector frame, and also project upwardly through the upper opening thereof, a retaining device holding the pin against upward displacement, and thus locking it within the socket and the car-coupler at all times and under all conditions.

My form of piping used for connecting the train pipes of the car to the connector, provides a through and through metallic connection, which is of the utmost importance, and all the various joints are held tightly in place and against leakage by the pressure of the fluid within the pipes, as is evident.

What I claim, as new, is:—

1. In combination with a car coupler and the train pipes of a train, of an automatic coupler for the pipes pivotally connected to

and retaining the ends of the knuckle pin of the car coupler and having adjustable means to hold the pipe couplings relatively to the car coupler.

2. In combination with a car coupler and the train pipes of a train, of an automatic coupler for the pipes pivotally connected to and retaining the ends of the knuckle pin of the car coupler and having means to hold the pipe coupling relatively to the car coupler.
3. In combination with a car coupler and the train pipes of a train, of an automatic coupler for said pipes, pivotally connected to and retaining the ends of the knuckle pin of the car coupler, and consisting of a frame, means for connecting the same to the coupler to assist the pin in supporting the coupler, means for holding the frame relatively below the car coupler, means for holding the coupling members of each coupler in horizontal correlation, and spring actuated couplers for the pipe carried by the frame.
4. In combination with a car coupler and the train pipes of a train, of an automatic connector for said pipes pivotally connected to and retaining the ends of the knuckle pin of the car coupler, and consisting of a frame, additional means for holding the frame relative to the car coupler, a carriage slidably and pivotally mounted within said frame, pipe couplers carried by said frame and in engagement with said train pipes, and means for projecting the carriage forward and exerting a tension in such direction.
5. In combination with two car couplers having each an automatic engaging knuckle joint and pin, of an automatic pipe connector pivotally connected to and retaining the ends of the knuckle pin of each car coupler, each of said connectors having a pin and funnel collector, vertically alined pipe connector ports, and a spring for holding the connectors extended beyond the car-couplers, whereby as the cars approach each other, the pin and funnel collectors engage first and aline the ports, the final locking of the car couplers holding the ports of each connector into close engagement.
6. In combination with a car coupler and the train pipes of a train, of an automatic connector for the pipes connected to and retaining the knuckle pin of the car coupler, and having a frame, a carriage slidably and pivotally mounted in said frame, and means for projecting the carriage and holding the connector either directly in front of the car coupler or to one side.
7. In combination with a car coupler and the train pipes of a train, of an automatic connector for the pipes connected to and retaining the knuckle pin of the car coupler, and having a frame, a carriage slidably and pivotally mounted in said frame, pipe con-

nectors carried thereby and provided with automatic connector ports and manually operated pipe couplers, and means for projecting the carriage and holding the connector either directly in front for automatic connection or to one side of the car coupler for manually operated coupling.

8. In combination with a car coupler and the train pipes of a train, of an automatic connector for the pipes connected to and retaining the knuckle pin of the car coupler, and consisting of a frame supported from said car coupler and its pin, a carriage slidably and pivotally mounted and capable of transverse tilting movement in said frame, pipe connectors for automatic connection carried by the carriage, manually operated coupling members also carried thereby, and means for projecting the carriage and holding the connectors and couplings either in or out of line with the car coupler.

9. In combination with a car coupler and the train pipes of a train, of an automatic connector for said pipes supported from and retaining the knuckle pin of the car coupler, and an adjustable clamping device engaging the car coupler for holding the automatic connector in relative alinement with the car coupler.

10. In combination with a car coupler and the train pipes of a train, of a frame straddling the knuckle joint of the car coupler from one side and engaging the knuckle pin so as to incase the lower end thereof, an adjustable clamping device for securing the frame against sidewise movement upon the car coupler, and an automatic pipe connector carried by said frame.

11. In combination with an automatic connector for train pipes of cars, having a series of ports, of a metal ring mounted in each port and having a series of concentric grooves, as and for the purpose set forth.

12. In combination with an automatic connector for train pipes of cars having air-brake and air signal connecting ports, of a metallic ring compressed in said ports and forming a connection with the opposing rings of another connector, each of said rings having a series of concentric grooves in the opposing faces, as and for the purpose set forth.

13. In combination with an automatic connector for the air-brake train pipe, of a metal ring mounted in the port of the air-brake pipe of the connector and having a series of concentric grooves, as and for the purpose set forth.

14. The combination with an automatic connector for train pipes, which normally exerts a tension away from the end of the car, to which it is attached, of a port for forming a tight connection between opposed connectors provided with means for ac-

commodating any foreign substances within the face of the port, as and for the purpose set forth.

15. The combination with an automatic connector for train pipes, of a connector ring for the port thereof provided with a series of grooves formed in its face intermediate of the central opening and the periphery.

10 16. The combination with an automatic connector for train pipes, of a connector

ring for the port thereof provided with a series of grooves, V-shaped in section formed in its face intermediate of the central opening and the periphery.

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

PETER BEAHM.

Witnesses:

LEWIS MILLER,
Jos. VOGT.