2 Sheets—Sheet 1.

F. A. HILL.
Wagon.

No. 213,508. **Patented Mar. 25, 1879.**

Fig. 1.

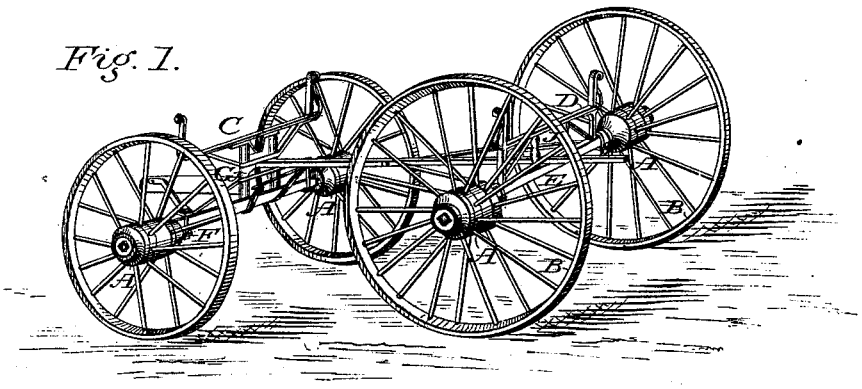


Fig. 2.

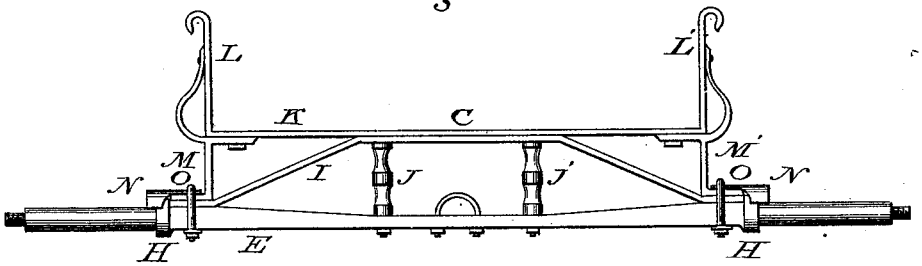
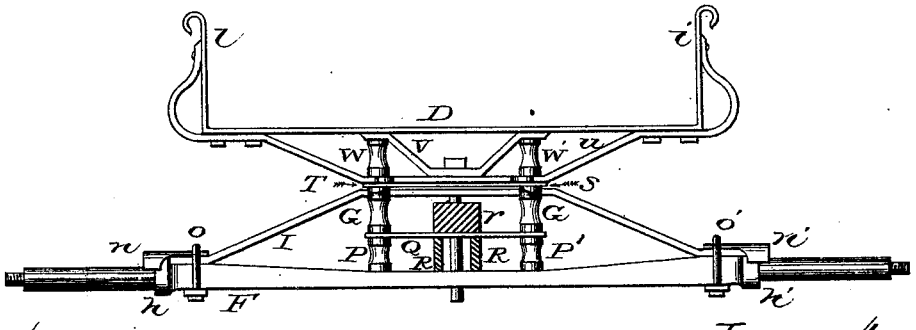


Fig. 3.



Witnesses:
Edward P. Palmer
Jacob Price

Inventor:
Frank A. Hill

2 Sheets—Sheet 2.

F. A. HILL.

Wagon.

No. 213,508. **Patented Mar. 25, 1879.**

Fig. 4.

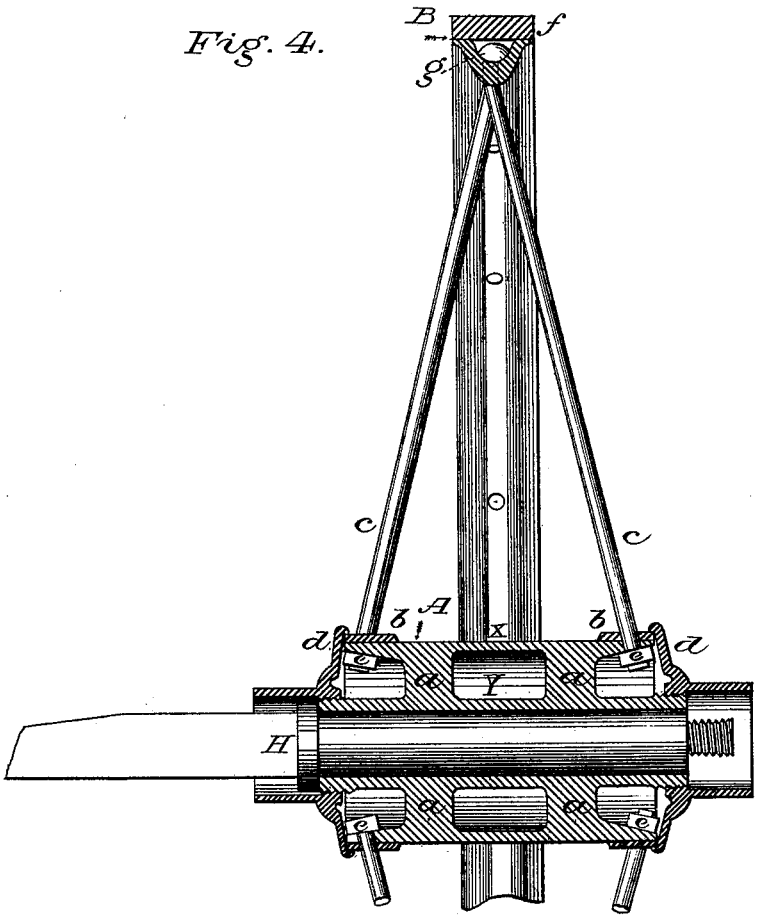
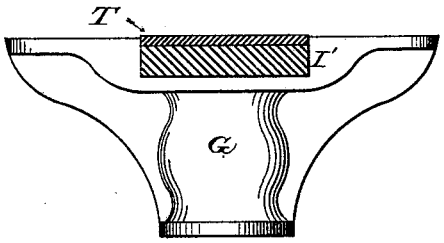


Fig. 5.



Witnesses:

Edward P. Palmer

Jacob Dieu

Inventor:

Frank A. Hill.

UNITED STATES PATENT OFFICE.

FRANK A. HILL, OF SAN LEANDRO, CALIFORNIA.

IMPROVEMENT IN WAGONS.

Specification forming part of Letters Patent No. **213,508**, dated March 25, 1879; application filed August 26, 1878.

To all whom it may concern:

Be it known that I, FRANK A. HILL, of San Leandro, in the county of Alameda, State of California, have invented a new and useful Improvement in Wagons, of which the following is a specification:

My invention relates to that class of wagons which are made chiefly of iron and other metals.

The object of my invention is to provide for the construction of a wagon which shall be especially strong, yet light, in the parts heretofore most liable to wear out or break.

The invention consists in the manner of trussing and bracing the axles and bolsters, and in the use of T-headed columns or braces in the forward axle, for the purpose of preventing the tipping of the bolster when the wheels are cramped in turning the wagon.

In the accompanying drawings, in which similar letters of reference indicate the same parts in each of the figures, Figure 1 is a perspective view of a wagon embodying my invention. Fig. 2 is a scale elevation of the rear axle and bolster. Fig. 3 is a scale elevation of the forward axle and bolster. Fig. 4 is a longitudinal section of the hub and a cross-section of the felly and tire of the wheels, and Fig. 5 is a side elevation of one of the supporting columns or braces in the forward axle.

The rear axle, E, Fig. 2, having solid collars H H′ forged upon it, is surmounted by a bent iron bar, I, the ends of which rest against said collars. The bent bar I is supported by two columns or braces, J J′, placed about one-third of the length of said bar from either end of it. On the top of the bent bar I is placed another bar of iron, bent upward at right angles at either end, forming in one piece the bolster K and stakes L L′. The ends of the bolster K are supported by the braces M M′, the upper or curved portions of which serve as braces or supports for the stakes L L′. The lower ends of the braces M M′ are bent outward at right angles, forming feet, which rest upon the bent bar I. On the top of said feet are placed the sand-boxes N N′.

The axle E, bent bar I, brace M, and sand-box N are bound together at each end by the clips O O′.

The forward axle, F, Fig. 3, like the rear one, has solid collars *h h′* welded upon it, and is also surmounted by a similar bent iron bar, I′, the ends of which rest against the collars *h h′*, and have placed upon them the sand-boxes *n n′*, the axle F, bent bar I, and sand-box *n* being bound together at each end by the clips *o o′*. Resting on the axle F near its center are the columns or braces P P′. On the top of these is an iron plate, Q, on which the reach *r* rests. Between the axle F and the bar Q are placed iron bars R R, technically known as "hounds," running lengthwise of the wagon, the forward ends of which support the tongue, and the rear the "sway-bar," so called.

On the bar Q are placed the T-shaped columns or braces G G′, which serve to support the bar I′, and also, by their shape, as shown in Fig. 5, prevent the bolster from tipping when the wagon is being turned.

On the top of the bent bar I′ is placed a thin plate of steel, S, which is designed to be replaced easily when worn out. On the top of said plate S another corresponding one, T, is placed for a like purpose. The lower plate, S, is attached to the bar I′, and the upper one, T, to the bent bar U, which serves as a support to the bolster D, and also serves at its outer or bent ends as braces for the stakes *l l′*.

Surmounting the bent bar U is a shorter bar, V, connected with the columns W W′ and bolster D, which prevents the middle of the bar I′ from bending upward when the wagon is loaded.

The rear axle and bolster, Fig. 2, is connected with the forward one, Fig. 3, in the usual manner, by the reach *r*.

The improvements above described enable me to construct a wagon almost wholly of iron, of the forms usually found in the market, which shall be as light as wooden wagons of the same diameter of spindle, and much stronger in the places liable to break or wear out rapidly.

What I claim, and desire to secure by Letters Patent, is—

1. In combination with the axle E, Fig. 2, the bent bar I, the columns J J′, the bolster K, and the stakes L L′, the braces M M′, for the purposes set forth.

2. In combination with the axle F, Fig. 3,

the bent iron bar I′, the columns P P′, and the plate Q, the T-shaped columns G G′, for the purposes specified.

3. In combination with the bent bar U, the columns W W′, and the bolster D, the brace V, for the purpose described.

4. In combination with the columns W W′, Fig. 3, the brace V, the bolster D, and the stakes *l l′*, the bent bar U, having its outer ends curved in the manner shown, for the purposes set forth.

FRANK A. HILL.

Witnesses:
EDWARD P. PALMER,
JACOB PRICE.