

J. ENDERS.  
Carriage-Springs.

No. 160,887.

Patented March 16, 1875.

Fig. 1.

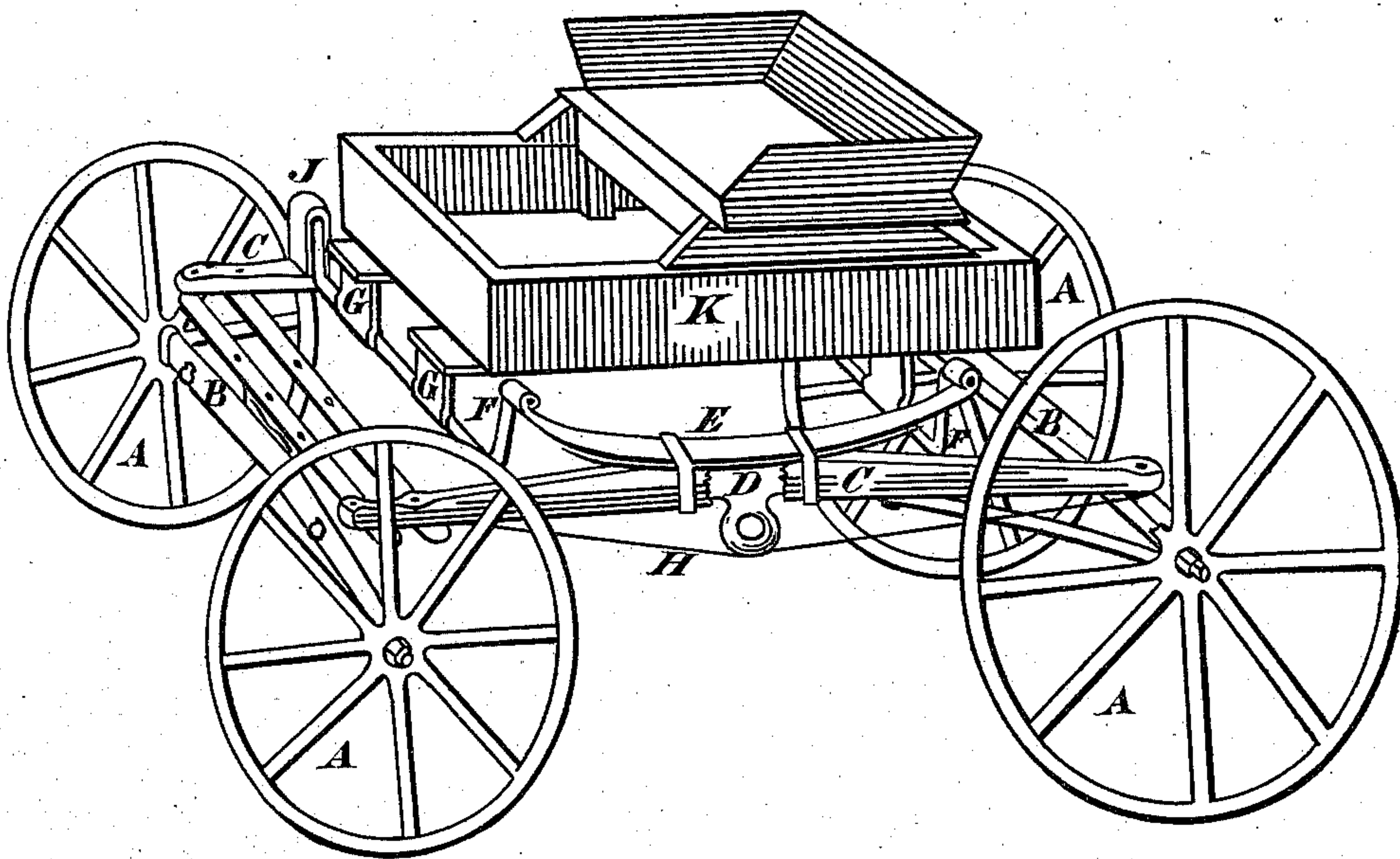


Fig. 2.

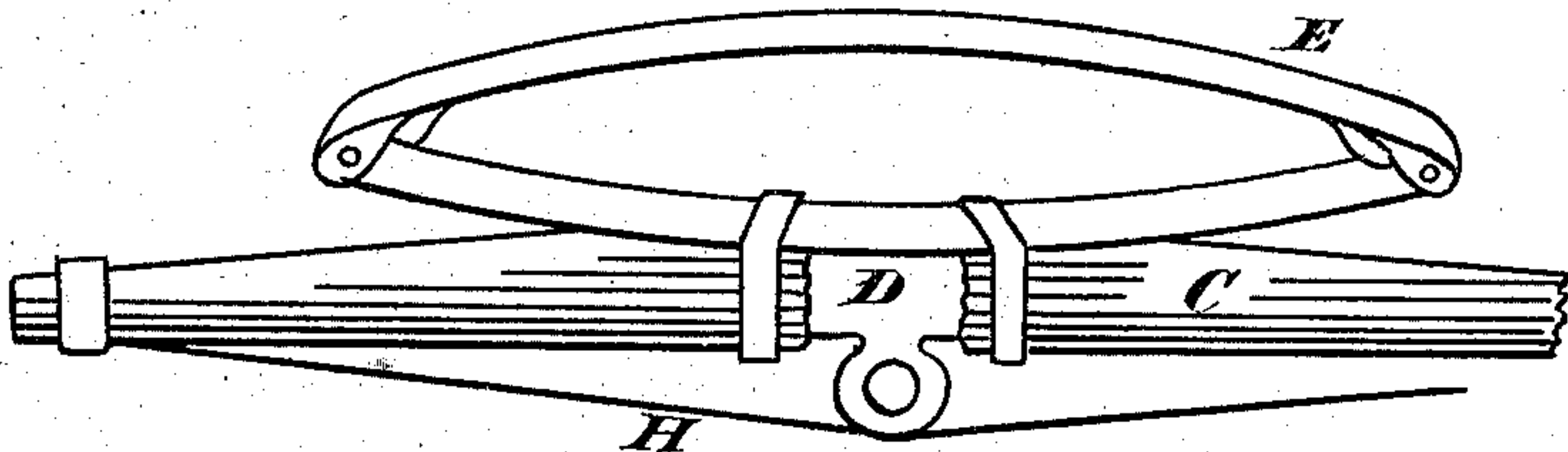
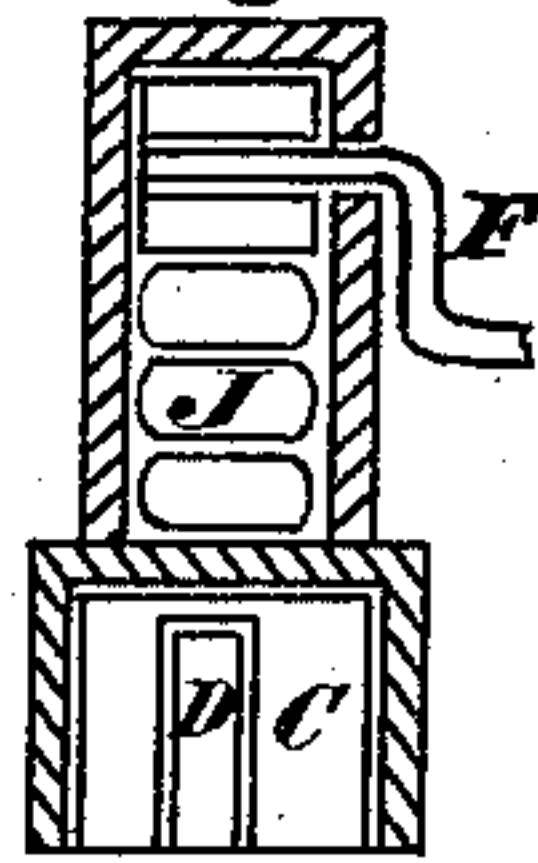


Fig. 3.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

JOSEPH ENDERS, OF LOUISVILLE, KENTUCKY.

## IMPROVEMENT IN CARRIAGE-SPRINGS.

Specification forming part of Letters Patent No. **160,887**, dated March 16, 1875; application filed January 18, 1875.

*To all whom it may concern:*

Be it known that I, JOSEPH ENDERS, of the city of Louisville, in the county of Jefferson and State of Kentucky, have invented a certain new and useful improvement in the manner of hanging the body of buggies or other vehicles to the side springs, in order to give it a swinging motion in connection with the elastic vertical motion of the springs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a perspective view, with the body moved back in front, in order to show the hinge-brackets on the bottom that rests on the cross-bars. Fig. 2 is a view of one side bar, with full elliptic spring, showing the steel bar in the center. Fig. 3 is a sectional view of a stand and gum or rubber spring, showing its general arrangement when used as a substitute for the elliptic springs.

Similar letters of reference indicate corresponding parts of the drawings.

This invention relates to a new and useful improvement in the manner of hanging the body of buggies or other vehicles to the side springs, in order to give it a swinging motion in connection with the elastic vertical motion of the springs, the object of which is to relieve the shock caused by obstructions, or in passing over rough roads, and at the same time be more easy and comfortable for the occupant, and less liable to accident or damage, by means of the yielding or swinging motion given to the body in connection with the free action of the side springs, the full elasticity of which is not obstructed or hindered in any manner by stationary or fixed attachments to the body, as now found to be the case with almost all similar springs now in use.

The machine will be found more fully illustrated in detail in perspective views, Figs. 1 and 2, and sectional view, Fig. 3.

In the drawings, A A A A are the wheels,

and B B the axles, all of which are made of the usual material, and in any of the known forms. C C are the side bars and frame, which is made mostly of wood, and in form as shown in the drawings, with a deep parallel groove cut in the under side, and a bar of steel inserted therein, which is further strengthened by a brace-rod on the under side, in order to render the whole perfectly stiff or rigid. D is this steel or metal bar. E E are the elliptic springs, which are made in the usual form, except that they have eyes formed on the ends to receive the end of the crank-bars F F. These last-named springs are secured to the side bars in the usual manner; but if necessary a gum or rubber spring may be substituted, and secured to the top or under side of the bar C, or in any other manner it may be found most suitable to use it. F F are the swinging crank-bars on which the body rests, which are made of any suitable material, and set off immediately on the inside of the springs in the form of cranks, that may be of any required length to give suitable motion to the body, with journals on the ends so formed as to work loosely in the eyes of the springs. These last-named cranks may be made as above described, or, if necessary, a straight bar may be substituted, having suitable journals on the ends, so made as to work loosely in the eye of a hanging link in the end of the springs, to answer the same purpose for which the cranks have been adopted, and may be still further carried out by substituting the main axles in their stead, to which the body may be hung in a similar manner when used for certain purposes. G G G are brackets or hinge-bearings on the bottom of the body, by means of which it is hinged to the crank-bars. These brackets may be made in any suitable form that will be sufficiently strong to withstand the strain to which they are liable. H is a brace or arch bar for strengthening the side bars. J is a gum or rubber spring intended to be used in lieu of the elliptic springs in cases where they would be more suitable. K is the body of the vehicle, which may be made in any known form.

Having thus fully described the nature and object of this my invention, therefore, what I claim as new, and desire to secure by Letters Patent, is—

1. The swinging crank-bars F F, in combination with the springs E E, brackets G G G, and body K, constructed to operate substantially as and for the purpose set forth.

2. The steel bar D, inserted in the side bar C, and the brace-rod H, by which it is supported, combined and constructed to operate substantially as and for the purpose set forth.

JOSEPH ENDERS.

Witnesses:

FRANK PARDON,

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