

(No Model.)

3 Sheets—Sheet 1.

H. S. BRYAN.
CAR COUPLING ATTACHMENT.

No. 539,609.

Patented May 21, 1895.

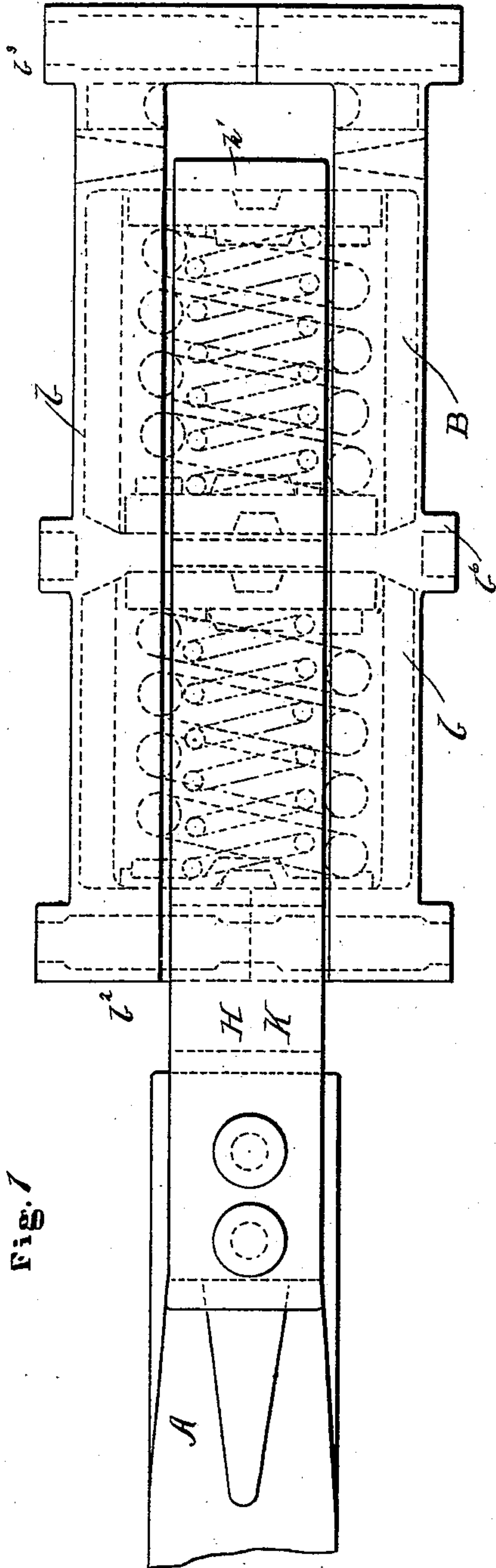


Fig. 1

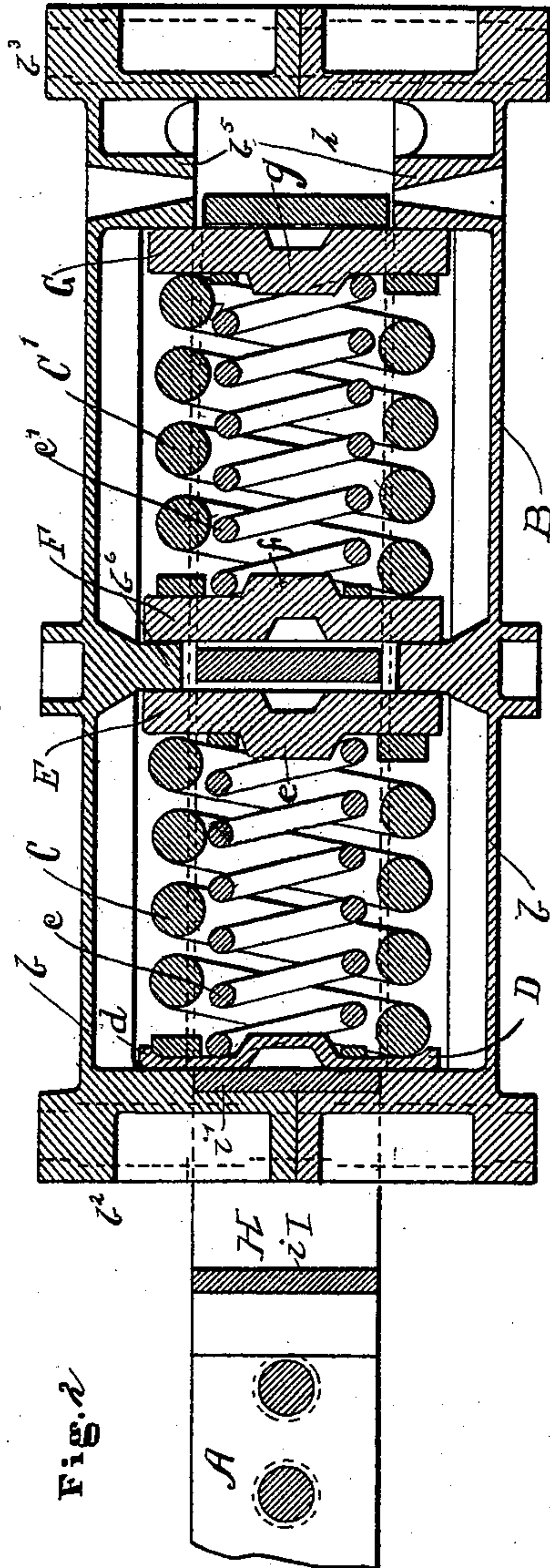


Fig. 2

Witnesses

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A. A. Murray

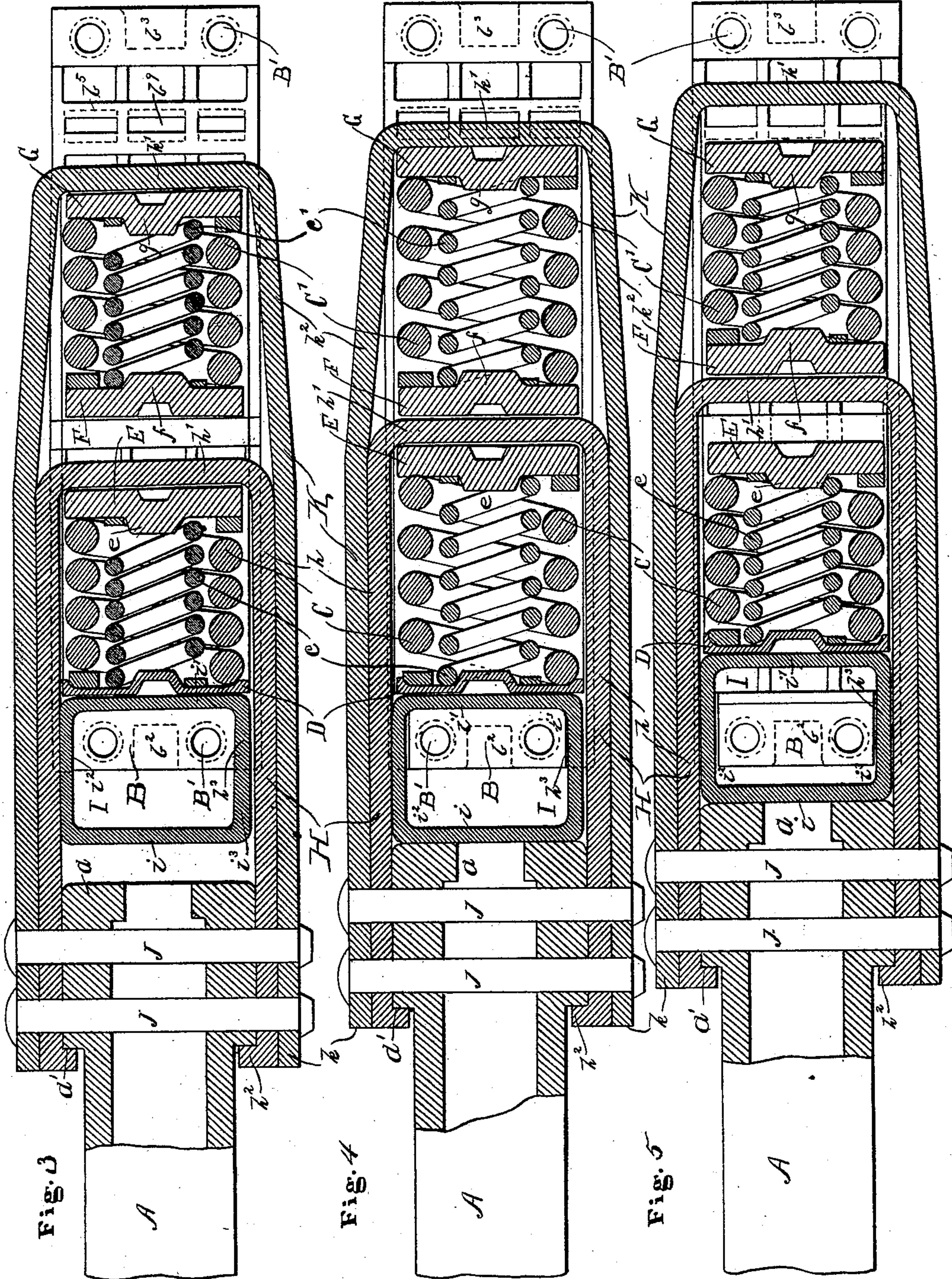
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UNITED STATES PATENT OFFICE.

HENRY S. BRYAN, OF TWO HARBORS, MINNESOTA.

CAR-COUPLING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 539,609, dated May 21, 1895.

Application filed March 16, 1895. Serial No. 542,001. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. BRYAN, a citizen of the United States, residing at Two Harbors, in the county of Lake and State of Minnesota, have invented certain new and useful Improvements in Car-Coupler Attachments, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 represents a plan view of a draw-bar casing and part of draw-bar embodying my invention; Fig. 2, a plan section of the same on line 2 2, Fig. 4; Fig. 3, a lengthwise vertical section taken on the line 3 3 of Fig. 1, showing the parts under draft; Fig. 4, the same view showing the parts at rest; Fig. 5, the same view showing the parts retracted or under back thrust; Fig. 6, an inside elevation of one section of the casing detached; Fig. 7, 20 a plan view of the same; Fig. 8, a section on the same line as Figs. 3, 4, and 5 of a modification with single loop and spring chamber, the parts being in position as shown in Fig. 4; Fig. 9, a plan of the spring-seat disk detached; Fig. 10, a cross-section thereof, taken on the line 10 10 of Fig. 9; Fig. 11, an end elevation of the sliding box, and Fig. 12 a side elevation of the same.

30 My invention relates to the casing in which the rear end of the draw bar is mounted, and to the spring mechanism by means of which the draw bar is cushioned in said case and is regulated in its sliding movements when the cars are coupled up in a moving train.

35 Many parts of the invention are common to and may be used in both double and single spring structures; but some of the devices are designed especially for a double spring structure. In the drawings both forms of construction are shown, Figs. 1 to 5 inclusive illustrating the double spring structure, and Fig. 8 the single spring device. The remaining figures show parts which are applicable to both.

45 It will be understood that the draw bar is applied to a car, in the usual way, by securing a casing to the under side of the car body or frame; but this arrangement is so well known that it is not necessary to show or describe the other parts of a car, and therefore 50 they are omitted in the drawings.

A description in detail of the construction and operation of a draw bar mechanism for

cars, embodying my improvements, will now be given, with reference to the drawings illustrating the same, and the special improvements which are believed to be new and which it is desired to secure by Letters Patent will then be more distinctly set forth in claims.

In the drawings, A. represents a draw bar, of any ordinary construction, only the rear 60 portion thereof next the casing being shown. At the rear end of the bar there is an enlargement or head, *a*, provided mainly by thickening the upper and lower portion, as seen in the drawings, this enlargement having a perpendicular edge or face at its front whereby 65 a straight stop, *a'*, is provided.

The casing, B., within which are arranged the springs and followers and a portion of the device for connecting them with the draw bar, 70 is composed of two separate parts or sections, *b*, which are alike in construction, and so the description of one will serve for both. Each case section consists of a long, rectangular body, *b'*, of plate form, provided at each end 75 with a cross head, which extends beyond each face of the side piece but projects considerably farther inward than outward therefrom. The front end cross heads are designated by the letter *b*², and those at the rear end by the 80 letter *b*³. A flange, *b*⁴, extends inward from each edge of the side body, but does not project so far as the cross heads. At the rear end of these casing sides there are cross ribs or bars, *b*⁵, running vertically from flange to 85 flange, being arranged a little distance in front of the cross head. About mid-way between these cross ribs, at the rear of the case, and the cross heads at the front end thereof, there is also provided a second cross bar or 90 rib, *b*⁶, extending between the flanges of the said piece, the same as the ribs *b*⁵, and projecting inward about the same distance. The cross heads at the respective ends of the case sections or sides are provided with good-sized 95 apertures, *b*⁷, running horizontally through them and arranged so that those in one will register with those in the corresponding part of the other case side, when the two are brought together in proper working position. 100 These two parts or sections of the casing are secured together, so as to form the complete case, by bringing them together in a vertical position with the long sections of the cross

heads inward and brought in contact with each other, when through bolts, B' , are passed through these apertures and secured in any usual way, whereby the two parts of the case
 5 may be drawn firmly together and strongly secured in position. This casing may be made of any suitable metal. Malleable iron or steel is preferred, however, and, when constructed of this metal, the case sides may be provided
 10 with a number of apertures, whereby the structure is lightened. This construction is shown in the drawings, in which the apertures in the main portion of the side pieces are indicated by the letter b^8 . There are also
 15 somewhat similar apertures, b^9 , in the cross ribs b^5 , as indicated in the drawings. Other metal may, however, be used for the casing, and, if gray iron or any other weaker metal is adopted, it is preferable to construct the
 20 case sides entire, to give them sufficient strength without objectionable increase in weight.

Obviously, when the two parts of the casing are put together as described above, there
 25 will be produced a rectangular inclosure, closed at the sides and ends and partially closed at the top and bottom, though quite a wide open space is left here between the respective edges of the inwardly projecting
 30 flanges. It will also be noticed that the cross ribs, b^5 , b^6 , form stops in the space between the flanges of each case side, the former just a little in front of the rear head of the case and the latter about half way between the
 35 said rear ribs and the front end of the case, thus dividing the space between the inside flanges of the side pieces into two parts, about equal in size, and providing in the case a kind of chamber at each end, extending to about
 40 the middle of the casing lengthwise, though of course these chambers are open above and below, connect with each other, and the rear one is open at its rear end between the cross ribs b^5 . In each of the said spaces or cham-
 45 bers there is arranged a strong spring coil, which is marked C. in the front section and C' . in the rear section, in Figs. 1 to 5 inclusive of the drawings. At the front end of the case there is a seat or follower, D., for
 50 the front end of the spring C. This piece is in the shape of a disk of metal, having an inwardly projecting flange, d , around its edge and an inwardly projecting boss, d' , at its center. This piece is adapted to set
 55 against the front end of the casing. At the rear end of this first chamber there is a follower, E., which is of ordinary construction, being a thick disk of metal provided with a central boss, e , projecting inward and of a
 60 size larger than the space between the central cross ribs, b^6 . This follower is the seat for the spring C. at its rear end. Both these followers are free within the case and may slide back and forth therein. Within the
 65 large spring C. there is arranged a smaller coil, c , of smaller wire and adapted at its respective ends to fit around the bosses of the

respective followers; and the edge flange on the front follower tends to hold the front end of the spring in place. It is to be noted that
 70 each follower is stopped in one direction, the front or forward one by the front end of the case and the rear one by the central cross ribs. The spring C' . is mounted in the rear chamber in a similar way. There is provided
 75 a follower, F., for the front end of this spring, and a follower, G., for the rear end thereof, both of which are like the follower E. and are provided with like central bosses f . and g . The respective ends of the rear spring
 80 rest upon these followers, and the latter find stops like the front followers, though they are free to slide in the case between the stop ribs. The follower F. is stopped in its forward movement by the central cross ribs, b^6 ,
 85 and the follower G. in its rear movement by the end cross ribs, b^5 . The spring C' . is mounted in this rear chamber space with its ends resting respectively upon the said fol-
 90 lowers, as seen in the drawings, and within it is also arranged a smaller spring coil, c' , like c . in the front chamber and seated in like manner.

A yoke or tail strap, H., is mounted partly within the front end of the casing and con-
 95 nected at its outer end to the draw bar. This yoke is designed especially for the front spring alone. It consists of a long strip of metal, of a width about the same as that of the space between the flange edges of the case
 100 sides, and is bent upon itself so as to form a rectangular structure open at one end. In the drawings the long sides are indicated by h . and the end joining them by h' . The free ends of this tail strap are adapted to embrace
 105 the head on the end of the draw bar and at their extremities are constructed with short inward flanges, h^2 , which fit over and engage with the respective stops, a' , and are secured to this head by means of through bolts. The
 110 space within this strap is about as wide as that within the flanges of the frame sides, and the front spring, C., with its seats or followers, D. and E., are arranged in the space at the rear end of the strap, that is, this strap
 115 surrounds these devices at its rear end, so that they will stand in the casing between the front end thereof and the rear closed end of the strap; but the front seat rests against a movable device, which will now be described. 120

The device referred to is a rectangular box, I., of strong metal. The dimensions of the box are such that, when applied to the casing, its height will be about the same as the distance between the flanges thereon, and its
 125 width about the same as the central space between the said flanges at the top and bottom of the casing. The thickness of the box, or rather the distance between its sides, is considerably greater than the thickness of the
 130 front end pieces of the casing, being at least double the thickness of the latter. The upper and lower faces of the front cross heads, b^2 , are cut away, thus providing a kind of

channel, or guide-way, h^3 , of a depth about equal to the thickness of the box and of a width corresponding to the width of the box. The box is mounted upon this front end of the casing by placing the respective end sections within the box, when the two parts of the casing are fastened together. The box is loose upon the casing end, so that it is free to slide back and forth thereon, within the limits of its inner width space. The front side, i , of the box, on the outside of the case end, rests loosely against the rear end of the draw bar. The rear side, i' , on the inside of the case end, is in contact with the spring seat or follower D. The top, l^2 , of the box runs in the upper channel of the case end, and the bottom, i^3 , in the corresponding channel on the under side. It will be seen from this description that the box is entirely independent of any device except the case end on which it is mounted and on which it also has a free, limited movement. It is disconnected and free from all the other adjacent parts of the device. The bolts which secure the front ends of the strap to the head of the draw bar are marked J. in the drawings.

A second yoke or tail strap, K., is provided for application to the rear spring. This device is similar in all respects to the strap H, just described above for the front spring, except that it is considerably longer, and its free ends, k , are spread sufficiently to embrace the front and shorter strap H. These ends are secured to the draw bar by the same bolts, J., which fasten the shorter strap thereto. Obviously there will be a space between the rear end, k' , of this long strap and the rear end of the shorter front strap, this space being inclosed by the said end piece and the rear portion, k^2 , of the strap back of the front strap. The parts are so constructed relatively that, in normal position of rest, this space will be of substantially the same length as that between the rear end of the front strap and the front end of the casing, or rather the back of the sliding box, as indicated in Fig. 4 of the drawings.

From the explanation above, it is obvious that these springs may both be compressed together, in either direction, at one and the same time. The followers have a certain freedom of movement, but are limited in this movement, in one direction, by stops on the casing, as described above. Now, when a forward draft is applied to the draw bar, obviously the two straps will be drawn forward with the draw bar, independently of the casing and the box; but the latter being in the position shown in Fig. 4, the springs in both chambers will be compressed by the respective straps, as indicated in Fig. 3 of the drawings. When there is a quick stoppage of the train, or a backward movement thereof, there will obviously be a backward thrust force brought upon the draw bar, the effect of which will be not only to restore the parts to normal position, as indicated in Fig. 4, but

also to compress the springs in the opposite direction, the front spring being compressed by the backward movement of the box, produced by the backward thrust of the draw bar, and the rear spring by the similar movement of its front follower, effected by the contact therewith of the rear end of the shorter strap in front, this action being illustrated in Fig. 5 of the drawings. It will be understood, of course, that this backward thrust movement is determined by the width of the open space between the box sides, for, as soon as the front side of the box is brought up against the front end of the casing, this backward movement will be stopped.

The above description relates to a device in which there are double springs and double tail straps. The invention may also be used with one spring and strap, where trains are lighter and the tension is less. This modified form of the tension device is illustrated in Fig. 8 of the drawings. The draw bar is the same as in the double tension structure, shown in the previous figures and described above, and is therefore designated by the letter A., the same as in the other construction. The casing, L., is also the same in construction as the casing B., except that it is very much shorter. It has similar cross heads, l and l' , at the front and rear ends, and rear cross ribs or bars, l^2 , a little in front of the rear end sections and like the rib b^5 in the double structure. It has not, however, the mid-way cross ribs, marked b^6 , in the double structure. Obviously this device is not necessary, as but one spring is used. The yoke or tail strap, M., is the same as the short strap H. in the double structure, is attached to the draw bar in the same way, and has a sliding movement in the casing, the same as already described. The rectangular, open-end box is also the same as in the double structure, but is marked with the letter N. in Fig. 8, as the structure is a modification in its entirety. In the casing back of the box, within the closed rear portion of the yoke or strap, there is arranged a spring, O., with front disk seat and follower, P., a rear follower, Q., and a small spring coil, R., arranged within the larger. Obviously the function and operation of this device must be precisely the same as the front portion of the double device described above. There is no difference between the two, except that in the double structure there is a rear enforcement of the tension mechanism, in the form of the second or long tail strap and the second or rear spring, which of course requires a longer casing. It will not be necessary, therefore, to give any detailed description of the operation of the single device shown in Fig. 8. It will be fully understood from the description already given of the double structure.

This device provides a very useful and efficient mechanism for use in a railway train of connected cars. It furnishes a very strong connection, which at the same time has a powerful tension, so that the cars are not only

coupled by strong mechanism, but also with yielding mechanism of almost any tension that may be desired, whereby danger of damage, in even severe shocks, is practically obviated.

5 The use of either the double spring structure or the single spring mechanism is considered as within my invention, though, for heavy work, the double structure is preferred.

10 Changes in details of construction and in some of the special devices may be made, without losing the invention, provided always that the main features of the latter, as herein stated, are retained. The small spring coil within the large spring coil, as here described
15 and shown, may be entirely discarded, if desired. Mechanical changes may also be made in the structure of the casing, the spring followers, and other of the devices, as separate parts. I do not wish to be understood, there-
20 fore, as restricting my invention to the precise construction, in all specific parts, as herein shown and described.

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

25 1. In a car coupler attachment, a casing consisting of two parts or side pieces provided with a flange, running lengthwise along each edge, and end pieces or cross heads at each
30 end, both flanges and cross heads projecting on the inner face of the said piece, the ends farther than the flanges, a tension spring or springs arranged within said casing, a draw bar connected at its rear end with said spring
35 within the casing, and devices for securing the two parts of the casing firmly together at the ends thereof, substantially as described.

2. In a car coupler attachment, a metal casing, in combination with a tension spring or
40 springs arranged within the casing, a draw bar provided at its rear end with a device adapted to surround and inclose the spring within the casing, and a sliding box mounted on bearings at the front end of the casing, on
45 which it is free to slip forward and backward, and arranged between the front end of the spring and the rear end of the draw bar but disconnected from each, substantially as described.

50 3. In a car coupler attachment, a casing composed of two separate side pieces having inward flanges on their respective edges and end pieces or cross heads at their respective ends extending inward and meeting beyond the re-
55 spective side flanges, whereby a central open space is left between the latter, a tension spring and suitable followers mounted within said casing, a draw bar for coupling adjacent cars, a yoke or tail strap composed of a strip
60 of metal, the width of which is about the same as the central open space between the side edges of the casing, doubled upon itself to inclose a rectangular space, secured at its free ends to the draw bar and at its rear, closed end embracing the spring within the
65 casing, and an independent rectangular box, mounted on a support at the front end of the

casing, on which it is free to slide, and arranged between the rear end of the draw bar and the front follower of the spring, substantially as described. 70

4. In a car coupler attachment, a casing provided with interior stops on its sides whereby it is divided into two sections, in combination with a tension spring arranged with movable
75 followers in each section, a draw bar provided with devices at its rear end adapted to extend back into the casing and embrace each spring separately, and a sliding box arranged at the front end of the casing, between the
80 front spring and the rear end of the draw bar, but independent of both, and mounted upon a support on which it is free to slide back and forth within the limits of its interior space, substantially as described. 85

5. In a car coupler attachment, a casing composed of two side pieces provided with inwardly projecting edge flanges, end pieces extending beyond said flanges and cross ribs or stops dividing the space between the flanges
90 into two parts, a tension spring mounted in each part or section of the casing and provided with followers of greater width than the space between said stops, a draw bar of any ordinary construction, a yoke or tail strap of
95 rectangular form, connected at its free ends with the draw bar and embracing the front tension spring within the loop at its rear end, a second and longer yoke or tail strap secured at its front open end to the draw bar, in connection with the shorter yoke, extending along the
100 latter to the rear and beyond the rear end thereof to embrace the rear tension spring within its loop in rear of the shorter yoke, the width of each yoke being about the same as the
105 central space between the casing flanges, and an independent rectangular box, having an interior space of greater width than the thickness of the front case end, mounted in suitable guide-ways on the upper and lower faces
110 of the front case end, and free to slide back and forth thereon, being arranged between the rear end of the draw bar and the front follower of the forward tension spring, substantially as described. 115

6. In a car coupler attachment, a metal casing for the tension spring and draw bar connection, constructed with inwardly projecting
120 flanges on the edges of each piece and end pieces or sections extending inwardly beyond the flanges, with transverse ribs or stops between the respective flanges, a little in front of the rear end pieces, substantially as described.

7. In a car coupler attachment, a metal casing, B., composed of two rectangular sections, b., provided with edge flanges, b⁴., and cross heads, b²., b³., extending inward beyond the
125 respective flanges, and cross ribs or bars, b⁵., b⁶., extending across the space between the edge flanges, to divide it into sections, tension springs, C., C'., arranged within the respective sections of the casing and provided with
130 followers at each end, wider than the space

between opposite cross ribs, a draw bar, and devices for connecting the latter with the respective tension springs, substantially as described.

5 8. In a car coupler attachment, a metal casing composed of two rectangular side pieces, perforated or of skeleton form, and provided with edge flanges and end sections both extending inward, and cross ribs or bars, b^5 ,
10 near the rear end of the side pieces, provided with perforations, b^7 , in combination with bolts passing through the adjacent end cross heads, a tension spring arranged within the casing, a draw bar, and a device connecting
15 the latter with said spring, substantially as described.

9. In a car coupler attachment, a metal casing for the tension spring, in combination

with a rectangular box, I., mounted in suitable guide-ways on the front end of the casing and free to slide back and forth thereon, the space within the box being of greater width than the thickness of the case end which it incloses, a tension spring mounted in the casing in rear of the said box but unattached
20 thereto, a draw bar abutting at its rear end against the sliding box, and a connecting device attached to the rear end of the draw bar, extending back therefrom, and inclosing the spring within the casing, substantially as described.
25
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