(No Model.) 2 Sheets—Sheet 1.

R. I. HAMPTON.

COUPLING FOR THE STEAM PIPES OF RAILWAY CARS.

No. 406,397. Patented July 2, 1889.

Fig. 1.

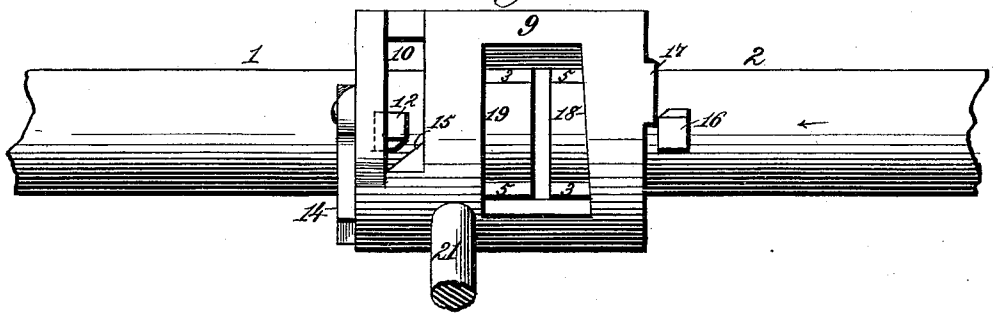


Fig. 2.

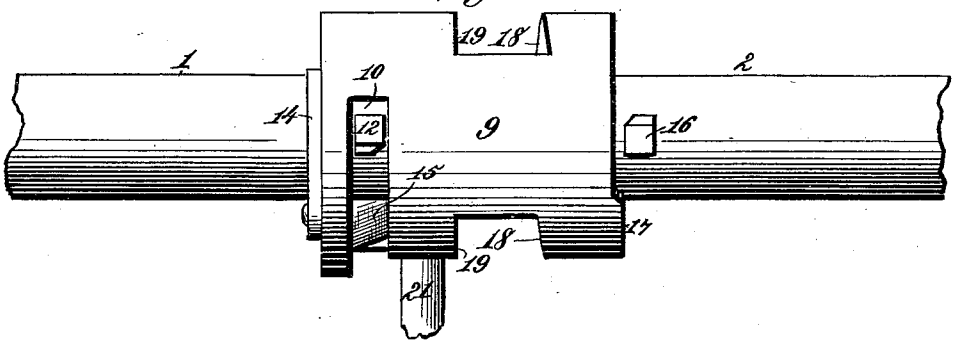


Fig. 3.

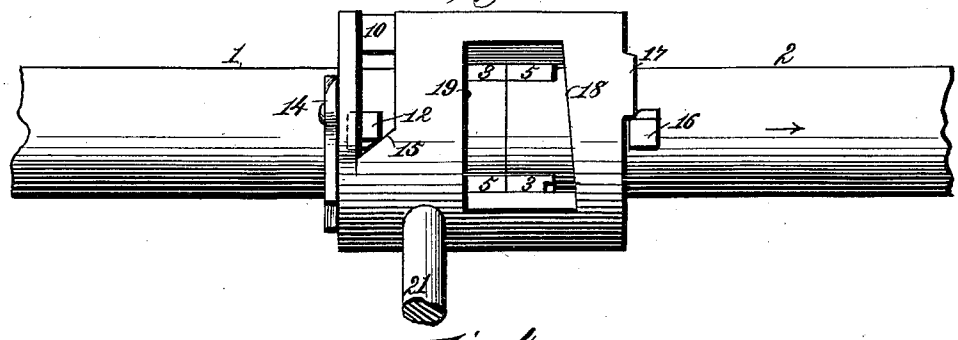
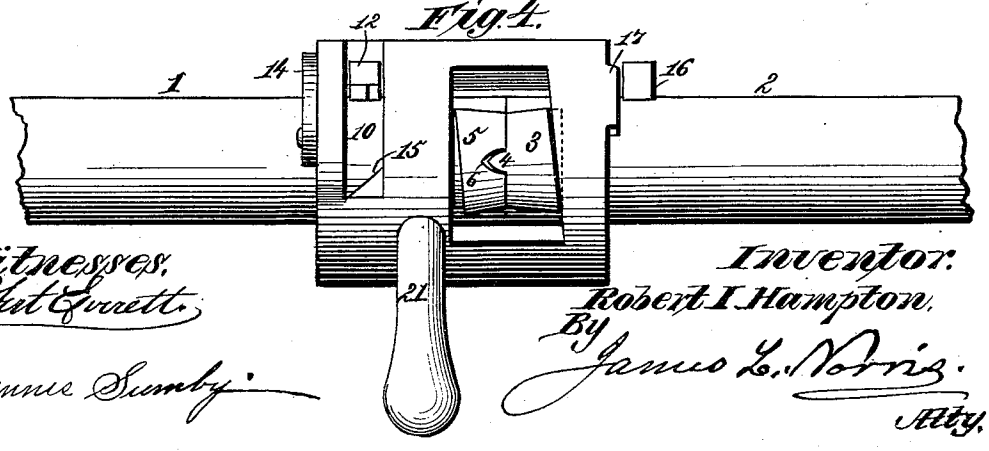


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

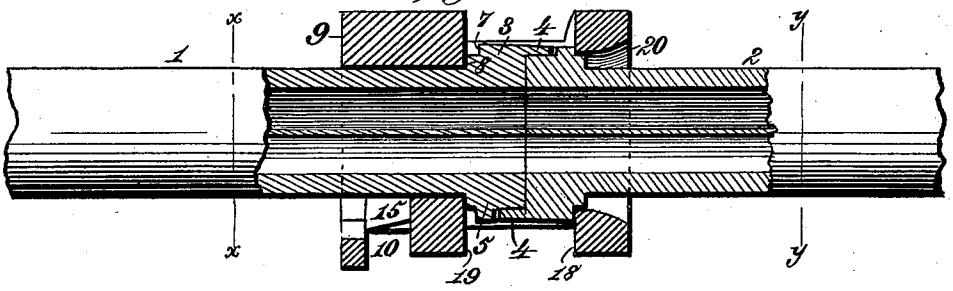


Fig. 6.

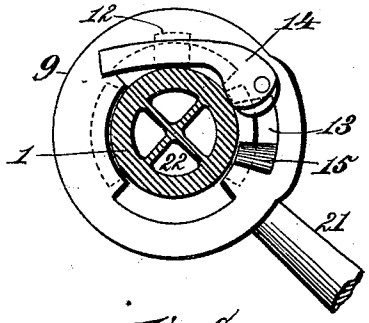


Fig. 7.

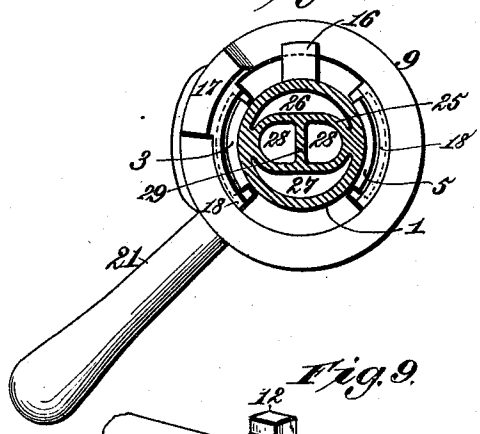


Fig. 8.

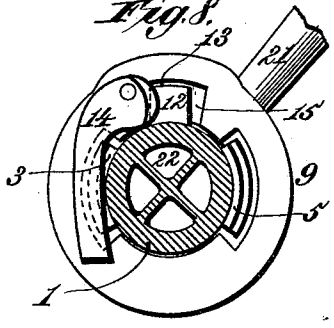


Fig. 9.

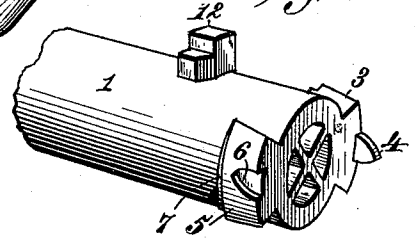
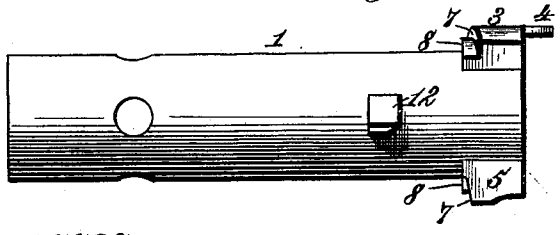


Fig. 10.



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UNITED STATES PATENT OFFICE.

ROBERT I. HAMPTON, OF ATHENS, GEORGIA.

COUPLING FOR THE STEAM-PIPES OF RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 406,397, dated July 2, 1889.

Application filed March 21, 1889. Serial No. 304,198. (No model.)

To all whom it may concern:

Be it known that I, ROBERT I. HAMPTON, a citizen of the United States, residing at Athens, in the county of Clarke and State of Georgia, have invented new and useful Improvements in Couplings for the Steam-Pipes of Railway-Cars, of which the following is a specification.

My invention relates to couplings for that class of pipes employed in conveying air or steam through a train of railway-cars for the purpose of supplying a heating medium to the interior of said cars or for operating the brakes.

It is the purpose of my invention to provide simple means, which may, if desired, have automatic action, whereby the communicating extremities of the separate pipes arranged beneath the several cars may be readily and securely coupled and instantaneously uncoupled, the coupling being effected by means of a weighted sleeve running upon the coupling-cams of the pipe-sections and drawing the same together, said sleeve being rendered detachable or removable and reversible at will.

The invention consists to these ends in the several novel features of construction and new combinations of parts hereinafter fully set forth, and then definitely pointed out in the claims following this specification.

Referring to the accompanying drawings, Figure 1 is a plan view of a coupling embodying my invention, the parts being shown as the pipe-sections are about to meet and be coupled. Fig. 2 is a similar view showing the parts locked. Fig. 3 is a plan view showing the partial revolution of the coupling-sleeve prior to the separation. Fig. 4 is a side elevation of the parts shown in Fig. 2. Fig. 5 is a central or axial section. Fig. 6 is a cross-section in the line *x x*, Fig. 5. Fig. 7 is a cross-section in the line *y y*, Fig. 5. Fig. 8 is a cross-section in the line *x x*, Fig. 5. Fig. 9 is a detail perspective of one of the coupling pipe-sections. Fig. 10 is a plan view of the pipe-section shown in Fig. 9.

In the said drawings the reference-numeral 1 designates one section of the pipe to be coupled, while the numeral 2 denotes the other section, each being connected to the rigid pipe beneath the car-bottom by any suitable flexible means, whereby the movements and undulations of the cars under motion are taken up. This coupling may be made by means of flexible sections of pipe, although for durability I prefer to employ an all-metal connection. Upon each coupling-section at its end is formed a lug 3, of substantially segmental form, from which projects in a direction parallel with the axis of the pipe a tooth or guide-piece 4. Upon the opposite section is formed a similarly-shaped lug 5, having a recess 6, within which the guide-piece enters as the coupling-sections come together, and by which they are brought into an accurate register, one with another, and rotary movement of either with relation to the other prevented.

The lugs 3 and 5, formed, as described, upon opposite sides of the abutting extremities of the coupling-sections, are of substantially segmental form, and while their meeting faces are flush with the ends of the pipe-sections their rearward faces are dressed off at a small angle with the axis of the pipe, thereby forming cam-faces 7, having an obliquity similar to the pitch of a screw-thread. The construction of all four of these lugs is in this respect the same; but it should be noted that while the cam-surfaces 7 are cut in the manner set forth they do not occupy the entire rearward faces of the lugs 3 and 5, but are cut from the outer surface part way to the pipe, leaving upon each lug a shoulder 8, which is parallel with the squarely-cut end of the coupling-section. This construction is very clearly shown in Fig. 10.

Loosely mounted upon one of the coupling-sections of pipe is a turn-buckle or locking-sleeve 9, having a slot or channel 10 cut therein near and parallel to its end. This slot receives a stud or post 12, projecting radially from the top of the pipe-section, and serving in part as a guide to the rotary movement of the locking-sleeve. The sleeve is provided at or near the end of this slot with an opening 13, by which it may be placed upon the coupling-section, the stud or post 12 passing through said opening into the slot 10, the entrance-opening being sufficiently covered by a cam-clutch 14, pivotally mounted on the sleeve, to prevent the longitudinal displacement of the sleeve. This cam-clutch also

locks when turned down upon the surface of the pipe-section and prevents rotary movement of the locking-sleeve. At that end of the slot 10 adjacent to the opening 13 an inclined surface 15 is formed, inclining toward said opening, whereby when the sleeve is turned until the stud is brought against the inclined face a longitudinal movement of the former will be caused, as shown in Fig. 3, thereby bringing the stud 12 partly into the recess or opening 13. Upon the other or engaging coupling-section 2 is formed a radial stud or post 16, similar in all substantial respects to the stud 12, but so located that when the locking-sleeve is rotated upon the two coupled sections of pipe, as in Fig. 3, until the inclined end or surface 15 of the slot 10 impinges upon the stud or post 12 and causes a longitudinal displacement of the sleeve, the end of the latter is brought into engagement with said stud 16 and brings a cam-stop to rest thereon.

In opposite sides or upon opposite interior faces of the locking-sleeve 9 are formed angular locking-shoulders 18, having a pitch or angularity corresponding to that of the cam-faces 7 of the lugs 3 and 5. These angular locking-shoulders may be formed by cutting entirely through the sleeve, as shown in Figs. 1 to 5, inclusive. In any form of construction, however, these angular shoulders are formed to engage the cam-faces 7 of the coupling-section 2, and at suitable intervals are formed shoulders 19, which are cut straight or at right angles with the axis of the sleeve to engage the straight shoulders 8 of the lugs 3 and 5 on the pipe-section 1. The end of the locking-sleeve which projects from the pipe-section 1 is cut away interiorly to freely admit the end of the pipe-section 2 with its lugs 3 and 5, slightly-beveled guides 20 being placed in the end of the sleeve, if desired, in order to direct the entering pipe-section to its proper position. For convenience of manipulation a lever 21 may be attached to the sleeve, from which it projects radially, and this lever may be so weighted as to give automatic rotation to the locking-sleeve when released, although this feature does not form an essential part of my present invention.

Before proceeding further with the description of parts, I will set forth the operation of the coupling devices.

The pipe-sections 1 and 2 being mounted upon the railway-cars in any suitable manner and the locking-sleeve 9 being in place upon either one of said sections, the coupling is effected as follows: The locking-sleeve being rotated, the post 12 strikes the incline 15 at the end of the slot 10 and passes into the opening or recess 13, whereby the sleeve is slightly projected forward upon the section 1. Being then released, it turns very slightly by the weight of the lever 21 until the end of the cam-stop 17 is brought into the path of the stud or post 16 on the entering pipe-section 2. Both the coupling-sections are so mounted that while the necessary flexibility is permitted the sections can neither of them turn upon their own axes, so that they will always be presented in coupling in the proper position for engagement. As the pipe-section 2 enters the open end of the sleeve 9, the post 16 impinges upon the cam-stop 17 and carries the sleeve longitudinally far enough to free the stud or post 12 from the recess 13 and bring it again into the slot 10, while at the same time the ends of the pipe-sections meet. If a weighted lever 21 is employed, the action following will be automatic, the sleeve rotating under the impulse of the gravity of the lever and its straight shoulders 19 engaging the straight-cut shoulders 8 on the lugs 3 and 5 of the section 1, while the angular shoulders 18 make engagement with the cam-surfaces 7 on the pipe-section 2. As this engagement takes place the instant the sleeve is released, a very limited rotation of the latter is sufficient to closely lock the engaging sections together.

The sleeve 9 may be operated by hand as well as by automatic means, or both the weighted lever and hand manipulation may be employed, since the weight may not be sufficient to completely rotate the sleeve and lock the pipe-sections together.

In devices of this character where steam is employed for heating the interiors, while either steam or air is used to operate the brakes and the conductor's signals to the engineer, it is necessary to provide in the coupling pipe-sections different channels of communication, whereby each medium may traverse the coupling without mingling with the others. It is extremely desirable, also, that the construction shall be such that the channels conveying the live steam and dead steam to and from the radiating-circuits shall be as completely as possible protected from exposure to the air, whereby rapid radiation of heat is caused and more or less condensation of steam as a result. While the separate conductors arranged beneath the cars may be covered and fully protected by jackets or other means, whereby conduction of heat is avoided, such protection is impossible in the pipe-couplings or pipe-sections. Therefore, while I have shown the pipe-sections as provided with four conducting-channels 22, formed of diametrical walls 23, I prefer the construction shown in Fig. 7, wherein the numeral 24 denotes the tube forming the pipe-section. Within this tube is formed an integral conveyer 25, of substantially oval or elliptical form in cross-section and extending throughout the central portion of the pipe-section, thereby forming a channel or passage-way 26 above and a suitable channel 27 below the central conveyer. If required, the latter may be divided into two separate and similar conduits 28 by means of a central vertical wall 29. These channels may be used for the live steam and return-circuit for the heating apparatus, while the passages 26 and

27 may be used for the steam operating the brakes or for the medium by which the conductor's signals are sounded. I may also utilize these channels as conduits for hot air, by which the brakes and conductor's signals may be operated, or I may simply pack the spaces thus formed with any suitable non-conducting material.

It should be noted that by simply raising the cam-clutch in either direction to clear the post 12 the turn-buckle or locking-sleeve 9 may be readily and instantaneously removed from one pipe-section and as easily applied to the other. The cam-faces 7 and shoulders 8 being in duplicate upon each pipe-section, the sleeve may be reversed, and will operate as readily on one section as upon the other.

Having thus described my invention, what I claim is—

1. In a coupling for the steam and other pipes upon railway-cars, the combination, with two similar pipe-sections, each having segmental lugs upon opposite sides, provided with alternate guides and guide-seats, of a locking-sleeve rotatively mounted upon one of said pipe-sections and capable of a limited longitudinal adjustment thereon, said sleeve having a cam-stop adapted to engage a stud or post upon the other pipe-section to hold the coupling in position for separation, substantially as described.

2. In a coupling of the type set forth, the combination, with two similar pipe-sections having locking-shoulders thereon, of a locking-sleeve having a slot with a recess therein, which receives a stud on one pipe-section, and provided with locking-shoulders engaging the similar shoulders on the respective pipe-sections, said slot having an inclined surface at one end, whereby the stud is thrown into the recess to hold the sleeve in coupling position, substantially as described.

3. In a coupling of the type described, the combination, with two similar pipe-sections, each having lugs provided with straight shoulders and separate cam-inclined shoulders, of a locking-sleeve having a straight slot provided with an incline at its end and having a recess opposite said incline, the other pipe-section being provided with a stud or post, and the edge of the sleeve adjacent to said post having a cam-stop which is engaged with the stud by the displacement of the sleeve caused by the action of the incline upon the stud lying in the recessed slot in the sleeve, substantially as described.

4. In a coupling of the type described, the combination, with two similar pipe-sections, each having opposite segmental lugs provided alternately with guide-pieces and seats therefor, of a locking-sleeve loosely mounted on one section and having straight and inclined shoulders engaging straight shoulders on one pipe-section and cam-shoulders on the other, one of said pipe-sections having a stud running in a slot in the sleeve, said slot having an inclined end and recess adjacent thereto, and the other having a similar stud engaging a cam-stop on the end of the sleeve as the pipe-sections come together, substantially as described.

5. In a coupling of the type described, the combination, with two similar pipe-sections, each having segmental lugs provided with guiding devices and each having straight and cam surfaces or shoulders on the rear faces of each lug, of a locking-sleeve having a straight slot to receive a stud on one pipe-section and provided with a recess into which said stud may pass to hold the sleeve when set for coupling, the other pipe-section being provided with a stud to engage a cam-stop on the open end of the sleeve and throw the stud on the other pipe-section out of its recess and release the sleeve as the ends of said sections meet, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

ROBERT I. HAMPTON.

Witnesses:

JAMES L. NORRIS,

JAMES A. RUTHERFORD.