B. DOBLE & H. B. PAUL.

Brace for Sulkies.

No. 219,924. Patented Sept. 23, 1879.

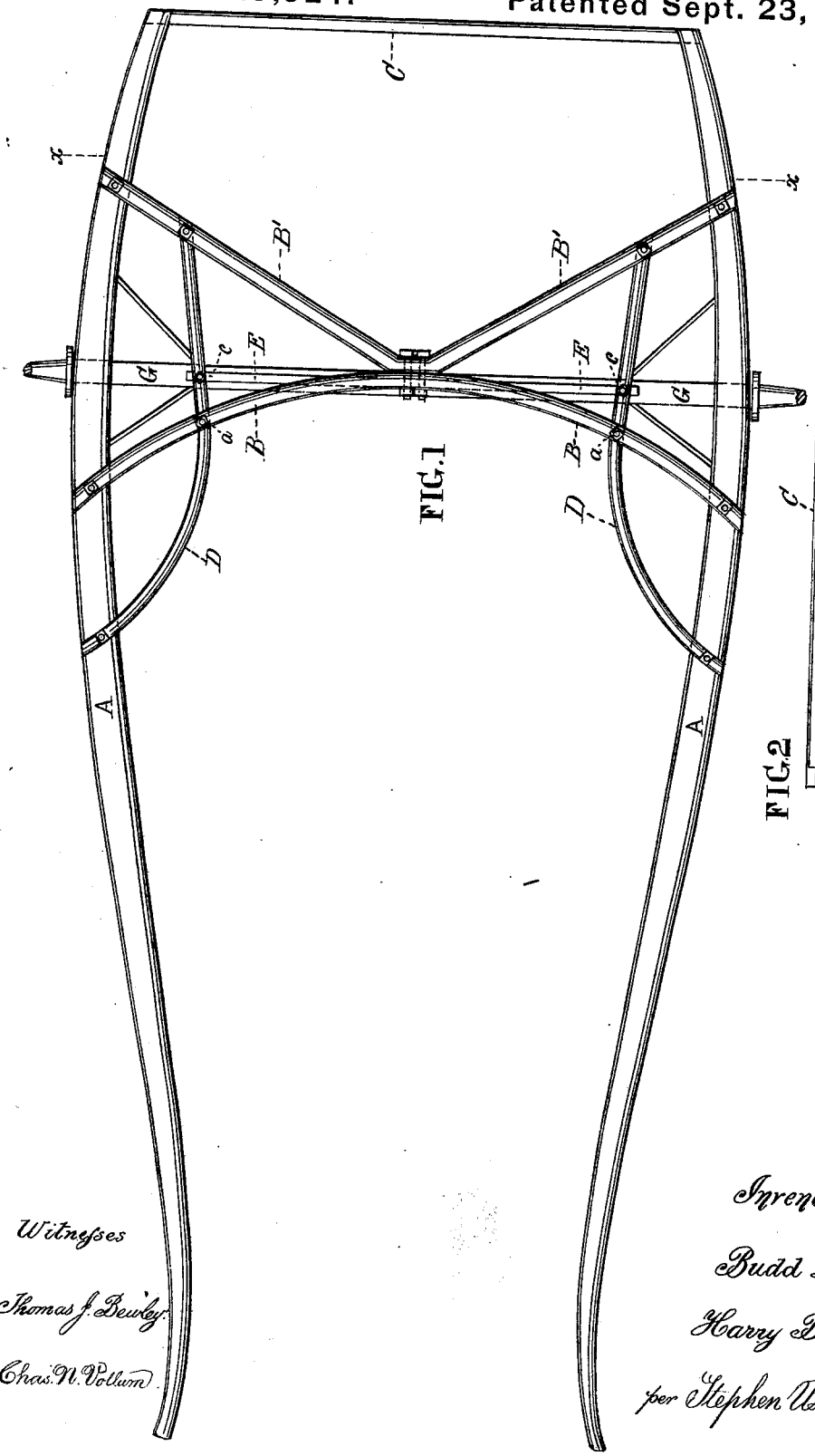

FIG. 1

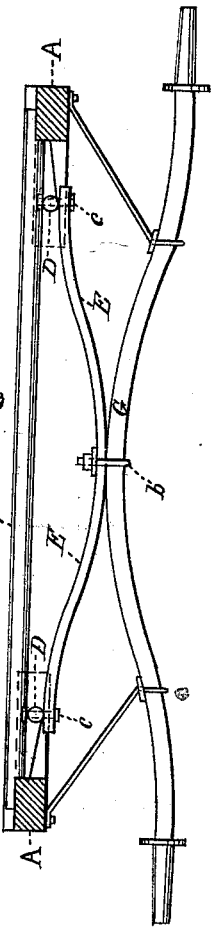

FIG. 2

Witnesses

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Harry B. Paul.

per Stephen Ustick attorney

UNITED STATES PATENT OFFICE.

BUDD DOBLE, OF CHICAGO, ILLINOIS, AND HARRY B. PAUL, OF CAMDEN, NEW JERSEY, ASSIGNORS OF ONE-THIRD THEIR RIGHT TO CHARLES S. CAFFREY, OF CAMDEN, N. J.

IMPROVEMENT IN BRACES FOR SULKIES.

Specification forming part of Letters Patent No. **219,924**, dated September 23, 1879; application filed July 23, 1879.

To all whom it may concern:

Be it known that we, BUDD DOBLE, of the city of Chicago, in the county of Cook and State of Illinois, and HARRY B. PAUL, of the city and county of Camden, and State of New Jersey, have invented a new and useful Improvement in Braces for Sulkies and other Carriages, of which the following is a specification.

The object of our invention is such a bracing of the shafts and the axle as will diminish their spring, and thereby increase their stiffness, and thus insure steadiness in the running of the wheels; and the nature of the invention consists, in the first place, in the combination of two longitudinal braces with the shafts and front and rear cross-bars. The middle part of one of the braces is firmly connected to the front cross-bar near one of the shafts, and the front end with said shaft in front of the bar, and the rear end of the brace with the rear cross-bar, and the other brace is connected to the other shaft and front and rear cross-bar in the same manner. The front ends of the braces are curved or turned outward to the shaft, and their rear ends are also inclined toward them, to better stiffen the shafts. A cross-brace is connected to the middle of the axle, and its ends projected upward to the above-described longitudinal braces, whereby vertical stiffness is given to the axle; and hence by the lateral bracing of the shafts and the vertical bracing of the axle in the middle of its length, in addition to the usual bracing of the ends of the axle with the shafts, sufficient stiffness both laterally and vertically are secured to the axle to insure a steady running of the wheels of the vehicle.

In the accompanying drawings, which make a part of this specification, Figure 1 is a plan view of the shafts A A and parts permanently connected therewith, showing our improvements. Fig. 2 is a rear elevation of the same, taken at the dotted lines *x x* of Fig. 1.

Like letters of reference in both figures indicate the same parts.

A A are the shafts of a sulky, connected in the usual manner with the front bar, B, the rear cross-bar, B′, and the back bar, C. D D are longitudinal braces for stiffening the shafts A A. They are firmly fastened in their middle parts to the front cross-bar, B, by means of the clips *a* or otherwise, and at their front ends to the shafts A A in front of the said bar, and at their rear ends to the rear cross-bar, as shown in Fig. 1. The front ends of these braces are curved or bent otherwise toward the shafts, to increase their resisting power; and their rear ends also have an inclination toward the shafts for the same purpose.

E is a brace, which is fastened in the middle of its length to the middle of the axle G by means of the clip *b* or otherwise. Its ends are projected upward and connected to the longitudinal braces D D by means of bolts *c c* or otherwise, as seen clearly in Fig. 1.

It will readily appear that, the curved or bent form of the braces meeting a similar reverse form of the shafts, and being firmly secured to the cross-bars and shafts, as shown in the drawings, the braces possess great resisting power, and thereby stiffen the shafts; and it will also appear that the axle is much stiffened vertically by the brace E in the middle and laterally at its ends by the stiffening of the shafts, whereby an increased steadiness is secured to the running of the wheels of the vehicle.

We claim as our invention—

1. The longitudinal braces D D, in combination with the cross-bars B and B′ and the shafts A A, for increasing the stiffness of the latter, substantially in the manner and for the purpose set forth.

2. The combination of the cross-brace E with the middle of the axle G, and with the longitudinal braces D D, for stiffening the axle, substantially in the manner and for the purpose set forth.

BUDD DOBLE.
HARRY B. PAUL.

Witnesses to the signature of Budd Doble:
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