(No Model.) 3 Sheets—Sheet 1.

W. C. WATSON.

CAR COUPLING.

No. 411,175. Patented Sept. 17, 1889.

Fig. 1.

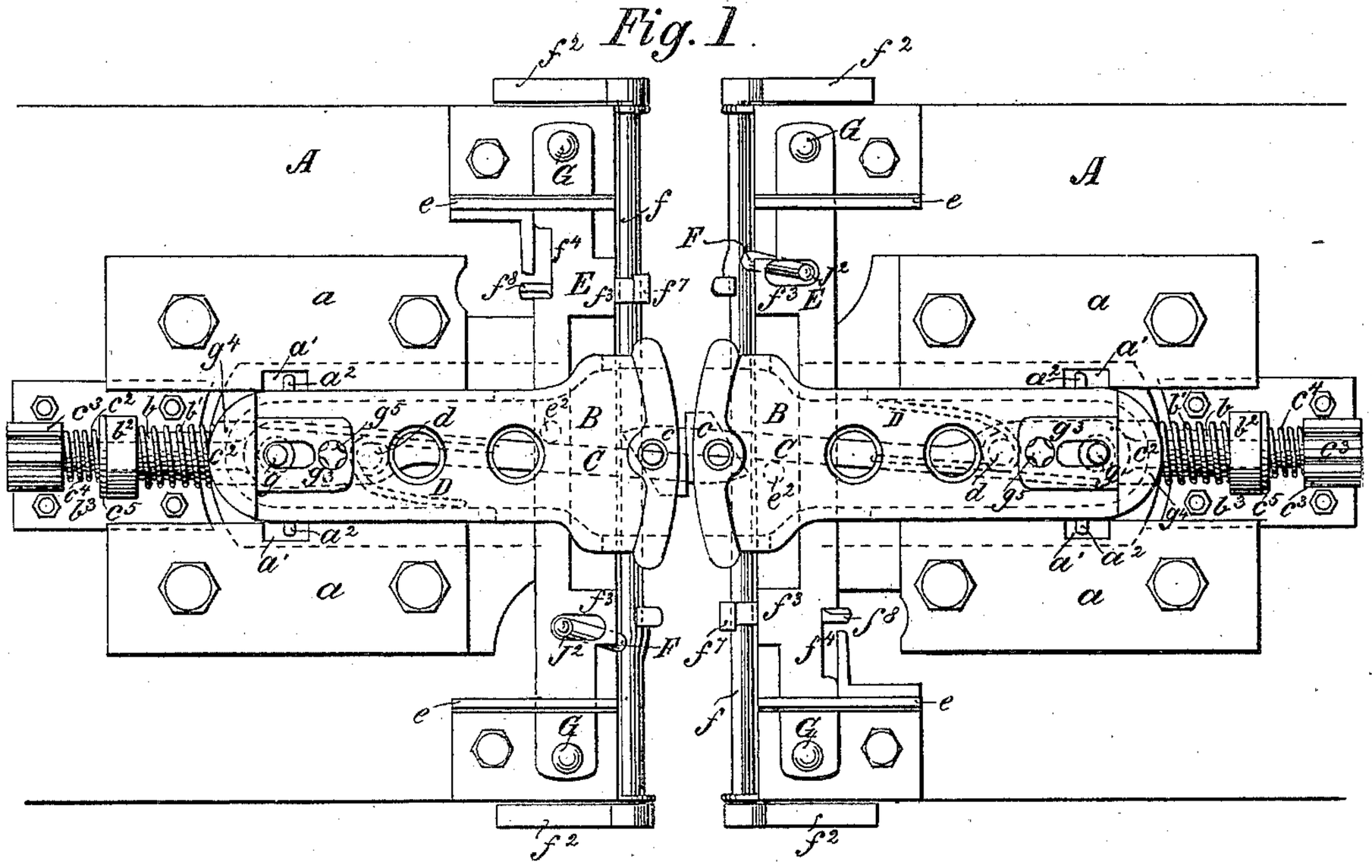

Fig. 2.

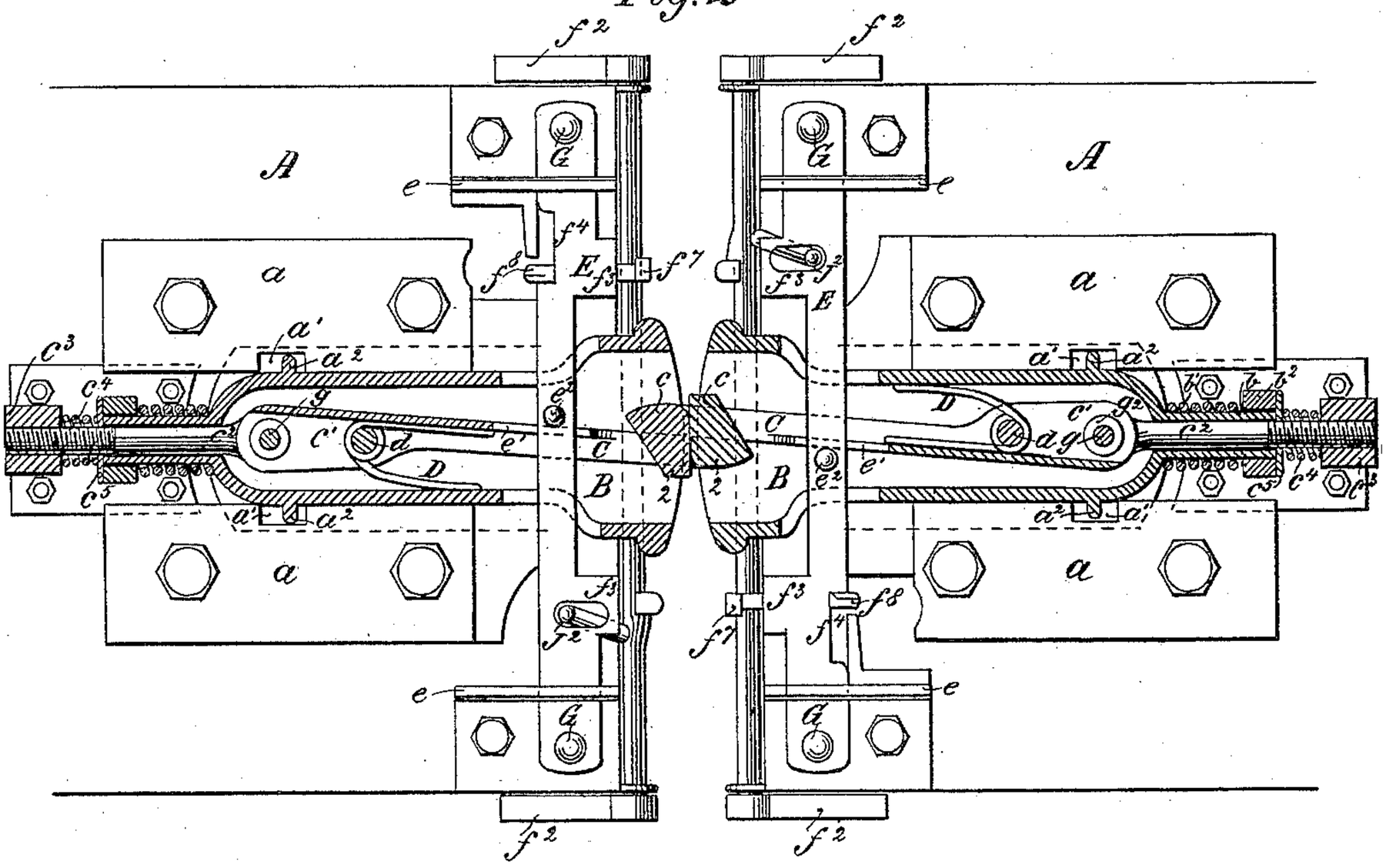

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Fig. 4

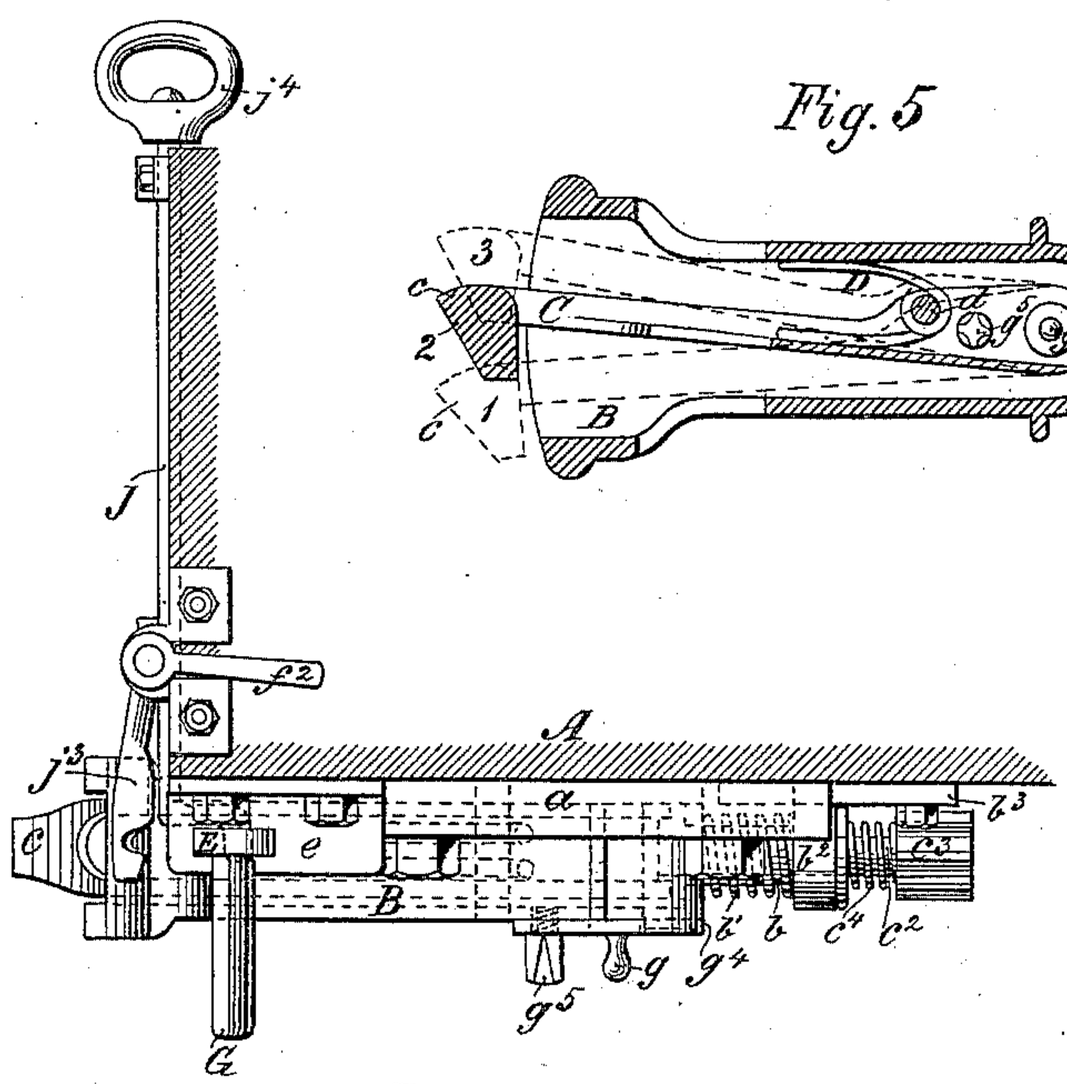
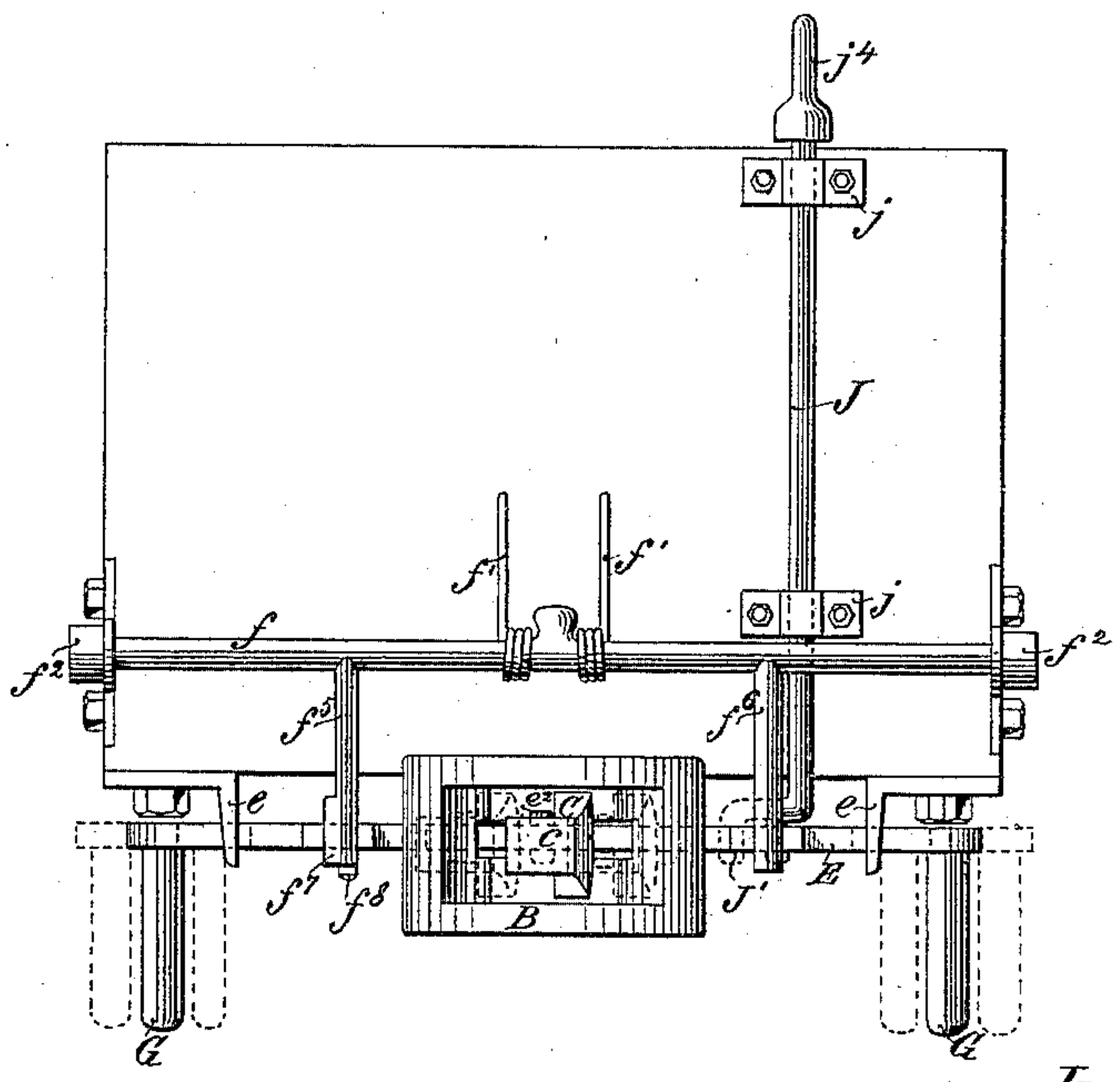


Fig. 3

Fig. 5



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(No Model.)

3 Sheets—Sheet 3.

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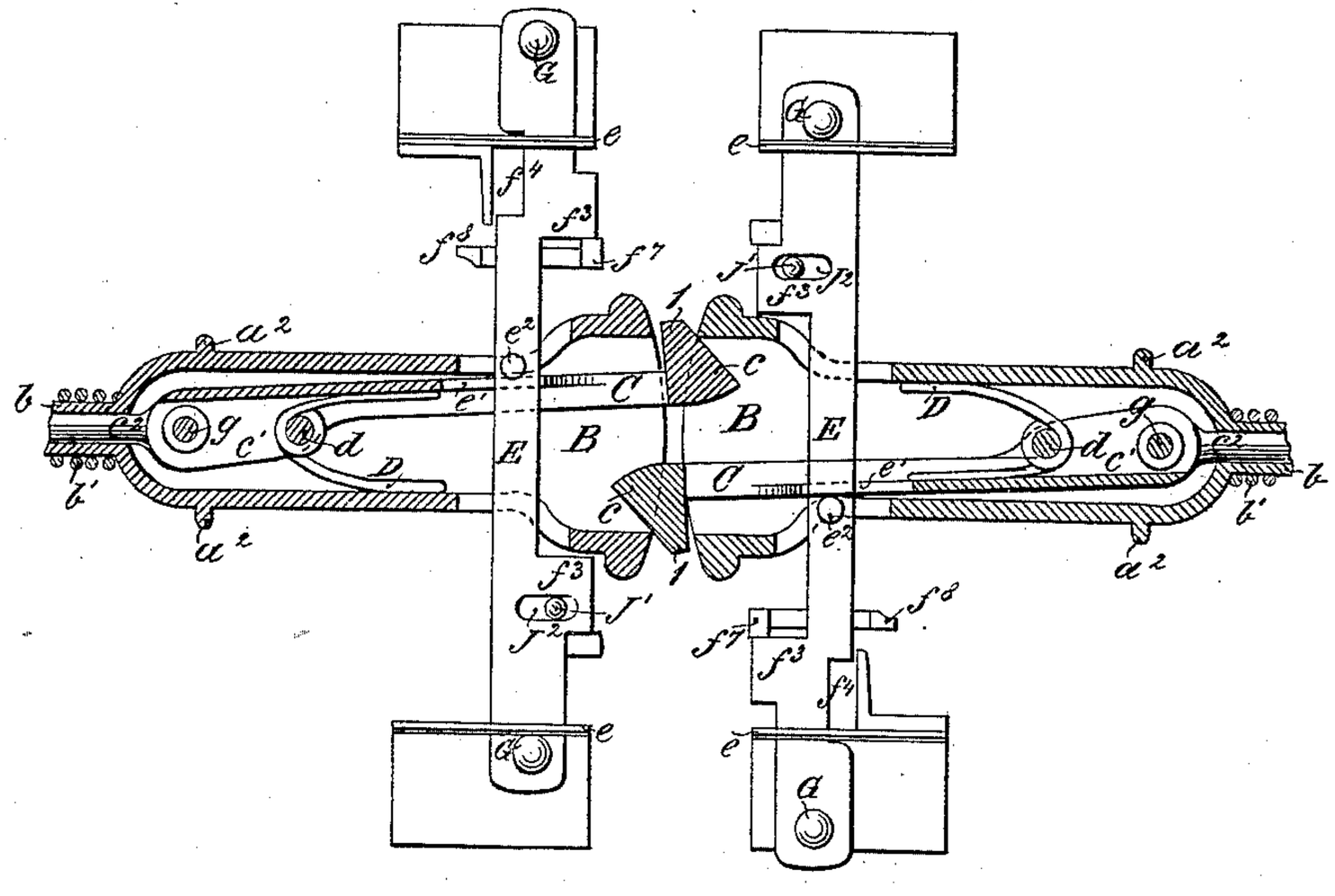
Fig. 6



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UNITED STATES PATENT OFFICE.

WILLIAM C. WATSON, OF PATERSON, NEW JERSEY, ASSIGNOR OF ONE-HALF TO THEODORE Y. KINNE, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 411,175, dated September 17, 1889.

Application filed March 30, 1889. Serial No. 305,387. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. WATSON, of Paterson, in the county of Passaic and State of New Jersey, have invented a certain new and useful Improvement in Car-Couplings, of which the following is a specification.

I will describe in detail a car-coupling embodying my improvement, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a bottom plan view of a coupling embodying my improvement and portions of two cars. Fig. 2 is a similar view, certain parts being shown in section and in a different position from that shown in Fig. 1. Fig. 3 is an end view of one of the cars and the coupling arrangement thereon. Fig. 4 is a side view of the same. Fig. 5 is a detail, partly in section, showing the different positions into which the coupling-hooks may be adjusted. Fig. 6 is a plan view, partly in section, showing one of the positions into which the coupling-hooks and their coacting parts may be adjusted.

Similar letters of reference designate corresponding parts in all the figures.

A A′ designate the bottom of cars, which may be of any suitable kind.

B designates draw-heads arranged upon the under sides of the cars and adapted to be moved lengthwise thereon. They are guided in their movements by means of guides *a*. (Shown as plates secured upon the under sides of the cars.) Upon the edges of the guides *a*, adjacent to the draw-heads B, there are formed notches *a′*, in which notches extend ribs or projections a^2, extending laterally from the draw-heads. The projections prevent the movement of the draw-heads too far in one direction. The draw-heads are of frame-like construction and are hollow, their outer ends being of greater extent laterally than their inner ends and being somewhat curved to admit of the various movements of the cars relatively to each other. At their rear ends the draw-heads are provided with shanks *b*, which shanks are also hollow, and are surrounded externally, as here shown, by coil-springs *b′*, which coil-springs abut near one of their ends against the draw-heads and at the other against eyes b^2, formed upon plates b^3, secured upon the under sides of the cars. The shanks *b* extend loosely through said eyes, so that the draw-heads may move freely to and fro. The springs *b′* tend to return the draw-heads to their normal positions after they have been pressed rearwardly out of such positions.

C designates coupling-hooks, which coupling-hooks are provided with hooking or engaging heads *c* and shank portions *c′*. The shank portions *c′* are of frame-like construction and extend rearwardly into the draw-heads B. Near their rear ends they are pivoted to shanks c^2, which shanks extend through the shanks *b* upon the draw-heads and to a considerable distance beyond the same. The shank portions *c′* are pivoted to the shanks c^2 by means of pivots *g*, which extend outwardly to the exterior of the draw-heads and through longitudinally-extending slots *g′* formed therein. Near their outer ends the pivots *g* are shouldered, as at g^2, in order to maintain said pivots in position within the draw-heads and yet admit of the free longitudinal movement of the coupling-hooks. I extend the portions of the pivots beyond said shoulders through longitudinally-formed slots in plates g^3, arranged upon the exteriors of the draw-heads and extending near one of their ends loosely into slots g^4, formed in the rear portions of the draw-heads and secured near their other ends to the draw-heads by clamping-screws g^5. The portions of the shanks c^2 beyond the eyes b^2 are screw-threaded and engage nuts c^3.

Surrounding the screw-threaded portions of the shanks c^2 are coil-springs c^4, which coil-springs abut near one of their ends against the nuts c^3 and at their other ends against washers c^5, surrounding the shanks c^2, outside the eyes b^2. The outer extremities of the shanks *b* upon the draw-heads abut against the washers c^5. It will therefore be seen that when the draw-heads are moved rearwardly they are so moved not only against the resistance of the springs *b′* but also against the resistance of the springs c^4. It will be further observed, however, that the coupling-hooks may have a longitudinal movement which is independent of the draw-heads when

they are drawn outwardly, as they will be so drawn against the resistance of the springs c^4 only. By this construction, should breakage occur at the shanks of the draw-heads, there can still be an independent movement of the coupling-hooks and at the same time the draw-heads will be maintained in position at their rearward ends by the shanks c^2 upon the coupling-hooks.

D designates springs (here shown as flat springs) bent in such manner as to surround pins d, arranged in the interior of the frame-like shanks of the coupling-hooks. One of the arms of the springs D bears against the shanks of the coupling-hooks and the other of said arms bears against the inner sides of the draw-heads. The tendency of these springs is always to force the coupling-hooks over toward one side of the draw-heads, and the springs are so arranged that upon adjacent cars they will operate to force the coupling-hooks in opposite directions, or, in other words, so that the heads of the coupling-hooks will be firmly engaged. By these means, whatever the movements of the cars may be in turning curves, the coupling-hooks will always be maintained in firm engagement by the springs, as they may move for considerable distances upon both sides of the center lines of the draw-heads. I have shown ranges of movements which the coupling-hooks may have more clearly in Fig. 5.

E designates pull-rods arranged beneath the cars and adjacent to the ends thereof. Near their extremities these pull-rods pass loosely through suitably-apertured guides e, secured upon the under sides of the cars. About midway in their lengths these pull-rods extend loosely through suitable apertures e' in the frame-like coupling-hooks, as shown more clearly in Fig. 2. Extending from each of the sides of the pull-rods are projections e^2, which projections are of such extent that when the pull-rods are moved toward one side of the cars they will contact with the adjacent surfaces of the coupling-hooks and draw the coupling-hooks over to one side of the draw-heads against the resistance of the springs D and into a position where the hooks will be uncoupled, and also into such a position that should two cars come together while the coupling-hooks occupy such position they will not couple.

In Fig. 5 the position of the coupling-hooks shown in dotted lines at the lower side of the figure and marked 1 is a position to which reference has just been made. The coupling-hooks may also be moved into the position marked 2 in Fig. 5, in which position they will, when the cars are brought together, be coupled, as shown more clearly in Figs. 1 and 2. As the coupling-hooks are provided with reversely-extending beveled outer faces, which when the hooks are brought together will slide past each other, after they have passed each other the hooks will be sprung into engagement by the springs D. When occupying the two positions just referred to, the coupling-hooks are maintained therein by means of locks F, acting upon the pull-rods E. These locks comprise rock-shafts f, extending the full width of the cars across the ends thereof. Springs f' upon the rock-shafts and bearing against the ends of the cars tend to rock said shafts always in one direction. They may be rocked in the other direction by means of arms f^2, arranged upon the ends of the rock-shafts upon both sides of the cars.

By reference more particularly to Figs. 1 and 2 it will be seen that the pull-rods E are provided upon their outer sides or their sides nearer the ends of the cars with projections f^3, and that upon the rear sides of the pull-rods they are provided with notches f^4. The projections f^3 and notches f^4 constitute, in effect, shoulders. Extending downwardly from the rock-shafts F are arms f^5 f^6. The arms f^5 are bifurcated near their lower ends, the bifurcated portions thereof extending downwardly at opposite side edges of the pull-rods and lettered f^7 f^8. The arms f^6 extend downward to the outer sides of the pull-rods.

When the coupling-hooks are uncoupled, or, in other words, they and their coacting parts occupy the positions shown in Fig. 2, the arms f^6 and the bifurcated portions f^7 of the arms f^5 will be interlocked with the projections or shoulders f^3 upon the pull-rods. Being held in such position by the springs f', the cars cannot then be coupled until the rock-shafts have been rocked sufficiently far to release the arms f^5 f^6 from their engagement with the pull-rods. If now it is desired to shift the coupling-hooks into a position where they will couple automatically, the arms f^2 are rocked downwardly from either side of the cars, thus causing the rocking of the rock-shafts and the movement of the arms f^6 and portions f^7 of the arms f^5 outwardly and out of engagement with the pull-rods. As soon as released, the springs D, acting against the coupling-hooks, will throw them over toward the opposite sides of the draw-heads. Their movements will, however, be stopped when they have reached the second or coupling position, for, as the bifurcated portions f^7 of the arms f^5 are moved out of engagement with the pull-rods the portions f^8 of the arms f^5 are moved into the notches f^4, and as the pull-rods are shot forward by the springs D they will come into contact with the portions f^8 of the arms f^5 at the ends of the notches f^4 and thus hold the pull-rods against further movement. It is of course to be borne in mind that the springs D are exerting a constant influence against the coupling-hooks and the pull-rods to force them over to one side. When two cars come together and the coupling-hooks by their contact are forced backwardly against the resistance of the springs D, the strain upon the pull-rods is at once relieved, because the coupling-hooks no longer contact with the projec-

tions e^2 upon the coupling-hooks. As soon as this occurs, the springs f' operate to rock the rock-shafts F, so as to move the bifurcated portions f^8 out of the notches f^4, thus releasing the pull-rods from the lock. The cars are now coupled, and in their swaying movement from side to side the pull-rods will be moved still farther along in the direction last indicated by the pressure of the coupling-hooks until the arms f^6 and the bifurcated portions f^7 of the arms f^5 will drop in behind the projections or shoulders f^3 upon the pull-rods and maintain the pull-rods in such position until moved out of the same by handles G, extending downwardly from the pull-rods, and which may be grasped by hand to move the pull-rods. When the pull-rods occupy this last position, the coupling-hooks are entirely uninfluenced by the projections e^2 upon the pull-rods, and the coupling-hooks may therefore swing to their full limit to and fro.

I have shown more clearly three positions which the pull-rods will occupy in Fig. 3, in which the dotted outlines represent the extreme movements from side to side, and the full lines the intermediate or coupling position which the pull-rods and the coupling-hooks will occupy. I have also shown in Figs. 5 and 6 the third position into which the coupling-hooks and their coacting parts may be shifted, in which position it will be observed that if the cars should come together the coupling-hooks pass each other back to back.

It is sometimes advantageous to be able to shift the pull-rods so as to uncouple the cars from their platforms or from the roofs. For this purpose I show a rod J extending downwardly at the front of the cars and journaled in bearings j thereon. This rod has at its lower ends cranks J′, which cranks extend into slots J^2 in the pull-rods E. The rods J extend in close proximity to the arms f^6 on the rock-shafts F. The rear sides of the arms f^6, as shown more clearly in Fig. 4, are provided with cam-surfaces j^3. If the rods J are drawn upwardly, the cranks thereon will contact with the cam-surfaces j^3 and will move the arms f^6 outwardly and cause the rocking of the rock-shafts F in such manner as to release the pull-rods from the lock. If the rods J be then turned—as, for instance, by handles j^4 upon the upper ends thereof—the pull-rods will be moved along into the position shown more clearly in Fig. 2, or, in other words, so that the coupling-hooks will be disengaged.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring acting on said coupling-hook to force it in one direction, a pull-rod extending upon both sides of said draw-head and adapted to contact with the coupling-hook to move the latter in one direction, and a lock for securing said pull-rod in a position into which it may be adjusted, substantially as specified.

2. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring for moving said coupling-hook in one direction, a pull-rod extending upon both sides of said draw-head and adapted to contact with the coupling-hook to move it in one direction, a rock-shaft, and an arm on said rock-shaft for locking said pull-rod in a position into which it may be adjusted, substantially as specified.

3. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring for moving said coupling-hook in one direction, a pull-rod extending to opposite sides of said draw-heads and adapted to contact with the coupling-hook to move it in one direction, a lock for securing said pull-rod in a position into which it may be adjusted, and a crank for causing the unlocking of said lock, substantially as specified.

4. In a car-coupling, the combination, with a draw-head provided with a shank upon its rear end, of a spring surrounding said shank and operating to force the draw-head forward, a coupling-hook pivoted within said draw-head and provided with a shank extending through the shank of the draw-head, and a second spring surrounding said shank of the coupling-hook beyond the spring first named and operating to draw said coupling-hook inwardly, substantially as specified.

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JOHN BICKER.