(No Model.) 2 Sheets—Sheet 1.

D. L. BARNES.

CAR COUPLING.

No. 477,489. Patented June 21, 1892.

Fig. 1.

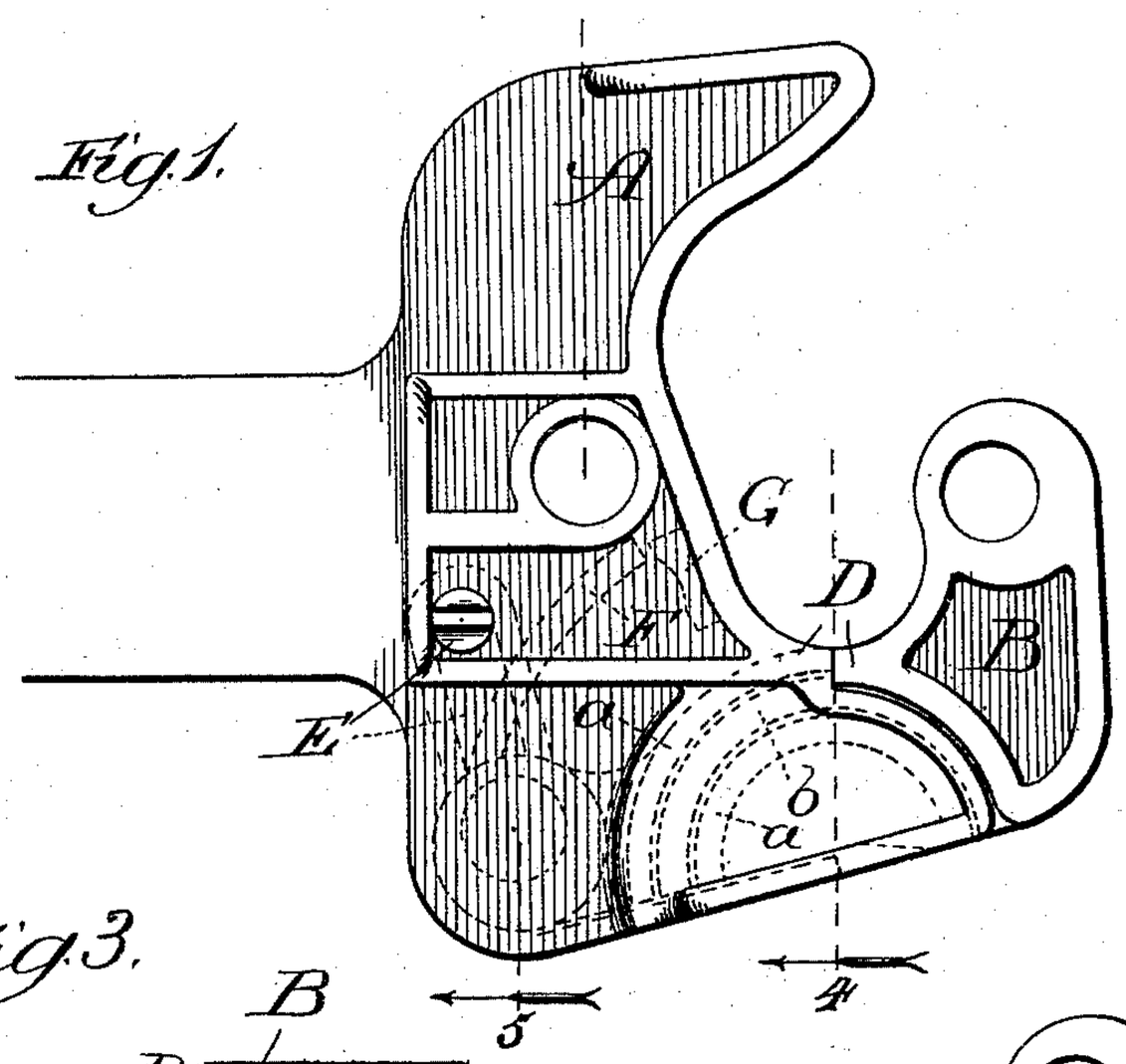


Fig. 3.

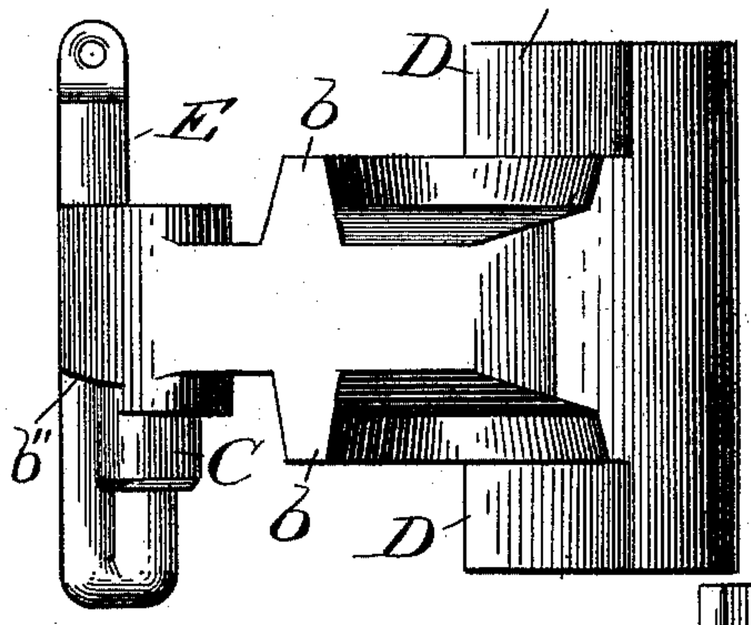


Fig. 2.

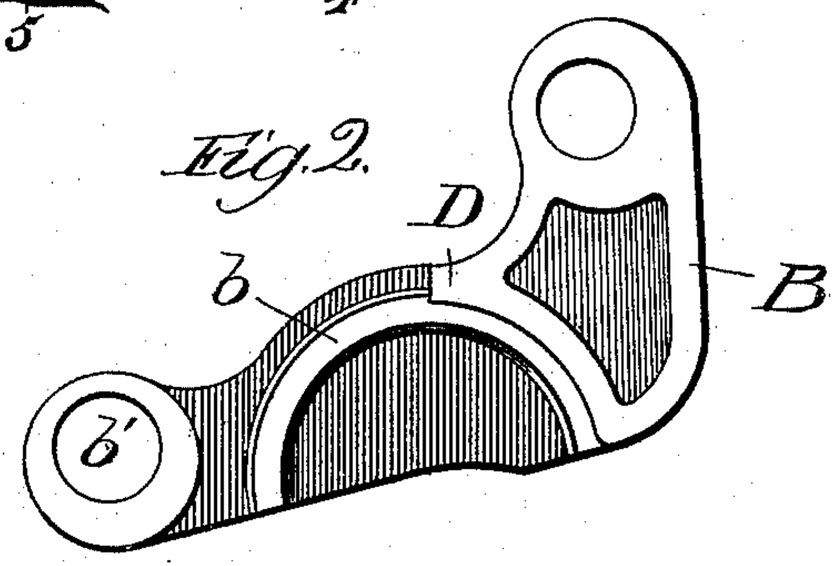
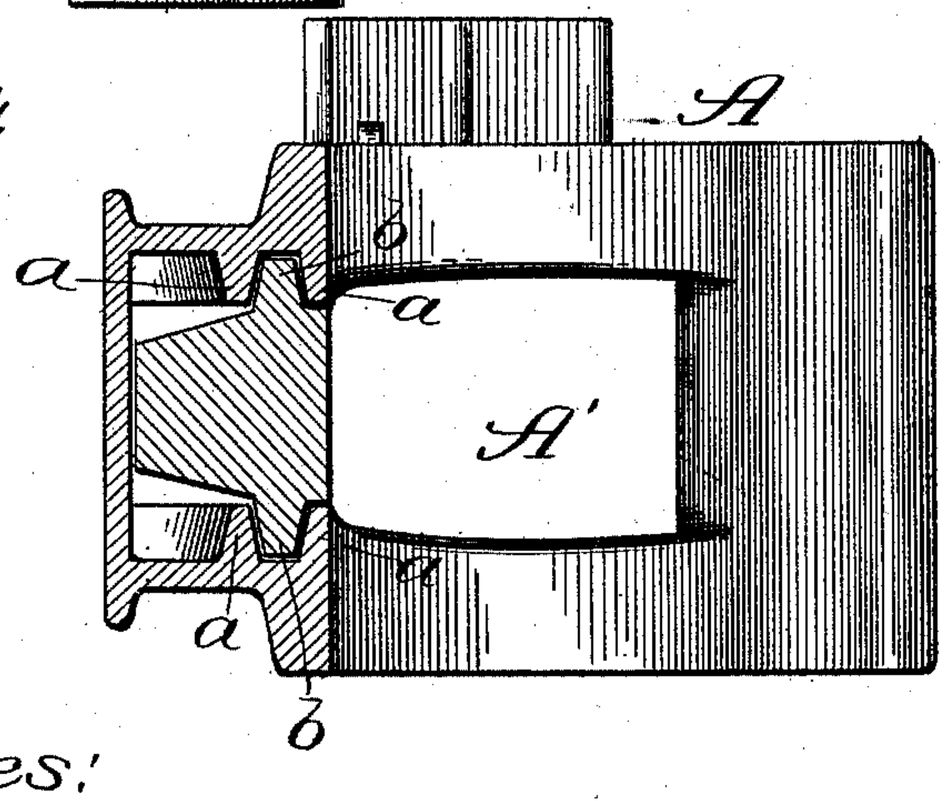


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

D. L. BARNES.

CAR COUPLING.

No. 477,489. Patented June 21, 1892.

Fig. 5.

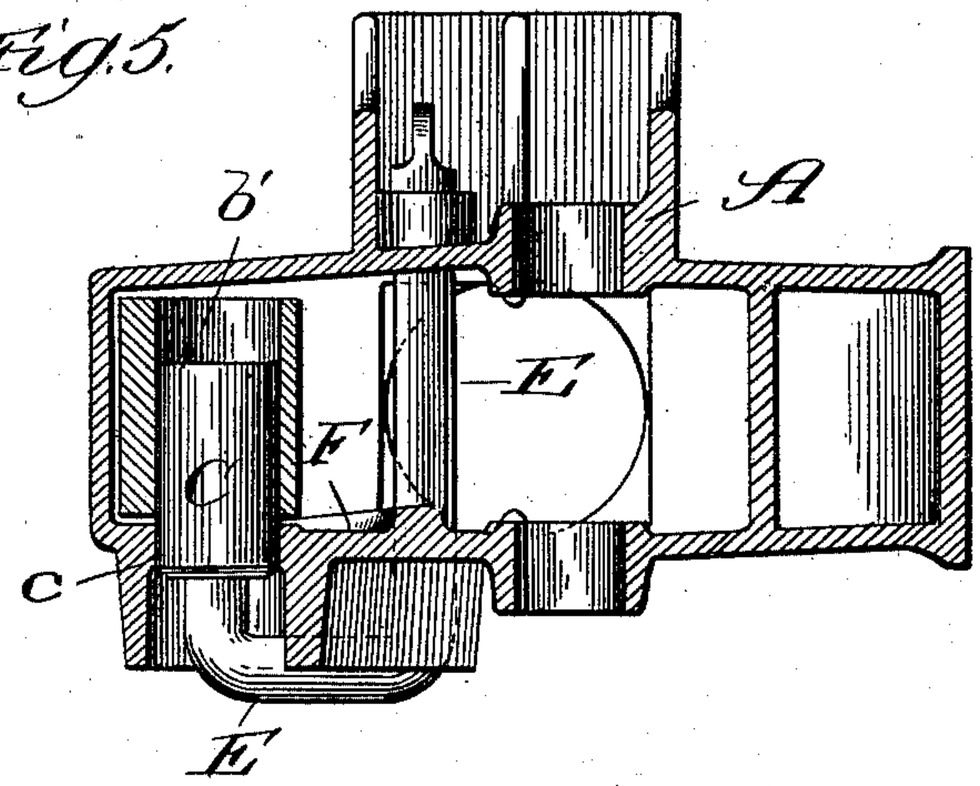
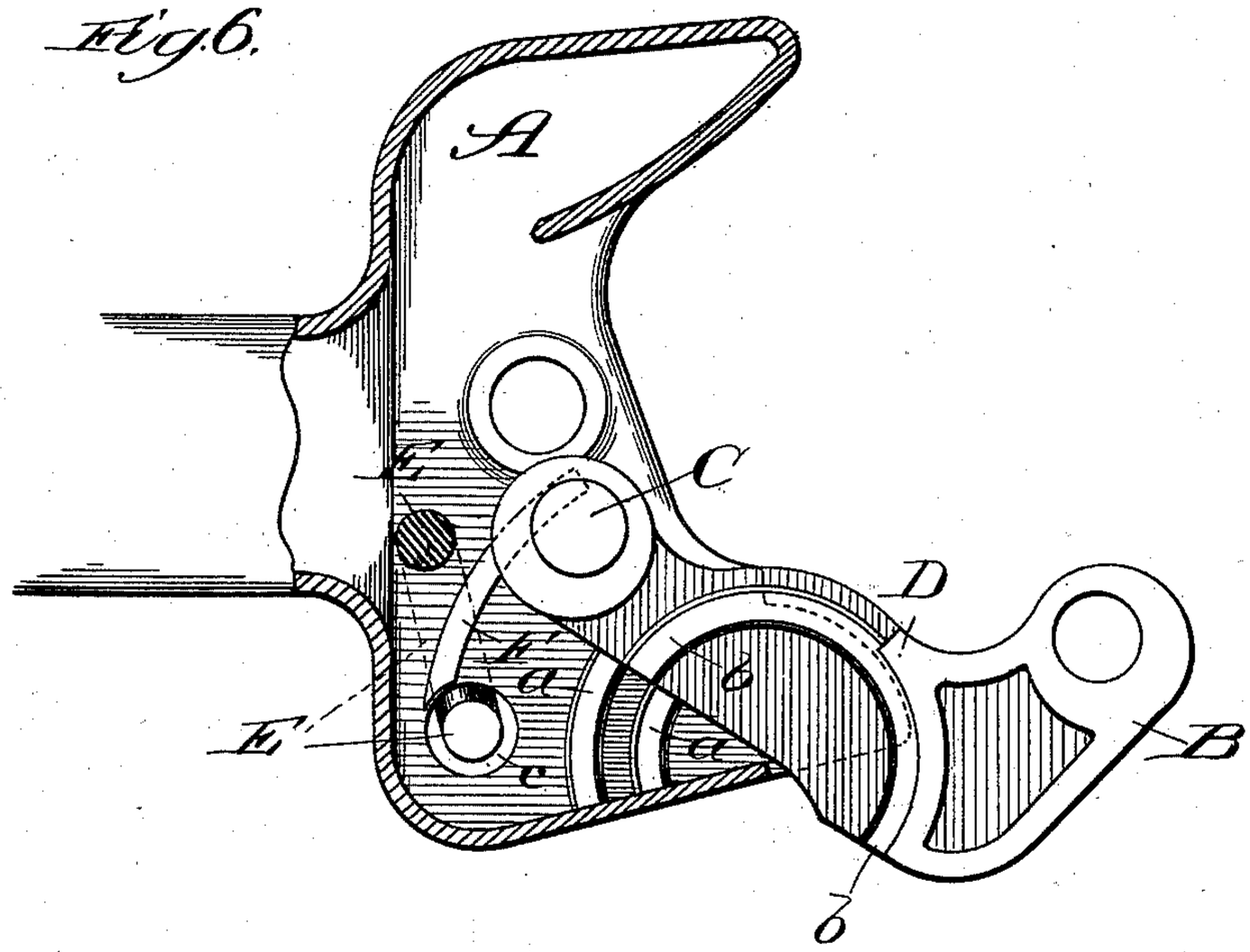


Fig. 6.



Witnesses:
Chas. E. Gaylord,
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Inventor:
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UNITED STATES PATENT OFFICE.

DAVID L. BARNES, OF CHICAGO, ILLINOIS, ASSIGNOR TO E. CLINTON CLARK, OF SARATOGA SPRINGS, NEW YORK.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 477,489, dated June 21, 1892.

Application filed September 7, 1891. Serial No. 404,927. (No model.)

To all whom it may concern:

Be it known that I, DAVID L. BARNES, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Vertical-Hook Couplers, of which the following is a specification.

The present invention is designed as an improvement in various particulars upon the coupler covered by United States Letters Patent No. 407,808 issued to me on the 30th day of July, 1889, the object of the present invention being in part to simplify and lighten the coupler, and thereby cheapen the cost of making the same, and to increase its efficiency, while not lessening its strength; and the invention consists in the features and combinations hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of my improved coupler; Fig. 2, a similar view of the rotating hook or knuckle removed from the draw-head; Fig. 3, a rear elevation of such hook. Figs. 4 and 5 are sections on lines 4 and 5, respectively, of Fig. 1, looking in the direction of the arrows; and Fig. 6 is a horizontal section of the coupler with the knuckle open.

The draw-head A is made substantially like that in my patent referred to, with the exception that it is somewhat lighter and that several changes, hereinafter to be described, have been made to adapt it to the present improvements.

The knuckle B is substantially in the form shown more particularly in Figs. 2 and 3 of the drawings, being provided with curved ribs *b* on its upper and lower sides and with a hole or opening *b'* to receive and hold the locking-pin C. In my former patent the draw-head was provided with a boss or projection, upon which the knuckle rotated, and in some forms with a projection R, with which the tail of the knuckle engaged and against which it rested when the knuckle was closed. These bosses or projections have been entirely omitted in the present form, the ribs on the knuckle entering between suitably-shaped ribs *a* on the draw-head and forming a bearing-surface as the knuckle is turned, as will be evident from an inspection of Figs. 1 and 6 of the drawings, the tail of the knuckle at no time resting against the inside of the draw-head. The drawing and buffing strains are not borne by these flanges or ribs, but by the locking-pin and the shoulders hereinafter referred to.

To hold the knuckle in place when the cars are coupled, I provide a locking-pin C, which also acts, as hereinafter described, to limit the outward movement of the knuckle. In my former patent this locking-pin was made in three sections, the knuckle being locked both at its top and bottom sides by two of these sections; but in my present coupler I make the locking-pin in a single piece, as shown, the length of the pin corresponding to the thickness of the tail of the knuckle at the point where the pin passes through the same. When the knuckle is locked, this pin falls into a hole or opening *c*, formed in the bottom of the draw-head, whereby the knuckle is held firmly in position to withstand the buffing or drawing strains, the pin being assisted in withstanding the former strain by shoulders D on the knuckle and draw-head.

To lift the pin and release the knuckle, I provide a somewhat L-shaped lifting-hook E. (More particularly shown in Figs. 3 and 5.) The longer arm of this hook extends up through the draw-head and may be connected to any operating chain or lever, as desired. The shorter arm engages, as shown, with the bottom of the locking-pin. The lifting-hook should be of such dimensions that when raised until its horizontal arm strikes against the bottom of the draw-head it will bring the locking-pin into such position that it will register with the tail of the knuckle, but at no time to enter the opening in this knuckle or interfere with the free movement of the latter.

On the lower frame of the draw-head I form an inclined plane F, preferably curved and extending from the opening *c* in the draw-head to a point near the front thereof, as shown in dotted lines in Fig. 1. This plane should be so placed that as the knuckle swings in one direction or the other the lifting-pin will slide upon the plane for the purposes hereinafter described, the tail of the hook being cut away, as shown at *b''*, to permit the inclined plane to pass under the same and act upon the pin.

Inside of the front face of the draw-head,

above the opening A′, I place a block or bumper G, preferably cast integral with the draw-head and in the form shown.

The operation of the coupler is as follows, supposing the parts to be in the position shown in Fig. 1: The lifting-hook being raised will raise the locking-pin, as already described, until the same registers with the tail of the knuckle. The latter may then be swung open into the position shown in Fig. 6, and as the tail thereof moves toward the right the inclined plane will lift the locking-pin and force it part way out through the upper side of the knuckle into a position to strike against the block G, whereby any further outward movement of the knuckle is prevented. When the hook is swung in again, the locking-pin will slide down the inclined plane and fall into the hole *c* by its own weight, locking the knuckle until again raised, as already described. By these means I provide a very light and cheaply-manufactured coupler composed of but a small number of parts and easily operated, either for coupling or uncoupling; but although I have described more or less precise forms I do not intend to limit myself thereto, but contemplate changes in form and proportions and the substitution of equivalent members, as the same may be necessary or desirable.

I claim—

1. In a coupler, the combination of a draw-head, a knuckle provided with ribs interlocking with ribs on the draw-head, and a single-piece vertically-moving coupling-pin travelling with the tail of the knuckle and engaging with an opening in the bottom of the draw-head to lock the knuckle, substantially as described.

2. In a coupler, the combination of a draw-head, a knuckle rotating therein, and a single-piece locking-pin traveling with the tail of the knuckle and engaging with an opening in the draw-head to lock the knuckle and adapted to be raised as the knuckle swings open into position to limit the movement of the same, substantially as described.

3. The combination of a draw-head, a knuckle rotating therein, a single-piece locking-pin traveling with the knuckle, and an inclined plane by which the pin is raised as the knuckle swings open, substantially as described.

4. In a coupler, the combination of a draw-head, a knuckle rotating therein, a single-piece locking-pin engaging with an opening in the draw-head to lock the knuckle, means for raising such pin until it registers with the tail of the knuckle, an inclined plane for raising the pin as the knuckle swings open, and a stop above the knuckle against which the pin strikes and whereby the outward motion of the knuckle is limited, substantially as described.

5. In a coupler, the combination of a draw-head, a knuckle provided with ribs engaging with ribs on the draw-head, a single-piece locking-pin traveling with the tail of the knuckle and engaging with an opening in the draw-head to lock the knuckle, and a lifting-hook adjusted to raise the pin to a point where it registers with the tail of the knuckle, substantially as described.

6. The combination of a draw-head having an inclined plane and a knuckle rotating in such head and carrying a locking-pin, the tail of the knuckle being cut away to allow the pin to engage with and be raised by the plane as the knuckle rotates, substantially as described.

7. In a coupler, the combination of a draw-head provided with ribs forming channels in its upper and lower sides and a hole in its lower side to receive the locking-pin, and a knuckle provided with ribs entering the channels in the draw-head and a hole to receive the locking-pin, the draw-head and knuckle being connected solely by means of the respective ribs and the drawing strain being carried by means of the pin, and thereby prevented from coming upon the ribs, substantially as described.

DAVID L. BARNES.

Witnesses:
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SAMUEL E. HIBBEN.