(No Model.) 2 Sheets—Sheet 1.

F. G. LAWRENCE.

CAR COUPLING.

No. 272,712. Patented Feb. 20, 1883.

Fig. 1

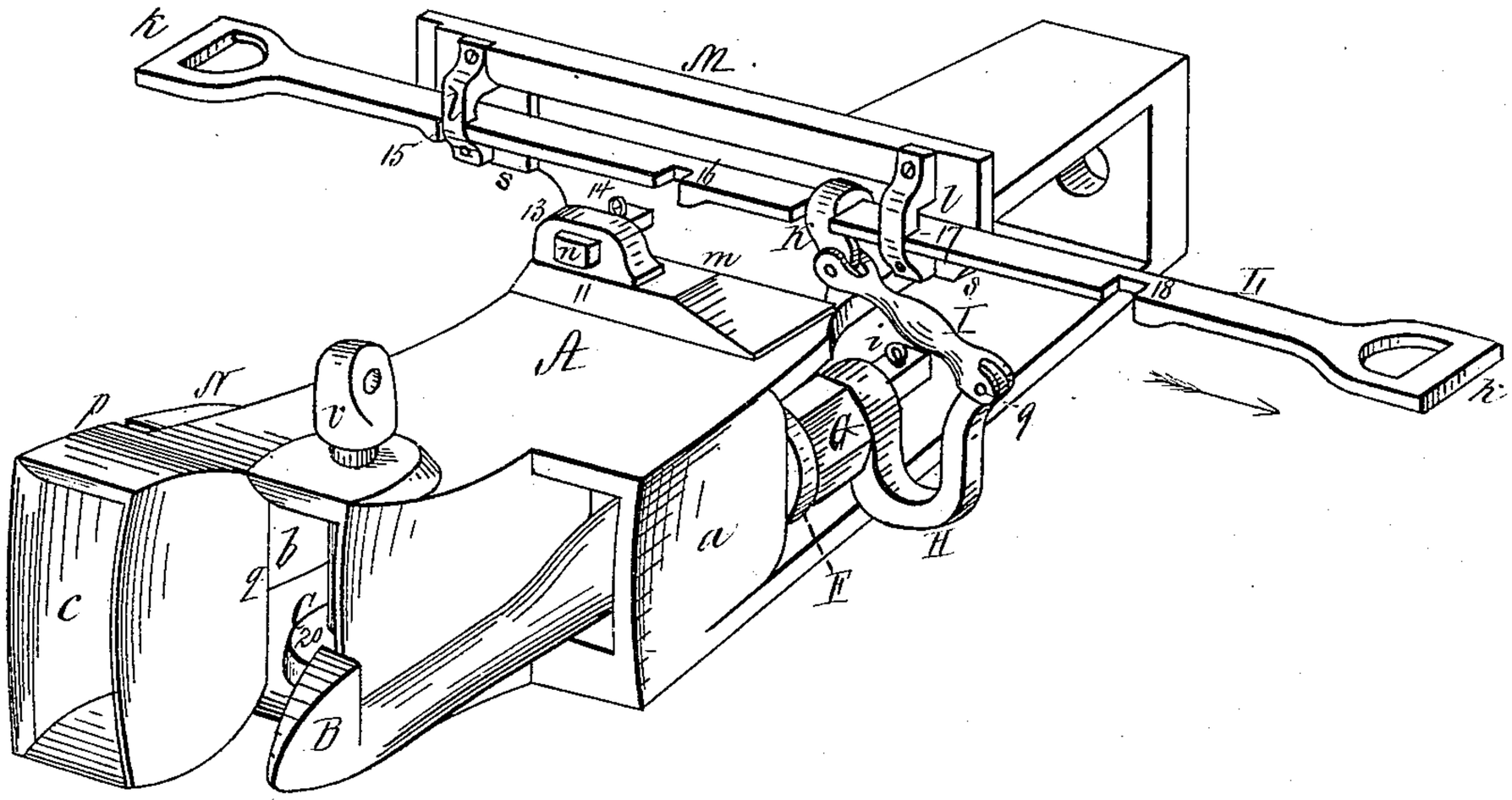
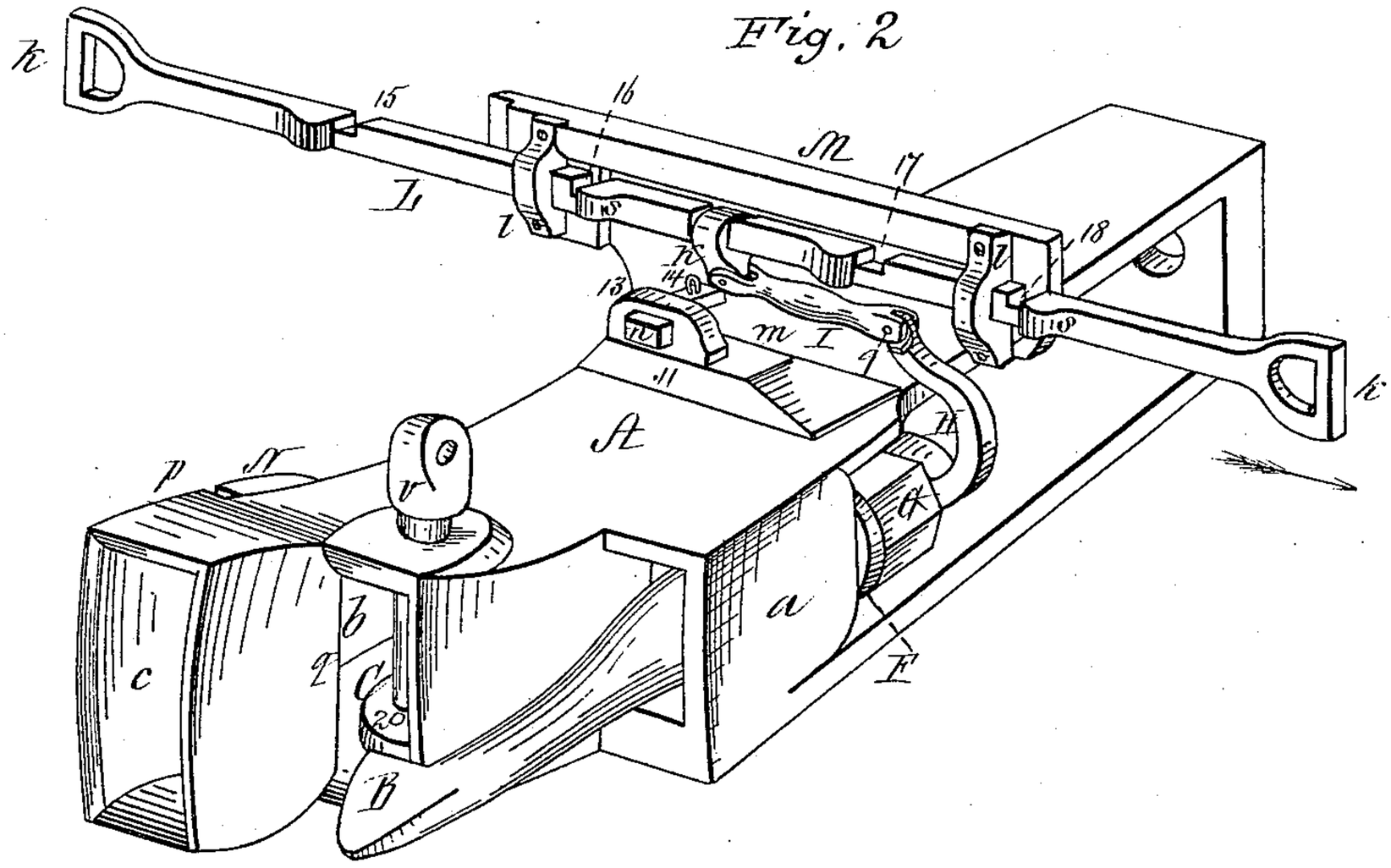


Fig. 2



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

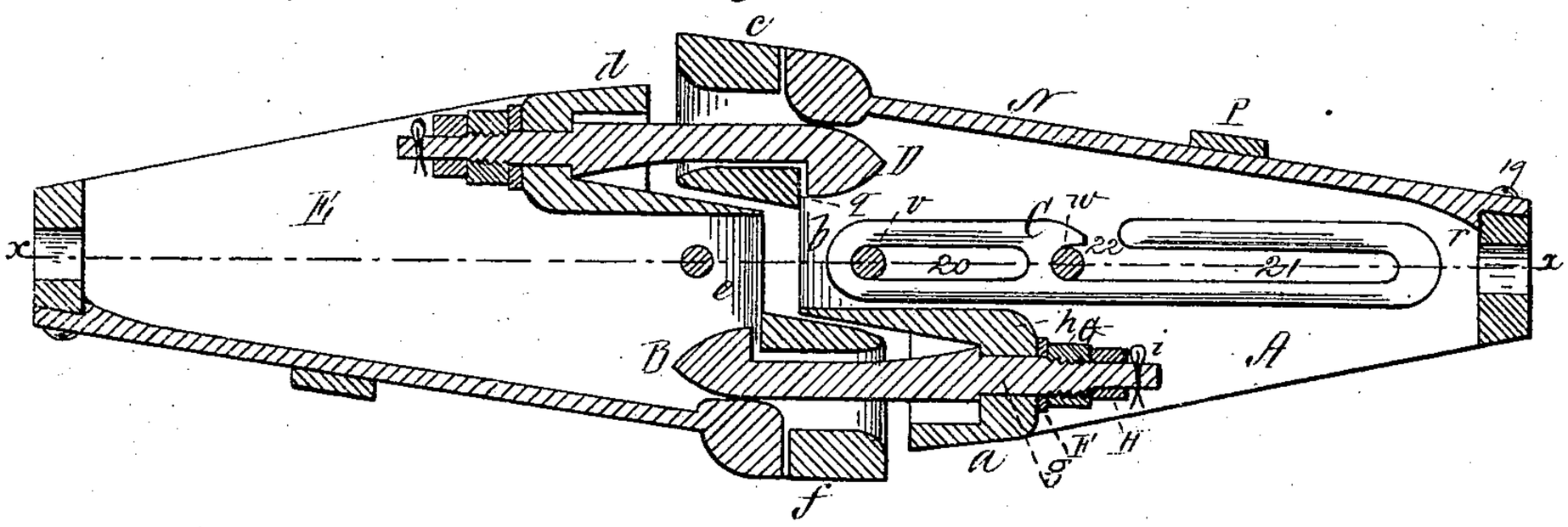


Fig. 4.

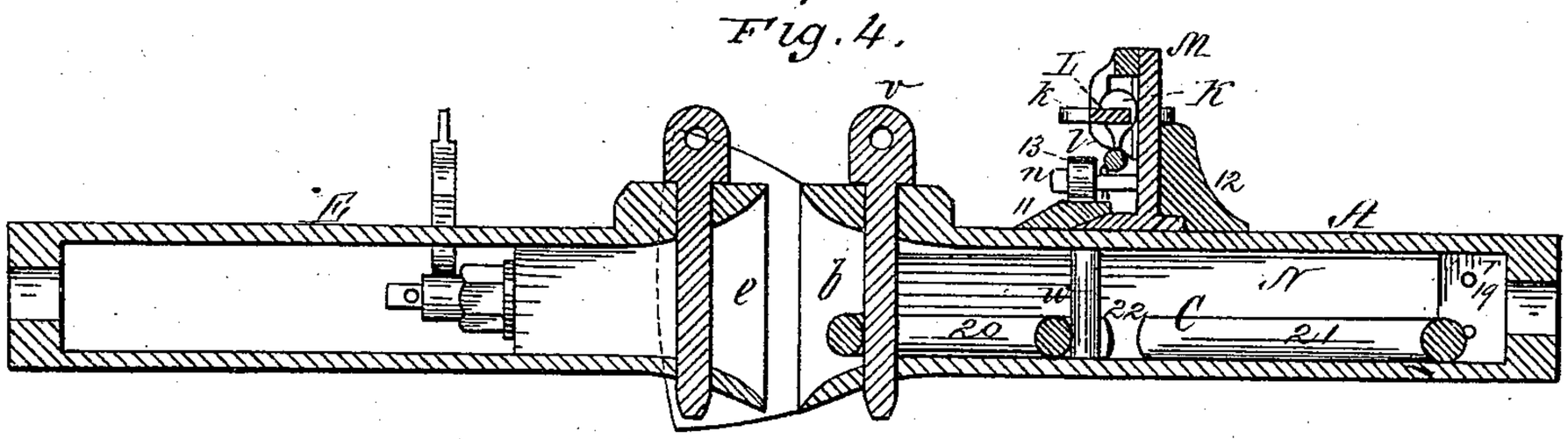


Fig. 5.

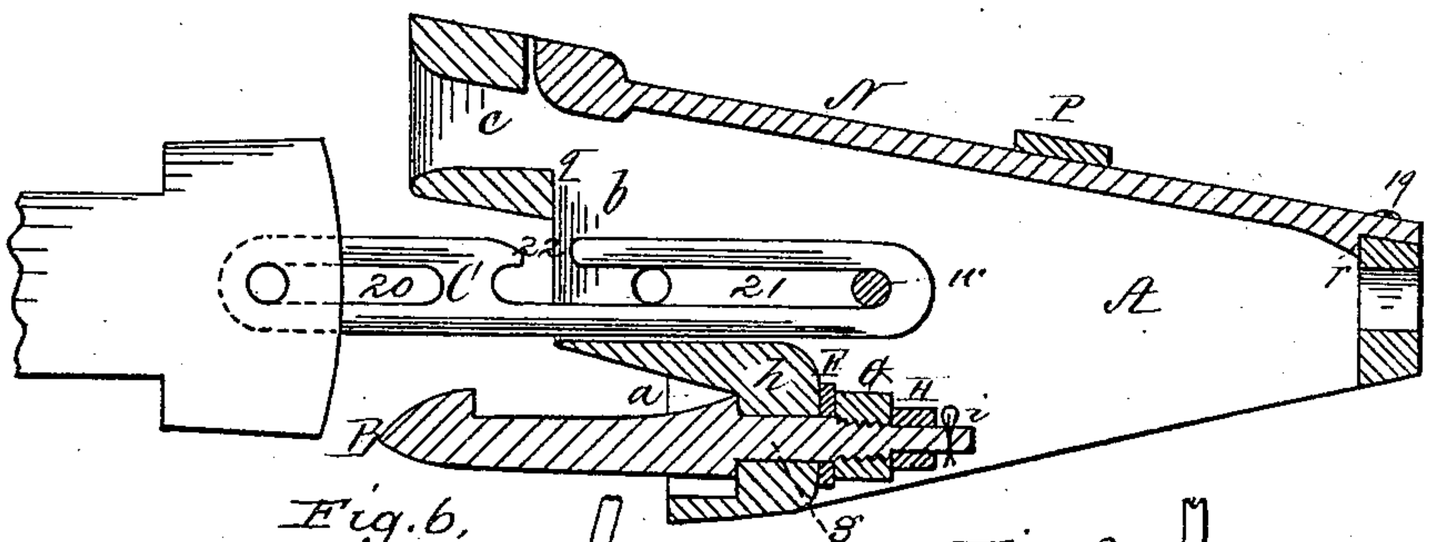


Fig. 7.

Fig. 6.

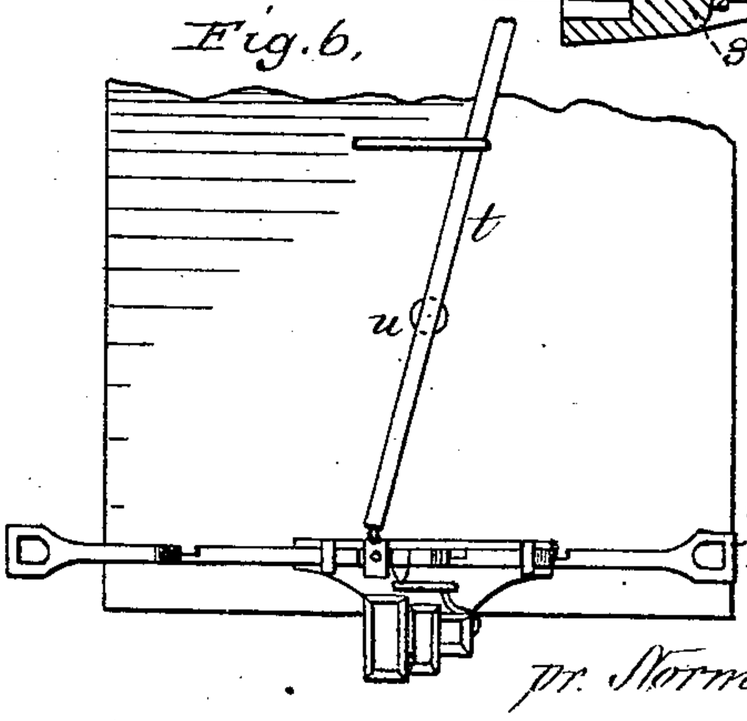
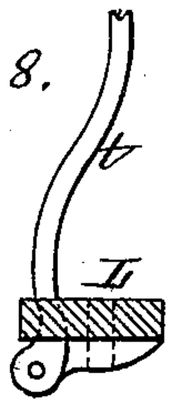


Fig 8.



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UNITED STATES PATENT OFFICE.

FRANK G. LAWRENCE, OF BOSTON, MASSACHUSETTS.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 272,712, dated February 20, 1883.

Application filed August 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANK G. LAWRENCE, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Car-Couplings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a compound draw-head constructed in accordance with my invention, the parts being represented in their locking position. Fig. 2 is a perspective view of the same, with the parts in the position they occupy when the draw-hook is ready to be unlocked from the opposite draw-head to allow two contiguous cars to be disengaged. Fig. 3 is a horizontal section through two contiguous componnd draw-heads coupled or connected by their draw-hooks. Fig. 4 is a vertical section in the direction of the line *x x* of Fig. 3. Fig. 5 is a horizontal section, showing the adaptatiou of the central portion of my compound draw-head in coupling a car of the ordinary construction provided with the common form of draw-head now in use. Fig. 6 is an elevation showing the manner of manipulating from the top of a car the shipper which operates my rolling draw-hook; Figs. 7 and 8, sectional details representing the manner of operating the sliding shipper by the rod which leads to the top of the car.

My invention relates particularly to that class of car-couplers designed exclusively for freight-cars, or those without projecting platforms; and it consists in a compouud draw-head having a yielding side, in combination with a rotating coupling or draw hook connected by suitable mechanism with a sliding shipper, operated either from the side of the track or top of the car, my said draw-head being either automatically locked to the contiguous similar draw-head of the next car or locked by operating the shipper after the draw-hook has reacned the portion of the opposite draw-head with which it engages, the unlocking of the draw-hook being only accomplished by operating the shipper, my said draw-head being readily applied to the common style of freight-car with trifling labor and cost, and my invention also consists in a shackling-link of peculiar form, and in the adaptation of the central portion of my compound draw-head to the ordinary draw-head and bolt employed in freight-cars of the present construction; and my invention furthermore consists in certain details to be herein specifically described and claimed.

In the said drawings, A represents my compound draw-head, composed of three portions, *a b c*—to wit, an outer portion, *a*, in which the draw hook B is located, a central portion, *b*, containing an auxiliary shackling-link, C, and an outer portion, *c*, for the entrance and engagement of a draw-hook, D, (similar to B,) projecting from a portion, *d*, of a compound draw-head, E, attached to the contignous end of the next car, this latter draw-head, E, being composed of three portions *d e f* of similar construction to those *a b c* of the draw-head A, but with the position of its outer portions *d f*, transposed or inverted. (See Fig. 3.)

The portion *c* of the draw-head A is longer or projects out beyond the central portion, *b*, and this portion *b* is longer or projects out beyond the portion *a*, the length and construction of the portion *c* being the same as the portion *f* of the draw-head E, but located on the opposite side and in line with the portion *d*.

The portion *a* of the draw-head A is of the same length and construction as the portion *d* of the draw-head E, but located on opposite sides thereof, being in line with the portion *f* of the draw-head E. The central portion, *b*, of the draw-head A is in line with and corresponds to the central portion, *e*, of the draw-head E, and the auxiliary link C, which it contains, is to be used in case of accident to one or both of the draw-hooks B D, and also in coupling with an ordinary car provided only with the common form of draw-head. The draw-hook B is provided with a turned-down cylindrical portion, *g*, which passes through a cylindrical opening in an abutment, *h*, which closes the rear end of the portion *a* of the draw-head A, the extreme inner end of the draw-hook being square, and having fitted thereover a washer, F, which bears against the conical rear of the abutment *h*, a washer, G, bearing against the washer F, and the lower end of a bent arm, H, bearing against the washer G,

this arm H being kept in place upon the inner square end of the draw-hook by an iron pin, *i*. The upper end of the bent arm H is pivoted at 9 to one end of a link, I, the other end of which is connected with the lower end of a collar, K, surrounding a turned-down portion of a long flat shipper, L, provided with handles *k k* and made to slide transversely across the end of the car in guides *l l*, secured near the opposite ends and to the front side of a vertical frame, M, extending transversely across the draw-head, the base *m* of the frame fitting into ways formed between two blocks, 11 12, secured firmly to the top of the draw-head A, the frame being held rigidly in place within the ways by a bolt, *n*, locked within a post, 13, rising from the block 11 by means of a pin, 14. The rear block, 12, extends up across the top of the draw-head and affords an unyielding bearing for the frame on which the shipper L slides, Fig. 4. The length of the shipper is intended to be less than the width of a car, so as not to project when shifted beyond the line of the side of the car. This shipper is provided with four rectangular notches, 15 16 17 18, cut in its upper or outer edge, the said notches, when brought in line with or opposite the guides or stops *l l*, allowing the shipper to tip or turn by its gravity from a vertical position, as seen in Fig. 2, to a horizontal position, as seen in Fig. 1, or vice versa, the sliding of the shipper through its connections with the draw-hook causing the latter to rotate from one position to another, Figs. 1, 2, 3.

The outer side of the portion *c* of the draw-head A consists of a strong leaf of spring metal, the forward end of this spring N being enlarged and fitting against a shoulder, *p*, at the rear of the front of this portion, the interior of the enlarged front of this spring being rounded, and in its normal position projecting in beyond the line of the adjacent inner side of the front of the portion *c*, in order that the draw-hook B, after entering the latter, may come into contact with the spring N and be guided beyond and behind the inner square face *q* and lock therewith, the tension of the spring being sufficiently great to keep the draw-hook from unlocking during any swaying of the train from a right line. The inner end of the spring is provided with a shoulder, *r*, abutting against the inside of the rear of the draw-head, and is secured by screws 19; but these screws may be dispensed with.

P is a strong metal plate secured to the side of the draw-head outside the spring, to prevent the accidental displacement thereof, and serves as a fulcrum on which it bears when yielding or vibrating outwardly. By unscrewing the inner end of the spring and grasping its front enlarged end it may be removed from its position.

When two cars provided with my improvements are to be coupled the two shippers at the contiguous ends of the cars are drawn while in their vertical position to their respective sides until the notches 16 18 of each come into line with the guides *l l*, when the shippers are free to tip into a horizontal locked position, causing the draw-hooks B D to rotate into a horizontal position, and with the parts in such position the two cars may be run together and locked automatically. Two cars may also be coupled by bringing them together with their draw-hooks in the position seen in Fig. 1 until their engaging portions pass beyond and over the shouldered faces *q* of the inside of the portions *c f* of the draw-heads A E, when the shippers are slid by the operator until the hooks are rotated, as before described, thus locking the cars securely, as desired. Two cars cannot be purposely unlocked without manipulating the shippers, it being simply necessary to pull them in the direction of the arrow till the notches 15 17 come in line with the guides *l l*, when the draw-hooks are rotated away from their locking faces with each hook upward, as seen in Fig. 1.

s s are stops for preventing the accidental sliding of the shipper beyond the points where the notches 15 16 17 18 come in line with the guides *l l*. Instead of sliding the shipper by hand from either side of the track, it may be slid from the top of a car by means of a lever, *t*, Fig. 6, pivoted at *u* to the end of the car, and having its lower end so connected with the flat shipper-bar as to admit of the movements of the latter from a vertical to a horizontal plane, and vice versa, (see Figs. 7 and 8,) it being simply necessary to pull upon the lever *t* to tip the flat surface of the shipper L from a horizontal to a vertical plane, in which latter position it is free to be slid longitudinally and rotate the draw-hook into its locking position.

Should it happen that the draw-heads A E and draw-hooks B D of two cars be inoperative, or should it be desired to couple one car having my compound draw-head with a car not so provided—for instance, a car having the old style of draw-head and common shackling-link—I couple them in the following manner: The auxiliary link C is run out of the central portion, *b*, (after removing the bolt *v*,) until the inner end of the link comes against a stationary pin, *w*, extending between the top and bottom of this portion of the draw-head, the outer end of the link entering the old style of draw-head, and being locked by the passage of the removable bolt *v* down through it. This auxiliary link C consists of two portions, one a short closed portion, 20, in front, and a long portion, 21, in the rear, provided with an opening, 22, by which the link, after being tipped vertically, so as to bring the opening in line with the stationary pin *w*, may be disengaged therefrom and drawn out by inserting the hand at the rear of this portion of the draw-head should the link be bent or otherwise damaged.

My compound draw-head is designed to

withstand the heavy strain and wear incident to the use of freight-cars, and its several portions are so constructed and arranged in relation to each other as to admit of their ready removal and replacement.

I claim—

1. As an improvement in couplers for freight-cars, the compound draw-head A, consisting of the portions *a b c*, secured to one car, and the compound draw-head E, consisting of the portions *d e f*, secured to the contiguous car, the respective portions of each draw-head being of different lengths and the positions of the portions of one draw-head being transposed or inverted with those of the other, in order that they may interlock and the long portion of each come into line with the short portion of the other, in combination with the rotating draw-hooks B D, operated by shippers accessible from the side or top of the car, substantially as described.

2. Two compound draw-heads, A E, with their portions *a b c d e f*, the outer side of each portion *c f* being formed by a spring, N, in combination with sliding shippers L L, rotating draw-hooks B D, and their connecting mechanism, as and for the purpose explained.

3. In combination, the sliding shipper L, with its notches 15 16 17 18 and handles *k k*, a shipper-supporting frame, M, provided with guides *l l* and secured to the draw-head A, a rotating draw-hook, B, and the mechanism connecting it with the shipper, as and for the purpose specified.

4. The sliding shipper L, provided with notches 15 16 17 18 and with suitable stops, in combination with the lever *t*, having its lower end loosely connected in such manner with said shipper that the latter may be tipped so as to bring its flat surface from a horizontal to a vertical plane, and vice versa, as and for the purpose set forth.

5. The ways formed between the blocks 11 12, secured to the draw-head A, in combination with the shipper-frame M, secured within said ways, as and for the purpose described.

6. The central portion, *b*, of a draw-head, provided with a stationary bolt, *w*, in combination with an auxiliary shackling-link, C, consisting of two portions, one provided with an opening in its side to admit of the removal of the link after tipping it on its edge, as and for the purpose described.

7. The central portion, *b*, of a draw-head, A, provided with a removable bolt, *v*, and a stationary bolt, *w*, in combination with an auxiliary shackling-link, C, formed of two portions, 20 21, with an opening, 22, in the rear portion, 21, as and for the purpose set forth.

Witness my hand this 4th day of August, 1882.

FRANK G. LAWRENCE.

In presence of—
F. L. McGOWAN,
EDWARD J. JONES.