

No Model.)

T. J. FARRELL.  
LOCOMOTIVE SPRING.

No. 248,152.

Patented Oct. 11, 1881.

Fig. 1.

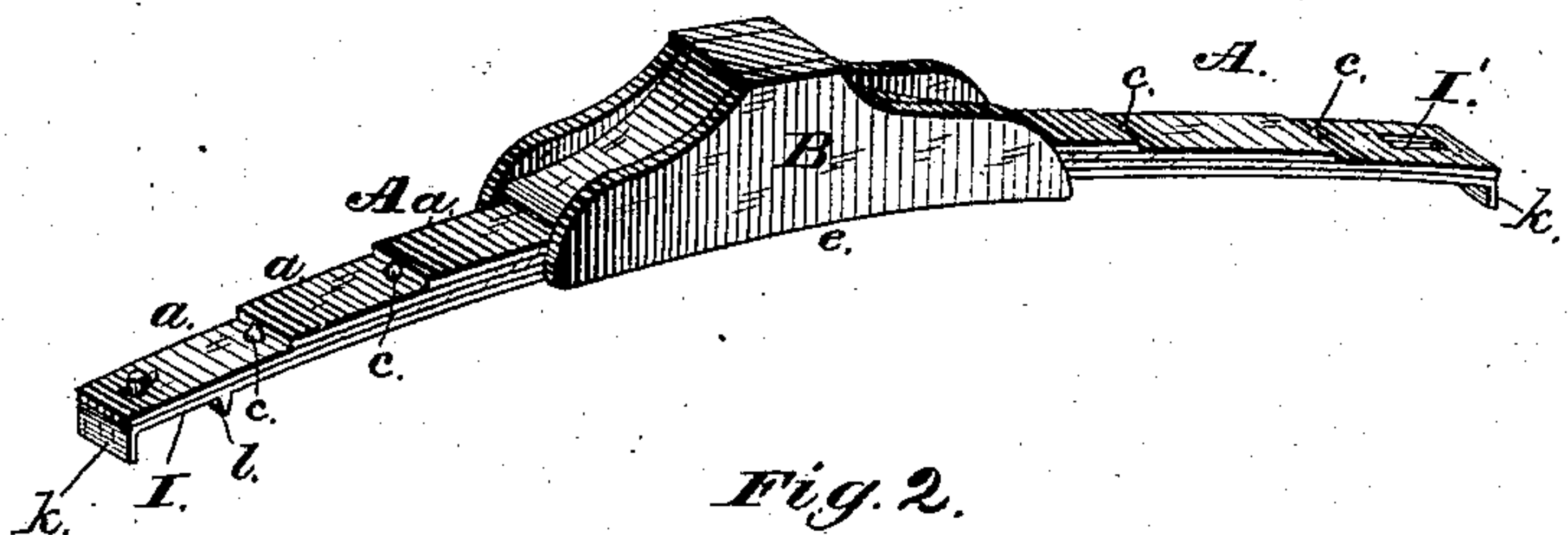


Fig. 2.

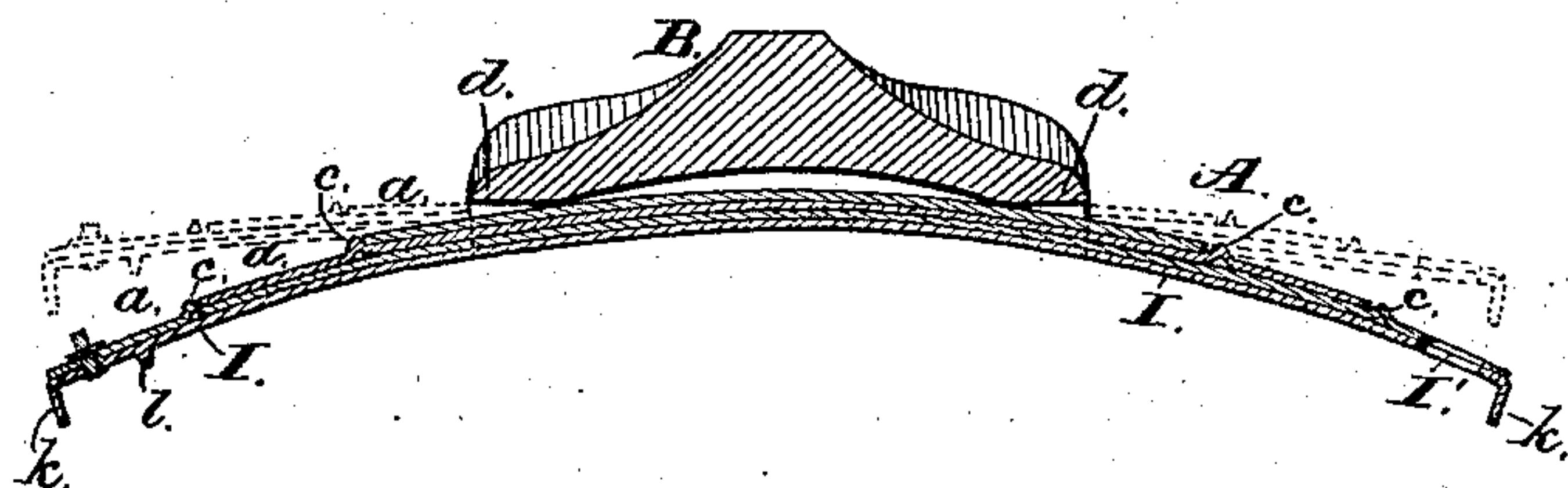


Fig. 3.

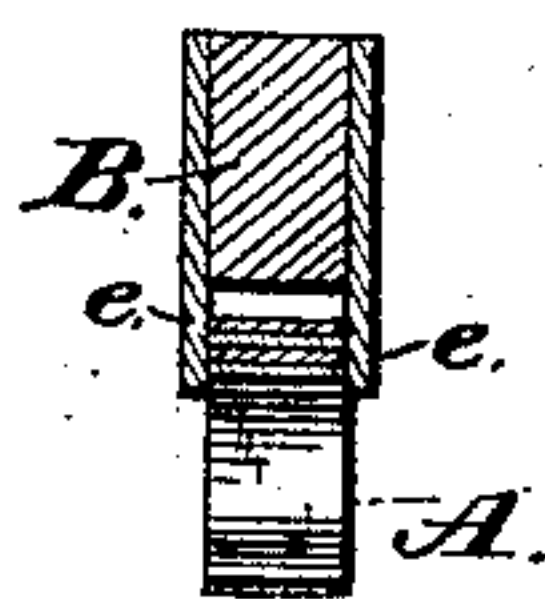


Fig. 4.

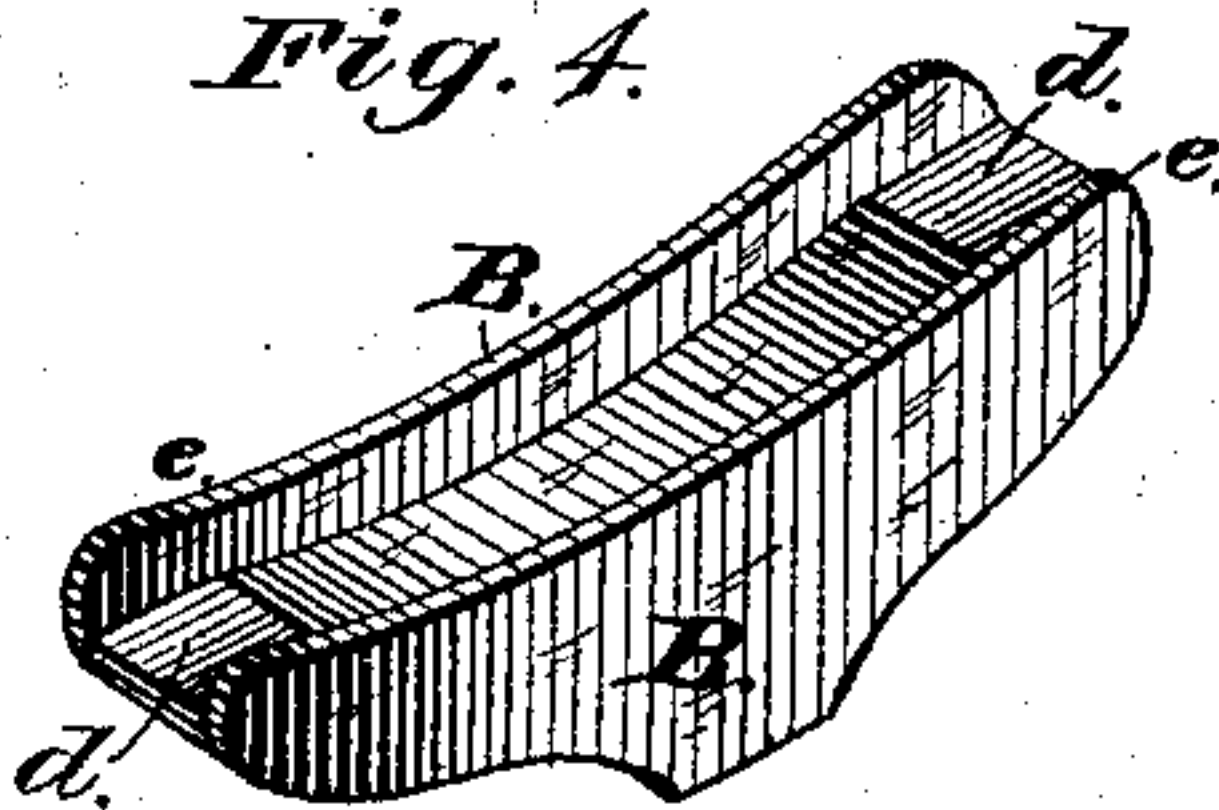


Fig. 5.

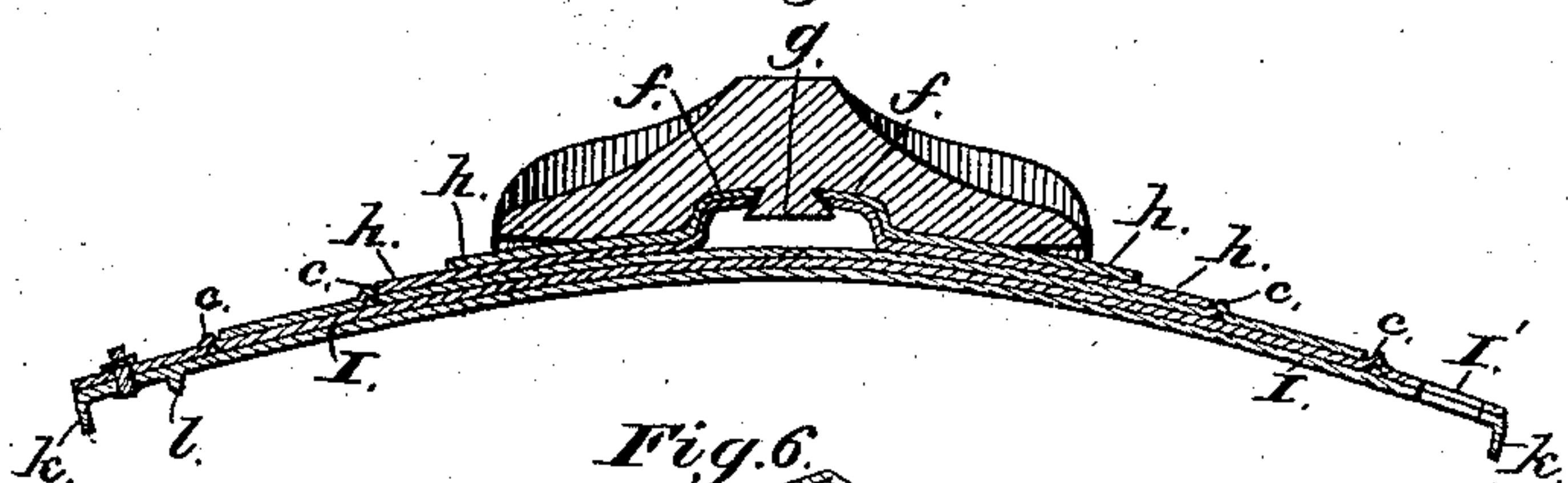
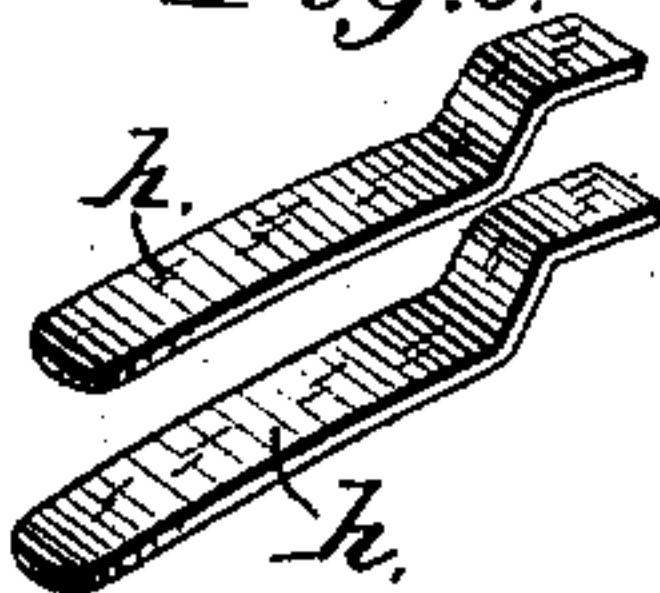


Fig. 6.



Attest.

Geo. E. Hutchinson.  
J. A. Rutherford.

Inventor.

Thos. J. Farrell,  
By James L. Norris.  
Atty.



# UNITED STATES PATENT OFFICE.

THOMAS J. FARRELL, OF FORT HOWARD, WISCONSIN.

## LOCOMOTIVE-SPRING.

SPECIFICATION forming part of Letters Patent No. 248,152, dated October 11, 1881.

Application filed December 13, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS J. FARRELL, a citizen of the United States, residing at Fort Howard, in the county of Brown and State of Wisconsin, have invented new and useful Improvements in Locomotive-Springs, of which the following is a specification.

This invention relates to leaf-springs in which the bearing-surface in contact with the convex face of the spring is extended in proportion to the weight sustained.

My improvement is especially applicable to half-elliptic springs for locomotives and tenders.

It consists, mainly, in the combination, with a half-elliptic spring, of a saddle having two elongated bearings, which are normally in contact, respectively, with the convex face of the spring at single points on opposite sides of the center of said spring, the normal contact-points of the bearings being their inner termini. These separate bearings on opposite sides of its center hold the spring steady under light weight, and as the weight increases and the spring straightens out it gradually comes in contact with increased bearing-surfaces near its ends, and its resistance is thus greatly re-enforced, rendering fewer leaves necessary than are required in a spring having its bearing-surface at its center, as heretofore.

In the accompanying drawings, Figure 1 is a perspective view of a half-elliptic spring constructed according to my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a cross-section. Fig. 4 is a detached perspective view of the saddle inverted. Fig. 5 is a longitudinal section of a modified form of spring. Fig. 6 is a perspective view of two of the short or half leaves.

The letter A indicates a half-elliptic spring, composed of a series of graduated leaves, *a*, the successively shorter leaves being prevented from undue longitudinal movement upon those below by teats *c*, projecting from the upper surfaces of all except the top leaf.

B is the saddle, which rests upon the top leaf. It is provided at its ends with straight bearing-surfaces *d d*, the inner ends only of which normally rest upon the spring, as shown in full lines, Fig. 2, the portion of the saddle between said bearing-surfaces being recessed to conform to the curvature of the spring. The

saddle is provided with side flanges, *e e*, which extend across the edges of the spring and prevent it from moving laterally.

When there is no weight upon the spring it stands in the position with respect to the bearing-surfaces *d d* as shown in full lines, Fig. 2; but when supporting a weight the spring straightens out, coming more or less in contact with said surfaces, according to the weight. The dotted lines, Fig. 2, indicate the position of the spring under a heavy weight, it being so straightened as to come in contact with the entire bearing-surfaces; but even under such a weight there is but slight danger of breakage, as the bearings are brought near its ends and its resistance thus greatly re-enforced, the re-enforcement being always in proportion to the weight sustained.

The spring in Figs. 1 and 2 is not confined otherwise than by the flanges, but is allowed a free longitudinal movement in the saddle, in order to adjust itself to curves.

In the modification shown in Fig. 5 the saddle is provided with recesses *f f*, having their upper portions extended over opposite sides of an abutment, *g*, these recesses being to receive the properly-bent inner ends of short or half leaves *h*, as shown in Fig. 6. These half-leaves may compose the upper portion of the spring, two or more lower leaves being preferably full length. By using these half-leaves I am enabled to utilize short pieces of metal, portions of broken full-length leaves, and the like, which would otherwise go to the scrap-pile.

The operation of the bearing-surfaces is precisely the same on the half-leaves as upon those of the full-length, as will be readily seen, and the lower half-leaves are allowed sufficient longitudinal play upon the upper full-length leaf to permit the lower portion of the spring to adjust itself to curves in the same manner that the entire spring does in the form shown in Fig. 2.

The bottom leaf or base-plate, *b*, of the spring is provided with a hanger-seat, *I*, by bending its ends downward at about a right angle, as shown at *k*, and forming a transverse rib or ridge, *l*, across the plate at a proper distance, according to the width of the hanger-plate to be used. This seat is for a loop-hanger. The opposite end of the spring is slotted, as shown at *I'*, to receive a straight bar hanger. The

spring may be formed to suit any style of hanger without departing from my invention. The base-plate is secured to the leaf next above by means of a key-bolt extending from the plate  
5 through a slot in said leaf, as heretofore.

What I claim is—

1. The combination, with the half-elliptic spring of a locomotive, of the saddle having side flanges, *ee*, for overlapping the edges of the  
10 plates or leaves composing the spring, and bearings *dd* near its ends, on opposite sides of the central recess, for bearing at single points on the spring, said spring being loosely seated  
15 as shown and described.

2. The combination, in a curved leaf-spring, of the saddle provided with the recess and central fixed abutment, and the half-leaves having their ends bent to fit into said recesses, with their edges against and over said abut- 20 ment, substantially as described, and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOS. J. FARRELL.

Witnesses:

CHAS. H. PUERNER,  
J. J. PLATTEN.