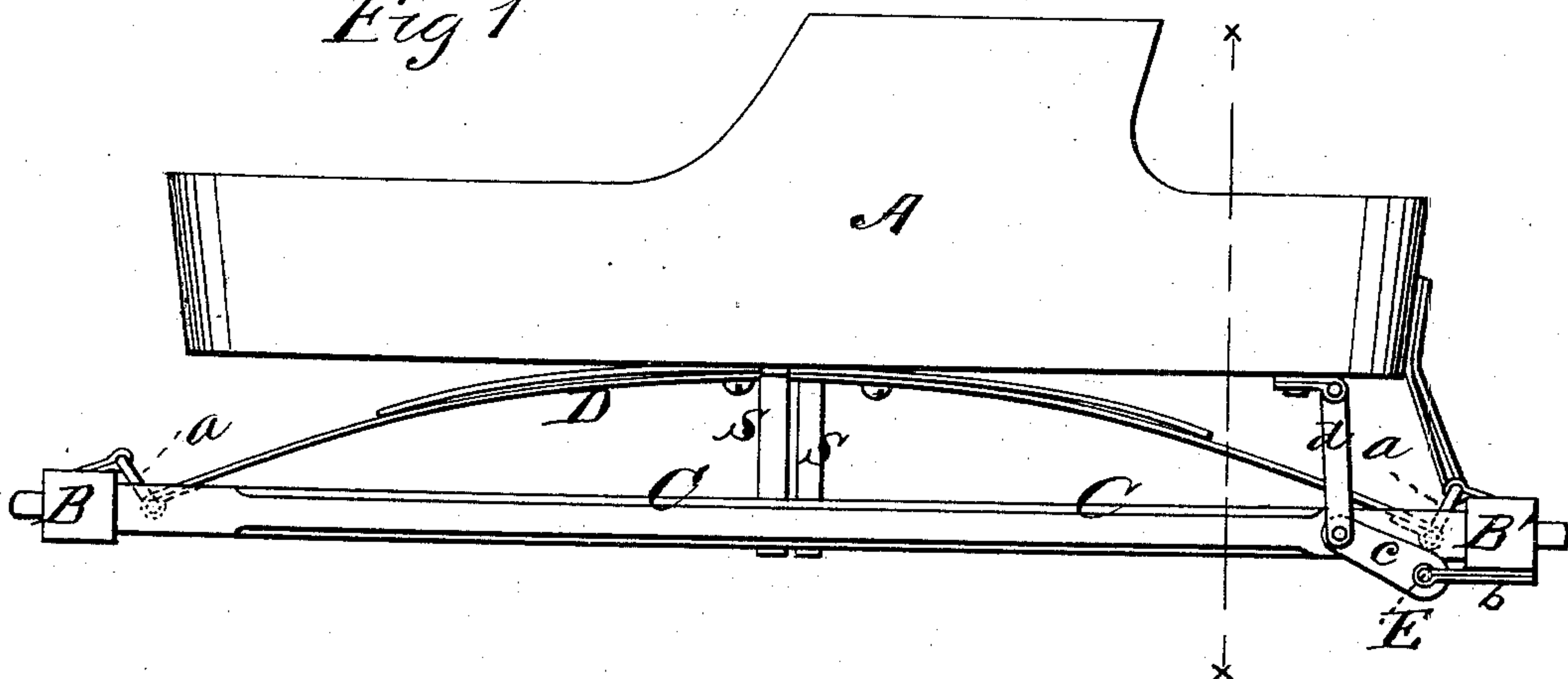


W. H. ELLIOT.  
CARRIAGE-SPRING.

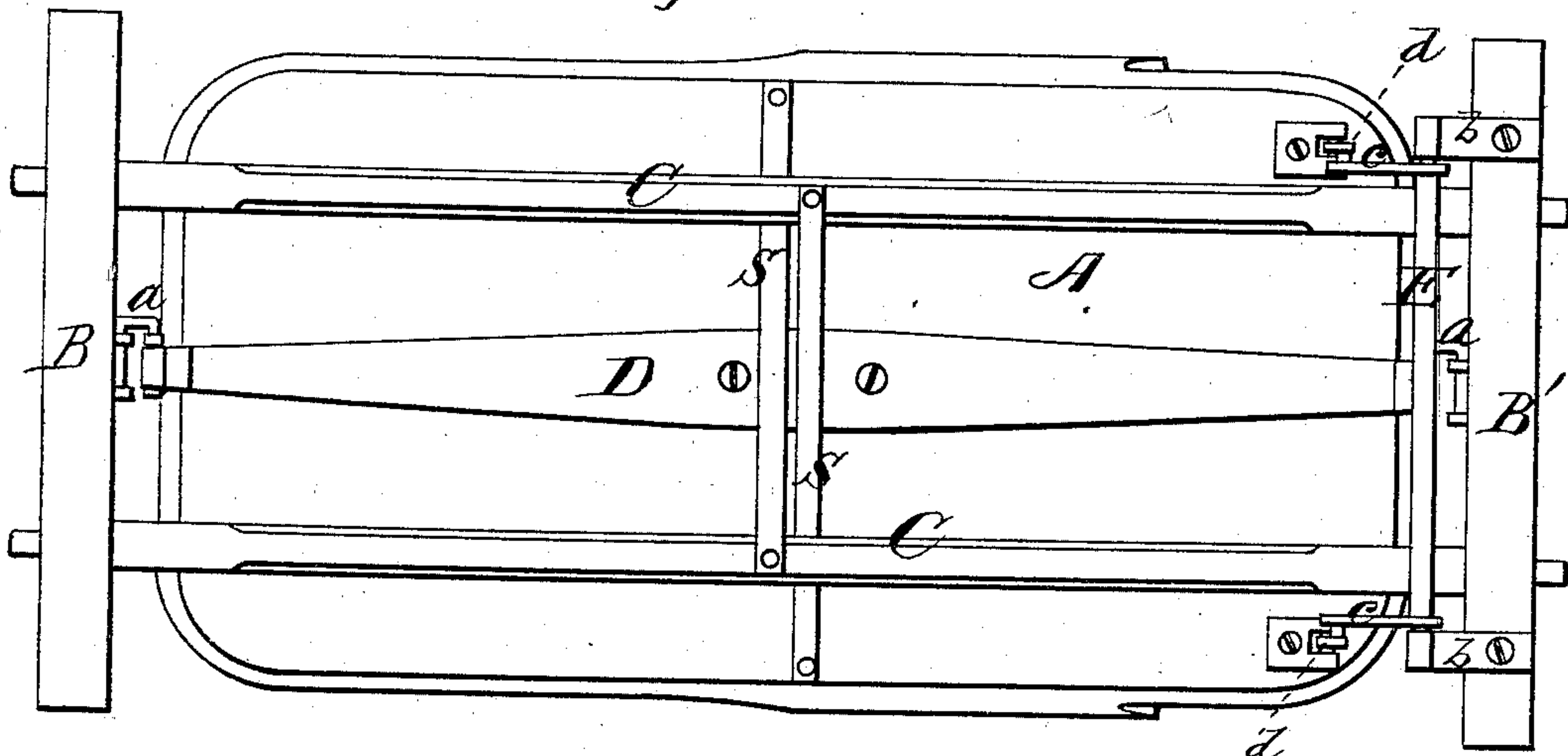
No. 169,683.

Patented Nov. 9, 1875.

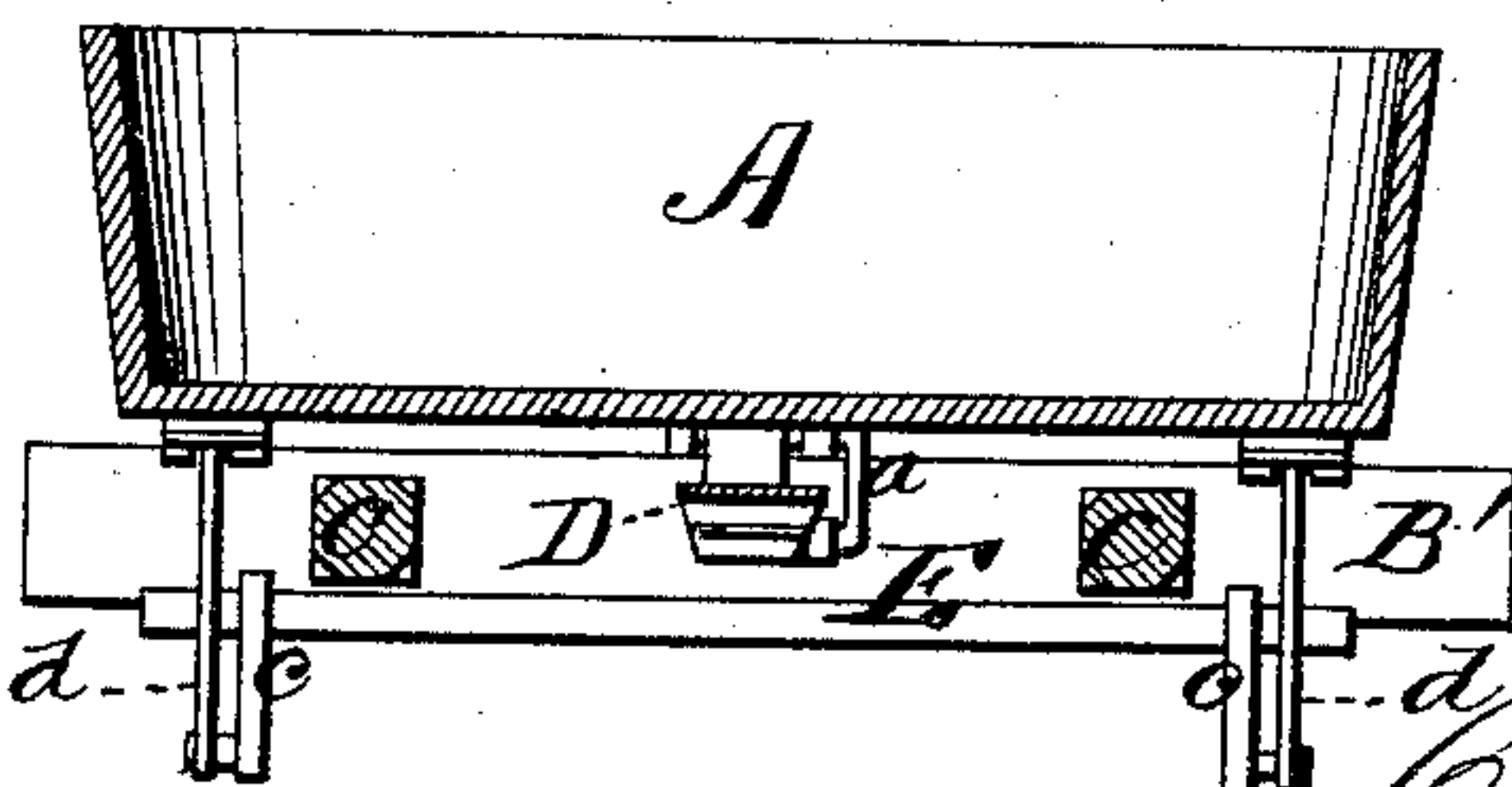
*Fig 1*



*Fig 2*



*Fig 3*



WITNESSES

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# UNITED STATES PATENT OFFICE.

WILLIAM H. ELLIOT, OF ILION, NEW YORK.

## IMPROVEMENT IN CARRIAGE-SPRINGS.

Specification forming part of Letters Patent No. **169,683**, dated November 9, 1875; application filed September 11, 1875.

*To all whom it may concern:*

Be it known that I, WM. H. ELLIOT, of Ilion, in the county of Herkimer and State of New York, have invented a new and valuable Improvement in Buggy Springs and Gearing; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of a buggy having my springs and equalizers, and Fig. 2 is a plan view thereof. Fig. 3 is a transverse vertical sectional view of the same.

This invention has relation to improvements in carriage-spring equalizers; and it consists in the employment of an equalizer or leveling device, in connection with a vehicle-body, which rests upon and is supported by a centrally-arranged reach-spring, as will be hereinafter explained and claimed.

In the annexed drawings, A designates a vehicle-body. B B' are the axles, and C the reaches connecting the same. D represents an elliptical scale-spring, which is rigidly secured at its central point to the center of the vehicle-body, and is connected by means of links *a*, of suitable strength, with the front and rear axles. This spring is designed to receive, independent of any other auxiliary devices, the entire weight of the body, its superstructure, and its load. E represents a rock-shaft, of suitable strength and of any suitable metal, having its bearings in brackets *b*, rigidly secured to the axle. This shaft is provided, at or near each bracket, with a rigid arm, *c*, which is pivotally connected, by means of an arm, *d*, to the wagon or carriage body A. This rod is also pivoted to the free end of arm *c*, and it is thus endowed with the functions of a link.

The effect of the equalizer E *c d* above described, in connection with a reach spring or springs, is that the whole load is sustained by the latter, no part of it being supported on the rock-shaft or any of its immediate attachments. The only strain borne by the equal-

izer is that caused by the excess of weight on one side of the vehicle over that on the other. The advantage of this construction is, that it necessitates the use of only a single rock-shaft, and that a very great degree of security is obtained by thus placing the weight upon that portion (the spring) most capable of successfully resisting the same.

In practice I may, if I so elect, employ two springs instead of one having the strength of two; but I prefer to use a spring of double power, the advantage being that this spring, when centrally arranged and when used in connection with the equalizer above described, becomes a fulcrum, over which the body acts as a lever, so that when the body is pulled down on the light side by the equalizer it exerts an equal amount of force to raise the heavy side by balancing upon the said spring as upon a fulcrum. By this means the leveling or equalizing device is relieved of a very great degree of strain.

Another very important advantage gained arises from the difficulty of obtaining two springs of equal strength, for the reason that when two springs of unequal strength are used with an equalizer or leveler the latter is compelled to bear not only the strain of keeping the body level, but also that produced and occasioned by the excess of the strength of the one spring over the other, thus subjecting the rock-shaft to a strain sufficient at times to twist it out of form and render it inefficient.

I may use two rock-shafts, one being at each end of the body, and by connecting them together by a rod or rods the front and rear ends of the body will be kept level, as well as the sides.

In practice, the rock-shafts may be attached to the body of the buggy and the arms connected to the axle by the connecting-rods, and serve substantially the same purpose in the same way; or the equalizing device may be placed at the middle of the body and connected with the reaches of the carriage.

In order to guard against the upsetting of the vehicle in the event of the breakage of the equalizer, I use a strap, S, rigidly secured at one end to the sides of the wagon-body,



and at the other to the reach. By this means all danger of accident from injury to the equalizer is done away with.

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

1. The centrally-arranged reach-spring D, in combination with the equalizer E *et al*, substantially as specified.

2. In combination with the central reach-spring D, wagon-body A, reaches C, and an

equalizer, the straps S, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

W. H. ELLIOT.

Witnesses:

D. LEWIS,

RICHARD W. JONES.