(No Model.)

J. TRIPPETT & T. & H. SEARLS.

DRAW BAR.

No. 328,086. Patented Oct. 13, 1885.

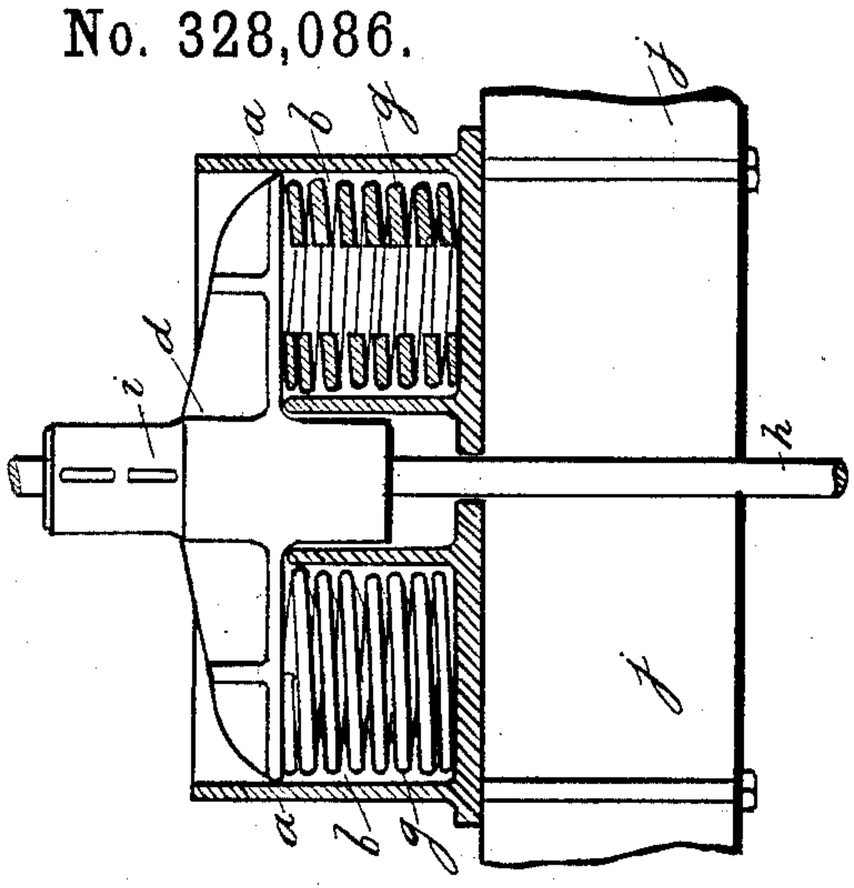

FIG. 5.

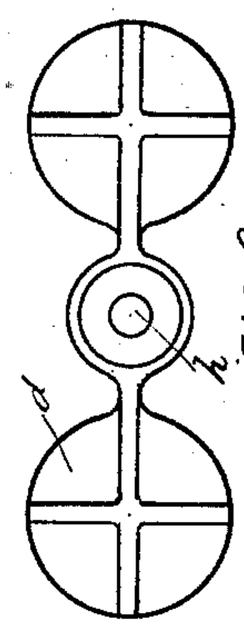

FIG. 8.

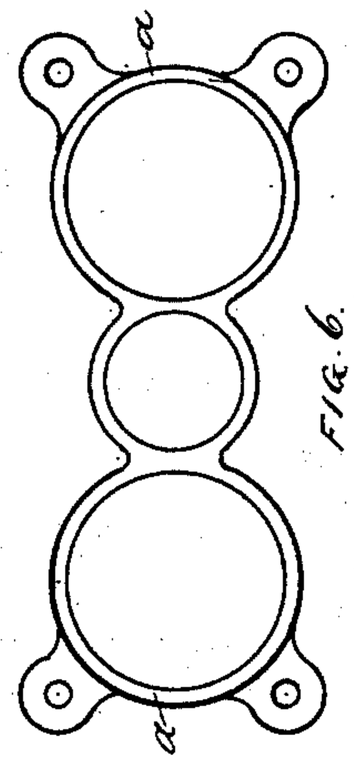

FIG. 6.

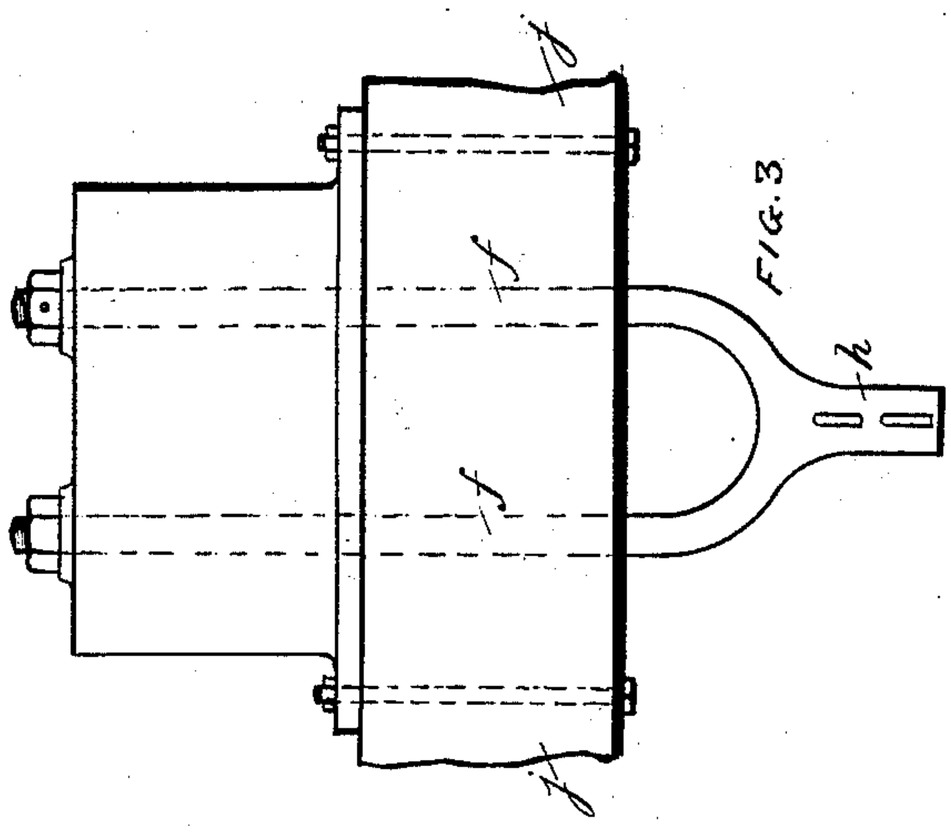

FIG. 3.

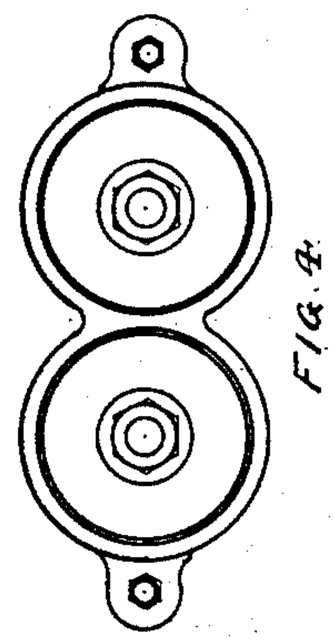

FIG. 4.

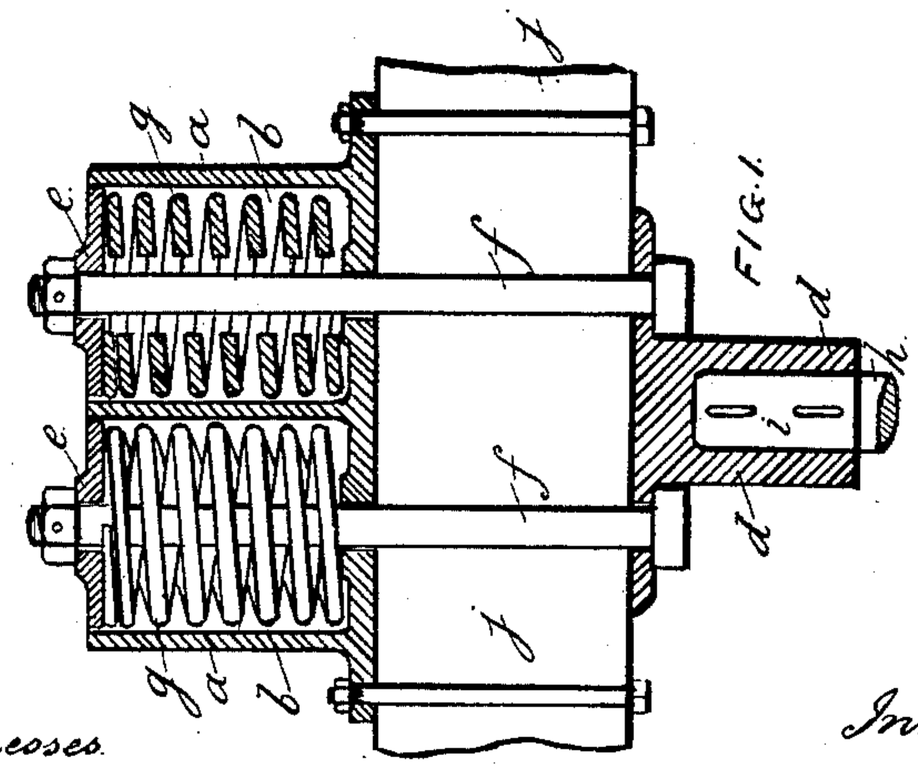

FIG. 1.

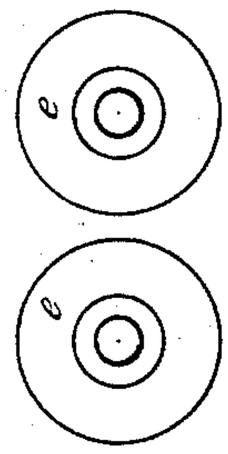

FIG. 7.

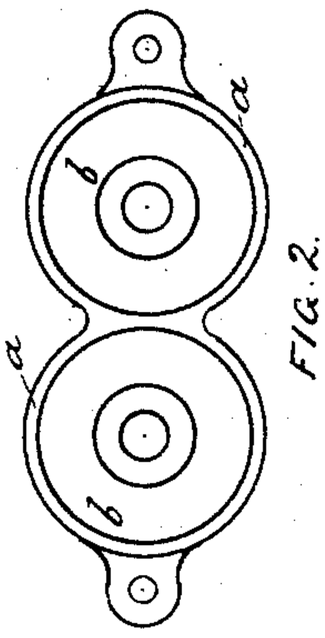

FIG. 2.

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UNITED STATES PATENT OFFICE.

JOSEPH TRIPPETT, THOMAS SEARLS, AND HENRY SEARLS, OF SHEFFIELD, COUNTY OF YORK, ENGLAND.

DRAW-BAR.

SPECIFICATION forming part of Letters Patent No. 328,086, dated October 13, 1885.

Application filed July 14, 1885. Serial No. 171,597. (No model.) Patented in England March 28, 1885, No. 3,963.

To all whom it may concern:

Be it known that we, JOSEPH TRIPPETT, THOMAS SEARLS, and HENRY SEARLS, citizens of Great Britain, residing at Sheffield, in the county of York, England, have invented certain new and useful Improvements in Draw-Bar Gear, Springs, and Boxes, applicable to locomotives and vehicles for use on railways, tramways, common roads, and the like purposes, (for which we have obtained a patent in Great Britain, No. 3,963, dated March 28, 1885,) of which the following is a specification.

Our invention relates to improvements in draw-bar gear, springs, and boxes; and it consists in making two or more sets of boxes and springs connected together in such a manner that the united or collective elasticity and resistance of the springs may be brought into operation with the draw-bar, as applied to a locomotive, vehicle, or like purposes, as the case may be.

The general features of our invention are in many respects similar to our invention for improvements in the construction of buffers for railway and tramway vehicles for which a patent has been obtained in Great Britain, numbered 9,713, dated July 2, 1884.

The objects of our improvements are, first, to construct draw-bar gear, springs, and boxes which shall combine strength, and lightness, and simplicity of construction; second, to construct draw-bar gear, springs, and boxes which will be better adapted than draw-bar gear ordinarily in use to sustain the varying strains to which they are liable; third, the construction of draw-bar gear, springs, and boxes, by which the machine labor—such as turning, boring, and drilling—may be considerably reduced, if not entirely dispensed with, and the several parts of which do not require skilled labor in fitting together ready for use.

We attain these objects by the arrangement illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of the arrangement hereinafter first described. Fig. 2 is a plan of the same with the springs and washers removed. Fig. 3 is an elevation of the arrangement hereinafter secondly described. Fig. 4 is a plan of the same. Fig. 5 is a sectional elevation of the arrangement hereinafter thirdly and lastly described. Fig. 6 is a plan of the same with the springs and cross-head removed. Fig. 7 is a plan of the washers as hereinafter first and secondly described. Fig. 8 is a plan of the cross-head referred to in the arrangement hereinafter thirdly and lastly described.

Similar letters refer to similar parts throughout the several views.

a is a cast-metal case or box. *b b* are the spring boxes or compartments formed in the same. *d* is the cross-head. *e e* are the washer-plates; *f f*, the bolts; *g g*, the springs; *h*, the draw-bar; *i*, the socket of the cross-head, and *j* the frame-work of the vehicle or other object to which the draw-bar gear may be attached.

The spring box or boxes *b b*, used in the construction of our improved draw-bar gear, may be made for two or more sets of springs, *g g;* but for ordinary purposes it is probable that two would suffice, and as the details of construction are similar whether two or more sets are required a description of the application with two sets will serve to explain the nature of our invention.

Two boxes would be cast together in the form of a double or twin box, into each of which will be placed a spring or springs, which may be either helical, volute, or other convenient form; or springs of india-rubber or other equivalent material may be employed.

In the arrangement illustrated in Figs. 1 and 2 the end of the draw-bar *h* would be cottered into a cross-head, *d*, which may be either of forged or cast metal. This cross-head would be formed with projections or flanges placed at right angles to the draw-bar. Holes would be formed in these flanges or projections, into which bolts *f f* would be fitted. These bolts, which may have square heads or necks, after having been passed through the flanges or projections of the cross-head *d*, would pass through the framing *j* of the locomotive or vehicle or other object which has to receive the stress of the draw-bar. Each bolt would then enter a hole in the base of the spring-box which had been previously placed on the other side of the framing last referred to. The hole in the base of the spring-box would be

central with the spring in that division of the box or boxes through which the bolt would be passed. A washer or cover plate, *e*, would then be passed over the end of the bolt onto the spring, such washer or cover plate being made with rounded edges and to fit easily inside the spring-box. A nut or nuts or other equivalent fastening would then be screwed onto each of the bolts to secure the washer or plate in position.

The action of the gear herein described would be as follows: When the tensile strain came on the draw-bar, the pull would be transmitted through the cross-head to the bolts, thence through the medium of the nuts and washer-plates to the springs within the boxes.

The bolts herein referred to may suffice to hold the several parts of the gear herein described in position; but additional bolts for fixing the spring-boxes to the framing may be employed, if required.

In the arrangement illustrated in Figs. 3 and 4, which is a modification of the foregoing, instead of employing a cross-head, as herein referred to, the draw-bar *h* may be made in two or more parts, one end being forged of a suitable form for connecting to the bolts *f f* in the spring-boxes *b b*, and in some applications—as, for example, the shackle of a cage or hoist or the shackle for a hawser or tow-rope—may be connected to the springs and boxes without separate bolts or joints.

In the arrangement illustrated in Figs. 5, 6, and 8 a further modification of our invention is shown, which would be applicable alike to either the ordinary or continuous draw-bar, and is as follows: The draw-bar box may be made with a central compartment, through which the draw-bar *h* would pass, the spring-boxes *b b* being on either side of the draw-bar. This central compartment may likewise be made to contain a spring, which may be either larger or smaller or of the same size as those in the other compartments or boxes. The draw-bar may be either single, double, or continuous, and would pass through the center of a cross-head, *d*, to which it would be cottered or otherwise fastened. The cross-head would also act on the end of the springs in the same manner as the washer-plates already described. The partitions in the draw-bar box would be so formed as to allow the cross-head to be drawn within the box, boxes, or compartments when the springs were compressed by the tension of the draw-bar, and in the case of a continuous draw-bar the cross-head would be formed with a long socket, *i*, into which the draw-bar, the end of the draw-bar, or the ends of the draw-bars could be cottered or otherwise secured. The material employed in the construction may be similar to that already described in the arrangements herein previously specified.

It is probable that the arrangement herein thirdly and lastly described, and illustrated in Figs. 5, 6, and 8, would be the one preferred for general use, more especially for railway and tramway vehicles, the action of the draw-bar as transmitted through the cross-head to the springs being more direct than in the other arrangements, and by dispensing with the bolts and washer or cover plates the number of working parts is reduced.

Having fully described our invention, what we desire to claim and secure by Letters Patent is—

The casing *a*, having independent compartments *b*, in combination with springs *g*, arranged, respectively, in the latter, washer-plates *e*, arranged against said springs at the open rear ends of said compartments, the draw-bar *h*, and the rods *f*, which extend from said washer-plates to said draw-bar, substantially as set forth.

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