2 Sheets—Sheet 1.

G. H. GRIGGS.

Pipe-Coupling.

No. 202,942. Patented April 30, 1878.

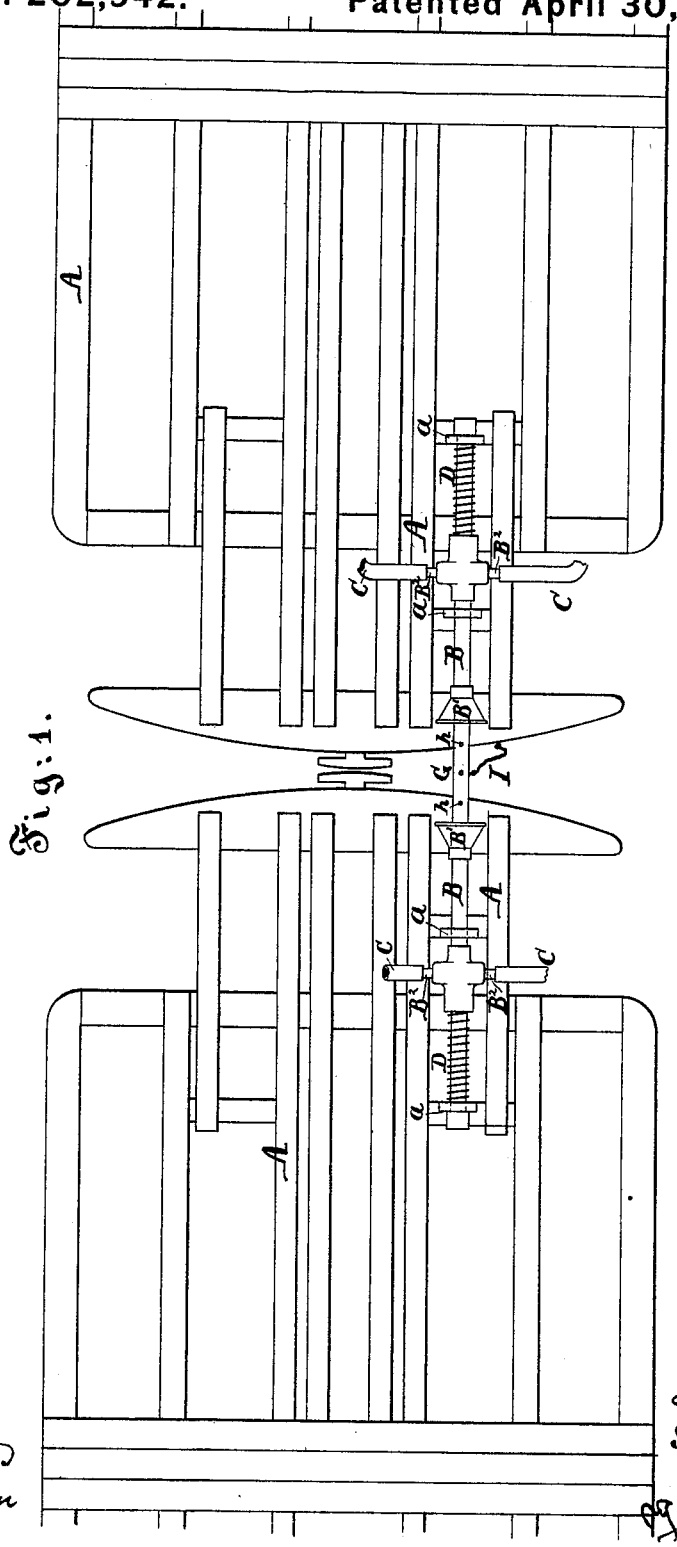

Fig. 1.

Witnesses:
A. L. Gaines
J. K. Cullahan

Inventor:
Geo. H. Griggs.
by his attorney
A. H. Hobbs

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2 Sheets—Sheet 2.

G. H. GRIGGS.

Pipe-Coupling.

No. 202,942. Patented April 30, 1878.

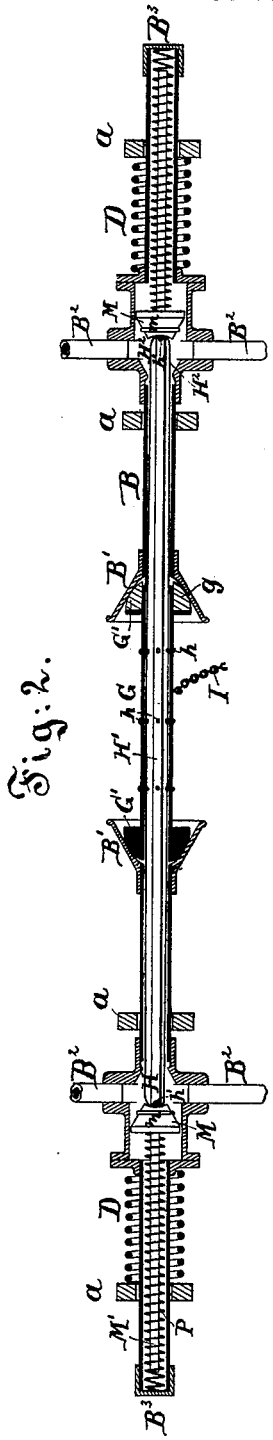

Fig: 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE H. GRIGGS, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN PIPE-COUPLINGS.

Specification forming part of Letters Patent No. **202,942**, dated April 30, 1878; application filed February 21, 1878.

To all whom it may concern:

Be it known that I, GEORGE H. GRIGGS, of Hartford, in the county of Hartford, State of Connecticut, have invented certain new and useful Improvements relating to Pipe-Couplings for Railroad-Cars, of which the following is a specification:

The invention is intended more particularly for use in connection with mechanism for operating the brakes by steam, air, or other gases. I esteem it especially adapted for use with what are known as "vacuum-brakes," where the pressure of the elastic fluid in the pipes is less instead of more than the external atmosphere.

I fix funnels having properly-shaped sockets on the ends of yielding sections of pipe, and provide an intermediate piece having spherical ends, which, on the cars being brought together, applies its spherical ends into air-tight or nearly air-tight union with the sockets, the springs serving to maintain a practically tight contact under all the stretchings and turnings of the connections in running the cars.

I provide springs extending through the connecting-pieces and projecting at each end, care being taken not to seriously obstruct the passage of air. The extensions engage in the contracted part of the pipe beyond the funnel, and while they are sufficiently flexible to yield to all the necessary turns, they are sufficiently rigid to support the weight of the connecting-piece, and to hold it up in a nearly horizontal position when the outer end is left free. The connecting-pieces will by this means hold themselves in the position to couple, and on running the cars together they will couple without requiring attention. The springs are so constructed as to yield uniformly on whichever side they may happen to lie, so as to maintain their length with rigidity, and thus to insure their performing properly, and guiding their respective ends of the connecting-piece into engagement with its proper socket on the cars being brought together.

Valves are provided which perform the obviously necessary function of closing automatically on the withdrawal of the central piece, and thus close the passage at the back end of the train. These valves are opened automatically by the entrance of the springs when two cars couple together.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a plan view seen from below. It represents part of the bottoms of two cars in the position which they assume when properly coupled together on a straight track. Fig. 2 is a sectional view on a larger scale.

Similar letters of reference indicate like parts in all the figures.

A is the platform of a car, and *a a* are brackets rigidly fixed therein, which support a section of pipe, B, with liberty to slide endwise to a considerable extent. The inner end of the pipe B is tightly closed. The outer end B^1 is flared, and forms an extended socket, the inner end of which is nicely turned to a section of a sphere. Branches B^2 connect to the pipe B at right angles, and to them are connected flexible lengths of hose C, which lead to other parts of the apparatus not represented, to form the continuous connection from the engine to work the brakes.

A spiral spring, D, embraces the pipe B, and acts between one of the abutments and the collar by which the branches B^2 are connected to urge the entire device outward.

It will be understood that each end of each car is equipped with one of these devices. A description of one will suffice for all. I propose in some cases to provide two complete sets of the apparatus at each end of each car, one to be on each side of the central draw-coupling. (Not represented.)

The connecting-piece is marked G. Each end is finished spherically, as indicated by G′. It is only of sufficient length to allow for the lateral and the vertical motions of the cars to which it is connected.

H^1 H^2 are thin plates of tempered steel, folded, as shown, so as to cross each other at the ends, and held in place in the coupling-piece G by rivets *h*. The ends where the plate H^1 crosses the plate H^2 are secured by a rivet, *h′*.

I will designate the entire spring, when necessary, by the single letter H. The slender and highly-elastic steel in the plates H^1 H^2 occupies but little space in the coupling, and forms but little obstruction to the passage of

the air. The construction allows the entire spring H to maintain a uniform length. It serves efficiently as a guide, and when it strikes the flaring inner face of a funnel, B^1, it smoothly guides its end of the coupling-piece G into the proper place in the socket.

The spring H also, by its capacity to exert considerable force longitudinally, acts effectively against the valve M, to push it inward and uncover the port where the branch B^2 connects.

The spring H, although constructed uniform in its length, is quite flexible laterally. Its form makes it equally willing to yield up and down or sidewise, and it is immaterial which side up it chances to lie. It will, in any position, yield freely to allow all the variations of level and all the variations of the positions sidewise of the two cars which its coupling-piece connects.

When the cars are uncoupled, the coupling-piece G and its connected spring H^1 H^2 may remain connected with one of the cars, or it may be drawn out of both. It is immaterial which condition obtains. A cord or chain, I, attaches the coupling-piece to a convenient point above, and prevents the device from becoming lost. On coupling two cars together, if the coupling-piece G is not in place in the socket of the car to which it is attached, the attendant inserts it, and the spring H^1 H^2, engaging in the pipe B, holds up the pendent weight sufficiently near the horizontal line to insure its coupling with the funnel B^1 of the opposite car on their being brought together.

The pipe B is formed with two branches, B^2 B^2, as indicated. At the junction of these branches with the pipe B, I form a conical valve-seat. The valve M is turned with one or more grooves, in which are inserted rubber rings *m*, which project from the surface. They insure a tight fit between the valve and its seat. A considerable extension, M′, of this valve is surrounded by a spiral spring, P, which finds its abutment against the cap B^3 on the inner end of the pipe B, and urges the valve M outward with considerable force, but not so as to prevent its being forced inward by the thrust of the springs H^1 H^2 in the act of coupling the cars.

One feature to which I attach much importance is a packing of rubber or analogous yielding material, *g*, fitted on to form the hemispherical ends of the coupling-piece G, and projecting a little beyond the metal, as indicated at the right side of Fig. 2. I use this with any construction of the other parts, but always with a smooth metallic spheroidal concave in the parts against which the soft-packed spheroidal ends shall work. The soft material *g* serves to pack the joint and reduce the leakage of air, as also to reduce the wear of the surfaces with the constant chafing or rolling of the spherical end within its socket.

My apparatus accommodates itself to all ordinary and extraordinary conditions. Many modifications may be made in the details. The spherical or nearly spherical ends G′ of the connecting-piece G may be formed in one with the main body of the connection.

I claim as my invention—

1. The pipes B, yielding elastically, as shown and described, and formed with spherical-based cavities at their flared ends, in combination with the coupling-piece G, having globular ends, adapted to yield in every direction and maintain a tight contact, as herein specified.

2. The connecting-piece G, formed with springs extending beyond the ends thereof, and adapted to serve, in combination with yielding pipes B, as shown and described, on the ends of the cars A, as herein specified.

3. In a coupling, the spring H in two separate thin parts crossing each other, and held by a rivet, *h′*, adapted to serve the double functions of pushing open the valve M and of elastically supporting the connecting-piece G in any position, as herein specified.

4. The combination of the yielding pipes B with flared ends B^1, and having spherical-based cavities therein, the coupling-piece G, having spheroidal ends, and the extending springs H, adapted to support the same, as herein specified.

5. The suspending chain or cord I, attaching the connecting-piece G permanently but loosely to one of the cars, in combination with the yielding pipes B B^1 and their connections, as herein specified.

6. The soft packing *g* on the spheroidal ends of the coupling-piece G, in combination with the correspondingly-concaved ends of the tubes B B^1, as herein specified.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

GEO. H. GRIGGS.

Witnesses:
H. A. JOHNSTONE,
CHAS. C. STETSON.