No. 743,561. PATENTED NOV. 10, 1903.

G. P. RITTER.

COUPLING RELEASE RIGGING.

APPLICATION FILED AUG. 25, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

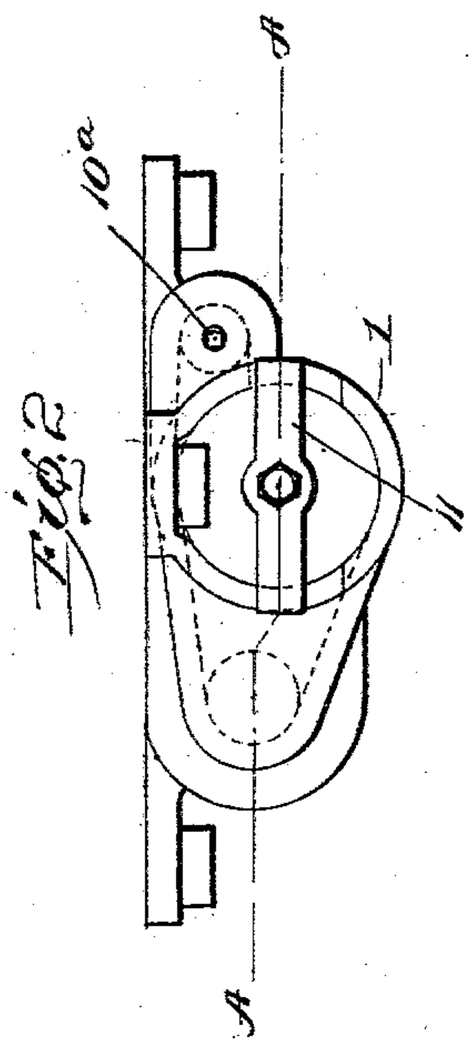

Fig. 2.

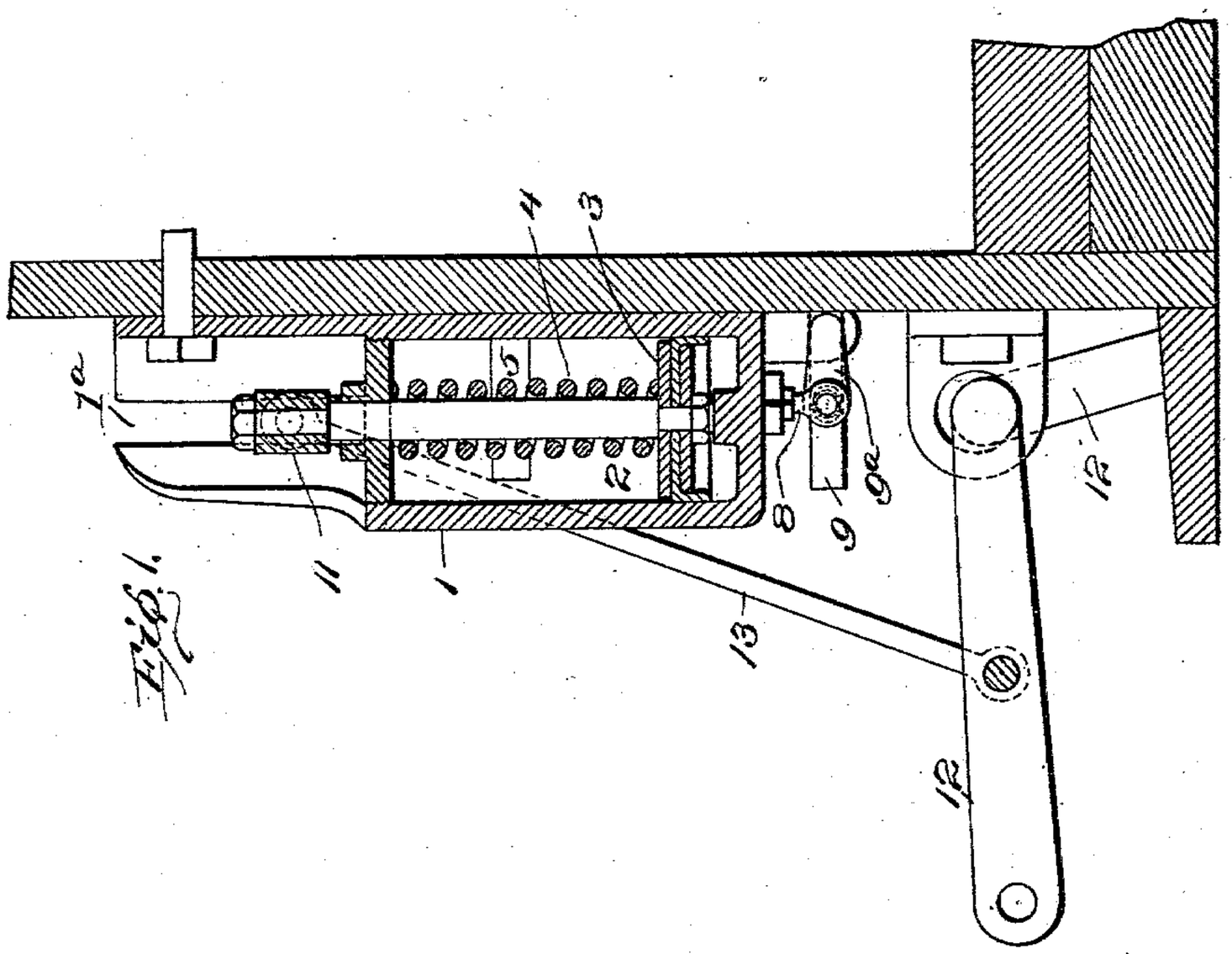

Fig. 1.

WITNESSES:
J. M. Fowler Jr.
J. H. Burgess.

INVENTOR
Gilbert P. Ritter

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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 4.

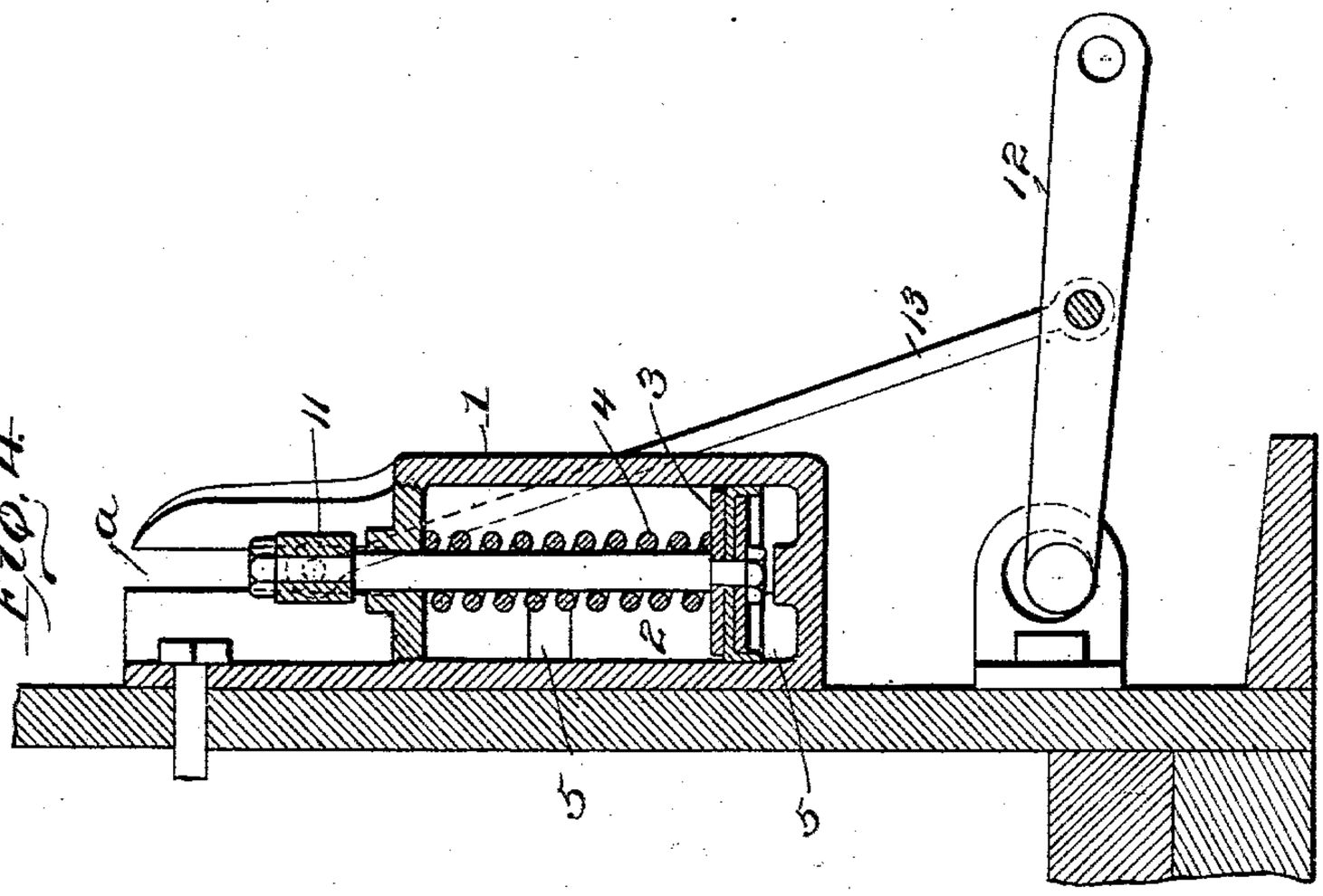
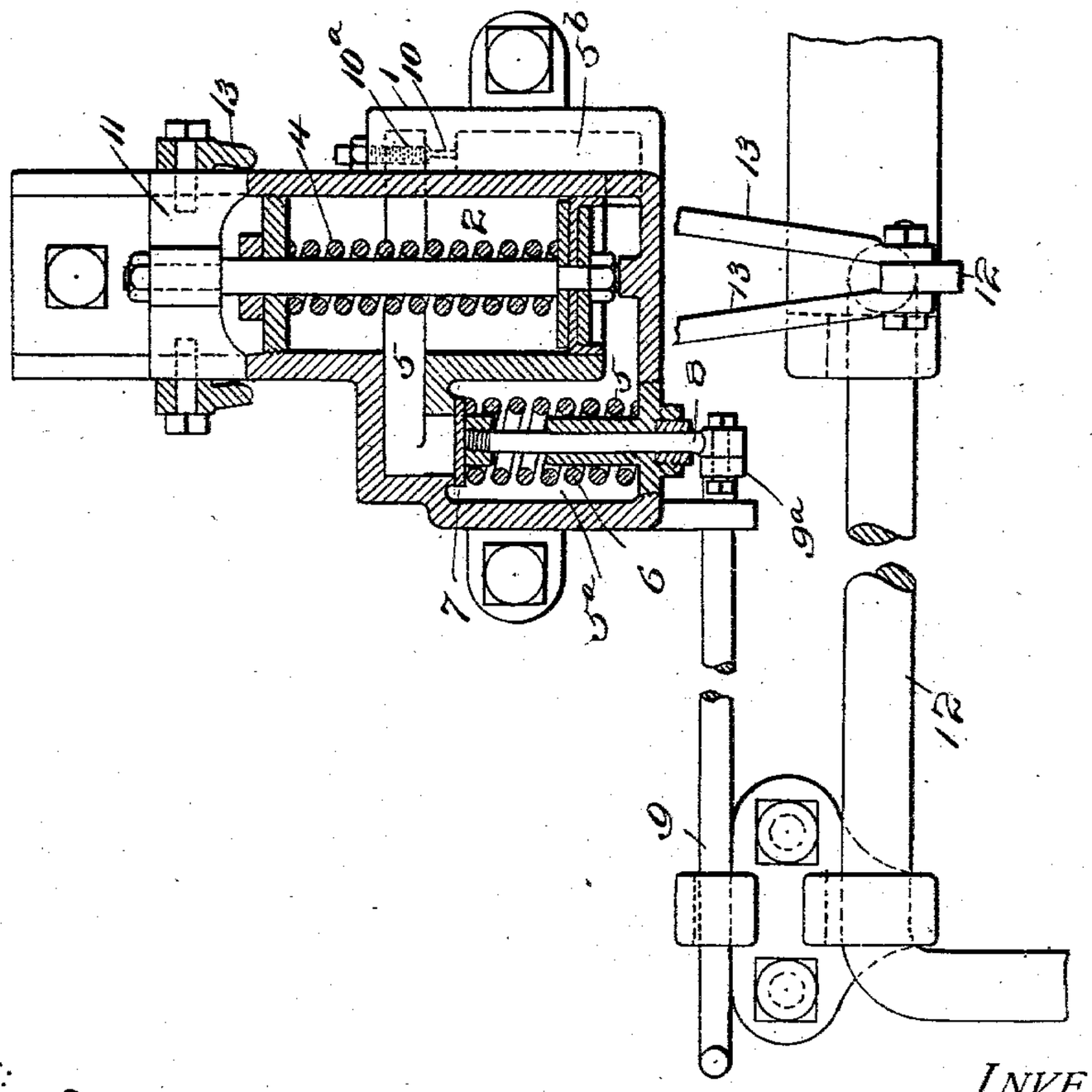


Fig. 3.



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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 6.

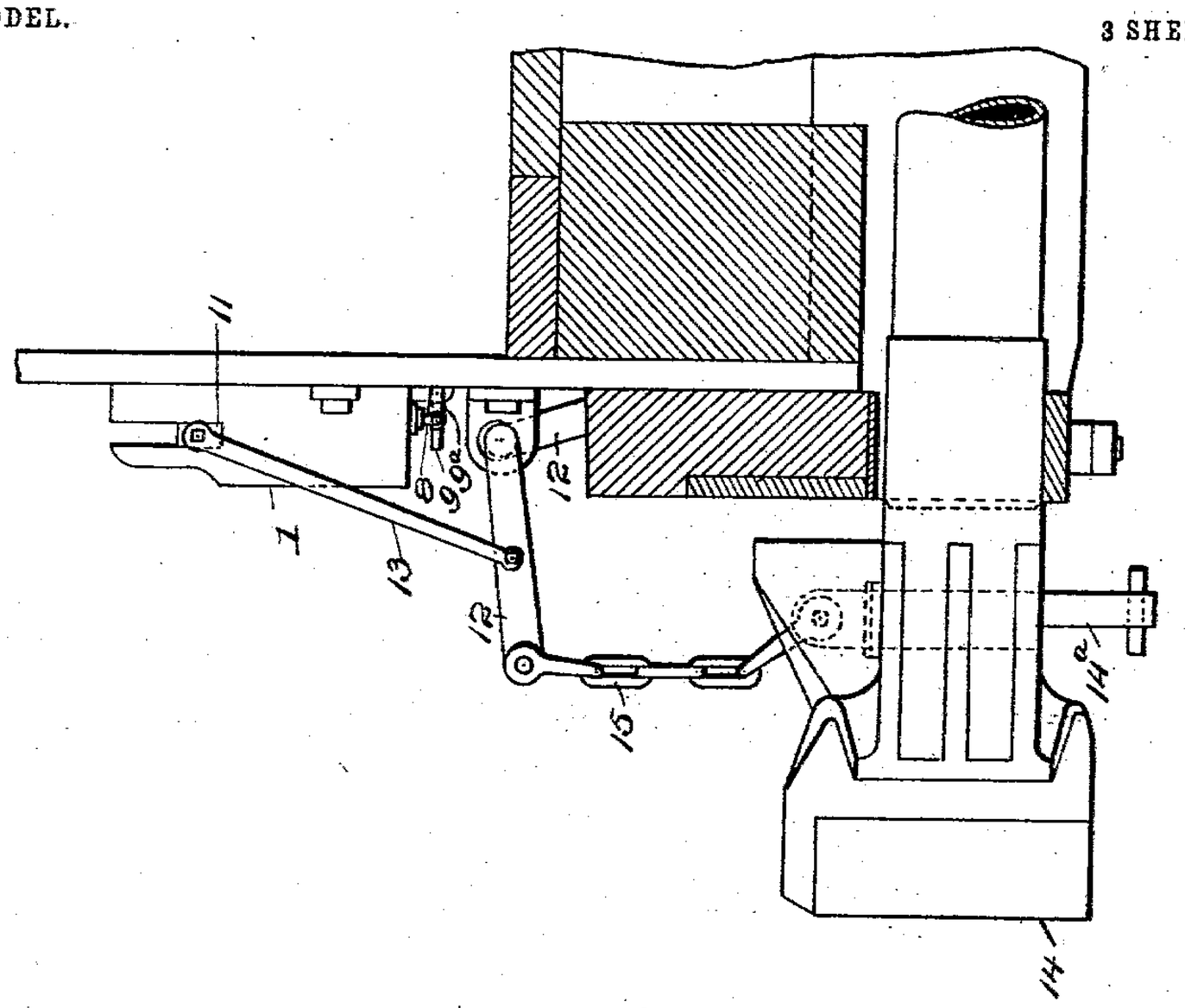
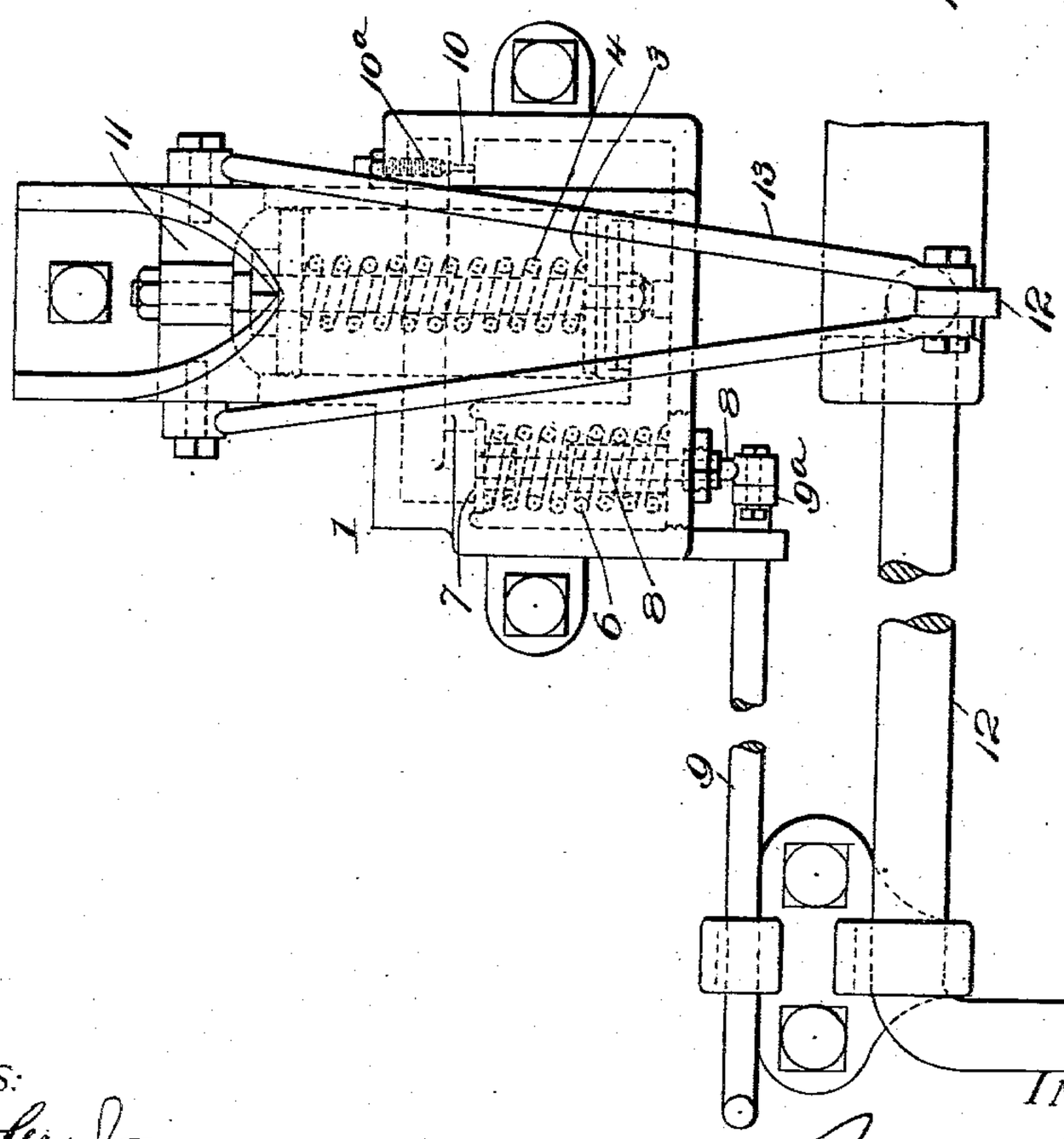


Fig. 5.



WITNESSES:

J. M. Fowler Jr.

J. H. Burgess.

INVENTOR

Gilbert P. Ritter

No. 743,561. Patented November 10, 1903.

UNITED STATES PATENT OFFICE.

GILBERT P. RITTER, OF CHICAGO, ILLINOIS.

COUPLING-RELEASE RIGGING.

SPECIFICATION forming part of Letters Patent No. 743,561, dated November 10, 1903.

Application filed August 25, 1903. Serial No. 170,749. (No model.)

To all whom it may concern:

Be it known that I, GILBERT P. RITTER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Coupler-Release Rigging; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical central section looking toward the transfer-valve, taken through the cylinder of a device embodying my invention, the uncoupling-lever and quick-release lever being in elevation and a portion of the end of a car being shown in section. Fig. 2 is a plan view of the device, the uncoupling-lever, quick-release lever, and connection between the cross-head and uncoupling-lever being omitted. Fig. 3 is a section on the line A A, Fig. 2, the leak-plug controlling the same, and portions of the transfer-passage adjacent thereto being shown in dotted lines. Fig. 4 is a vertical central section looking toward the leak, taken through the cylinder at right angles to the section of Fig. 3. Fig. 5 is a front elevation of the device, the interior being shown in dotted lines. Fig. 6 is a side elevation of the device, showing its relation to the coupler and coupler-locking mechanism.

Like symbols refer to like parts wherever they occur.

My invention pertains to that class of devices by which the locking mechanism of a car-coupler is actuated, and has for its object to minimize the manual operations of the coupler, and particularly to supply means whereby the most dangerous switching of cars may be accomplished without unnecessary manipulation of the coupler-locking mechanism, such manipulation being now generally necessary by reason of the fact that the vibrations of the coupler-knuckle in switching operations actuate lock-set devices as now constructed to allow the coupler to be prematurely locked and from the further fact that the prevailing construction of knuckle-opener devices prevents the locking up of the uncoupling-lever without danger of breaking the knuckle-opener or uncoupling-chain by the vibration of the knuckle.

This invention relates particularly to that class of devices in which the coupler-locking mechanism is controlled by means independent of the knuckle, so that said locking mechanism may be held in an unlocked position during any desired interval and may then be automatically returned to a locked position; and it consists, generally stated, in the transfer within a closed receptacle of a mobile medium which operates upon instrumentalities connected to the coupler-locking mechanism, whereby said coupler-locking mechanism is controlled.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings of the particular construction chosen to illustrate my invention, 1 is a closed receptacle having therein the chamber or cylinder 2, within which is a follower or piston 3 of any approved construction and surrounding the stem of which and bearing upon the piston-head at one end and the receptacle 1 at the other is the spring 4 or equivalent means of weighting the follower or piston.

Opening out of the cylinder 2 above the piston-head is the transfer-passage 5, which is enlarged at a point 5^a to form a chamber to accommodate the spring 6, which bears upon the transfer-valve 7 and maintains the same in a closed position except when forced off its seat by the movement of the piston 3, as will hereinafter appear. In lieu of a spring the valve 7 may be counterweighted, so as to remain normally seated. Secured to the valve 7 in any suitable manner is a valve-stem 8, which passes through a properly-packed opening in the receptacle 1 and is connected to the lever-arm 9^a of the quick-release lever 9. Opening out of the chamber 5^a at the end opposite the transfer-valve the transfer-passage merges into the cylinder 2 beneath the head of the piston 3, and the said transfer-passage proceeds out of the cylinder by way of that portion 5^b of the passage which is adjacent to the leak and thence through the leak 10, thus enabling the mobile medium to be readily transferred or caused to circulate from one side to the other side of the piston. The leak 10 may be graduated in the size of its

opening by means of the rotatable screw-plug 10^a, which preferably has a conical point corresponding to the conical seat at the adjacent end of the leak, the rate of transfer of the mobile medium through the transfer-passage being thus controlled.

Secured to the stem of the follower or piston 3 in any suitable manner is the cross-head 11, which slides in the guideways 1^a 1^a of the receptacle 1, and interposed between said cross-head 11 and the well-known uncoupling-lever 12, and pivotally attached to each is the rigid connection 13, whereby the piston 3 and uncoupling-lever 12 reciprocally control the movements of each other.

The well-known uncoupling-lever 12 is secured to the car by brackets or otherwise, and the coupler-locking mechanism 14^a of the coupler 14, which may be of any construction, is attached to said uncoupling-lever by the uncoupling-chain 15 in a manner commonly practiced.

The mobile medium which I prefer to employ and which is contained in and preferably fills the cylinder 2 and transfer-passage 5 is preferably oil; but other mobile means may be substituted therefor.

It is evident that the transfer-valve 7 and the leak 10 may either or both be located in the head of the piston 3 and the transfer-passage 5 be omitted; but for reasons which will hereinafter appear in describing the operation of the device with reference to its quick-release function and the control of the transfer-valve by the quick-release lever the construction here illustrated is deemed preferable.

The construction being substantially such as hereinbefore pointed out, the device will operate as follows: The rotatable plug 10^a having been adjusted to graduate the size of the leak 10, which determines the interval between the setting of the coupler-locking mechanism in an unlocked position and its automatic return to a locked position, the coupler-locking mechanism 14^a may be brought to an unlocked position by manipulating the uncoupling-lever 12 to cause an upward movement of the piston 3 through the agency of the rigid connecting member 13 and cross-head 11, thus compressing the spring 4. As the piston 3 is displaced from its normal position and moves upwardly the oil above the piston-head transmits the pressure, and thus opens the transfer-valve 7, compressing the valve-spring 6, and passes through the transfer-passage 5 and enlarged portion 5^a thereof into the cylinder 2 beneath the piston-head. In this the upper position of the piston 3 the coupler-locking mechanism is in such relation to the tail of the coupler-knuckle that said piston may descend a fixed and measurable distance before the coupler-locking mechanism locks the knuckle, the time interval of the piston descent being controlled by the size of the leak 10, which may be graduated by the rotatable plug 10^a, as before described. As soon as the upward movement of the piston 3 is arrested by the withdrawal of the force applied to the uncoupling-lever 12 the pressure of the piston-spring 4, acting through the mobile medium, closes the transfer-valve 7, this closure being assisted for the sake of rapidity of action by the valve-spring 6, and the oil is compelled to seek egress from beneath the piston 3 by way of the portion 5^b of the transfer-passage 5 and through the restricted portion or leak 10 thereof, and thus to the cylinder 2 on the opposite or upper side of the piston-head. The return of the piston to its normal or bottomed position is gradual, and hence the return of the coupler-locking mechanism 14^a is also gradual and automatic, the piston controlling the coupler-locking mechanism through the instrumentality of the cross-head 11, rigid connection 13, uncoupling-lever 12, and uncoupling-chain 15.

In case it is desired to allow the piston 3 to quickly return to its normal or bottomed position after it has assumed an upper position in order to permit an immediate locking of the coupler the same may be accomplished by manipulating the quick-release lever 9, which, acting through the arm 9^a, connected to the valve-stem 8 of the transfer-valve 7, unseats the said transfer-valve, and thus allows a large and unrestricted passage for the rapid return or accelerated transfer of the oil beneath the piston 3 to the opposite or upper side of the piston-head. Upon the withdrawal of the force applied to the quick-release lever 9 the transfer-valve 7 is closed and the said release-lever returned to a normal position by means of the valve-spring 6, which has been compressed in the opening movement of the transfer-valve.

It is evident that my invention is susceptible of many modifications and changes in details of construction whereby the mobile medium may be repeatedly transferred from one position to another to control the coupler-locking mechanism through the instrumentalities directly affected by said mobile medium and whereby the same fixed quantity of said mobile medium may be repeatedly used.

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

1. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle, a mobile medium within said receptacle, and means whereby the transfer of the mobile medium within the receptacle controls the coupler-locking mechanism, substantially as and for the purposes specified.

2. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a mobile medium within said cylinder, a piston within said cylinder, and means for transferring the mobile medium from one side to the opposite

side of the piston-head whereby the coupler-locking mechanism is controlled, substantially as and for the purposes specified.

3. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle, a mobile medium within said receptacle, means whereby the transfer of the mobile medium within the receptacle controls the coupler-locking mechanism, and means for graduating the rapidity of the transfer of the mobile medium within said receptacle, substantially as and for the purposes specified.

4. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a transfer-passage, a mobile medium within said cylinder and said transfer-passage, and means whereby the transfer of the mobile medium actuates the coupler-locking mechanism, substantially as and for the purposes specified.

5. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a transfer-passage, a valve in said transfer-passage, and means whereby the movement of said piston controls the coupler-locking mechanism, substantially as and for the purposes specified.

6. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a transfer-passage, a leak in said transfer-passage, and means whereby the movement of said piston controls the coupler-locking mechanism, substantially as and for the purposes specified.

7. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder having a piston therein, a transfer-passage, a leak, means for graduating the size of said leak, and means whereby the movement of the piston controls the coupler-locking mechanism, substantially as and for the purposes specified.

8. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a transfer-passage, a valve in said transfer-passage, a leak, and means whereby the movement of the piston controls the coupler-locking mechanism, substantially as and for the purposes specified.

9. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a transfer-passage, a valve in said transfer-passage, a leak, means for graduating the size of said leak, and means whereby the movement of the piston controls the coupler-locking mechanism, substantially as and for the purposes specified.

10. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a valve, a mobile medium, and means whereby the transfer of the mobile medium from one side to the opposite side of the piston-head controls the coupler-locking mechanism, substantially as and for the purposes specified.

11. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a valve, a leak, a mobile medium, and means whereby the transfer of the mobile medium from one side to the opposite side of the piston-head controls the coupler-locking mechanism, substantially as and for the purposes specified.

12. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, means for transferring said mobile medium within said receptacle, means for graduating the rapidity of the transfer of the mobile medium, means for accelerating the transfer of the said mobile medium, and means whereby the transfer of the mobile medium controls the coupler-locking mechanism, substantially as and for the purposes specified.

13. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, an uncoupling-lever, means whereby the movement of the uncoupling-lever in one direction causes a transfer of the mobile medium so that the return of the uncoupling-lever to a normal position is retarded, and means whereby the transfer of the mobile medium controls the coupler-locking mechanism, substantially as and for the purposes specified.

14. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a mobile medium within said cylinder, a transfer-valve, means for actuating the transfer-valve independent of the movement of the piston, and means whereby the transfer of the mobile medium controls the coupler-locking mechanism, substantially as and for the purposes specified.

15. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, a transfer-valve, means acting through the mobile medium for actuating the said transfer-valve, and means whereby the transfer of the mobile medium within the receptacle controls the coupler-locking mechanism, substantially as and for the purposes specified.

16. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, a transfer-valve, means acting through the mobile medium for actuating the said transfer-valve, means independent of said mobile medium for actuating

said transfer-valve, and means whereby the transfer of the mobile medium within the receptacle controls the coupler-locking mechanism, substantially as and for the purposes specified.

17. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, a transfer-valve, means for actuating said transfer-valve, and means whereby the transfer of the mobile medium within the receptacle controls the coupler-locking mechanism, substantially as and for the purposes specified.

18. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, a transfer-passage, and means whereby the transfer of the mobile medium within said receptacle and said transfer-passage controls the coupler-locking mechanism, substantially as and for the purposes specified.

19. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, a transfer-valve, means for actuating said transfer-valve, means for graduating the rapidity of the transfer of the mobile medium, and means whereby the transfer of the mobile medium within the receptacle controls the coupler-locking mechanism, substantially as and for the purposes specified.

20. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, a transfer-valve, means acting through the mobile medium for actuating said transfer-valve, means independent of said mobile medium for actuating said transfer-valve, means for graduating the rapidity of the transfer of the mobile medium, and means whereby the transfer of the mobile medium within the receptacle controls the coupler-locking mechanism, substantially as and for the purposes specified.

21. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle having a mobile medium therein, a piston within said receptacle, an uncoupling-lever, a rigid connection between said piston and said uncoupling-lever, and means whereby the transfer of the mobile medium within the receptacle controls the coupler-locking mechanism, substantially as and for the purposes specified.

22. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a transfer-passage connecting the opposite ends of said cylinder, a mobile medium within said transfer-passage and said cylinder, and means whereby the transfer of the mobile medium within said cylinder and transfer-passage controls the coupler-locking mechanism, substantially as and for the purposes specified.

23. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a spring acting upon said piston, a transfer-passage, a transfer-valve, a spring acting upon said transfer-valve, a mobile medium within said cylinder and said transfer-passage, and means whereby the transfer of the mobile medium within said cylinder and said transfer-passage controls the coupler-locking mechanism, substantially as and for the pursoses specified.

24. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a cylinder, a piston in said cylinder, a spring acting upon said piston, a transfer-passage, a leak in said transfer-passage, a transfer-valve, a spring acting upon said transfer-valve, a mobile medium within said cylinder and said transfer-passage, and means whereby the movement of the piston controls the coupler-locking mechanism, substantially as and for the purposes specified.

25. In a coupler-release rigging, the combination with a coupler and the locking mechanism therefor, of a receptacle for a mobile medium, a mobile medium, means for causing the circulation of the mobile medium within the receptacle, means for controlling the circulation of the mobile medium, and means for controlling the coupler-locking mechanism by the circulation of the mobile medium within its receptacle, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 25th day of August, 1903.

GILBERT P. RITTER.

Witnesses:
WM. E. DYRE,
HUGH M. STERLING.