(No Model.) 3 Sheets—Sheet 1.

G. BEEKMAN.

CAR COUPLING.

No. 495,655. Patented Apr. 18, 1893.

Fig. 1.

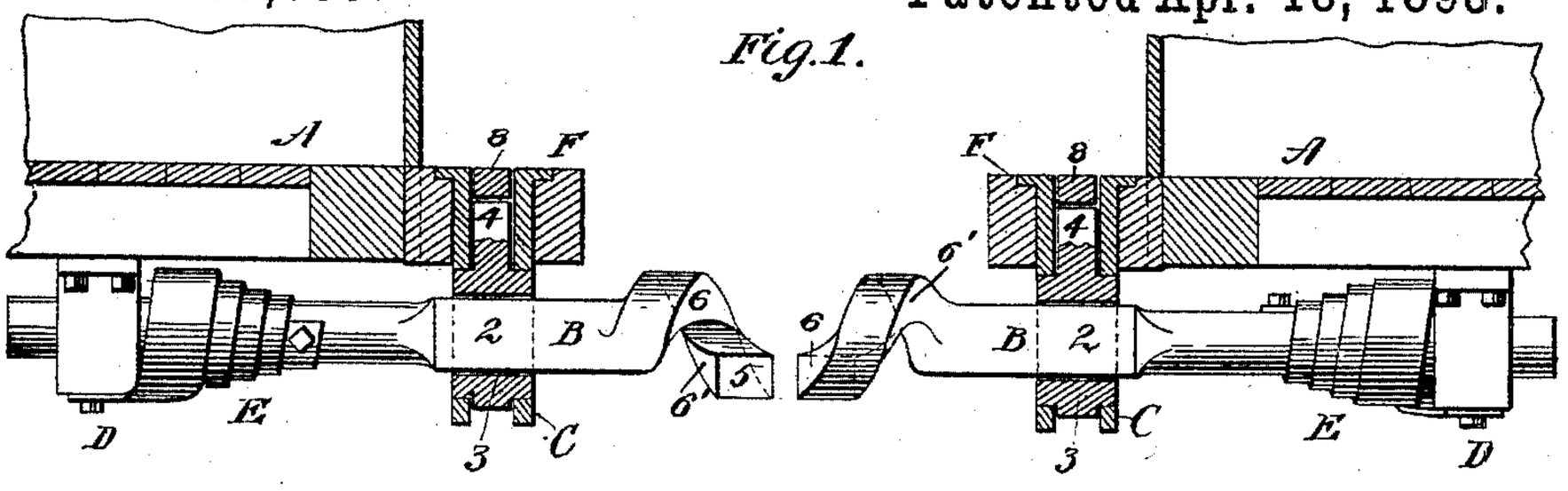

Fig. 2.

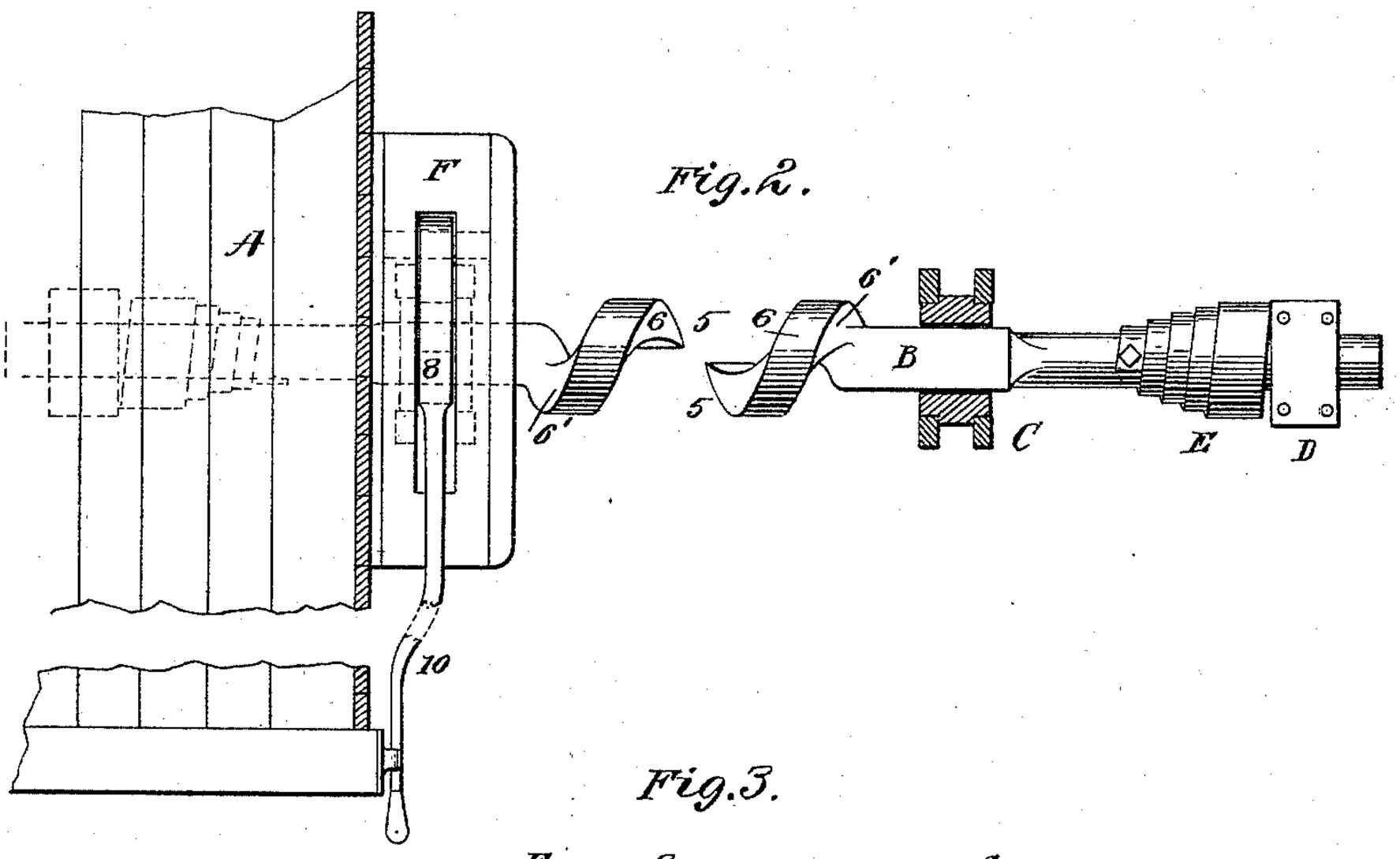

Fig. 3.

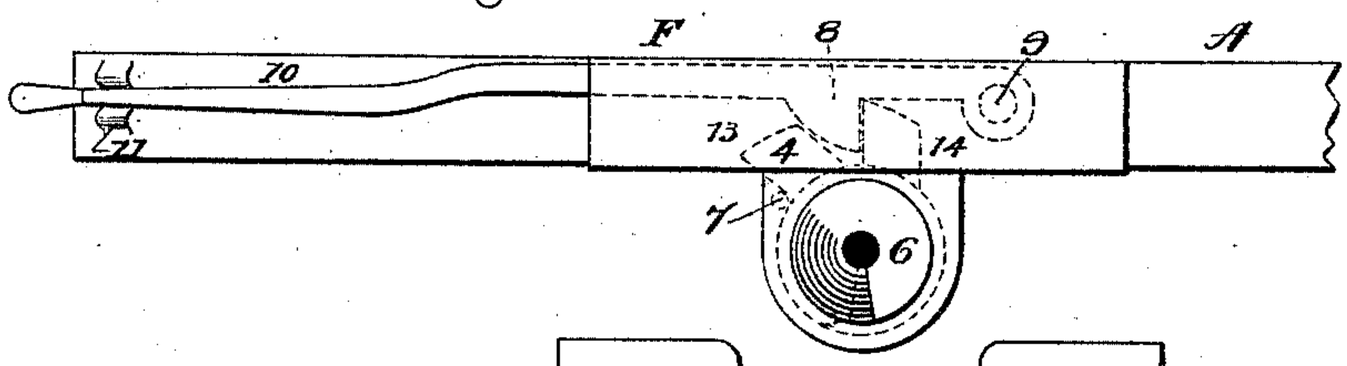

Fig. 5.

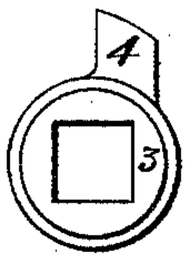

Fig. 4.

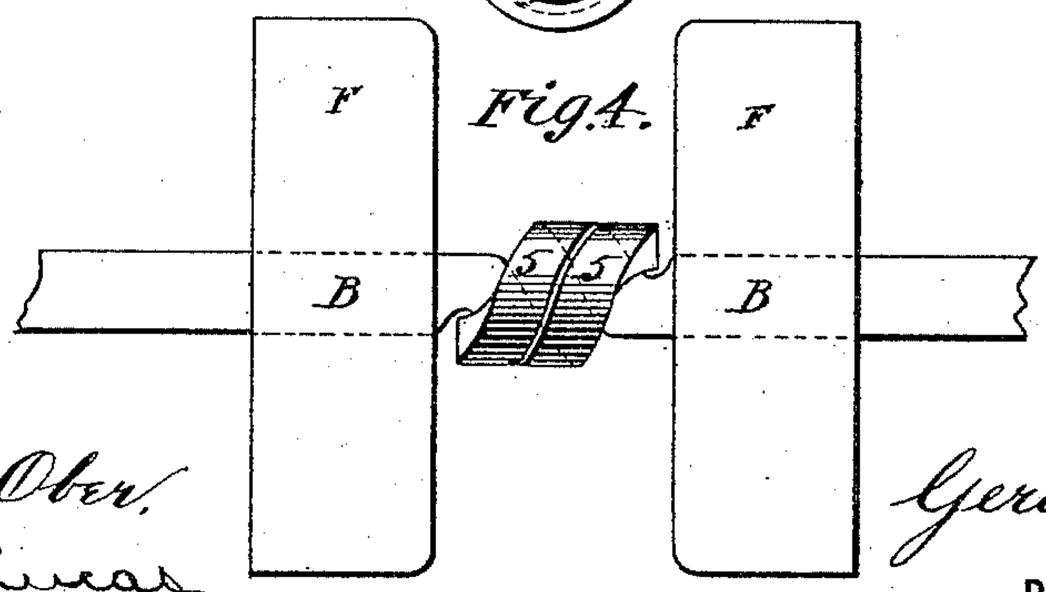

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Fig. 6.

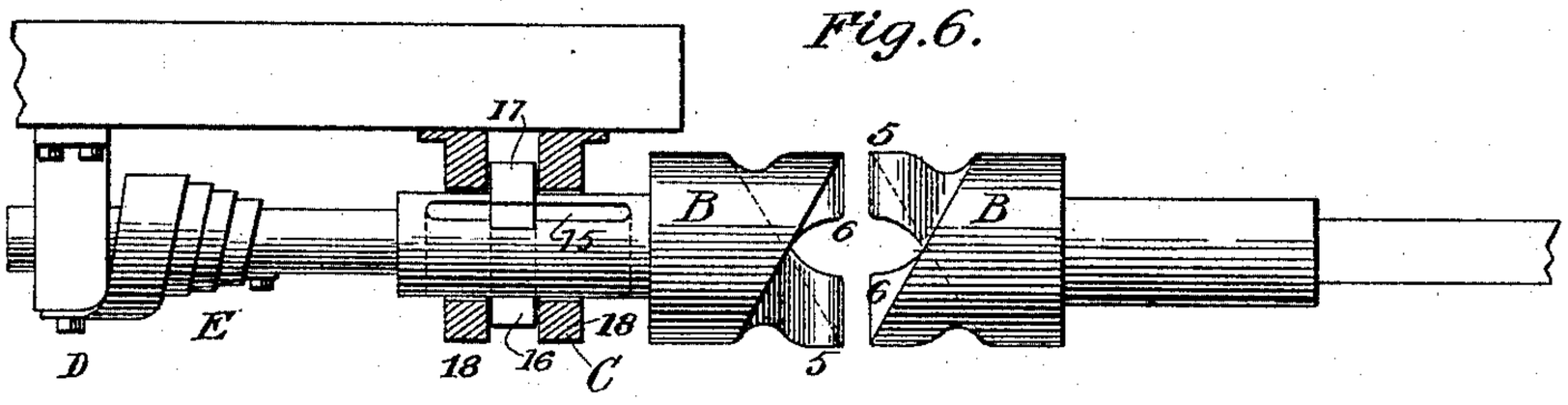

Fig. 7.

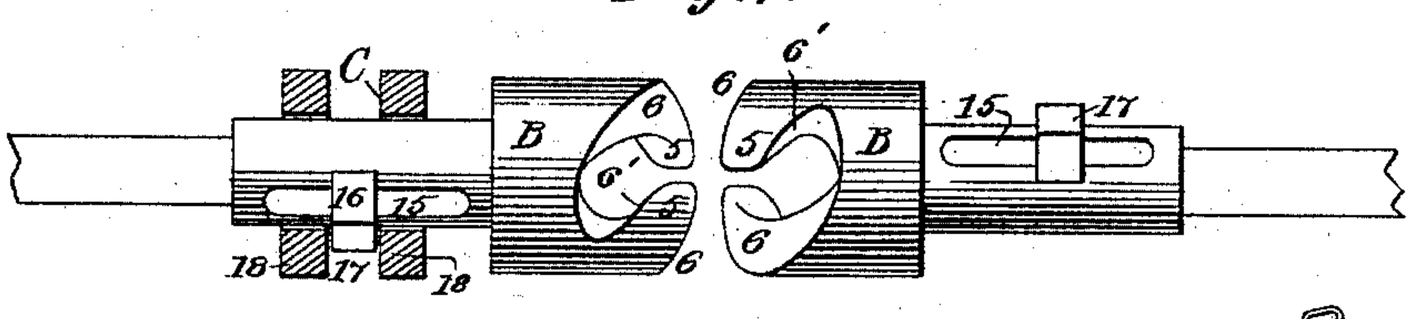

Fig. 8.

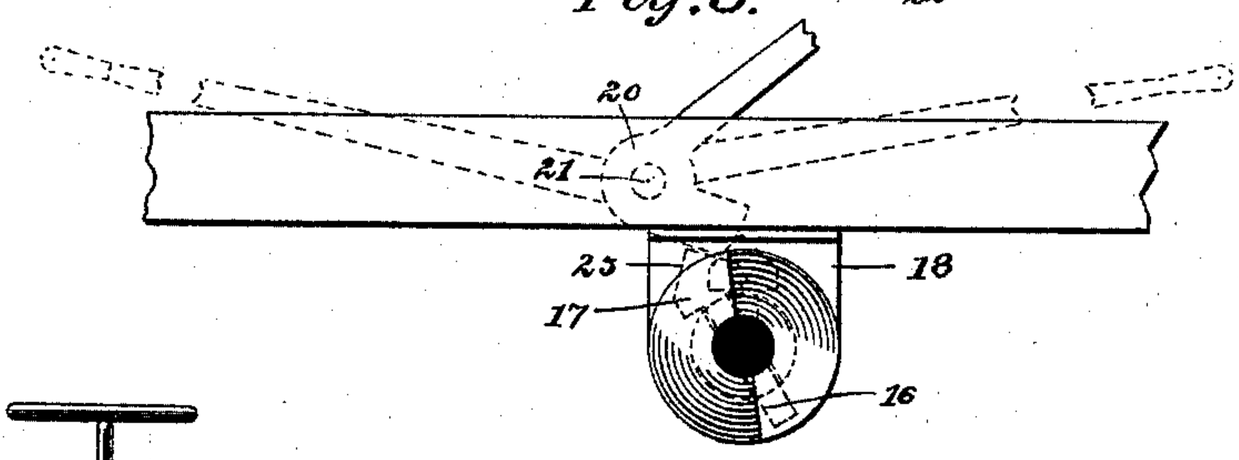

Fig. 10.

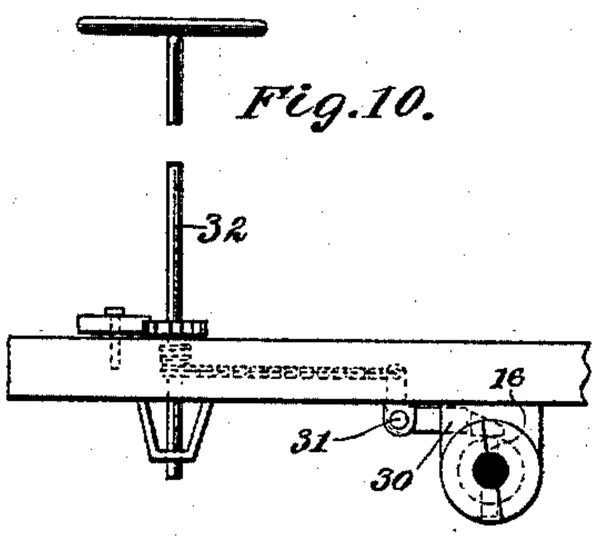

Fig. 11.

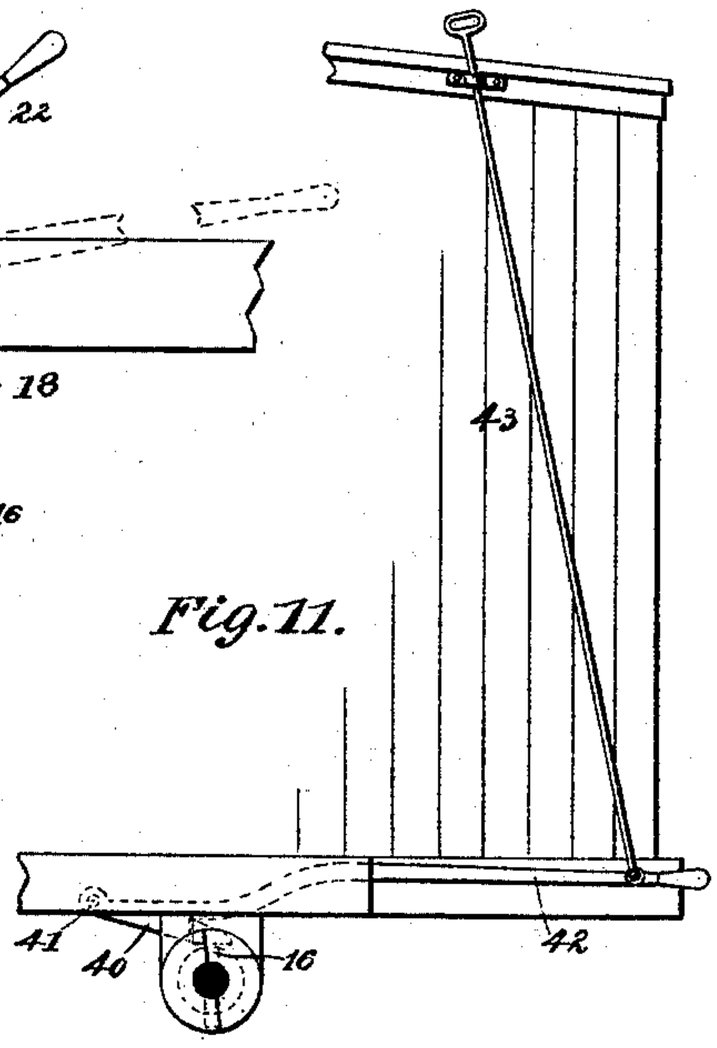

Fig. 9.

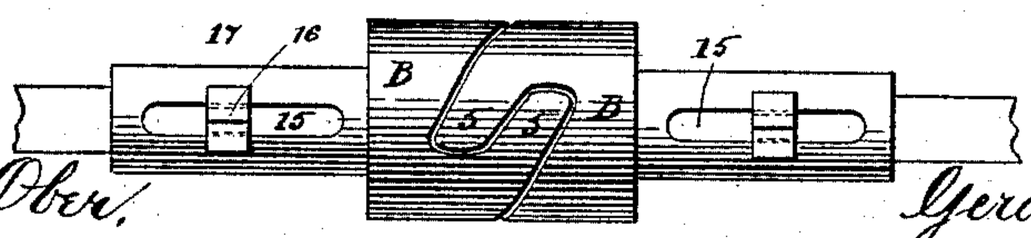

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Fig. 12.

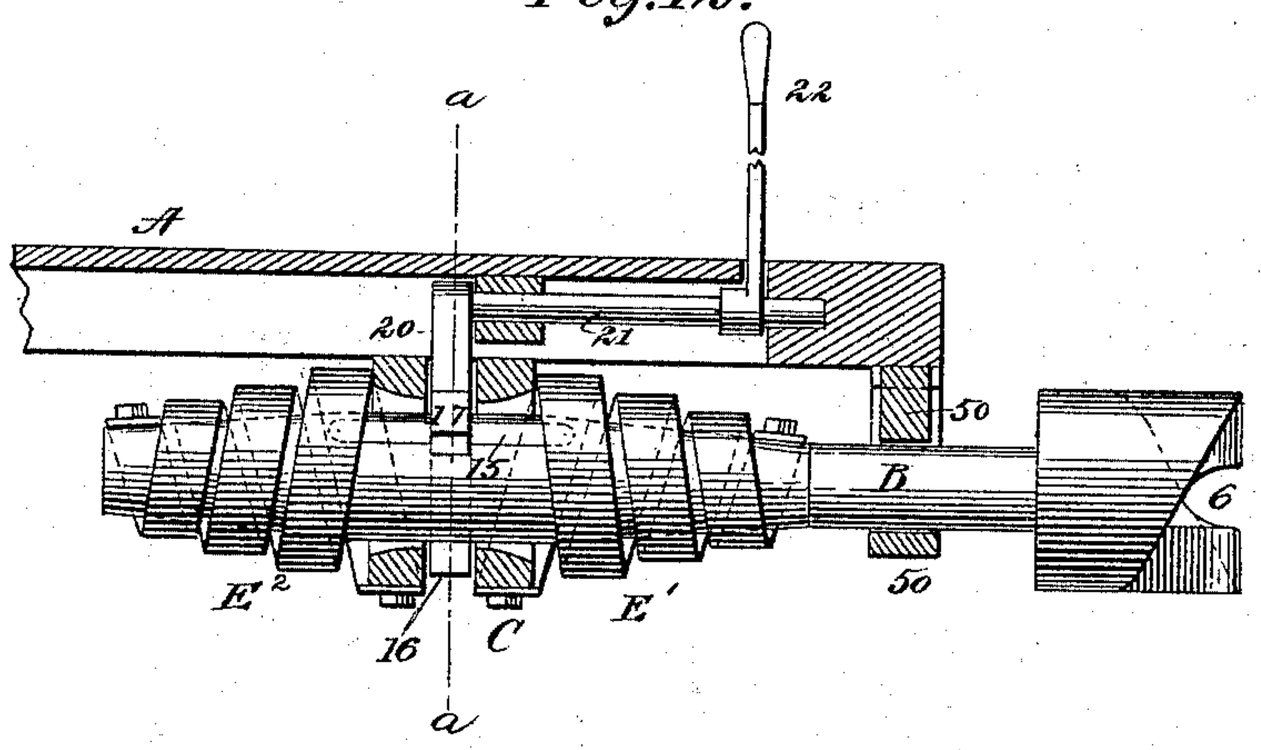


Fig. 13.

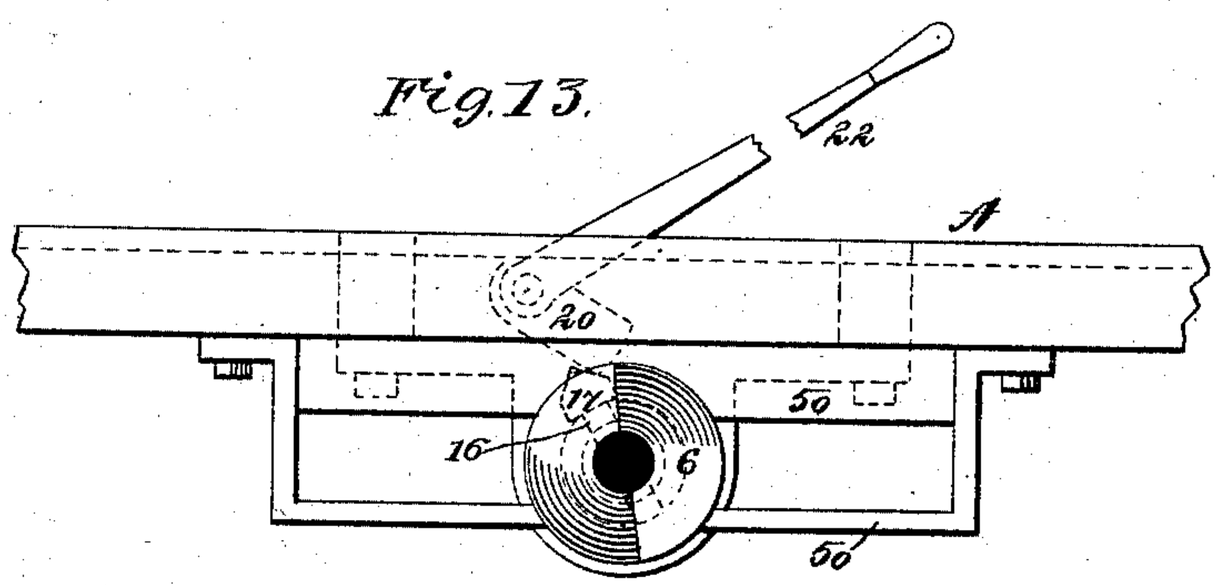
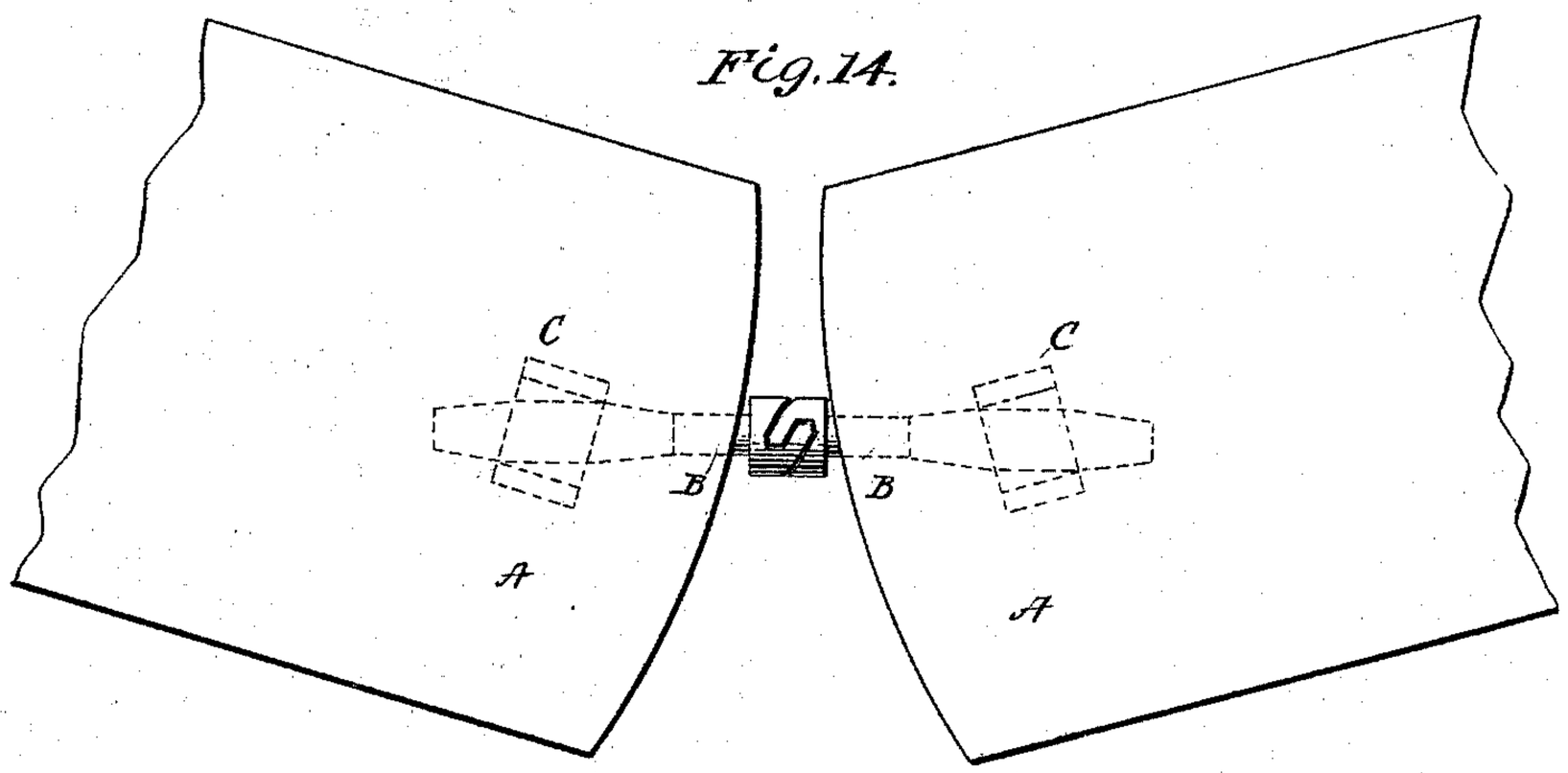


Fig. 14.



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UNITED STATES PATENT OFFICE.

GERARD BEEKMAN, OF NEW YORK, N. Y.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 495,655, dated April 18, 1893.

Application filed July 18, 1892. Serial No. 440,311. (No model.)

To all whom it may concern:

Be it known that I, GERARD BEEKMAN, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

My invention relates to car couplers and buffers composed of a draw-head which is rotated or partially rotated upon its own axis longitudinally to the car; and my said invention consists in a car coupler composed of a draw-head having spiral or other projections adapted to interlock with similar projections of an opposite coupler when rotated at the moment of abutment, and in certain instrumentalities for producing and controlling such rotation and latching the draw-head in its interlocked rotative position, such as hereinafter fully described and pointed out in the appended claims.

Referring to the accompanying drawings in which similar characters of reference indicate corresponding parts throughout the several views, Figure 1 represents a side elevation partly in section, of an elementary form of my improved coupler illustrating the principle thereof; two opposite couplers being shown as about to connect; Fig. 2, a plan view partly in section of Fig. 1; and Fig. 3, an end elevation of Figs. 1 and 2, the parts corresponding thereto in position. Fig. 4, is a plan view of the same, illustrating the couplers connected together; and Fig. 5, a detail view of the rotating collar for the draw-head. Fig. 6, is a side elevation partly in section illustrating a modified construction of my invention wherein double interlocking projections are employed in lieu of the single. Fig. 7, is a plan view partly in section of Fig. 6; and Fig. 8, an end view thereof; the uncoupled positions of the draw-heads being represented in each said view. Fig. 9, represents the same device coupled. Fig. 10, represents an end view partly in section of a modified construction of latching device; and Fig. 11, a further modification of the same. Fig. 12, is a side elevation partly in section illustrating a modification of the invention comprising a laterally movable coupler adapted for the passage of the cars around abrupt curves. Fig. 13, is a front end view of Fig. 12; and Fig. 14, a plan view showing on a reduced scale the intended action of the device in Figs. 12 and 13.

My improvement is applicable to cars in passenger and freight service, and the same is herewith illustrated in Figs. 1, 2, 3, and 4, in connection with a freight car A. The draw-head B, is supported in suitable bearings C and D, wherein it is both longitudinally and rotatively movable. The spring E, is both torsionally and longitudinally resilient, and owing to its ribbon form the same is adapted to give the necessary powerful resistance to the draft or buffing of the draw-head while yielding with comparative freedom to the torsional motion imparted in the act of coupling. The part 2 of the draw-head is squared and slides freely through a rotative collar 3, (shown separately in Fig. 5) supported in the bearing C, and such collar bears a spur 4, by means of which the coupler is latched when connected to an opposite coupler. The projection 5, by means of which the draw-head B is interlocked with a similar projection of an opposite coupler, may be constructed in any suitable form adapted to rotatively advance and retire when the said draw-head is revolved or partially revolved. It is preferable, however, and essential to the automatic mode of operation, that the said projection 5, be constructed with a spiral front face 6, adapted to produce the necessary rotation by the act of abutment upon a similar spiral face of an opposite coupler when the cars come together. The spring E, tends to rotate the projection 5 in the retiring direction; which rotation is limited to the position seen in Figs. 1, 2, and 3. When two opposite couplers approach, the extremities of the projections 5 therefore clear each other and allow the faces 6, 6, to have impact throughout nearly an entire convolution of the spiral abutting surfaces, and by the momentum of the cars both draw-heads are thus forcibly rotated in opposite directions, opposing the springs E, E, until, by means of a suitable latching device, the spurs 4 on each car are caught and retained so as to prevent a return and disengagement of the draw-heads until released at will. The position of the draw-heads thus coupled is indicated in Fig. 4, wherein they are represented as sufficiently

interlocked to prevent lateral disengagement in any direction by the motion of the cars or angular change of relative position thereof during their passage around curves. A certain amount of space is allowed between the interlocked convolutions of the spiral projections 5, 5, to permit freedom of movement when passing around ordinary curves.

The latching device shown in Figs. 1, 2, and 3, consists in a pawl 8, fitted in the buffer beam F of the car, which pawl is pivoted at 9, and operated by a lever 10, projected therefrom to the side of the car for convenient access by the operator. The lever 10, may be retained in its locked position by a suitable notched holder 11, as indicated, into which it is sprung when dropped down. When the car is uncoupled, the spur 4 occupies the position 13, in Fig. 3, and when coupled the said spur occupies the position 14, wherein it is retained automatically by the pawl 8, dropping thereon to the position shown after being lifted by the rotative motion of such spur from the one said position to the other.

In Figs. 6, 7, and 8, the principal parts are similarly designated and operated on like principles. The modification consists in the employment of two interlocking projections 5, 5, instead of one, each of which bears spiral faces 6, 6, as before described. A less amount of rotation is required in the operation of said modification in order to effect a secure lateral retention of the draw-heads B, B, together, when interlocked as in Fig. 9. The modification further consists in the substitution of a longitudinal slot 15, in the draw-head B, for the squared portion 2, before described, through which slot 15 an intersecting pin 16 is provided, having a projecting head 17, corresponding in function to the spur 4, hereinbefore described. The pin 16, is longitudinally retained and permitted to rotatively operate between the two stationary collars 18, 18, of the bearing C, and any suitable character of latching device may be applied to retain the pin 16, when the couplers are interlocked. I illustrate in Fig. 8, a pawl 20 pivoted at 21, bearing a gravity lever 22, by which it is operated. The uncoupled position of the parts is illustrated in Fig. 8, and when the draw-heads abut together the same are rotated in opposition to the spring E, until the head 17 of the pin 16, has revolved sufficiently to raise the pawl 20, and cause the latter to again descend on the surface 23 of said head 17, and lock the same in position.

Other forms of latching devices are illustrated in Figs. 10, and 11, as examples of numerous possible modifications. That in Fig. 10 consists in a pawl 30 pivoted at 31, which drops by gravity into the rotative path of the pin 16, to secure the coupled position of the draw-head. The pawl 30 is released at will by means of the rotary shaft 32, provided with a suitable hand wheel, chain, and ratchet device, connected in the manner indicated. The device in Fig. 11, consists in a gravity pawl 40, pivoted at 41, engaging with the pin 16 as before described, and provided with an extension 42, forming a lever by means of which the said pawl may be disengaged from the side of the car, or from the roof of the car, by means of an additional lifting rod 43.

In the construction illustrated in Figs. 12, 13, and 14, the draw-head B is adapted for three distinct motions; a longitudinal draft or buffing motion, an oscillatory motion upon a vertical axis intermediate to its length, and a rotative motion corresponping to, and for similar purposes as that hereinbefore described. The draw-head B is retained in the single supporting collar C, on the car by the connection of spiral springs E′, E², each of which is connected at one end with the draw-head B, and at the other with the collar C, and is torsionally and longitudinally resilient as before described with reference to the preceding views, and also laterally resilient in order to bring the draw-head B into alignment with the car when at rest. The body of the draw-head B is smaller than the opening through the support C, and may thereby be oscillated in the manner indicated in Fig. 14, to maintain alignment of the two couplers during the passage of the cars around abrupt curves. The draw-head B is guided in its lateral motion between suitable guides 50 beneath the platform A, and means are provided for partially rotating the draw-head B, irrespective of its lateral oscillation. A device is shown for so rotating it corresponding to that illustrated in Figs. 6 to 9; the same consisting in a longitudinal slot 15, and intersecting pin 16 provided with a beveled head 17, upon which the pawl 20 engages as nearly as possible to the vertical axis *a*, *a*, of oscillation. The pawl 20 is mounted upon a shaft 21 extending forward toward the end of the car, bearing a lever 22 in a convenient position for access on the platform, and said pawl and pin 16 operate in precisely the same manner as hereinbefore described with reference to Fig. 8. The pin 16 in the modification shown in Figs. 12, 13, and 14, should be sufficiently rounded to allow free play in the slot 15 when the draw-heads are in the position shown in Fig. 14. Where the slot and pin device is used, the draw-head should be enlarged at a suitable place to compensate for the slot as shown in Figs. 6, 7, 9, and 12.

In all the devices shown the buffers are adapted by their form to be automatically uncoupled by the draft upon the train, when the pawl 20 is released, by reason of the projections 5 having a spiral inner face 6′ corresponding to the spiral outer face 6. Thus when the pawl 20 is released the cars may be readly uncoupled while the train is in motion, without the necessity of slacking speed, as heretofore required with the use of former devices. The pull of the train acting on the inner surfaces 6′, 6′ to uncouple in a manner

similar to the abutting of the train on the surfaces 6, 6, to couple as described.

The springs E, E′, E², primarily acting to set the uncoupled draw-heads in a position suitable for coupling by abutment, act secondarily to assist in uncoupling. The weight of the train thus falls partially upon the pawl and head 4, 8,—17, 20.

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

1. In a car coupler, the combination of a rotary draw-head having projections adapted to interlock with similar projections of an opposite coupler when rotated, means tending to hold the draw-head in a rotative position whereby the said projections are normally disengaged, and a device removed from the abutting part of the draw-head for latching the same to secure its position when the said projections are interlocked.

2. In a car coupler, the combination of a rotary draw-head having projections adapted to interlock with similar projections of an opposite coupler when rotated, means tending to hold the draw-head in a rotative position whereby the said projections are normally disengaged, an automatic latching device for securing the interlocked rotative position of the draw-head, and means for releasing such latching device at will, for the purpose described.

3. In a car coupler, the combination of a rotary draw-head having one or more spirally faced projections adapted to automatically interlock with one or more similar projections of an opposite coupler when abutted, and to automatically unlock when the couplers are longitudinally withdrawn, and a controllable latching device for rotatively securing the draw-head when the said projections are interlocked.

4. In a car coupler, the combination of a rotary draw-head having one or more spirally faced projections adapted to automatically interlock and unlock with one or more similar projections of an opposite coupler as described, a torsional spring or equivalent tending to hold the said projections in a normally unlocked rotative position, and an automatic latch for securing the interlocked rotative position of the draw-head.

5. In a car coupler a draw bar suspended in a single collar adapted for rotative coupling capable of three distinct motions; a longitudinal motion, a rotative motion on its own axis, and an oscillatory lateral motion, substantially as and for the purpose described.

6. In a car coupler, a draw-head adapted for rotative coupling, capable of a longitudinal motion, a rotative motion upon its own axis, and an oscillatory lateral motion, and a combined buffing, torsional, and oscillatory spring or springs, serving as a means of supporting said draw-head in the frame of a car, substantially as described.

7. In a car coupler, the combination with a draw-bar suspended in a single collar adapted for rotative coupling, capable of combined longitudinal motion, rotative motion upon its own axis, and an oscillatory lateral motion, of a device for determining or controlling the rotative position of said draw-head independent of the other said motions.

8. In a car coupler, the combination with a draw-bar adapted for rotative coupling, suspended in a single collar wherein it is capable of combined longitudinal motion, rotative motion upon its own axis, and oscillatory lateral motion, of a latching device for securing the interlocked rotative position of the draw-head, situated in the axis of oscillation of said draw-bar, substantially as described.

9. In a car coupler, the combination of a longitudinally and rotatively movable draw-bar having projections adapted to interlock with similar projections of an opposite coupler when rotated, and means for controlling the rotative position of the draw-bar, consisting in a longitudinal slot in the latter, an intersecting pin or bar, and a stationary support for said pin which support is adapted to permit the rotative movement of the pin but oppose the longitudinal movement thereof, substantially as described.

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