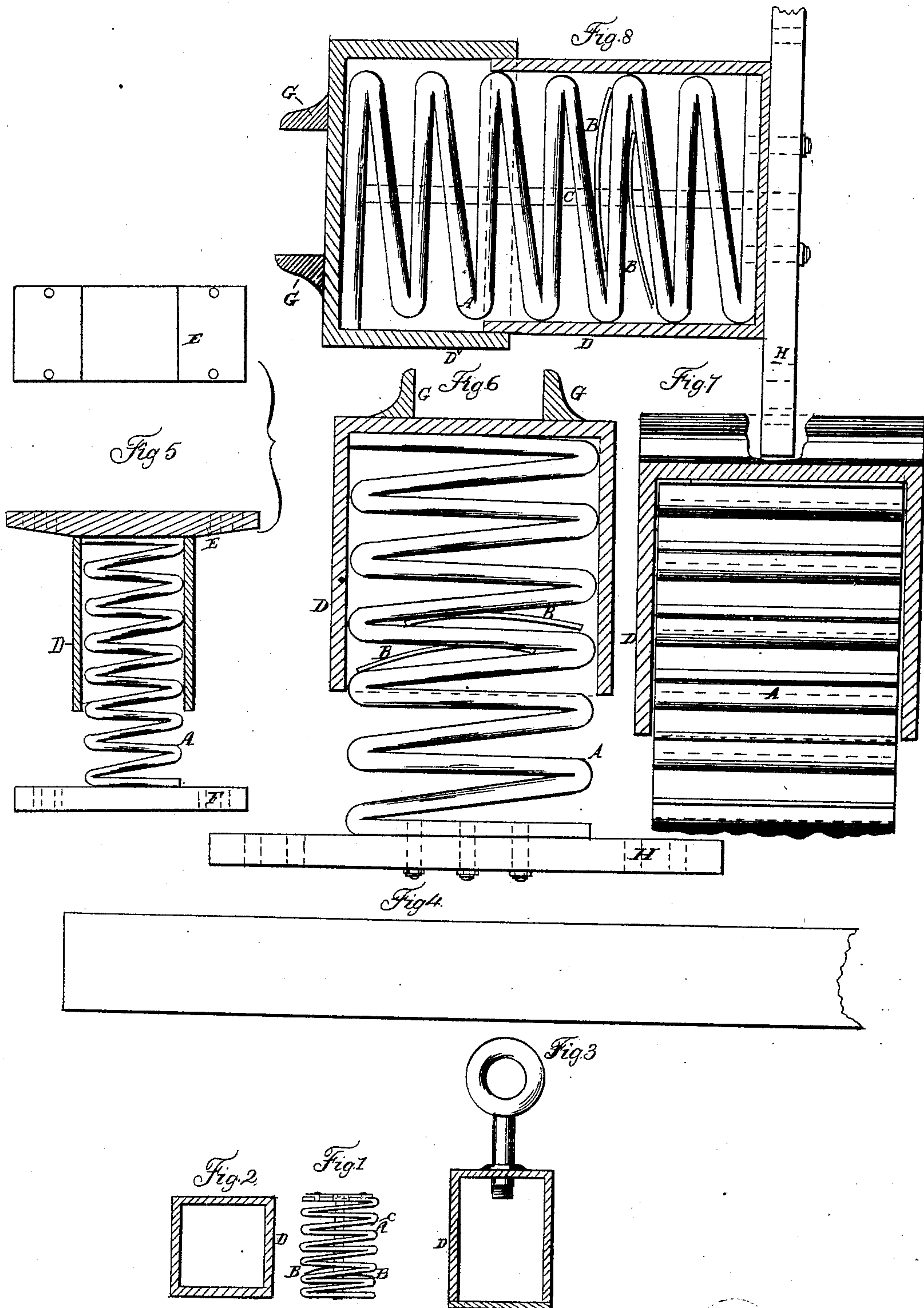


H. GARDINER.

Car Spring.

No. 20,418.

Patented June 1, 1858.



UNITED STATES PATENT OFFICE.

HEMAN GARDINER, OF NEW YORK, N. Y.

SPRING FOR RAILROAD-CARS.

Specification of Letters Patent No. 20,418, dated June 1, 1858.

To all whom it may concern:

Be it known that I, HEMAN GARDINER, of the city, county, and State of New York, have invented certain new and useful Improvements in Springs for Railroad-Cars and other Purposes; and I do hereby declare the following to be a full description of the same, reference being had to the accompanying drawings, forming a part of this specification, the same letters of reference wherever they occur referring to like parts.

Figure 1, is a representation of the folds of the fillet. Fig. 2, is a plan view of a box into which the spring is cased. Fig. 3, is a side elevation of the spring case or box, having a thumb rod which is tapped into the cap plate of the fold for the convenience of operating the spring in the box. Fig. 4, is the plate of steel to be shaped into folds. Figs. 5, 6, 7, are enlarged representations showing the mode of attaching to the car truck. Fig. 8, is a representation of the mode of constructing the case, for holding the spring and allow of its expansion and contraction under pressure, and prevent exposure to dust, &c.

The nature of my invention consists in arranging a series of semi-elliptical springs of a peculiar shape and small size in the form of a square shaped column, between the leaves or folds of a folded steel plate, or fillet folded back and forth, so as to form also a square shaped column, the springs and plate being held together by a bolt passing through a hole in the center, whereby the elastic force of the intermediate springs acts with a leverage corresponding with the length of the plate of steel of which the folds are made, and producing great softness and ease in action. The fillet or plate of steel may be folded into any required number of

folds and the plate should be of such form that when folded it will present a square shaped column, that being in my judgment the best form for the spring. The semi-elliptical springs are made with the edges slightly curved upward when they rest upon the folds of the plate as seen at B, B, Fig. 6, and they are made of well tempered steel; their small size and simple shape render them perfectly easy to harden, anneal, and temper to the degree desired. The whole may be placed within a case or box composed of one piece as in Fig. 6, or in two parts as in Fig. 8.

It is not my intention to claim as my invention the forming of a spring out of a fillet or plate folded back and forth; nor the use simply of auxiliary or intermediate springs in detached pieces. I am aware of the use of small springs as described in the specifications of Holmes and Evans, and Clark and Proctor; I am also aware of the plate described in the specification of D. B. Rogers, and that of Hill patented in England. But

What I claim as my invention, and for which I desire Letters Patent is—

The arrangement of the peculiar shaped semi-elliptical springs B, B, in the form of a square shaped column, held in position and made to act as one spring by the folded steel plate so as to give the long leverage and easy soft action as above described; the several springs and folded plate being combined and held together by the bolt passing vertically through them as above set forth.

HEMAN GARDINER.

Witnesses:

E. A. VANDERHOFF,
C. L. BARRITT.