

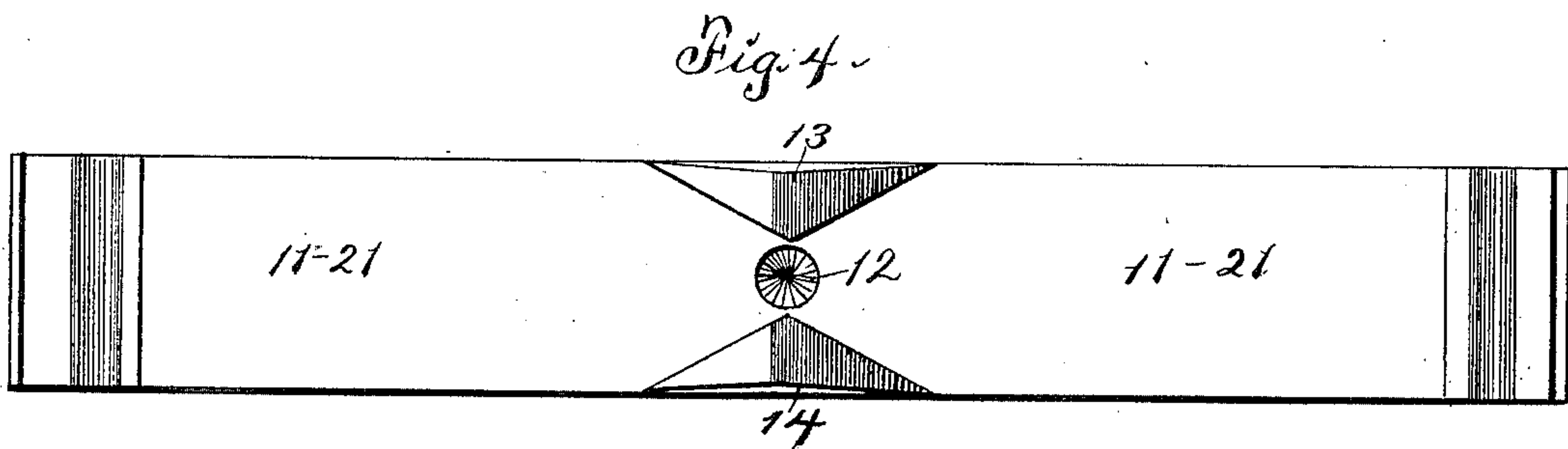
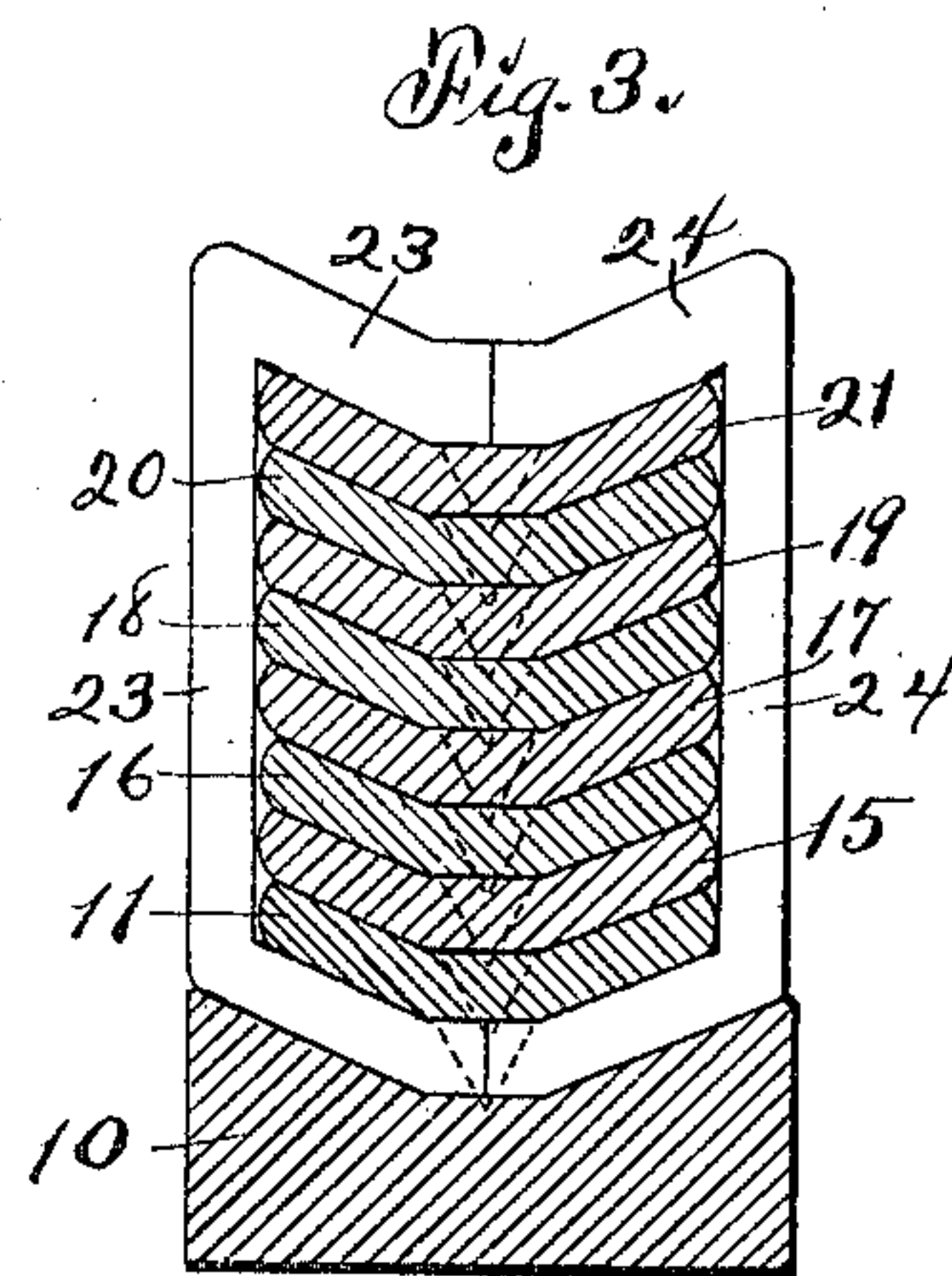
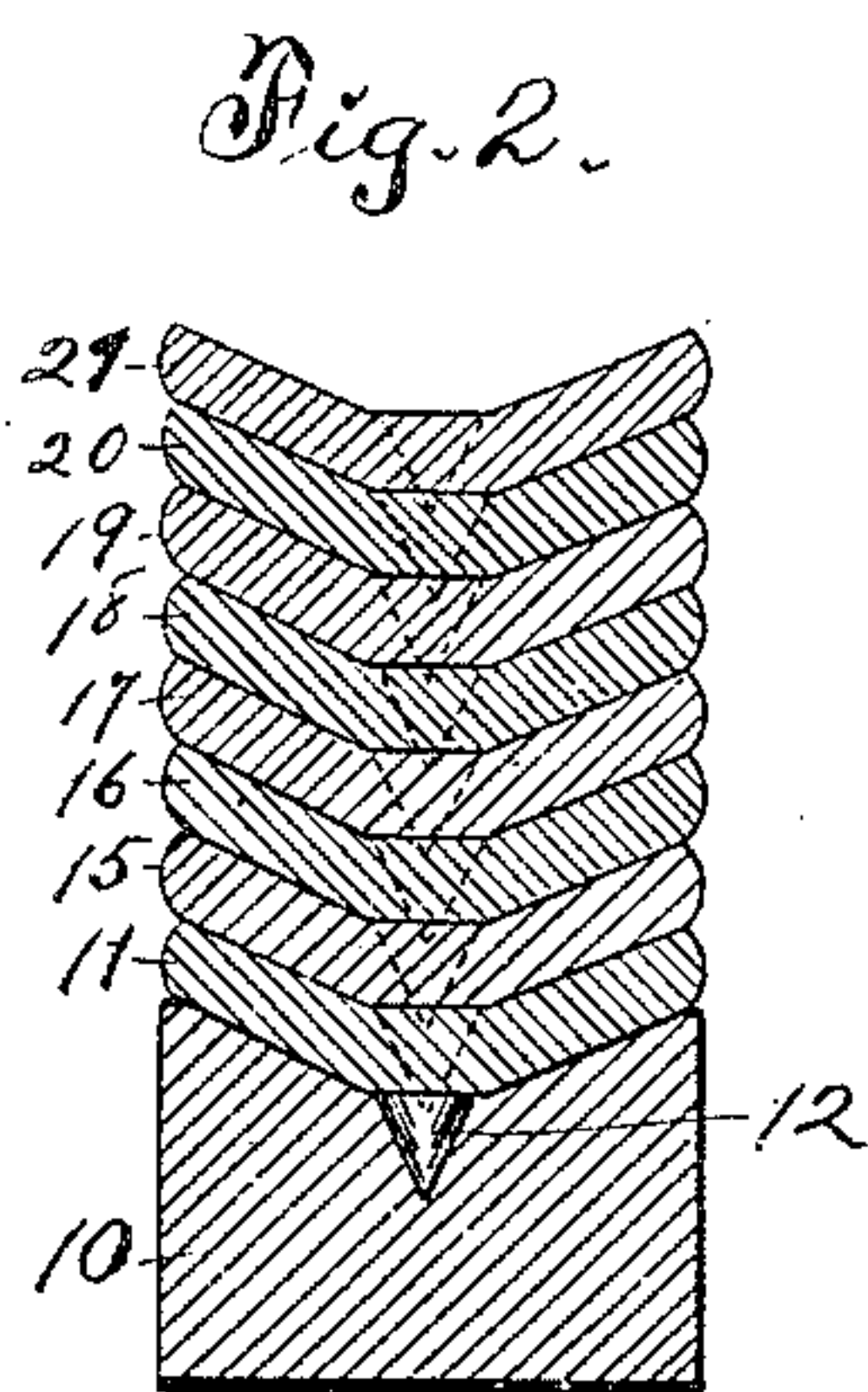
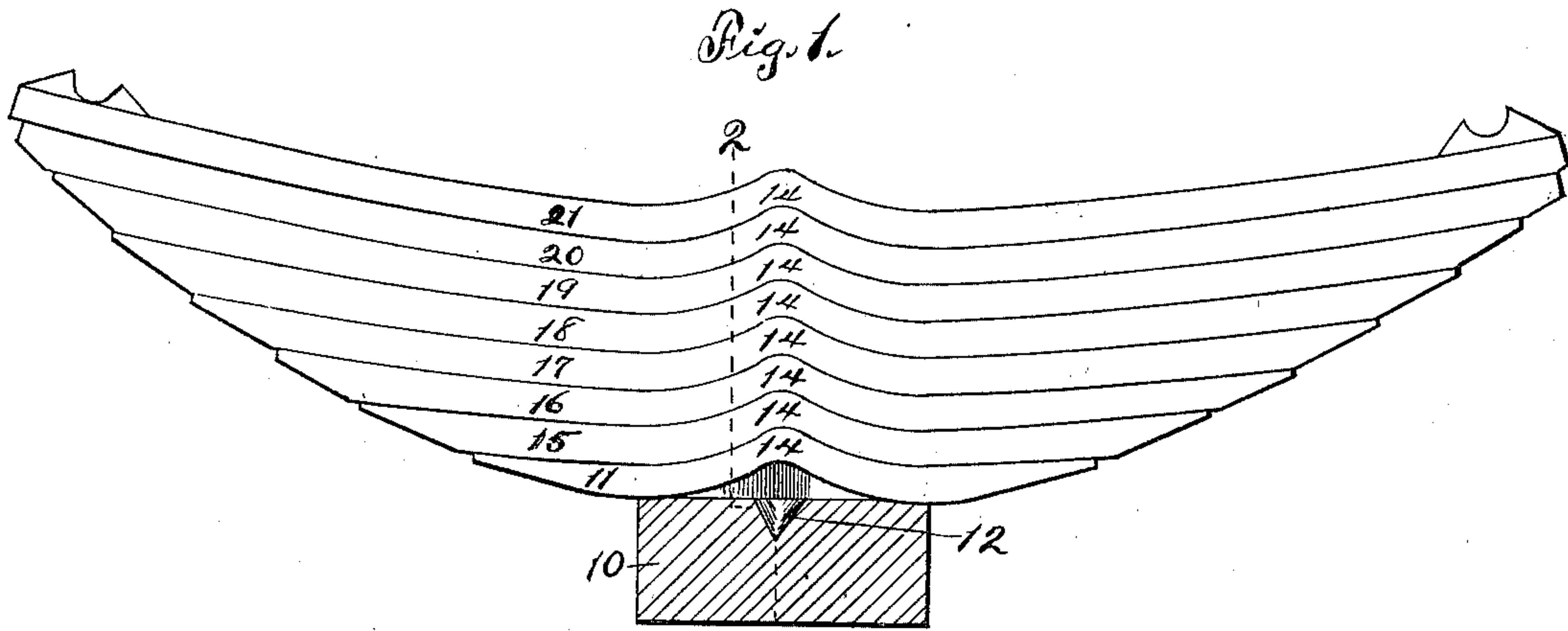
No. 697,865.

Patented Apr. 15, 1902.

C. A. MILLER.
ELLIPTICAL SPRING.

(Application filed Mar. 15, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

CHARLES A. MILLER, OF MARSHALLTOWN, IOWA.

ELLIPTICAL SPRING.

SPECIFICATION forming part of Letters Patent No. 697,865, dated April 15, 1902.

Application filed March 15, 1901. Serial No. 51,252. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. MILLER, a citizen of the United States of America, and a resident of Marshalltown, Marshall county, Iowa, have invented certain new and useful Improvements in Elliptical Springs, of which the following is a specification.

The object of this invention is to provide improved means of building up or constructing an elliptical or semi-elliptical spring for railway-cars, locomotives, tenders, and the like in which the leaves of the spring are retained against lateral and longitudinal movement relative to their support either with or without the use of bands or clamps.

My invention consists of a leaf for an elliptical spring, the central portion of which leaf is shaped with offset or struck-up side margins and a depressed central teat or stud, several of said leaves when superimposed resting upon and nesting with each other in such manner as to limit and determine any lateral or longitudinal movement of one leaf relative to another or to the base on which the whole is mounted.

My invention consists, further, in the construction, arrangement, and combination of elements hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of the lower half of an elliptical spring, partly in section, illustrating my improved construction. Fig. 2 is a transverse vertical section on the indicated line 2 2 of Fig. 1. Fig. 3 is a transverse section on the indicated line 2 2 of Fig. 1, with the addition thereto of a clamp or band that may be employed or not, as desired. Fig. 4 is a plan of a single leaf constructed in accordance with my invention.

In the construction of the device as shown the numeral 10 designates a saddle or similar bearing, having an angularly-concaved seat in its upper face and a conical depression or recess in the center of said seat. A spring-leaf 11 is provided and formed with a teat or stud 12, stamped downwardly from its exact center, which teat or stud is of such size as to fit within the recess or depression in the center of the saddle. Portions 13 14 of the spring-leaf 11 are struck up, stamped upwardly, or offset from the body of the leaf on each side

of the downwardly-stamped teat or stud 12. The struck-up portions 13 14 of the spring-leaf 11 are so shaped and of such size as to extend inwardly from the margins of said leaf nearly to the teat or stud 12 and have their ridges or apices in line with and on the opposite sides of the vertical center of said stud and their margins approximately at angles of forty-five degrees from the line of their apices, the edge margins or corners rising dome-shaped or vaulting at angles of about twenty degrees from the horizontal. Other springs 15 16 17 18 19 20 21, constructed identical with the spring-leaf 11 except as to length, are superimposed one upon the other on said spring-leaf 11, and the teats and struck-up portions of said spring-leaves interengage or nest with each other in succession. The engagement of the teat 12 in the depression or recess in the center of the seat of the saddle 10 and the extension of the struck-up portions of the said leaf 11 upon corresponding elevations in said seat of the saddle provides for a stable seating of the leaf, and the engagement of superimposed leaves with the first leaf and with each other insures their stable retention as component parts of the whole. At the same time the inherent vibration of individual leaves is not obstructed, and the extremities thereof may rise and fall under the vibration of the weight carried thereby without material restriction, thus cushioning the weight.

In the construction of the spring-leaves and their mounting as shown and above described I do not perforate the central portions thereof nor remove therefrom any of their substance, and hence the resulting article is of equal resilience with and greater strength than a leaf made plane in its central portion. Thus I am enabled to produce a device in which the leaves are nested and will retain their positions and their equilibrium without the use of bands, straps, or clamps over their centers. However, as illustrated in Fig. 3, bands may be provided and formed of two sections 23 24, shaped at their lower ends to fit the saddle 10 and shaped at their upper ends to fit the leaf 21. The band members 23 24 need not be secured by means of bolts or other fastenings, since they are retained securely by the formation of their lower ends nesting in the seat of the saddle.

My present invention is an improvement on the device for which Letters Patent of the United States No. 636,828 were granted to me November 14, 1899, and in which the margins of the spring-leaves were struck down at their central portions. Such striking down of the central portions of the edges of the spring-leaves resulted in materially increasing the rigidity of each leaf, the struck-down portions acting as braces and destroying the desired elasticity of the springs at the center. On the contrary, the present invention forms the leaves with the central portions of the margins thereof struck up in curved formation, whereby the elasticity of each leaf is preserved, the complete spring yielding readily to pressure applied to its end portions.

I am aware that it is not new to form a teat or depression in the center of each leaf of the spring; but I do not know of an instance prior to my invention where such teat or depression has been combined with struck-up side margins to hold the spring together longitudinally when used without bands or clamps.

I claim as my invention—

1. A leaf for an elliptical spring, which leaf is formed of bar metal and has a stud stamped

in its center and portions struck up on either side of and spaced apart from said stud and extending laterally to the long margins of the leaf. 30

2. A leaf or plate for an elliptical spring, having struck-up portions in the centers of its long edges and a central teat or stud between said struck-up portions. 35

3. The combination of a saddle formed with a seat in its upper face, the plurality of spring-leaves, each formed with a central depressed teat and struck-up angular portions in the centers of its long edges, conforming to and nesting with each other successively, the lowermost leaf conforming to and nesting in the seat of its support, together with counterpart band members shaped to embrace the several leaves jointly and also shaped to conform to the upper and lower faces of the collocation of leaves and to the upper face of the saddle, in which band members the spring-leaves are mounted loosely. 40 45 50

Signed at Marshalltown, Iowa, this 31st day of October, 1900.

CHARLES A. MILLER.

Witnesses:

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WILL. S. DAVIS.