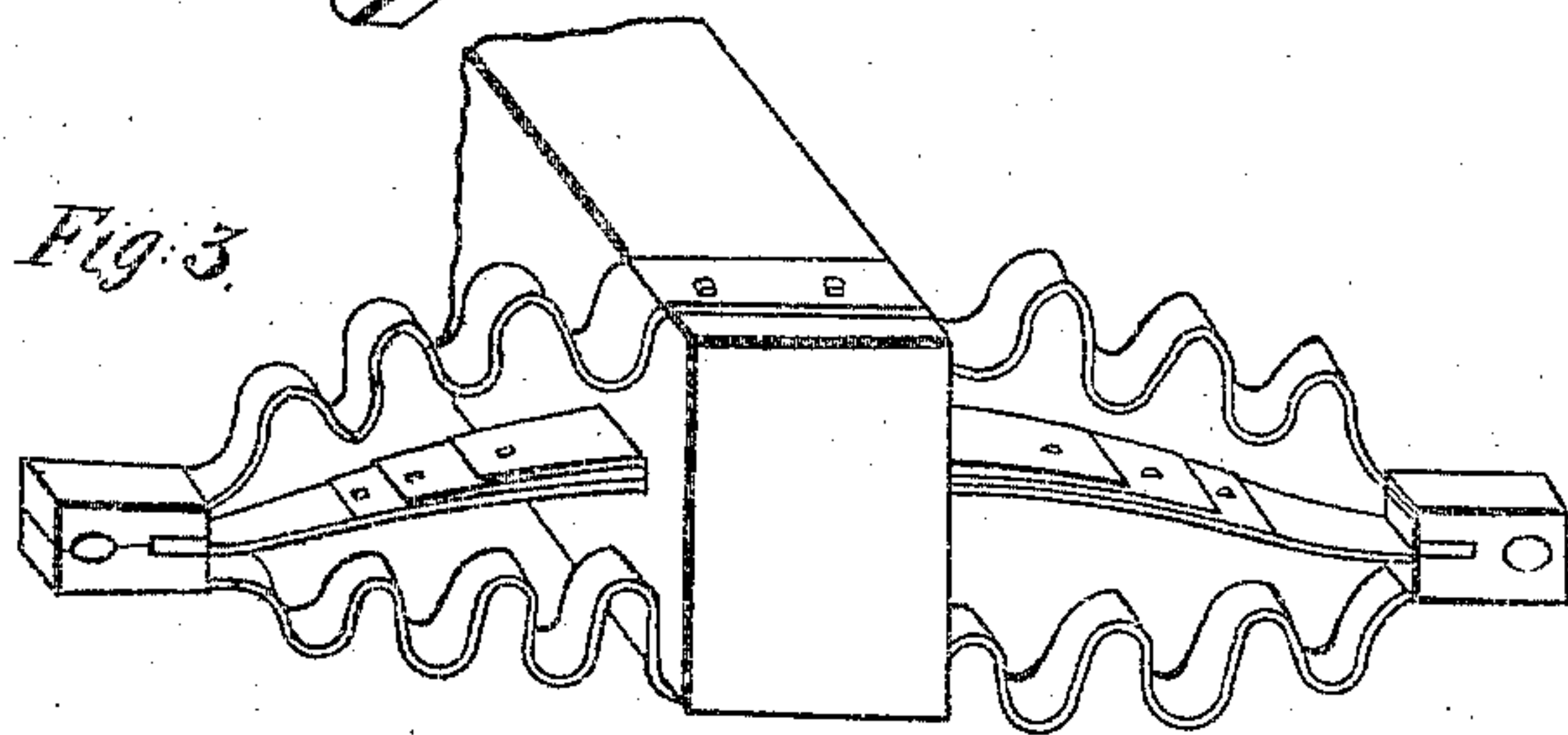
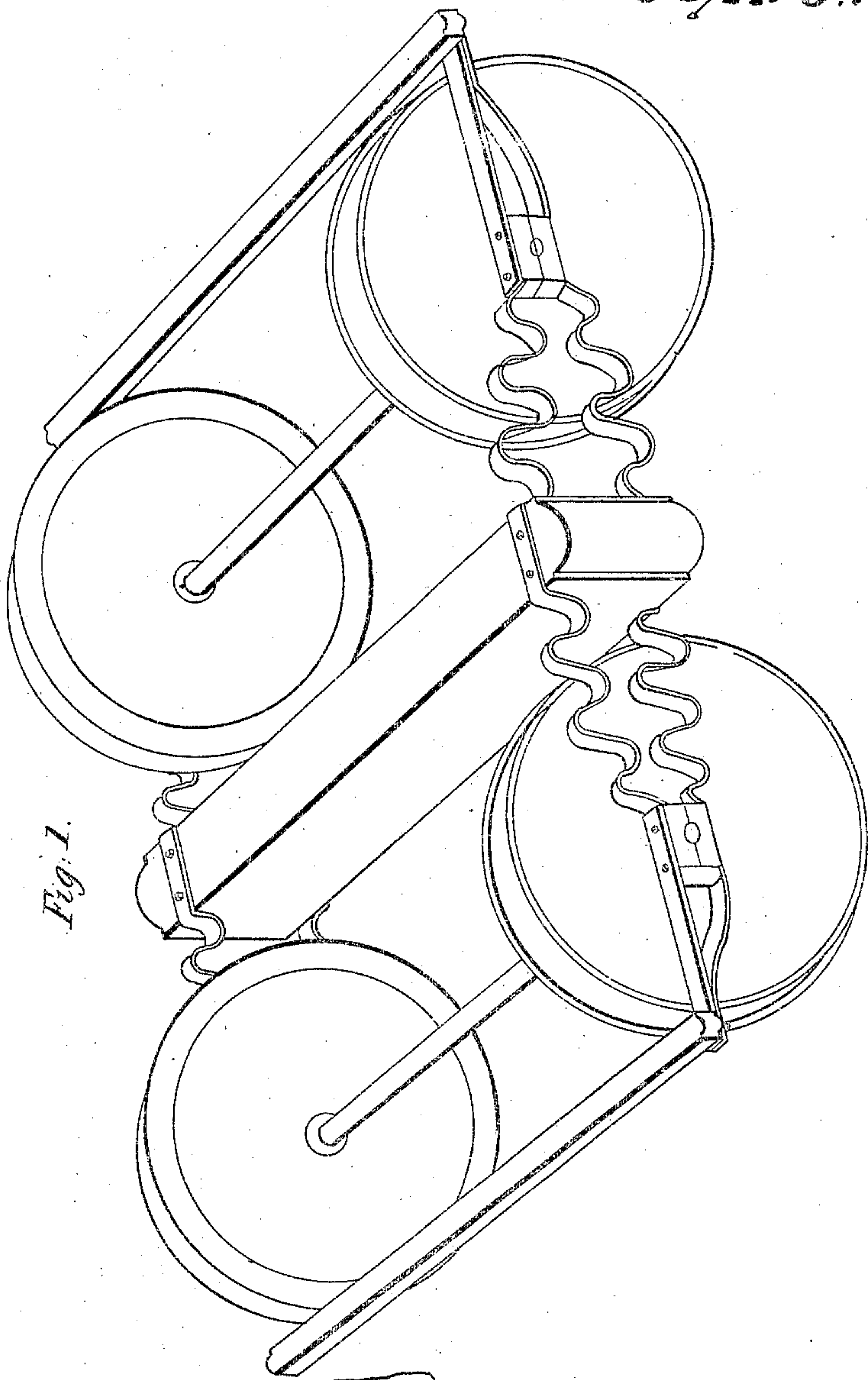
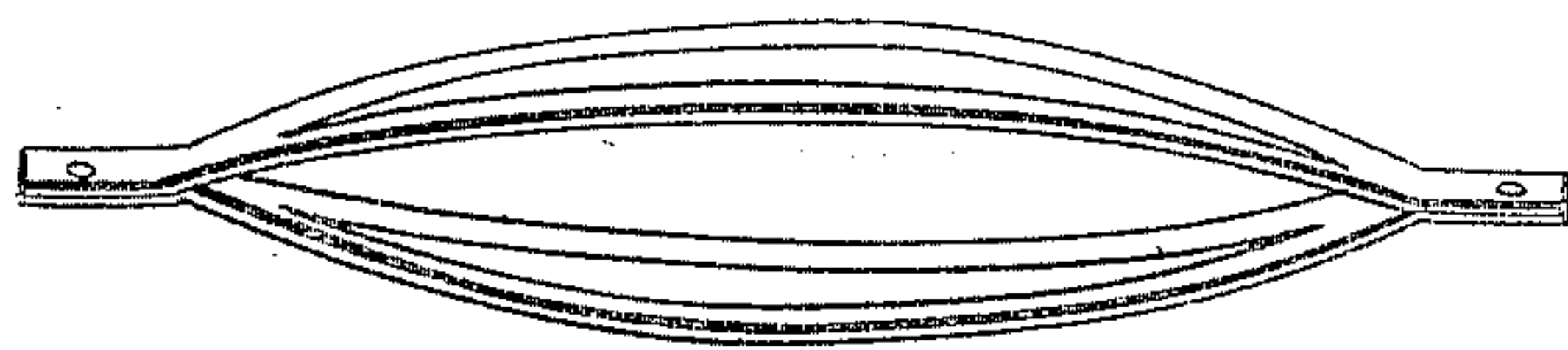


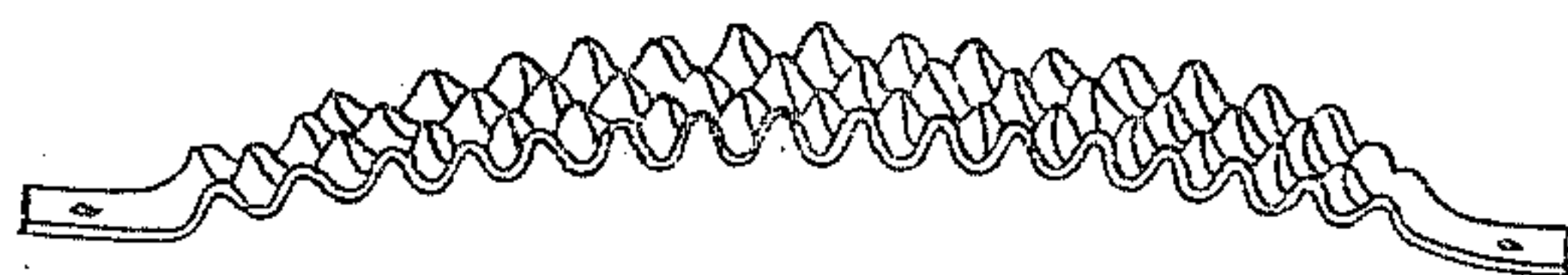
*H. T. Hyde. Sheet 1. 2 Sheets.*  
*Carriage Spring.*  
*N<sup>o</sup> 6276 Patented Apr. 3. 1849.*



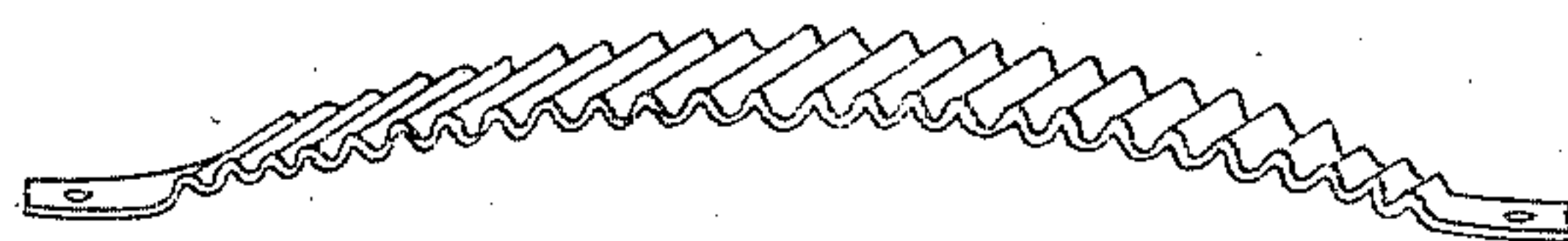
*H. T. Hyde. Sheet 2. 2 Sheets.*  
*Carriage Spring.*  
*N<sup>o</sup> 6276 Patented Apr. 3. 1849.*



*Fig. 6.*



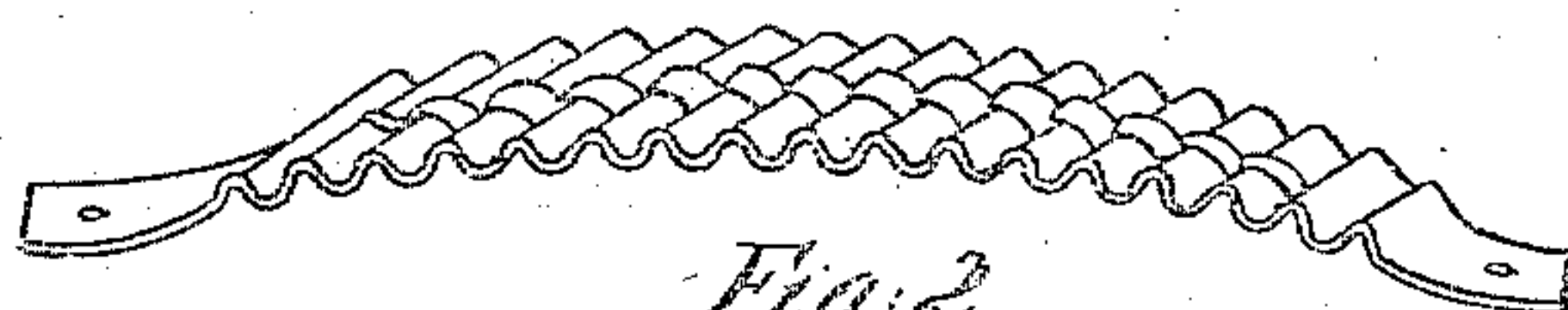
*Fig. 5.*



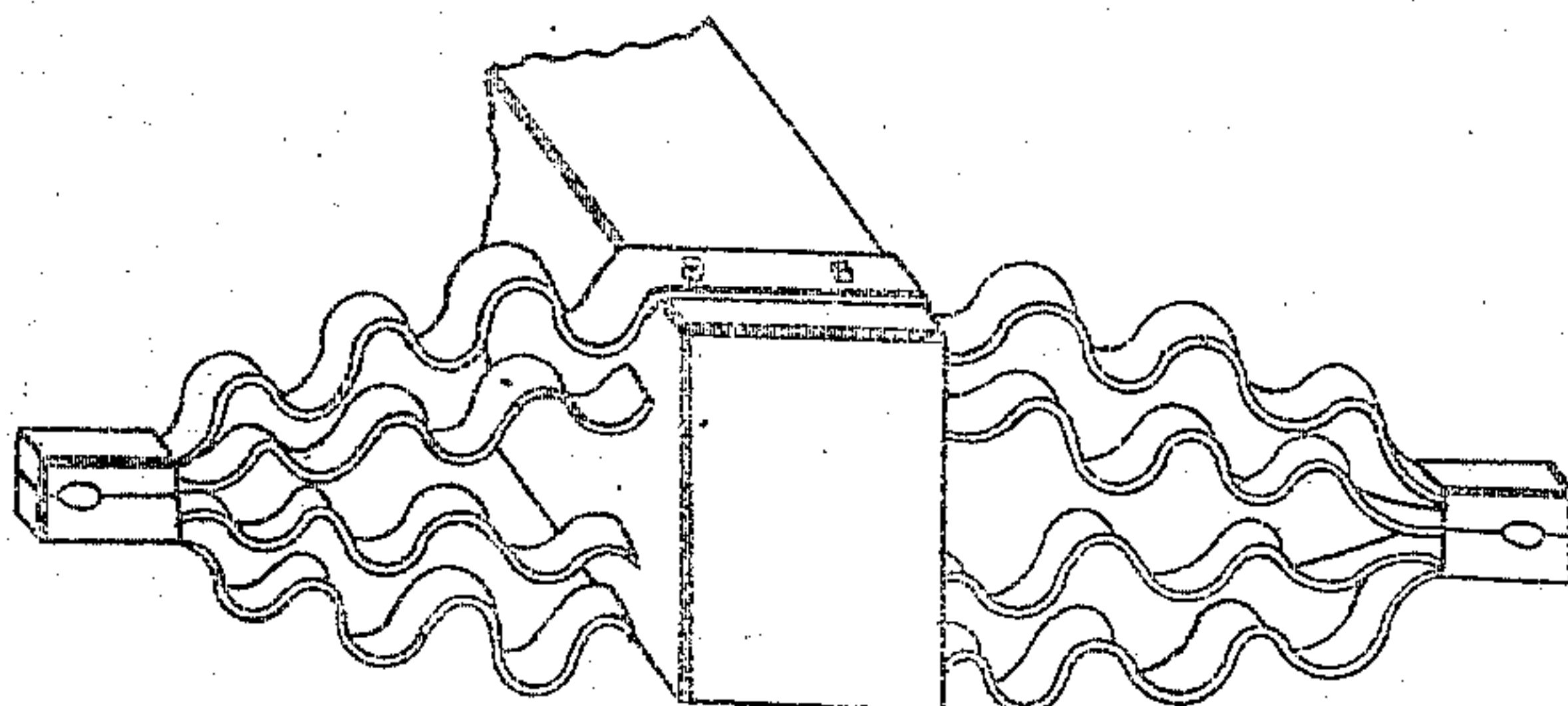
*Fig. 4.*



*Fig. 8.*



*Fig. 2.*





# UNITED STATES PATENT OFFICE.

HIRAM T. HYDE, OF TROY, NEW YORK.

## CARRIAGE-SPRING.

Specification of Letters Patent No. 6,276, dated April 3, 1849.

*To all whom it may concern:*

Be it known that I, HIRAM T. HYDE, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Springs for Railroad and other Carriages, of which the following is a full and exact description, reference being had to the annexed drawings of the same, making part of this specification, in which—

Figure 1 is a perspective view of a railroad truck, with my crimped springs applied thereto, Fig 2 is a view of one end of the cross beam of a truck with two pairs of my springs applied to it. Fig. 3 is another view of a truck beam with a pair of my springs applied thereto in combination with a semi-elliptic spring, Fig. 4 is one half of a crimped elliptic spring having a flange or lips turned up on its edges, Fig. 5 is a spring formed with oblique transverse crimps or flutes, Fig. 6 is a half spring having double oblique transverse crimps or flutes, Fig. 8 is a spring with transverse crimps intersected by a central longitudinal crimp.

The same letters indicate the same parts in all the figures.

The importance of having carriage springs universally flexible has long been acknowledged, and many attempts to render them so have been made, not however with complete success. The accompanying drawings represent different modifications of a spring which I have invented, in which it is believed many of the defects existing in the common spring will be obviated, and an equal degree of strength be obtained, at less cost, in consequence of a smaller quantity of material being used in its construction.

In the accompanying drawings springs are represented, which are fluted, grooved, and crimped, in different ways; these springs are made of narrow plates of steel of the kind in common use for such purposes, the crimps or flutes being made in them in any convenient way although I prefer for this purpose to use a pair of suitably formed rollers, between which the plates are caused to pass in the manner of

bars, or sheets of metal, in the ordinary rolling mill; crimping the springs longitudinally gives to them a degree of stiffness proportioned to the depth of their section in the line of pressure, and with less material will give the same degree of stiffness and rigidity as the elliptic, many leafed spring. These springs possess another property not found in the ordinary elliptic leaf spring, which is universal flexibility, so that when a carriage body is mounted upon them it is almost impossible to communicate to it a jar or concussion by the sudden application of force from any direction, and this universal flexibility also prevents the springs themselves from being strained or taking a "set."

Another application which I contemplate making of these springs is to connect the two axles of a rail road truck as represented in Figs. 1 and 2, or in combination with a semi-elliptic spring, which sustains the weight but leaves the lateral motion free, as in Fig. 3, the cars when turning a curve in the track are prevented from running off by the lateral yielding of the springs which causes the cars to slip down again every time they begin to rise upon the rail.

The springs may be made and applied in many ways besides those represented without in any way changing the principle of the invention.

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

1. Making the plates of elliptic and other carriage springs of a transversely or diagonally crimped, fluted, or ribbed form substantially as herein described, by which they are rendered universally flexible, and can be made of a given strength with less material and expense than the common elliptic spring.

2. The combination of the crimped spring, with a semi-elliptic many-leafed spring in the manner, and for the purpose herein set forth.

In testimony whereof I have hereunto signed my name before two witnesses.

HIRAM T. HYDE.

Witnesses:

P. H. WATSON,  
S. W. WOOD.