M. L. BOOKWALTER & S. SAUNOOKE.

TRAIN LINE COUPLING.

APPLICATION FILED MAR. 12, 1914.

1,130,252.

Patented Mar. 2, 1915.

3 SHEETS—SHEET 1.

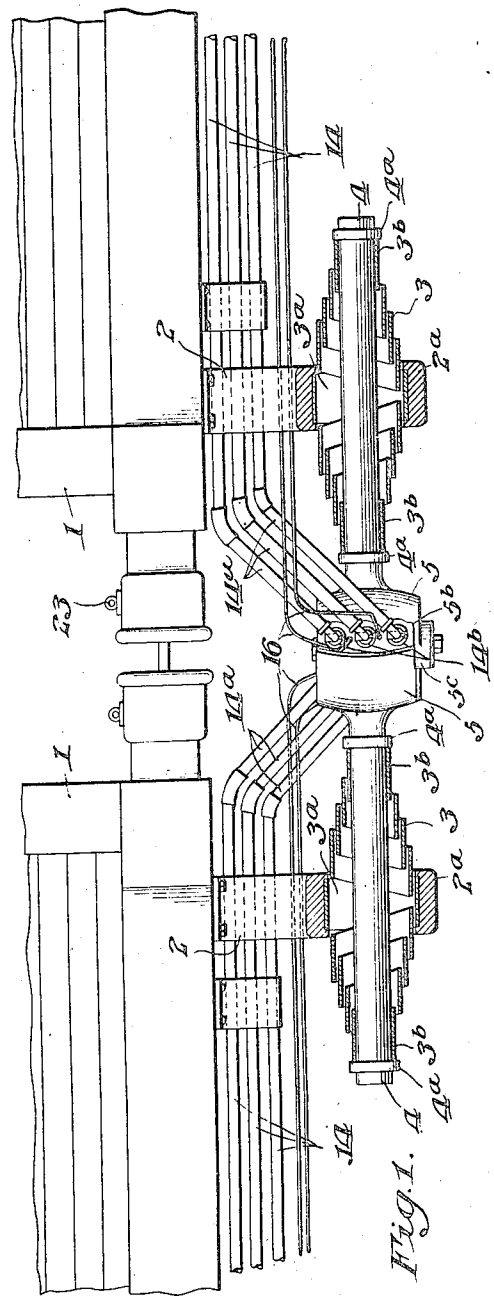


Fig. 1.

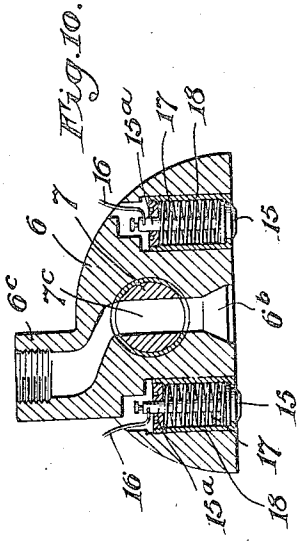


Fig. 10.

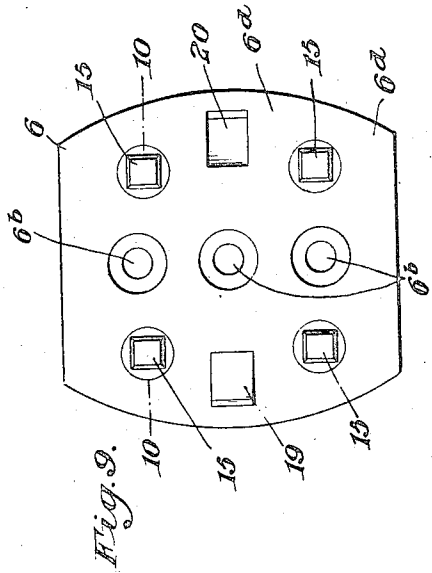


Fig. 9.

WITNESSES:

R. Schleicher

Jos. B. Dennis

INVENTORS:

Miles L. Bookwalter

and Samuel Saunoo

BY

Charles N. Burpee

ATTORNEY.

M. L. BOOKWALTER & S. SAUNOOKE.

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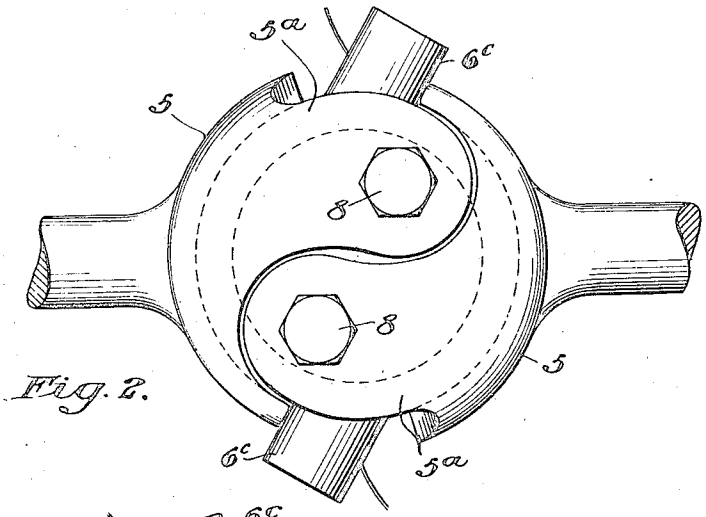



Fig. 2.

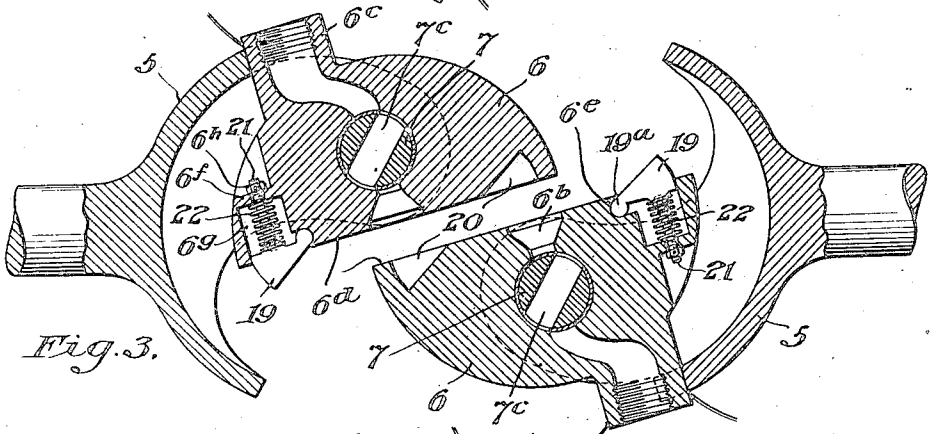



Fig. 3.

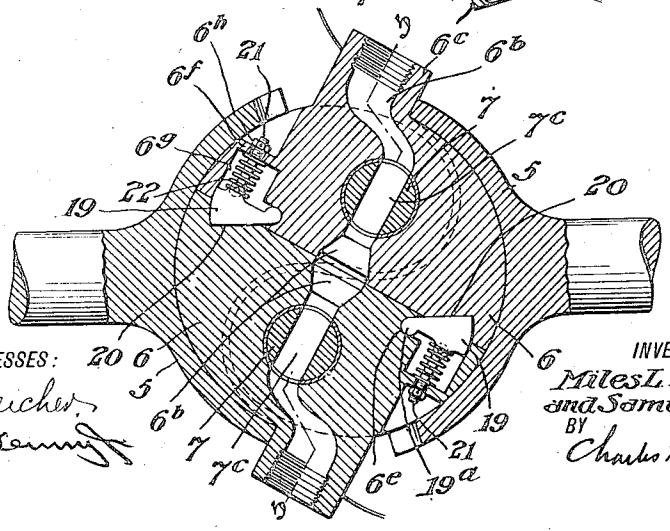



Fig. 4.

WITNESSES:

R. Schleicher.

Jos. B. Dennis

INVENTORS:

Miles L. Bookwalter

and Samuel Saunooke,

BY

Charles N. Butler

ATTORNEY.

M. L. BOOKWALTER & S. SAUNOOKE.

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3 SHEETS—SHEET 3.

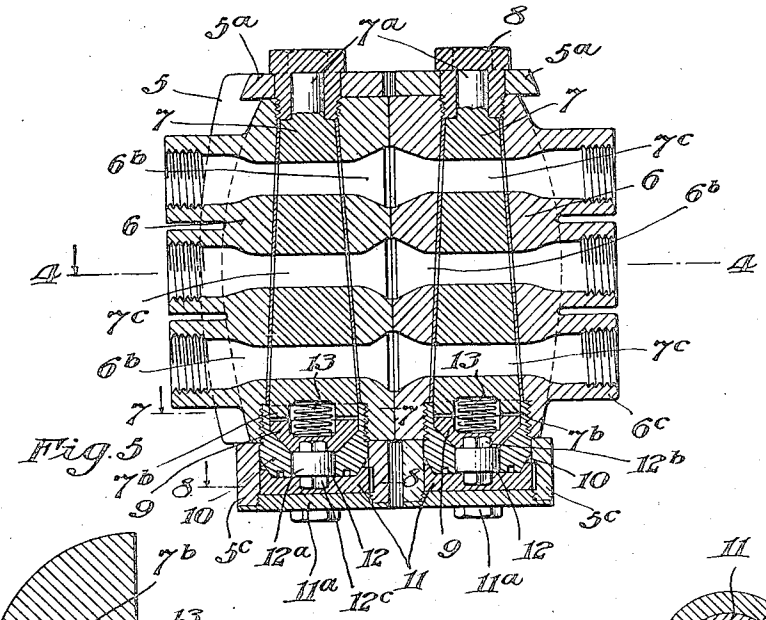


Fig. 5.

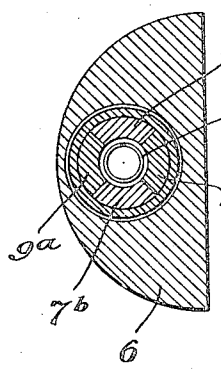


Fig. 7.

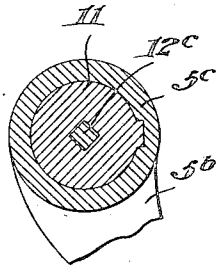


Fig. 8.

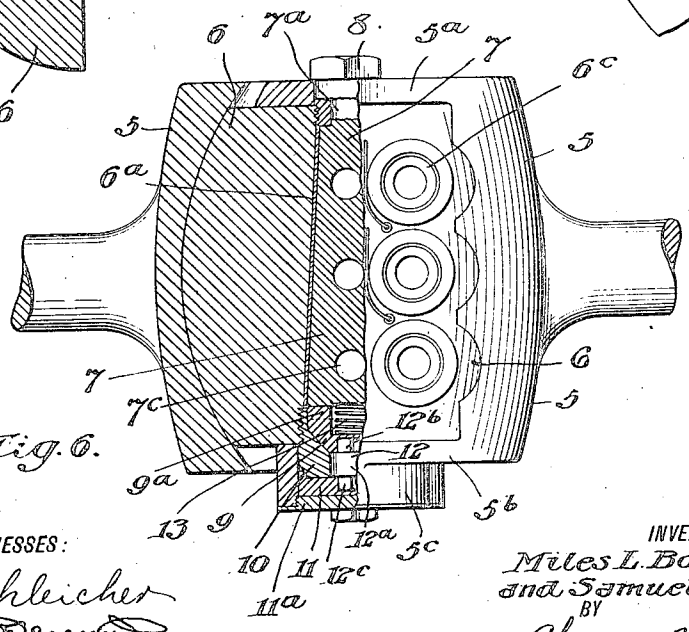


Fig. 6.

WITNESSES:

R. Schleicher

INVENTORS:

Miles L. Bookwalter,
and Samuel Saunooke,
BY
Charles N. Butler
ATTORNEY.

# UNITED STATES PATENT OFFICE.

MILES L. BOOKWALTER AND SAMUEL SAUNOOKE, OF ALTOONA, PENNSYLVANIA.

## TRAIN-LINE COUPLING.

1,130,252. Specification of Letters Patent. Patented Mar. 2, 1915.

Continuation of application Serial No. 786,774, filed August 26, 1913. This application filed March 12, 1914. Serial No. 824,085.

*To all whom it may concern:*

Be it known that we, MILES L. BOOKWALTER and SAMUEL SAUNOOKE, citizens of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain Improvements in Train-Line Couplings, whereof the following is a specification.

This invention is designed to provide improved means for automatically and certainly coupling together the members of a train line system, comprising fluid conduits and electric conductors, carried by the several cars, and for automatically and certainly closing the conduits of the train line system upon the separation of the train line coupling members, which is effected automatically, this application being a continuation of our application Serial Number 786774, filed Aug. 26, 1913.

An object of our invention is to provide a construction having the foregoing characteristic functions, which will effect automatic registration and reduce the loss of steam and air by leakage to a minimum.

A further object is to provide a simple construction that can be readily attached to and operated by standard cars.

The characteristic features of our invention will more fully appear from the following description and the accompanying drawings in illustration thereof, in which—

Figure 1 is a part sectional elevation representing our improvements applied to a pair of coupled cars; Fig. 2 is a top plan view representing essential features of our improvements in coupled relation; Fig. 3 is a sectional view taken on a horizontal plane through the coupling with the members in the dissociated relation; Fig. 4 is a sectional view of the connected coupling members taken on the line 4—4 of Fig. 5; Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 4; Fig. 6 is a part sectional elevation of coupling members in connected relation; Fig. 7 is a sectional view taken on the line 7—7 of Fig. 5; Fig. 8 is a sectional view taken on the line 8—8 of Fig. 5; Fig. 9 is a face elevation of a coupler block; and Fig. 10 is a sectional view taken on the line 10—10 of Fig. 9.

As shown in the drawings, the cars 1 have depending therefrom the hangers 2 provided with bearings $2^a$ which carry coiled springs 3 having median coils $3^a$ fixed in the bearings, the springs contracting from the median to the terminal coils $3^b$. Bars 4 are supported within the springs 3 by the coils $3^b$ and are provided with the flanges $4^a$ for engaging these coils, the springs allowing the bars limited lengthwise and lateral movements under pressure but restoring them to their normal position when released.

Concave heads or shells 5 are carried by the bars 4 and provided with the top and bottom lugs $5^a$ and $5^b$, the latter having the hubs $5^c$ thereon.

Blocks 6, which are truncated spheroidal segments as shown, are journaled between the respective lugs $5^a$ and $5^b$ on the conical valves 7, which pass therethrough and are fixed to the respective lugs. The reduced tops $7^a$ of the respective valves are fixed to the corresponding lugs $5^a$ by the sleeve nuts 8. The bottoms of the valves are provided with segmental clutching members $7^b$ which are engaged by clutching members $9^a$ of bearings 9. These bearings 9 are seated in the sleeve bearings 10 journaled thereon and screwed into the blocks 6, the bearings 10 being journaled in the hubs $5^c$ on the bearings 11 keyed therein. A coupling 12 with a cylindrical body $12^a$ on which the bearing 10 turns has the square heads $12^b$ and $12^c$ engaging the respective parts 9 and 11 to fix them together. The part 9 contains a spring 13 which acts upon the valves 7 to maintain them in closely fitting relation to the conical valve seats $6^a$ in the blocks 6, and plugs $11^a$ are screwed into the hubs $5^c$ to hold the bearings 11 in place.

Each of the blocks 6 is provided with fluid passages $6^b$ connected with pipes 14 by hose $14^a$ having unions $14^b$ adapted to be screwed into hollow bosses $6^c$ on the blocks, and each of the valves 7 is provided with passages $7^c$ which are adapted to be closed by the blocks 6 in the uncoupled relation and opened by the blocks so as to connect their registering passages $6^b$ in the coupled relation. Each of the blocks is provided with electrical contacts 15 fixed on binding posts $15^a$ for the electrical conductors 16, the contacts being normally pressed beyond the respective complementary flat faces $6^d$ of the blocks by the springs 17 seated in boxes 18 through the forward and rear ends of which the contacts and posts are respectively movable. Each block is provided

with a segmental dog 19 adapted to be engaged in a segmental recess or catch 20 in the face of the complementary block, the dogs having the respective journals $19^a$ seated in the bearings $6^e$. Bolts 21 are pivotally connected to the respective dogs, move through the bottom $6^f$ of chambers $6^g$ in the blocks and provided with the nuts $6^h$ for limiting their movement and the outward movement of the dogs, the latter being normally held in their outer position by coiled springs 22 on the bolts within the chambers and being movable into the chambers against the actions of these springs.

In the operation of the mechanism, with the couplers in the separated relation shown in Fig. 3, the blocks 6 are turned on the valves 7 so as to close the fluid passages $6^b$, the valves having such character and connections that they will prevent leakage. As the cars come together, the block faces $6^d$ (which are at an angle to the direction of movement with the bosses $6^e$ in engagement with the heads 5 to limit such angle) engage, the blocks are turned on the valves to the position shown in Fig. 4, first by the actions of the blocks 6 on each other and then by the action of the respective members 5 on the blocks entering therein, with the bosses in engagement with the heads complementary to those by which they are carried, the passages $6^d$ through the blocks and $7^c$ through the valves are brought into registration to couple the fluid conduits 14, the contacts 15 of the respective blocks are engaged to couple the conductors 16, and the dogs 19 enter the recesses 20 to hold the blocks in the relation desired for coupling the lines, the dogs being pressed back into the chambers $6^g$ as the faces $6^d$ slide into place and springing into the recesses 20 when this place is reached. It will be understood that the curved exterior surface of each block and the curved interior surface of the head carrying the opposite block effect the adjustment or guiding operation necessary to bring the parts of the blocks into the desired registering relation, in the event that the complementary parts are for any reason out of line. When the cars are drawn apart, the contact of the faces $6^d$ supplemented by the action of the dogs 19 turn the blocks 6 from the position shown in Fig. 4 to that shown in Fig. 3, whereby the lines are disconnected and the fluid passages closed.

Having described our invention, we claim:

1. A train line coupling comprising members adapted to be connected with respective cars, valves carried by said members, devices journaled relatively to said valves and having train line sections therein, and train line sections connected in communicating relation with the train line sections of the respective devices in the different positions thereof, each of said devices being adapted for engaging the member to which it is not journaled and being automatically turned on bringing them together and the train line sections in said devices being automatically registered thereby.

2. A train line coupling comprising members adapted to be connected with respective cars, journaled devices carried by the respective members, one of said devices engaging the member to which it is not journaled, said devices containing conduits, train line conduits connected with the conduits of said devices in the different positions thereof, and stationary means for opening and closing the conduits in said devices in different positions thereof.

3. A train line coupling comprising members adapted to be connected with respective cars, devices having bearings journaled in the respective members, passages in the respective devices and valves on which the respective devices are journaled, said valves opening and closing said passages in different positions of said devices.

4. A train line coupling comprising members adapted to be connected with respective cars, valves carried by the respective members, devices journaled on the respective valves, each of said devices containing a passage controlled by the valve on which it is journaled, a train line section connected with each of said devices in the different positions thereof and communicating with the respective passages, said devices being turned automatically by engagement with said members to open and connect said passages.

5. A train line coupling comprising members adapted to be connected with respective cars, bearings on said members, blocks, devices on said blocks and journaled in said bearings, each of said blocks containing a passage and an intersecting valve seat, valves in the respective seats for controlling said passages, and springs and supports therefor relative whereto said blocks are adapted to turn and whereby said valves are pressed against said seats.

6. A train line coupling comprising substantially spheroidal members adapted to be fixed to respective cars, devices respectively provided with passages and substantially spheroidal surfaces journaled relatively to said members, the spheroidal surface of the device connected with one member adapted to engage the spheroidal surface of the other member, and valves connected with the respective members, said devices journaled on said valves and said valves controlling said passages.

7. A train line coupling comprising a member adapted to be connected to a car, a valve, a block having a seat adapted to turn on said valve, and means whereby said

block is connected in journaled relation to said member independently of said valve.

8. A train line coupling comprising members adapted to be connected with respective cars and having spheroidal surfaces, valves carried by said members, and blocks journaled on said valves and having spheroidal surfaces, the spheroidal surface of each of said blocks engaging the spheroidal surfaces of both of said members, said blocks containing passages and being journaled eccentrically on said valves.

9. A train line coupling comprising concave members adapted to be fixed to respective cars, in combination with blocks having respectively convex and flat surfaces journaled relatively to said members, said blocks being turned and brought into registration automatically by the engagement of their flat surfaces and the action of said members so that the engaging surfaces shall extend transversely to the direction of movement of said members.

10. A train line coupling comprising members adapted to be fixed to cars, devices containing passages journaled relatively to the respective members, valves for opening and closing the passages of the respective blocks in different positions thereof, and means carried by each block for positively turning the other upon separating to close said passages.

In testimony whereof, we have hereunto set our names this 19th day of February, 1914, in the presence of the subscribing witnesses.

MILES L. BOOKWALTER.
SAMUEL SAUNOOKE.

Witnesses:
CARL E. HEDBERG,
ADAM LEAKE.