(No Model.) 4 Sheets—Sheet 1.

H. C. BUHOUP.

CAR COUPLING.

No. 573,961. Patented Dec. 29, 1896.

Fig. 1.

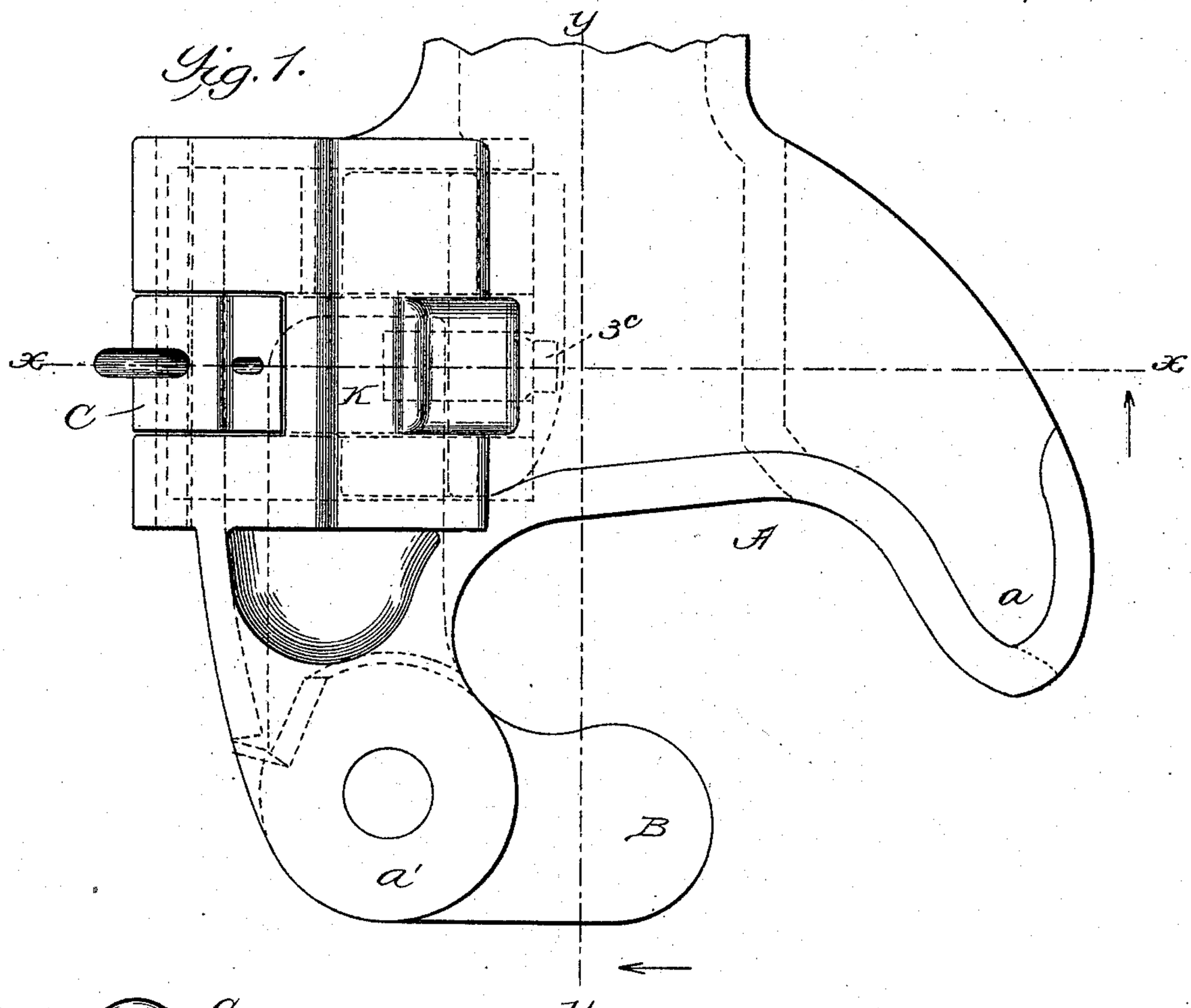
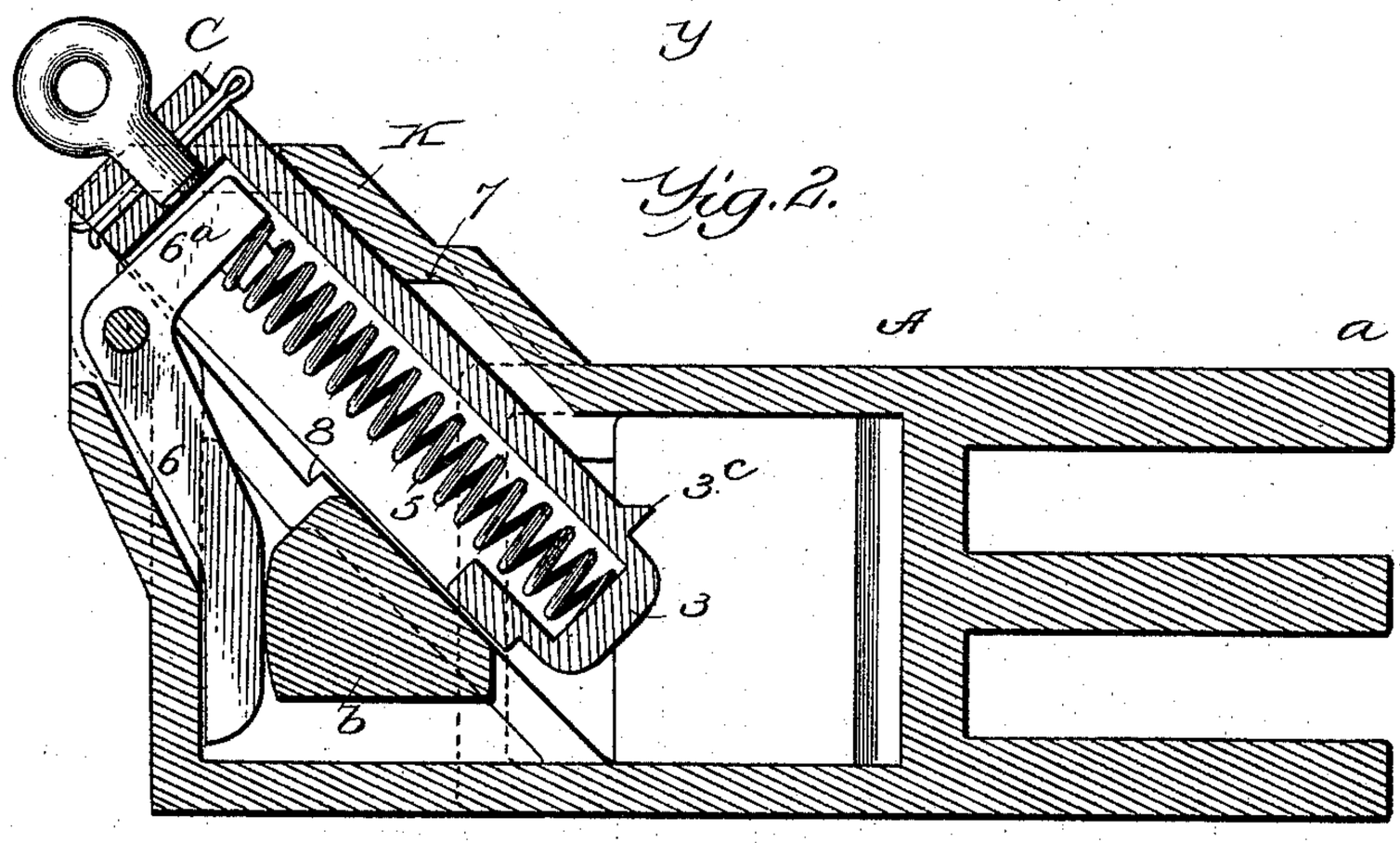


Fig. 2.



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(No Model.) 4 Sheets—Sheet 2.

H. C. BUHOUP.

CAR COUPLING.

No. 573,961. Patented Dec. 29, 1896.

Fig. 3.

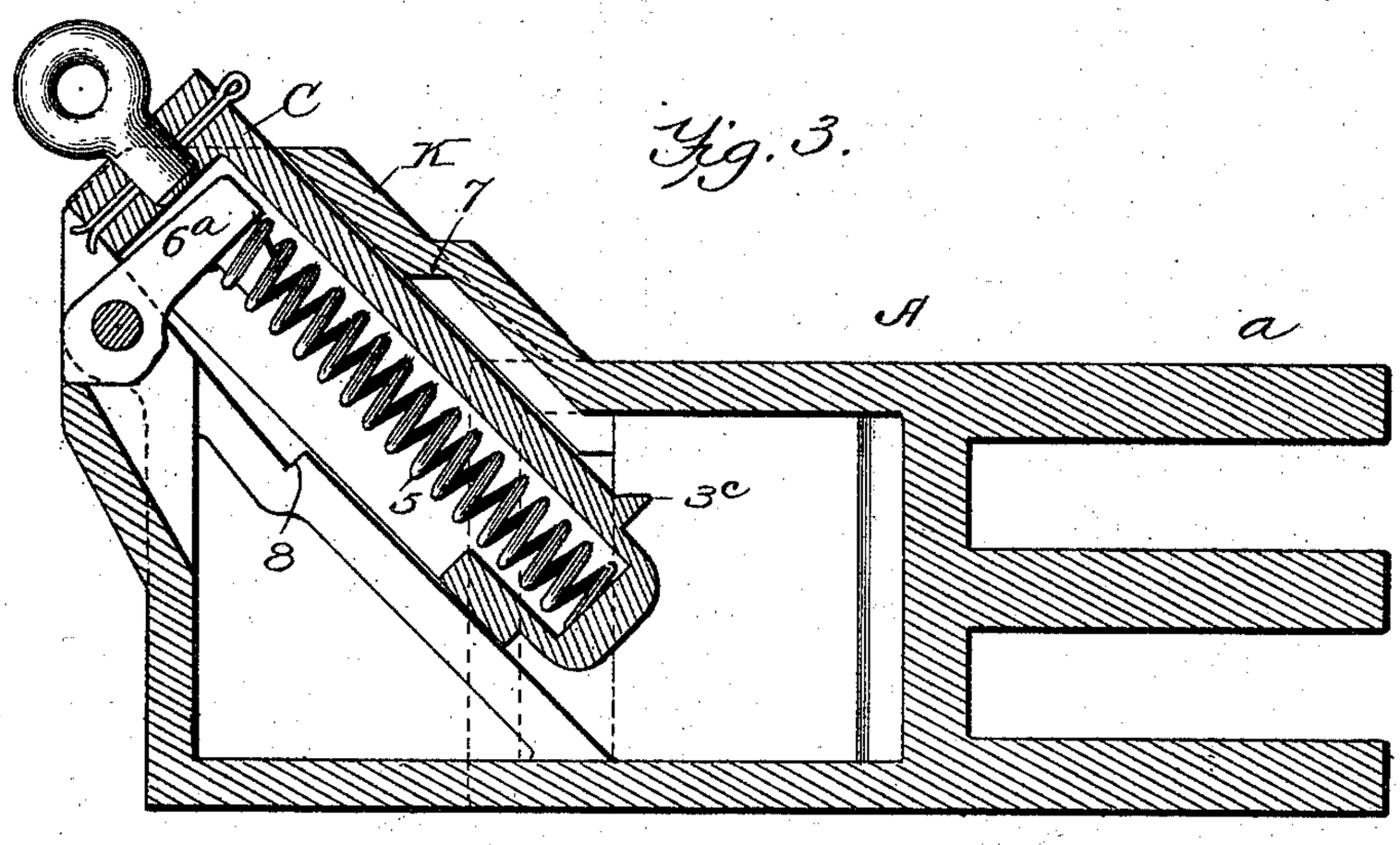
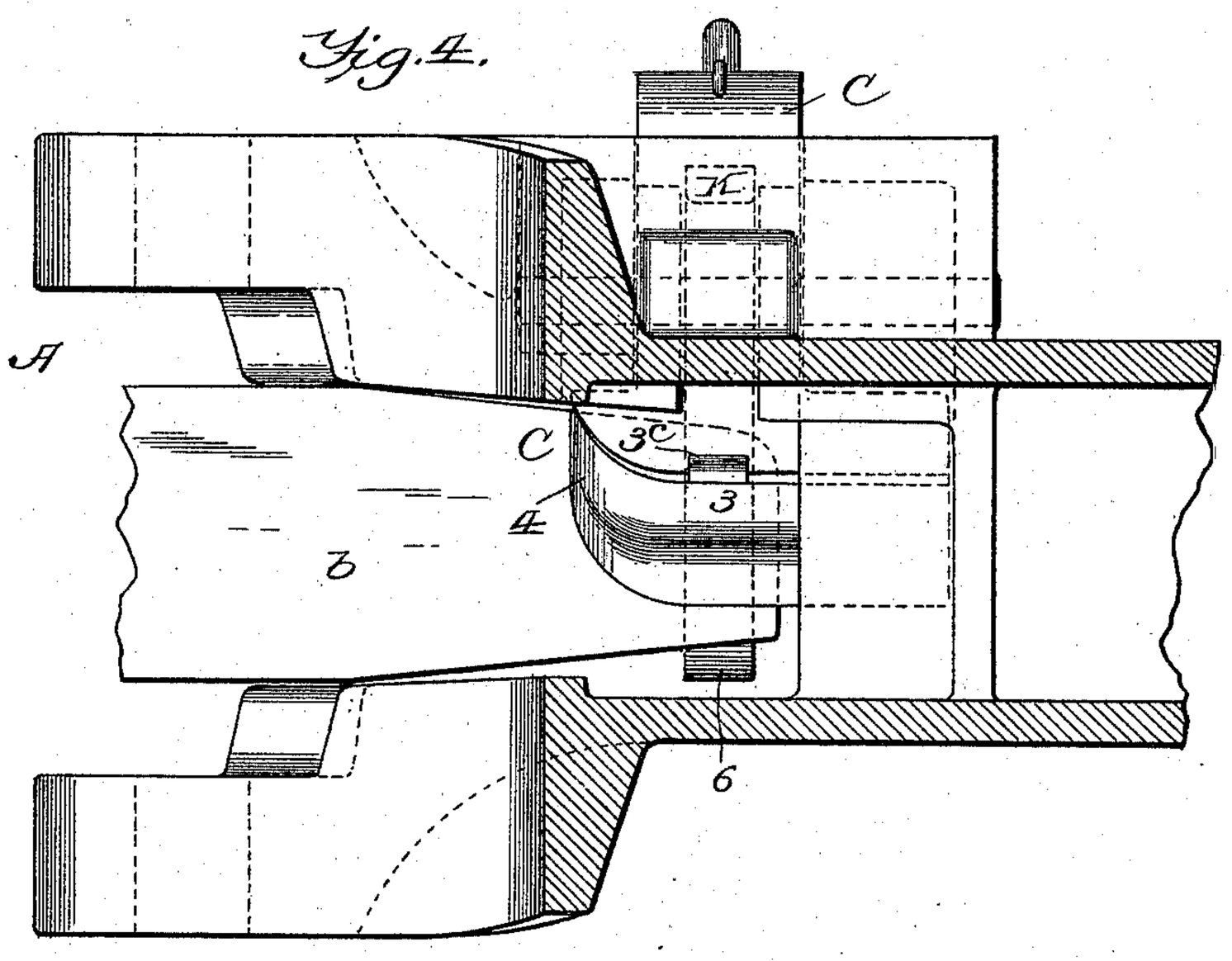


Fig. 4.



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4 Sheets—Sheet 3.

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CAR COUPLING.

No. 573,961. Patented Dec. 29, 1896.

Fig. 5.

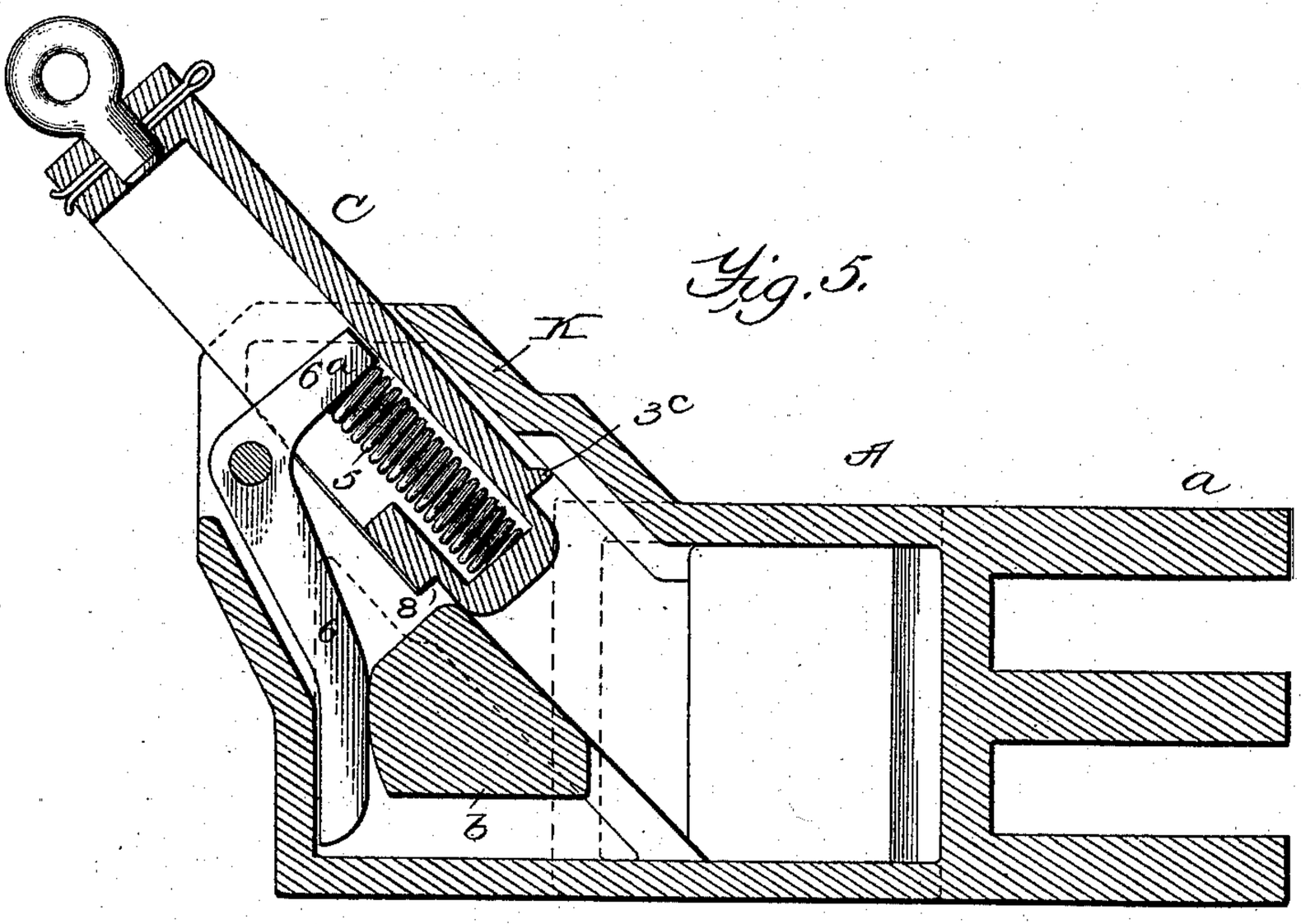
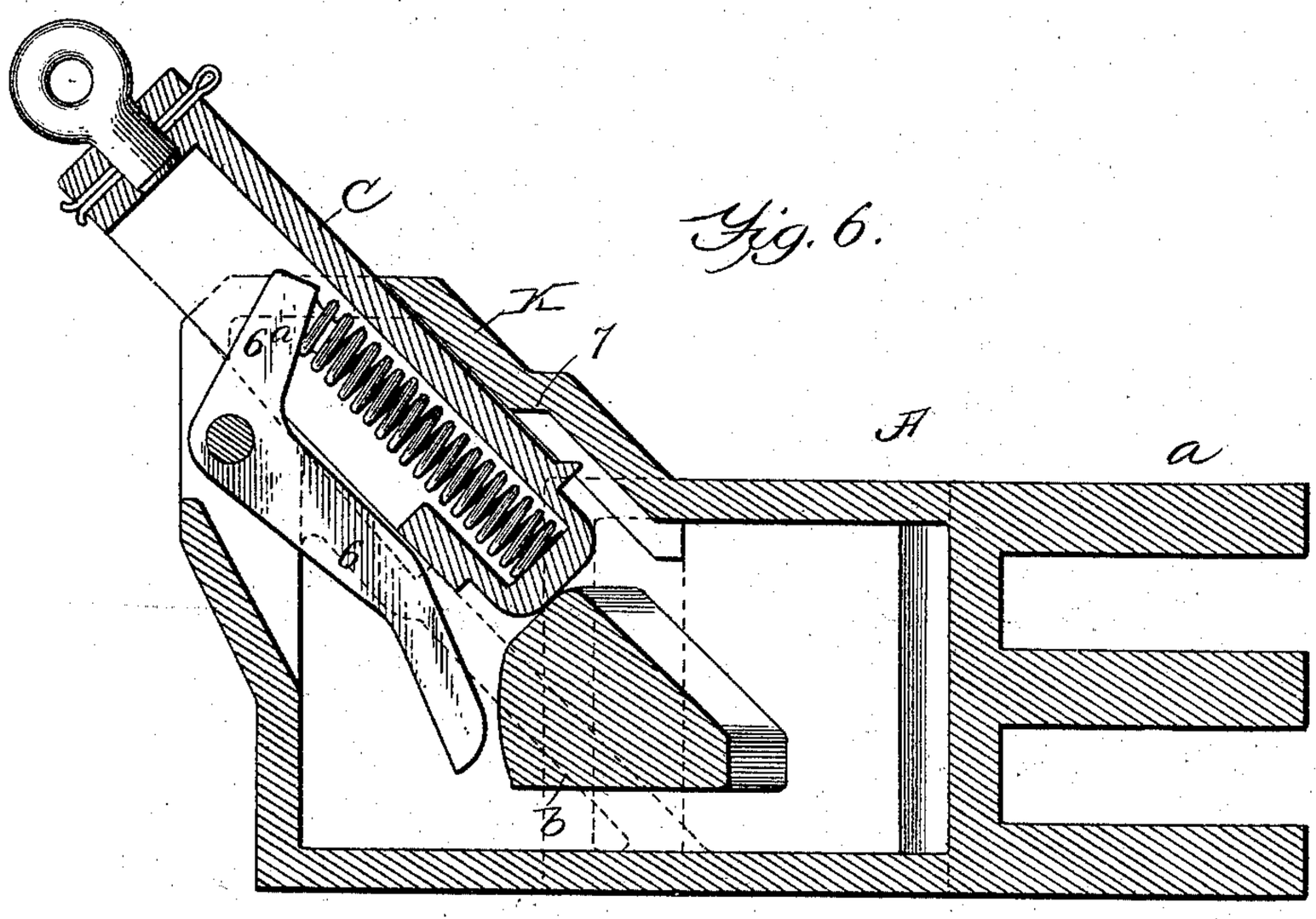


Fig. 6.



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4 Sheets—Sheet 4.

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CAR COUPLING.

No. 573,961. Patented Dec. 29, 1896.

Fig. 13.

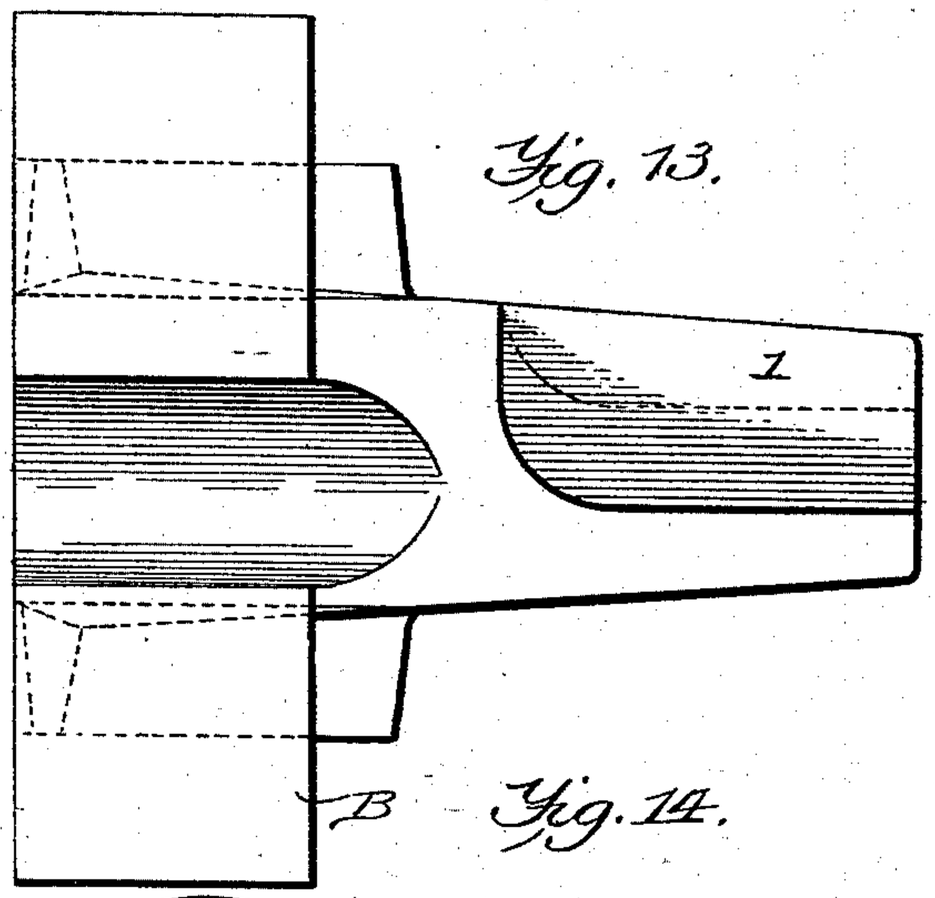

Fig. 14.

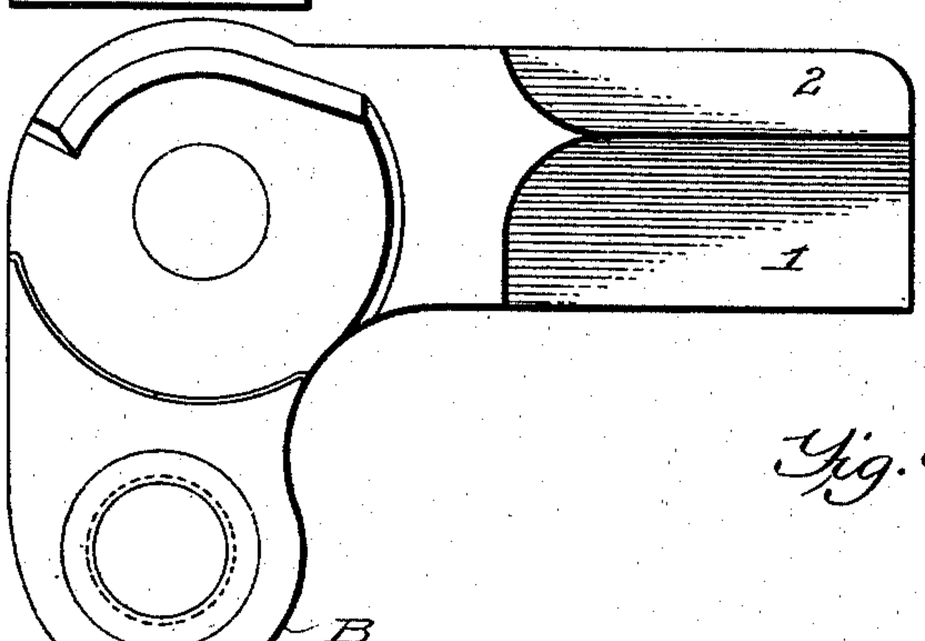

Fig. 15.

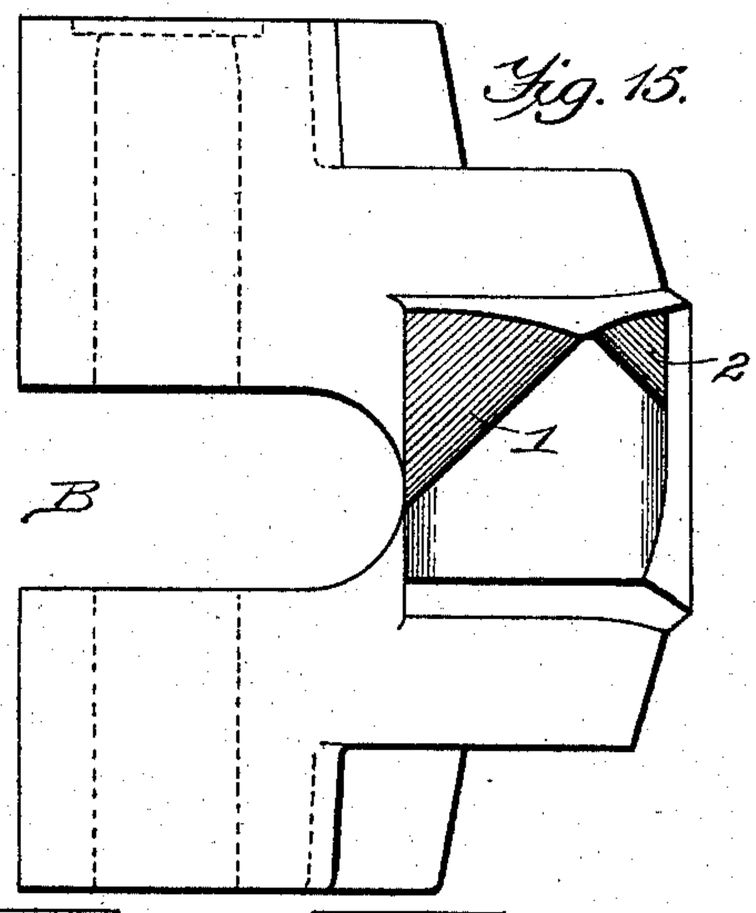

Fig. 7.

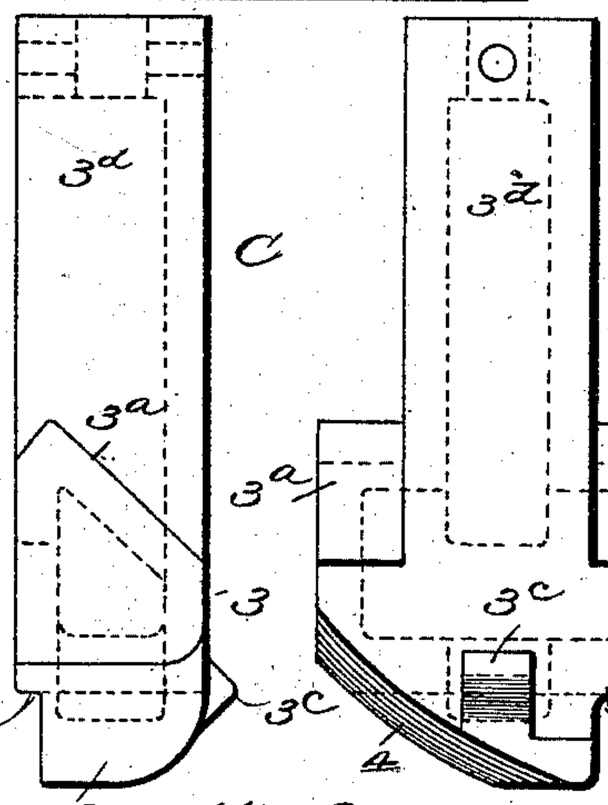

Fig. 8.

Fig. 9.

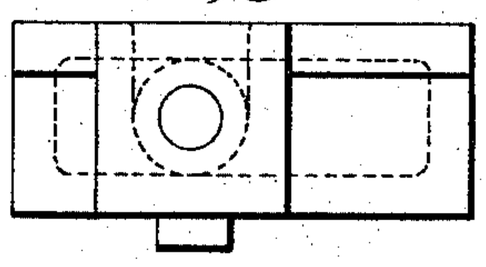

Fig. 12.

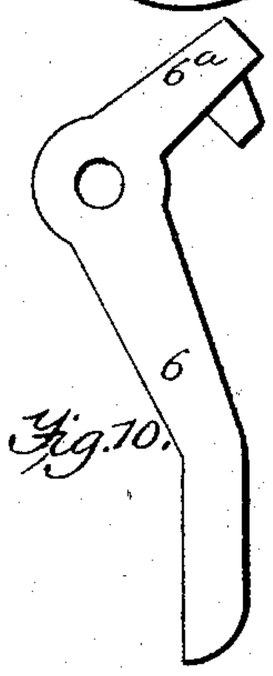

Fig. 10.

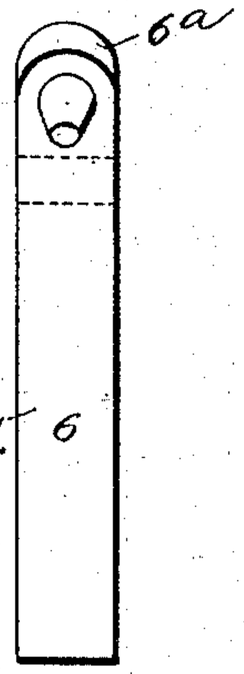

Fig. 11.

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UNITED STATES PATENT OFFICE.

HARRY C. BUHOUP, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILLIAM McCONWAY, OF PITTSBURG, PENNSYLVANIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 573,961, dated December 29, 1896.

Application filed September 23, 1896. Serial No. 606,721. (No model.)

To all whom it may concern:

Be it known that I, HARRY C. BUHOUP, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Car-Couplings; 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 plan view of a coupler-head, the position of the operative parts (tailpiece of the knuckle, the locking-block, &c.) being indicated by dotted lines. Fig. 2 is a transverse vertical section on the line *x x*, Fig. 1, looking in the direction of the arrow, showing the end of the tailpiece in transverse section, the inclined locking-block in transverse section, the spring for actuating the locking-block in elevation, and the kicker for actuating the tailpiece of the knuckle in side elevation, the parts being in the position they occupy when the coupling is locked or coupled up. In this figure the bearing or resistance-arm of the spring is shown as formed on the kicker for reasons which will hereinafter appear. Fig. 3 is a similar section on the line *x x*, Fig. 1, the tailpiece removed to more clearly show the inclines or ways in the head for the locking-block, the kicker being omitted and the upper spring bearing or resistance being shown as a pivoted arm or lever capable of a limited movement. This resistance-arm or bearing may be a fixed arm or finger, if desired, as will hereinafter appear. Fig. 4 is a vertical longitudinal section of the coupler-head on the line *y y*, Fig. 1, looking in the direction of the arrow and showing a portion of the tailpiece of the knuckle and the lower end of the locking-block in elevation. Fig. 5 is a vertical transverse section of the head similar to Fig. 2, showing the same parts, the inclined locking-block, however, being raised and set for uncoupling. Fig. 6 is the same view, the parts being in the act of uncoupling or unlocking, the kicker having acted on the tailpiece to throw it out and the locking-block being in the act of following down into its first position. Fig. 7 is a detached view in elevation of the locking-block and its stem, showing the side opposite to that which engages the tailpiece of the knuckle, same as in Fig. 4, the dotted lines indicating the spring-pocket within the block and the opening on the opposite side of the block in the stem leading thereto. Fig. 8 is a detached view of the locking-block and its stem in elevation at right angles to the view shown in Fig. 7. Fig. 9 is a top or plan view of the locking-block and its stem. Figs. 10 and 11 are front and side elevations of the combined kicker and spring resistance-arm. Fig. 12 is a detached view in elevation of the spring for the locking-block. Fig. 13 is a front view in elevation of the knuckle and its tailpiece, showing the angle or front incline on the tailpiece, the rear angle or incline being indicated in dotted lines. Fig. 14 is a plan view of the knuckle and its tailpiece, showing both the front and rear inclines or bevels on the end of the tailpiece. Fig. 15 is an end view of the tailpiece and knuckle, also showing the front and rear inclines of the tailpiece.

Like symbols refer to like parts wherever they occur.

My invention relates to certain improvements in car-couplings of the Master Car-Builders' (M. C. B.) type, and is directed more especially to such a construction of locking-block and combination thereof with the tailpiece of the knuckle as shall obviate all tendency of the locking-block working upward or backward, thus preventing the opening of the couplers while the car is in transit, and which will also so reduce the wear on the tailpiece of the knuckle and locking-block as to obviate any play of the tailpiece which will allow the knuckles to pull past each other while the locking-block is in engagement with the tailpiece.

Heretofore in vertical plane couplers or those of the Janney type having the revolving knuckle and locking-pin or locking-block considerable trouble and much danger has arisen from the locking-pin or locking-block working up or backward and releasing the knuckle while the car is in transit, allowing the couplers to open, causing serious damage and frequently great loss of life. To overcome said difficulty, I combine with the knuckle and its tailpiece a locking-block so arranged

that it will move at an angle transversely with the tailpiece of the knuckle, whereby the bearing of the tailpiece of the knuckle holds the locking-block with a wedging action which counteracts any rise or recession of the locking-block, and a construction involving said principle of operation embodies the main feature of my invention.

As a preferred form of the devices I employ in combination a knuckle, the tailpiece thereof having on its front an incline or bevel, and a spring-actuated locking-pin or locking-block arranged at an angle transversely of the coupler and inclined to the path of the coupler, whereby the tailpiece of the knuckle becomes a wedge to assist the spring in holding down the locking-block, and such a construction embodies a secondary feature of my invention.

There are other minor features of invention, such as the combination, with the locking-block and the spring for actuating the same, of a movable bearing or resistance-arm for the spring, whereby the compression of the spring is reduced and tendency of the spring to "set" is obviated, the combination, with the locking-block, its spring and movable bearing or resistance-arm, of a kicker for actuating the knuckle by the withdrawal of the locking-block, as well as other novel features of construction and combination, all as will hereinafter more fully appear.

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, A indicates a coupler-head of the Janney type, having the usual guard-arm *a* and ears *a'* for the knuckle; B, a knuckle pivoted on the head and provided with a tailpiece *b*, the general construction of which parts and mode of their combining may follow any of the several well-known forms of vertical coupler.

In carrying out my invention I form the tailpiece *b* at that part which engages the locking-block with two longitudinal inclines, a front incline 1, which engages the locking block (or pin) when the coupler is locked, and a rear incline 2, which engages the locking block (or pin) and causes it to rise or recede before the tailpiece when the tailpiece moves in, as in making a coupling.

C indicates the locking-block, (or pin,) which coacts with the tailpiece of the knuckle in making a coupling. This locking-block is preferably block-shaped at the bottom, as at 3, (see Figs. 7, 8, and 9,) having a bevel 4 at its front end, where it is engaged by the incline 2 of the tailpiece *b* in coupling up, and provided with lateral inclined shoulders 3^a 3^b, which shoulders, when the locking-block is in position, (that is to say, inclined transversely of the coupler,) stand in a horizontal plane. The locking-block is also provided centrally of its front face with a wedge-shaped lug or projection 3^c to force the block into the path of the tailpiece of the knuckle when the locking-block is raised, on its rear face with a shoulder 3^s to engage a projection or shoulder in the coupler-head and hold the locking-block in the raised position, and with a hollow stem 3^d, whereby the block 3 may be raised to set the lock for uncoupling.

Within the hollow stem 3^d of the locking-block 3 is a coiled or equivalent spring 5, which is introduced through a suitable opening in the rear face of stem 3^d, said spring having a bearing at one end on the locking-block and at the other on a resistance-arm. The resistance-arm may be a simple projection on the interior of the coupler-head, which projects into the slot in the rear face of stem 3^d, or it may be a pivoted lever with restricted movement, as shown at 6^a, Fig. 3, or, where a kicker is used for projecting the tailpiece when the lock is set for uncoupling, it may be formed at right angles to and integral with the kicker 6, as illustrated in Figs. 2, 5, and 6 of the drawings. The latter construction is preferred because the compression of the spring is thereby reduced very materially by the kicker (or knuckle-opener) 6 yielding when the knuckle is moved outward, thus again relieving the tension of the spring, (see Fig. 6,) which returns to very nearly its normal position, so that if the locking-block was pulled back and left in the raised position when the coupler was not in action there would be little danger of the spring becoming "set" and useless, as might occur if left under full compression, as illustrated in Fig. 5 or as would be the case with the construction shown in Fig. 3, where the substantially fixed or limited resistance-arm 6^a is shown.

A locking-block C, not necessarily but preferably of the construction hereinbefore pointed out, is arranged in transversely-inclined guide recesses or ways within the coupler-head A, (see Figs. 2, 3, 5, and 6,) so that it will move at an angle transversely across or in front of the tailpiece *b* of the knuckle, with its rear face contacting with the front incline 1 of said tailpiece *b*, and if the construction of locking-block hereinbefore set forth is selected said ways are provided with an inclined projection or cam-abutment 7, with which the projection 3^c of the locking-block will engage when the block 3 is raised to force the locking-block over into the path of the tailpiece of the knuckle and opposite thereto with a ledge or projection 8 to receive the shoulder 3^s on the rear face of the locking-block 3, to retain the block above and in the path of the tailpiece when the locking-block is set for coupling up.

The devices being of the general character and combined substantially as hereinbefore set forth will operate as follows: The parts being in the locked position, as illustrated in the sectional view, Fig. 2, the tailpiece *b* will act as a wedge to draw down rather than raise the locking-block C, whether the same be spring-pressed or a gravity-block, and in either case the block being backed through-

out by that wall of the coupler (marked K) which extends down the full length of the locking-block on top, the tailpiece of the knuckle would have to crush the locking-block before it could force back or pass the block. To release the tailpiece, as in the act of uncoupling, the inclined locking-block is raised by means of its stem 3^d or in other suitable way, and if the block is spring-pressed said spring 5 within the stem will be compressed between the block 3 and the resistance-arm 6^a. If the resistance-arm 6^a has combined therewith the kicker 6, as soon as the locking-block 3 rises above the tailpiece *b* the kicker 6 will act upon the tailpiece to force open the knuckle, and the spring 5 will be immediately relieved by its expansion, which operates the kicker through the medium of the resistance-arm. As the locking-block 3 is raised (or withdrawn) the inclined projection 3^c upon its front face encounters the abutment 7, and the locking-block 3 as it rises above the tailpiece *b* is forced into the path thereof and being released immediately follows the tailpiece (see Fig. 6) back into its first position, so that the spring returns to its normal position, and the parts are in position for coupling up when the tailpiece of the knuckle again moves inward and its incline 2 engages the beveled end 4 of the locking-block. If, however, it is desired to only set the parts for uncoupling, the locking-block will be raised until the projection 3^c, moving over the abutment 7, forces the block over, so that its shoulder 3^s engages the ledge 8, whereupon (see Fig. 5) the locking-block is retained in the elevated position in the path of the tailpiece *b* of the knuckle and with the incline 1 of the tailpiece in contact with the point of the locking-block until such time as the outward movement of the tailpiece, in separating the cars, shall lift the locking-block 3, force shoulder 3^s off of ledge 8, and permit the locking-block to follow into its first position, (see Fig. 6,) as hereinbefore pointed out.

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

1. In a car-coupler of the Master Car-Builders' type, the combination with a knuckle and its tailpiece, of a locking-block arranged laterally of the coupler-head and at an inclination to the path of the tailpiece of the knuckle; substantially as and for the purposes specified.

2. In a car-coupler of the Master Car-Builders' type, the combination with the knuckle and its tailpiece, of a locking-block arranged to move at an angle to the tailpiece of the knuckle and laterally of the coupler-head; substantially as and for the purposes specified.

3. In a car-coupler, the combination of a knuckle provided with a tailpiece, and a transversely-inclined spring-pressed locking-block; substantially as and for the purposes specified.

4. In a car-coupler, the combination with a knuckle provided with a tailpiece having an incline on its front face, of a locking-block arranged at a corresponding incline and transversely of the coupler-head; substantially as and for the purposes specified.

5. In a car-coupler, the combination with a knuckle having a tailpiece, of a locking-block having a spring-pocket, a spring arranged in the pocket of the locking-block, and a resistance-arm secured to the coupler-head and which projects into the spring-pocket of the locking-block; substantially as and for the purposes specified.

6. In a car-coupler, the combination of a knuckle provided with a tailpiece, a locking-block, a spring for actuating the same, and a combined spring resistance-arm and kicker; substantially as and for the purposes specified.

7. In a car-coupler, the combination with a knuckle and its tailpiece, of a spring-actuated locking-block arranged at an angle transversely of the coupler-head, and a combined resistance-arm and kicker; substantially as and for the purposes specified.

8. In a car-coupler, the combination with a coupler-head having an inclined transversely-arranged way for the locking-block said way provided with a cam-abutment, of a locking-block provided with a projection to engage the cam-abutment on the retraction of the block, and a knuckle having a tailpiece which engages the locking-block; substantially as and for the purposes specified.

9. In a car-coupler, the combination with a coupler-head having transverse inclined ways for a locking-block, a cam-abutment on one side and a ledge on the opposite side of said ways, of a locking-block having a projection on one face which engages the cam-abutment when the block is retracted and a shoulder which engages the ledge of the coupler-head, substantially as and for the purposes specified.

10. The combination with a coupler-head and a knuckle having a tailpiece, of a locking-block arranged to move at an angle transversely of the coupler-head, the tailpiece of the knuckle being provided with a face corresponding to the plane of movement of the locking-block whereby the locking-block is wedged between the tailpiece and coupler-head; substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 22d day of September, 1896.

HARRY C. BUHOUP.

Witnesses:
WM. E. DYRE,
F. W. RITTER, Jr.