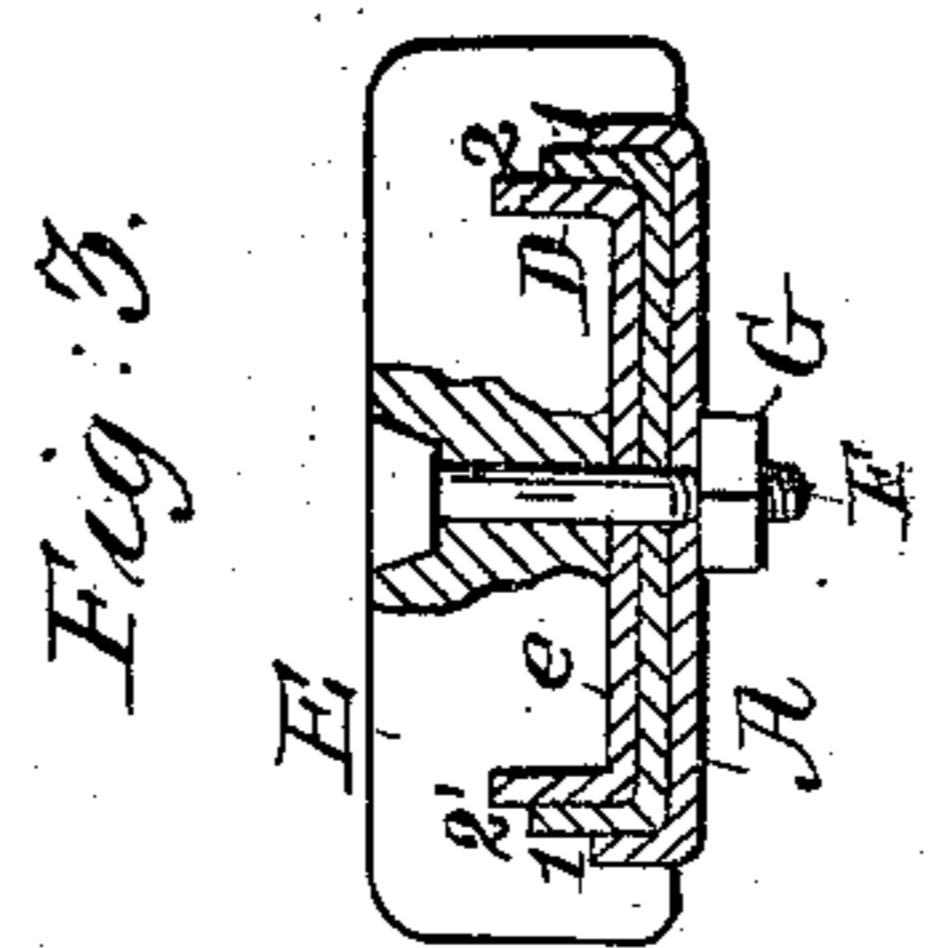
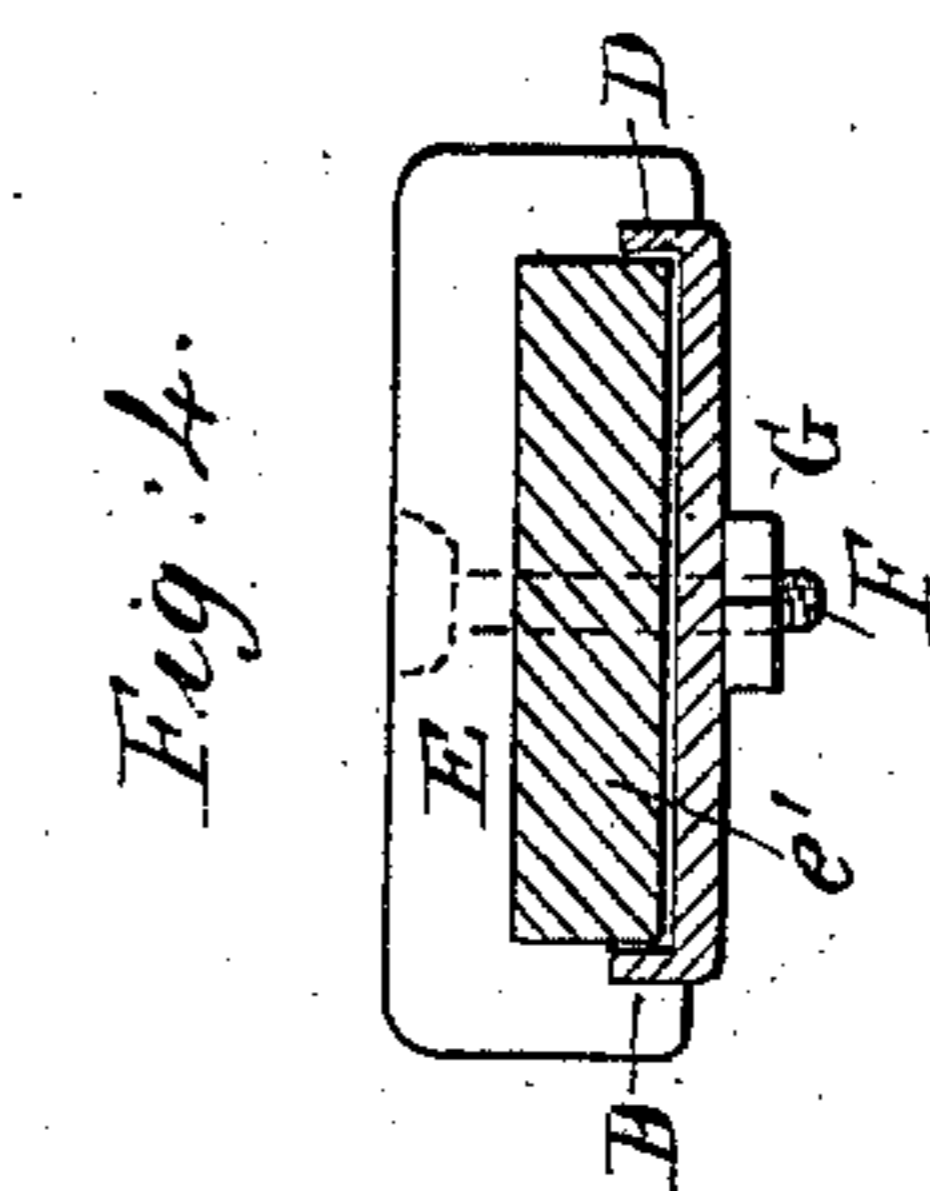
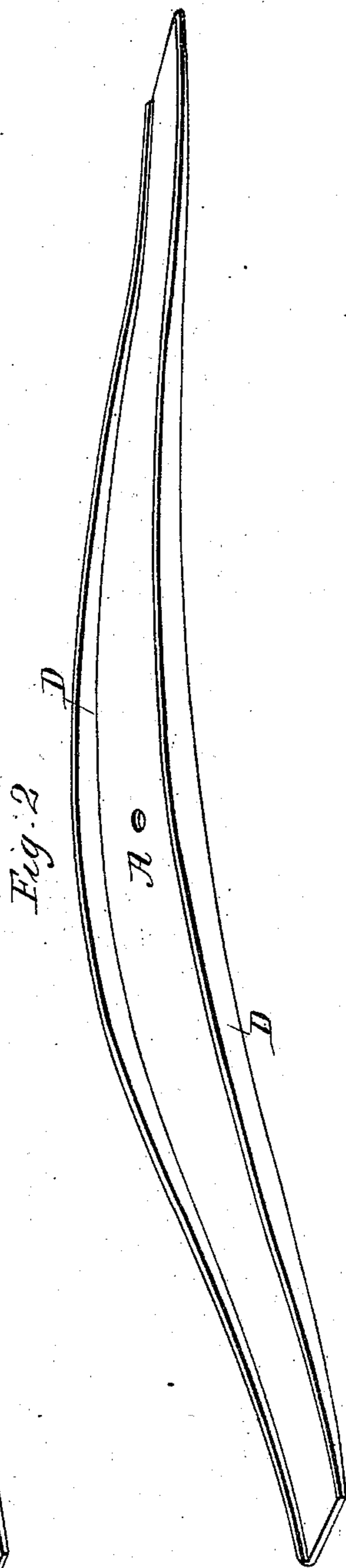
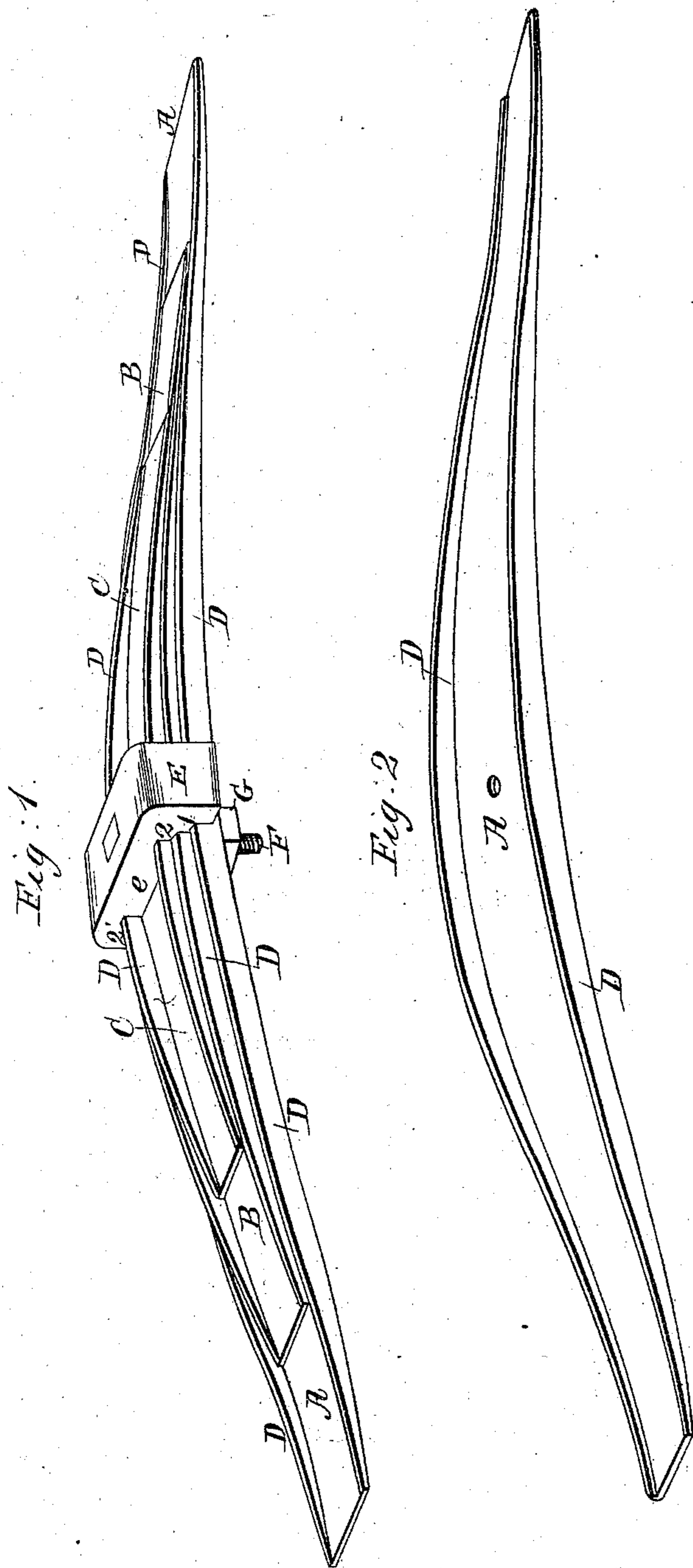


HARRIS & ELLIOT.

Car Spring.

No. 81,499.

Patented Aug. 25, 1868.



Witnesses.
 Jas. H. Layman
 C. K. Pickles

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United States Patent Office.

GEORGE W. HARRIS AND GEORGE ELLIOT, OF AURORA, INDIANA.

Letters Patent No. 81,499, dated August 25, 1868.

IMPROVEMENT IN CAR-SPRINGS.

The Schedule referred to in these Letters Patent and making part of the same.

TO WHOM IT MAY CONCERN:

Be it known that we, GEORGE W. HARRIS and GEORGE ELLIOT, both of Aurora, Dearborn county, Indiana, have invented a new and useful Car and Carriage-Spring; and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Our invention relates to a form of spring for supporting the bodies of railroad-cars and other vehicles, which combines great elasticity and endurance with economy of weight, space, and material.

In the drawings—

Figure 1 is a perspective view of a spring composed of a nest or bundle of leaves connected by a band or strap.

Figure 2 is a perspective view of one of the leaves.

Figure 3 represents a transverse section of the complete spring.

Figure 4 illustrates a modification.

Our spring is composed essentially of a series of steel plates or leaves, A B C, bent into the curved form represented, tapering in width from their centre toward each end, and having upturned edges or flanges, D, which flanges taper in height toward the ends.

Each leaf in succession upward in the series is of so much less width as to fit or nest snugly within that below.

The leaves are retained in a compact bundle or pack by means of a strap, E, so formed as to fit and grasp the top and sides of the pack at its widest portion, the stud or protuberance *e* of said strap occupying the space between the uppermost leaf, and being traversed by a bolt, F, having a nut, G, which, being screwed tightly against the under side of the pack, serves, in conjunction with the strap E, to hold all the leaves in place. This strap is stepped off, (1 2, 1' 2',) as represented, so as to tightly fit and grasp the upturned edges, as well as the flat portions of the leaves, thus holding all equally firm.

Springs thus constructed are both far more elastic and less bulky than those of the ordinary form.

A modification of our invention is seen in fig. 4, where a block of wood, *e'*, is used in place of the stud *e*.

Although in most cases our springs will be constructed of two or more leaves, for use in light vehicles a single leaf may be made to serve a good purpose.

We claim herein as new, and of our invention—

1. A spring, composed of one or more leaves, which taper from mid-length endward, and the upturned margins of which likewise taper endward.

2. A spring, composed of a series of nested leaves, A B C, which, with their upturned margins, taper in width endward, and are secured by means of a central band or strap, substantially as set forth.

3. The pack of flanged tapering and nested leaves A B C, in combination with the stepped strap E *e*, 1 2, 1' 2', bolt F, and nut G, substantially as and for the purpose set forth.

In testimony of which invention, we have hereunto set our hands.

GEORGE W. HARRIS,
GEORGE ELLIOT.

Witnesses:

GEO. H. KNIGHT,

C. K. PICKLES.