

(No Model.)

A. B. WEBSTER.

SHAFT IRON.

No. 377,128.

Patented Jan. 31, 1888.

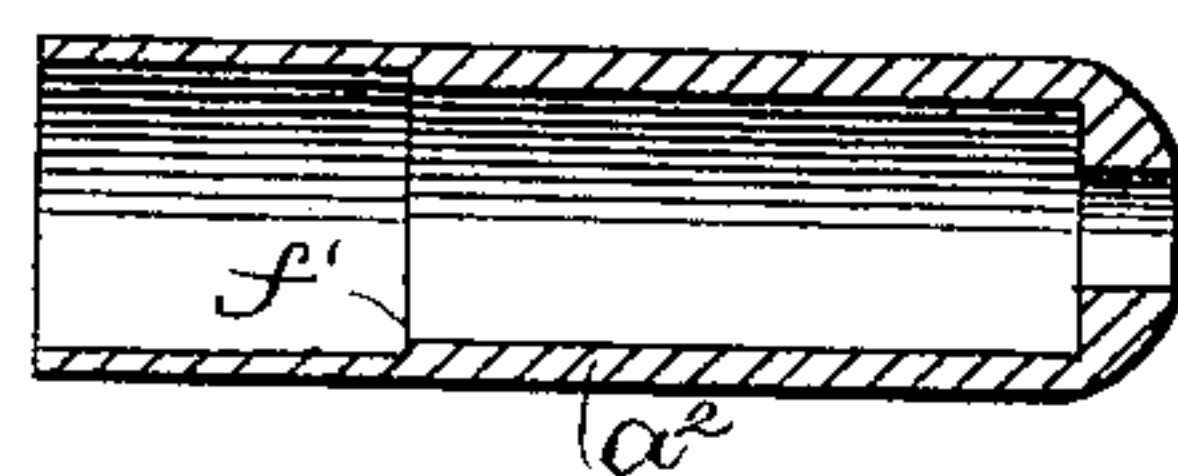
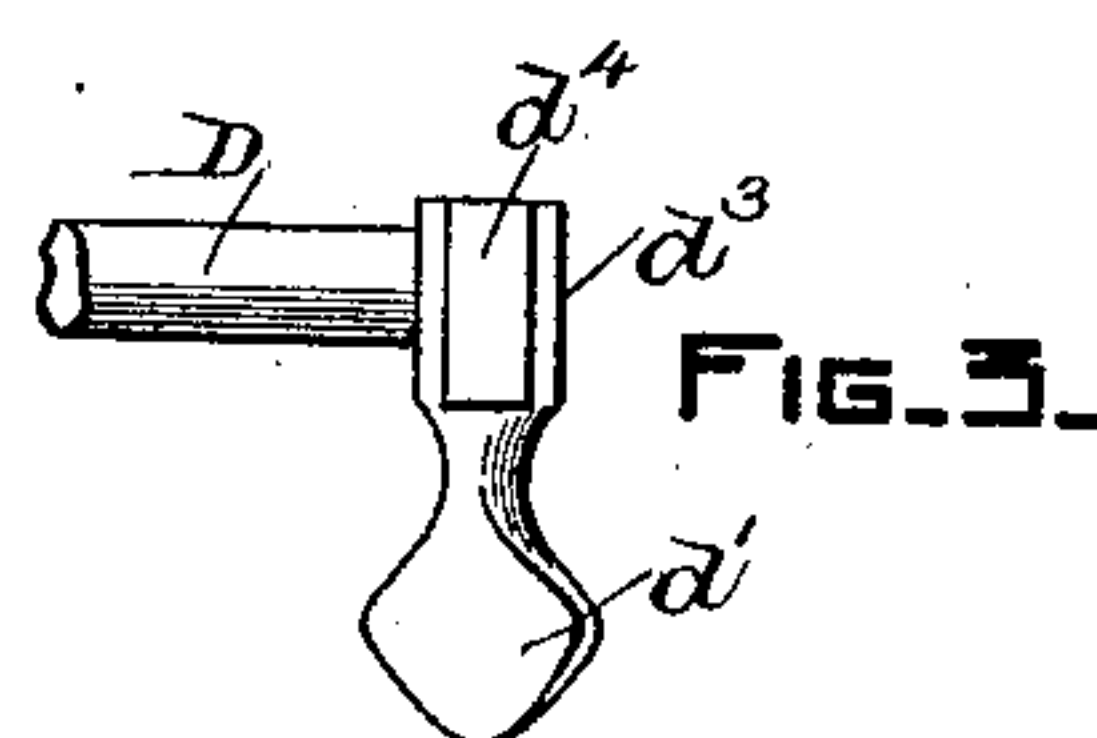
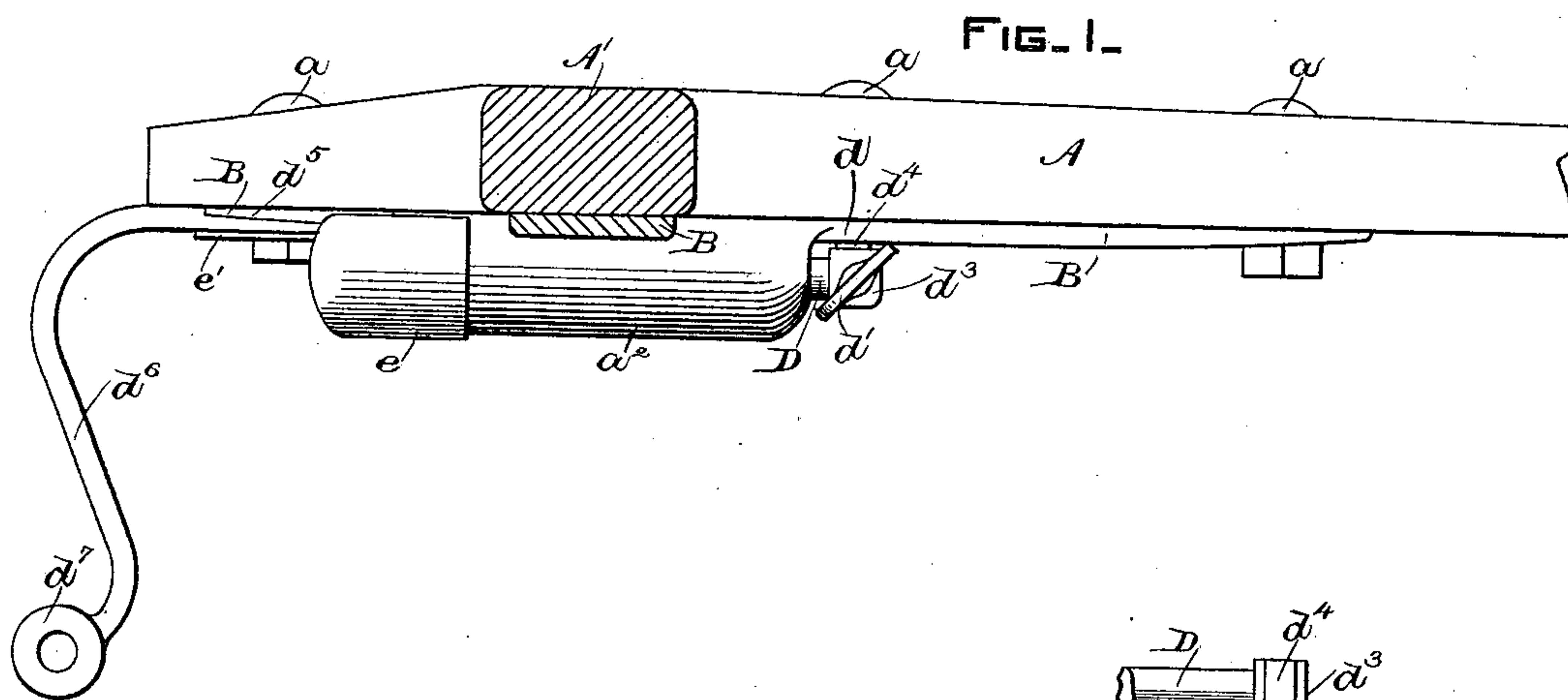
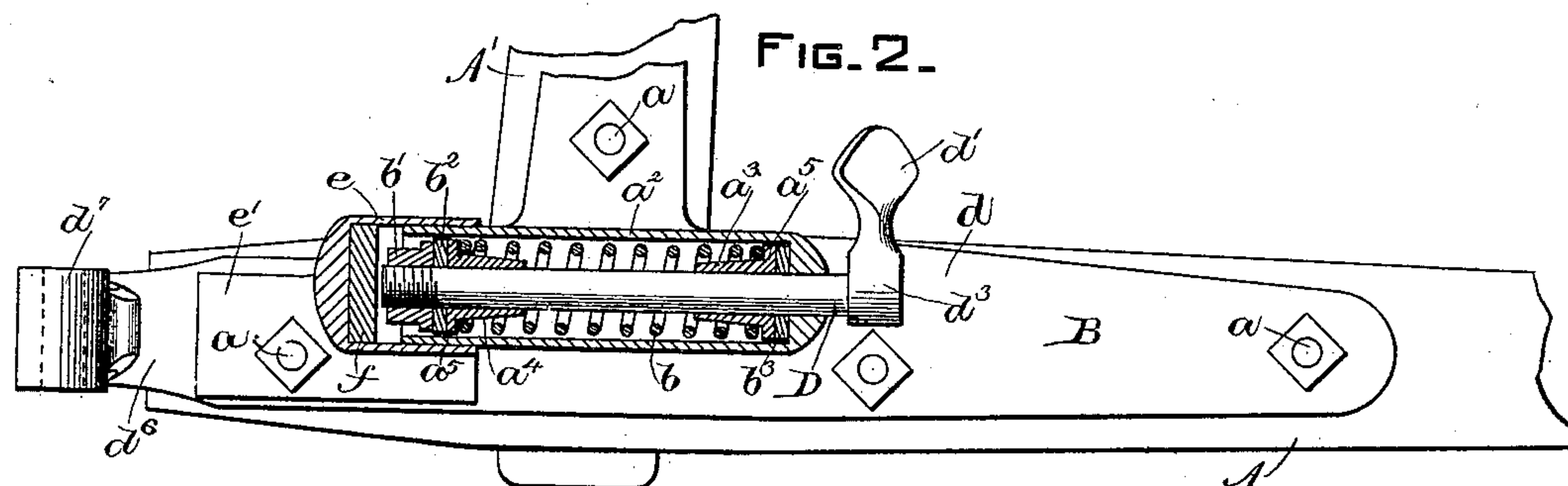


FIG. 4.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## SHAFT-IRON.

SPECIFICATION forming part of Letters Patent No. 377,128, dated January 31, 1888.

Application filed March 29, 1887. Serial No. 232,865. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT B. WEBSTER, of Manchester, county of Hillsborough, and State of New Hampshire, have invented an Improvement in Shaft-Irons or Tug-Holders, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Prior to my invention shafts of vehicles have been strengthened by means of irons secured to them, and the said irons have had bolted to them a piece of iron having a tube to contain a spring and a draw-bar, to which latter the tug is attached.

This invention has for one of its objects to effect a saving in time and labor required to iron the "shaft," as it is technically called, and to apply the tug-holder directly to the shaft-iron; and I accomplish this feature of my invention, preferably, by casting the tube containing the draw-bar to which the tug is secured and the shaft-iron in one piece, the said tube projecting from that portion of the iron which is applied to the shaft rather than from the cross-bar thereof.

Another feature of my invention consists in providing the tube containing the draw-bar with packing, whereby the said tube is rendered water-tight.

Other features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 is a sectional elevation of a shaft provided with my improved shaft-iron and tug-holder, the cross-bar being in section; Fig. 2, a view of Fig. 1 turned through an angle of ninety degrees, the tube being in section to more clearly show the interior construction of the same; Figs. 3 and 4, details to be referred to.

The shaft A and cross-bar A', of any usual material, have secured to them, as shown, by bolts or rivets  $a$ , the shaft-iron B, of wrought or malleable iron, malleable iron being preferred on account of its cheapness. The shaft-iron B has cast integral with it a tube,  $a^2$ , open at its rear and closed at its front end, the latter end having a hole through which the shank of the draw-bar D is extended. The shank of the draw-bar D, when inserted within the tube  $a^2$ , is extended through tubes  $a^3$   $a^4$ , having

flanges  $a^5$ , which rest against the inner walls or circumference of the tube  $a^2$  and form a bearing for the said draw-bar, the said tubes being inserted into the ends of a spiral spring,  $b$ . The shank of the draw-bar is screw-threaded at its rear end to receive a nut,  $b'$ , and between the said nut and tube  $a^4$  is a washer,  $b^2$ , of leather, rubber, or other suitable material, to render the tube  $a^2$  water-tight at its rear end, a washer,  $b^3$ , between the tube  $a^3$  and the closed end of the tube  $a^2$  rendering the tube  $a^2$  water-tight at its front end. The tubes  $a^3$   $a^4$  are made tapering from their flanges toward their ends, so that they may snugly fit the first coil of springs of different sizes or diameters, thus permitting of a stronger or weaker spring to be employed, as the exigencies of the case require.

By making the tubes  $a^3$   $a^4$  tapering, as described, the spring  $b$  used therewith is centered in the tube  $a^2$ , and the said spring is prevented from making contact with the inner walls thereof.

The shaft-iron B, at its inner edge, in front of the tube  $a^2$ , is made thicker, as at  $d$ , to afford a bearing-surface for the portion  $d^3$  of the projection or hook  $d'$ , which, as shown, is enlarged at its junction with the shank of the draw-bar, to thus prevent the said draw-bar from turning and the hook from dropping down. The enlarged portion  $d^3$  of the hook or projection  $d'$  is grooved or cut away in suitable manner at its upperside to receive a packing,  $d^4$ , (see Fig. 3,) of leather or other suitable material, the said packing being preferably glued or cemented in the said groove.

The packing  $d^4$  forms a perfect bearing for the draw-bar as the latter is drawn out along the shaft-iron B, the said packing preventing contact of the draw-bar and shaft-iron.

The packing  $d^4$ , when worn, may be easily cut out and a new one substituted without removing the draw-bar from the tube  $a^2$ .

With shafts made as herein shown, and used in most cases with the lighter class of vehicles, the shaft-iron B, near the rear end of the tube  $a^2$ , has spliced to it, as at  $d^5$ , a piece,  $d^6$ , of iron, which in practice will fit the sweep of the shaft in usual manner, the said iron piece  $d^6$  having an eye,  $d^7$ , by which the shaft is secured in usual manner to the axle of the vehicle.

The tube  $a^2$  at its rear end is provided with



a tubular cap, *e*, having an extension, *e'*, fitted upon and so as to cover the splice of the shaft-iron B and the sweep-piece *d*<sup>6</sup>, the said cap and extension being secured by a bolt or rivet, *a*, the said extension serving to strengthen the said splice. Inside the cap *e* is a packing, *f*, of rubber or other suitable material, which acts as a stop for the draw-bar when the tension upon the spring *b* is relieved.

The packing *f* renders the cap *e* water-tight, and also prevents the clicking sound which would otherwise arise from suddenly releasing the tension upon the draw-bar.

When applied to shafts which are mortised or otherwise fixed solid to the front axle, the spliced piece *d*<sup>6</sup> is dispensed with and the rear portion of the shaft-iron B made as long as the front portion or longer, if desired.

Instead of making the shaft-iron of malleable iron, it may be of dropped iron forged.

In case the iron becomes broken at the bolt-holes in the sweep or worn at the eye *d*<sup>7</sup>, the said iron may be detached as far as the splice without disturbing the main part of the shaft-iron.

By means of the packing described I obviate undue wear of the parts and prevent rattling, which would ordinarily occur after considerable use.

By means of the nut *b'* the packing *b*<sup>3</sup> at the front portion of the tube *a*<sup>2</sup> is kept pressed water-tight, thereby preventing water from filling in as the draw-bar becomes worn. The water, if admitted, would freeze in cold weather and stop the free working of the spring.

It will be noticed that the tubes *a*<sup>3</sup> *a*<sup>4</sup> meet when sufficient tension is exerted upon the draw-bar, and thus act as a stop to prevent the spring from becoming "set."

If it is desired to limit the travel of the draw-bar, the tube *a*<sup>2</sup> toward its rear end may be turned to leave a shoulder, *f'*, as shown in Fig. 4, the flange tube *a*<sup>4</sup> striking against the said shoulder.

By placing the tube *a*<sup>2</sup> on the shaft-iron instead of on the cross-bar I am enabled to use tubes of various lengths to receive springs of any desired tension, and so, also, the strain is taken from the cross-bar and transferred to the shaft.

As a further means of preventing the spring from becoming set, a sleeve may be located upon the draw-bar at the front end of the tube, and, as shown in the drawings, the tube *a*<sup>3</sup> may be this sleeve. In this case the tube *a*<sup>4</sup> at the rear end of the draw-bar may be omitted, if desired, and in case of severe tension upon the spring the nut *b'*, or the washer *b*<sup>2</sup> in front of

it, may strike against the said sleeve, and thus limit the compression of the spring.

I claim—

1. The combination, in a tug-holder, of a tube, a spring within the said tube, a draw-bar having its shank extended into the tube and encircled by the said spring, a nut upon the end of the said shank, and a stop, substantially as described, to limit the forward movement of the said spring to prevent it being set under excessive tension, substantially as described.

2. The combination, in a tug-holder, of a tube provided with a cap, a packing in said cap, a spring, *b*, located in said tube, the washers *b*<sup>2</sup> *b*<sup>3</sup> at opposite ends of the said tube, the draw-bar D, having the extension *d'*, and nut *b'*, substantially as described.

3. The combination, in a tug-holder, of a tube provided with a cap, a packing in said cap, a spring, *b*, located in said tube, the draw-bar D, having the extension *d'*, and nut *b'*, substantially as described.

4. The shaft-iron B, the tube *a*<sup>2</sup>, integral therewith, the spiral spring *b*, and the draw-bar D, combined with the sweep *d*<sup>6</sup>, spliced to the shaft-iron B, and with the cap *e*, provided with the extension *e'*, to cover the said spliced shaft-iron and sweep-piece, substantially as described.

5. The combination, in a tug-holder, of the tube *a*<sup>2</sup>, the spiral spring *b*, the draw-bar D, having the extension *d'*, provided with the packing *d*<sup>4</sup>, the nut *b'*, and packing *f*, substantially as described.

6. The combination, in a tug-holder, of the tube *a*<sup>2</sup>, the spiral spring *b*, the draw-bar D, having the extension *d'*, provided with the packing *d*<sup>4</sup>, and having the thickened portion *d*<sup>3</sup>, the nut *b'*, and packing *f*, substantially as described.

7. The combination, in a tug-holder, of a tube, a spiral spring, *b*, located therein, the washers *b*<sup>2</sup> *b*<sup>3</sup> at opposite ends of the said tube, the draw-bar D, having the extension *d'*, and nut *b'*, substantially as described.

8. The combination, in a tug-holder, of the tube *a*<sup>2</sup>, the spiral spring *b*, the draw-bar D, having the extension *d'*, provided with the packing *d*<sup>4</sup>, and the nut *b'*, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT B. WEBSTER.

Witnesses:

CHAS. H. BARTLETT,  
WILLIAM COREY.