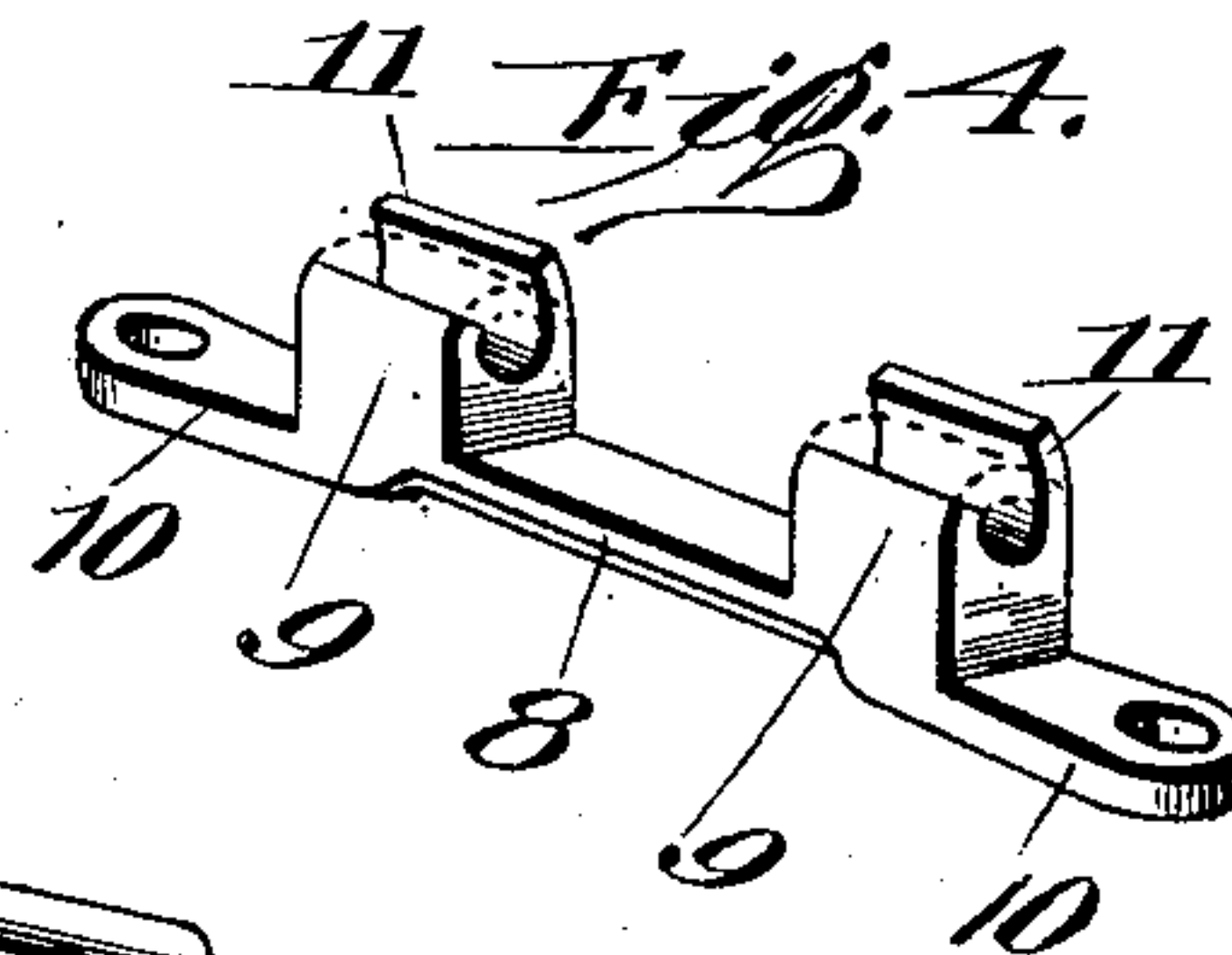
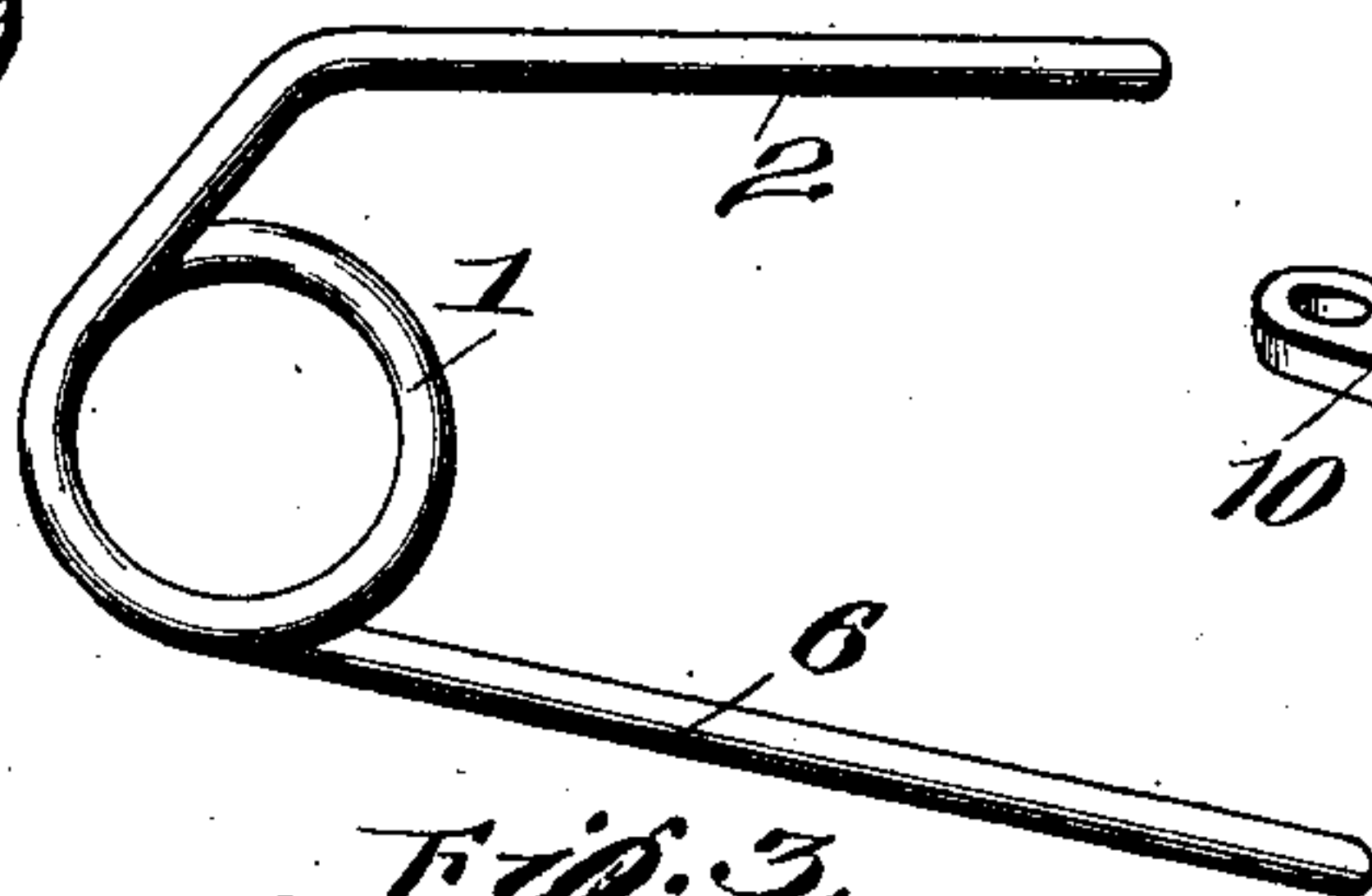
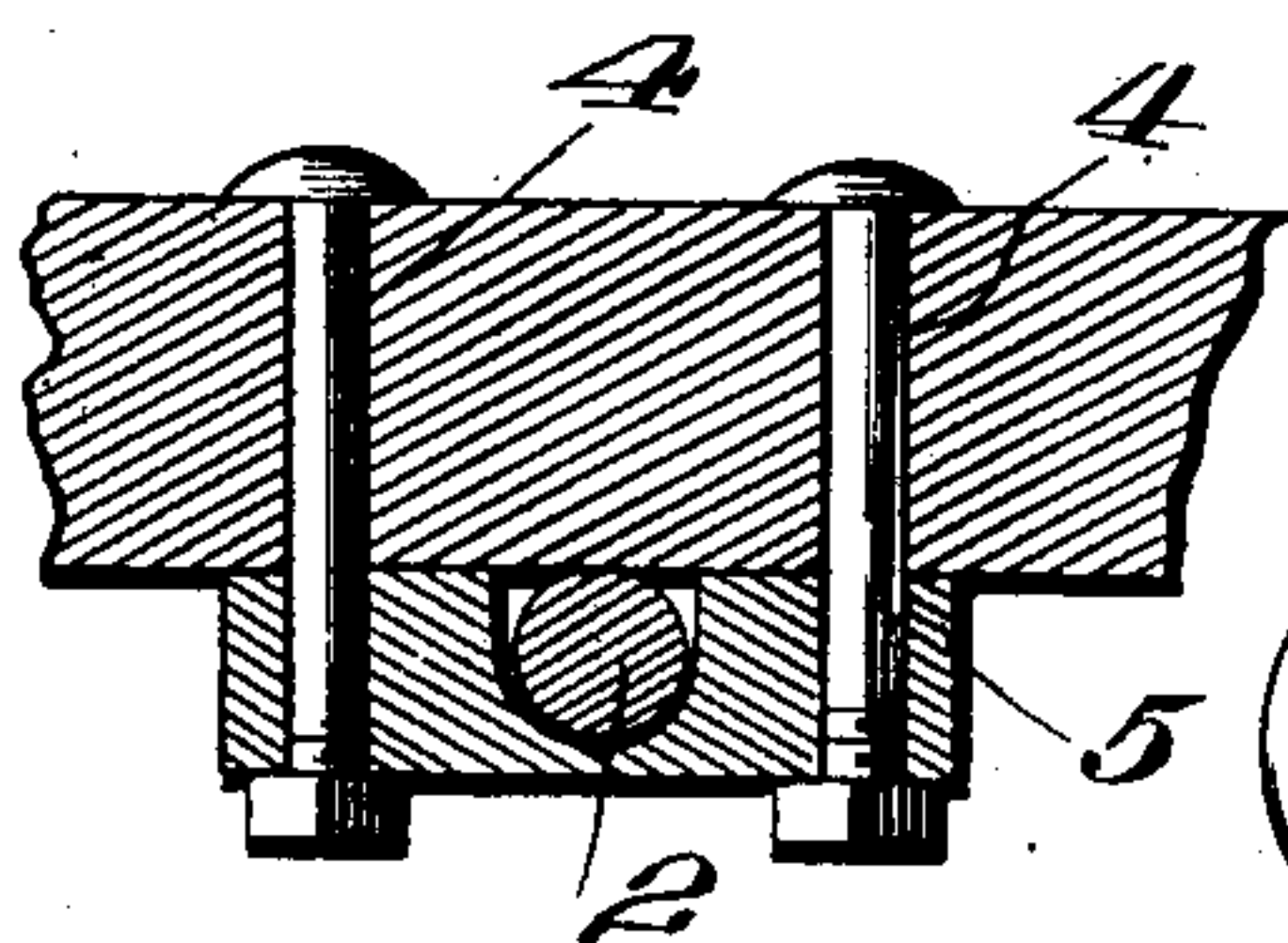
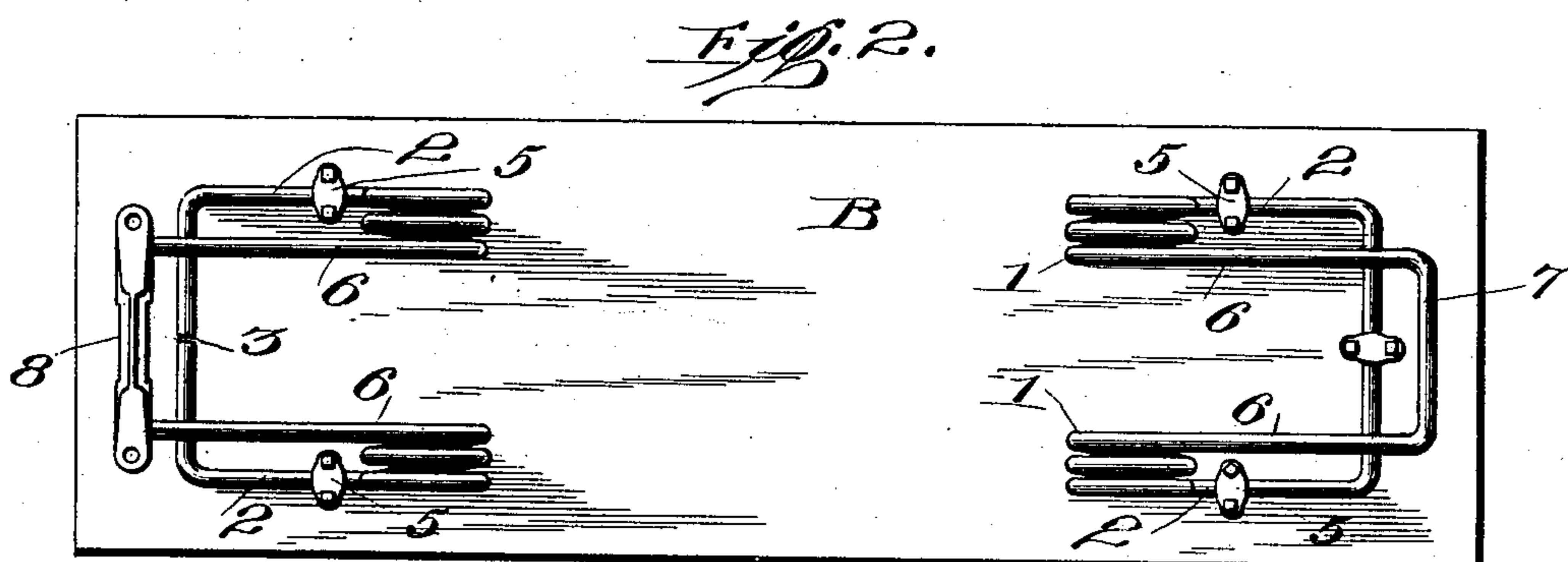
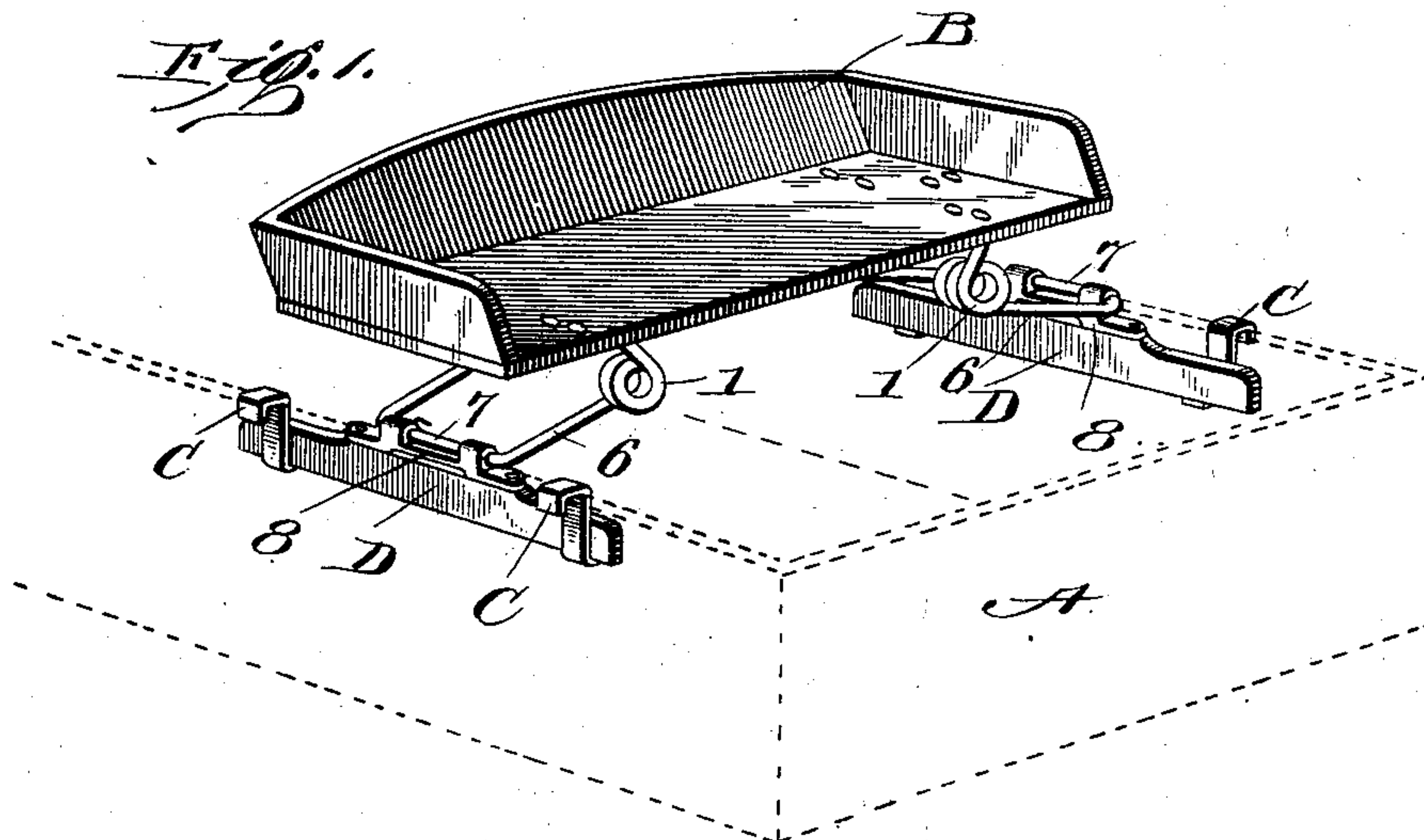


No. 755,813.

PATENTED MAR. 29, 1904.

C. L. THOMAS.
SEAT SPRING FOR VEHICLES;
APPLICATION FILED AUG. 5, 1902.

NO MODEL.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES L. THOMAS, OF AMSTERDAM, NEW YORK, ASSIGNOR TO W. S. SHULER AND THOMAS SPRING COMPANY, OF AMSTERDAM, NEW YORK, A CORPORATION OF MAINE.

SEAT-SPRING FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 755,813, dated March 29, 1904.

Application filed August 5, 1902. Serial No. 118,488. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. THOMAS, residing at Amsterdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Seat-Springs, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a seat-spring more especially adapted for use in connection with vehicle-seats wherein the seat is suspended from the sides of a wagon or carriage body, but capable of use in a variety of relations.

The invention consists in the features of construction, combinations of elements, and arrangement of parts, which will be hereinafter more fully described and the novel features thereof pointed out in the claims.

In the accompanying drawings, which illustrate an embodiment of the invention, Figure 1 is a perspective showing a portion of a wagon-body carrying a seat supported thereon by my improved springs. Fig. 2 is a bottom plan view of the seat with its springs substantially as it appears when assembled ready for securing to the wagon-clips, but with certain parts omitted to show the parts beneath. Fig. 3 is a side elevation of the spring detached. Fig. 4 is a detail perspective of a bearing adapted to be secured to the wagon-clips and to support the springs thereon. Fig. 5 is a sectional view showing the means for attaching the spring-arms to the seat.

Similar reference characters refer to similar parts throughout the several views.

A portion of a wagon-body A is shown in dotted lines. B represents the wagon-seat, while C represents clips which rest upon the side of the body, each set of clips being connected by a bar D, extending longitudinally of the wagon-body on the inside thereof. These parts are shown merely conventionally and do not limit the invention in any way. The springs by which the seat is supported upon the bars D consist of one set for each

seat, which provides for one spring under each end of the seat. Each spring consists of a single length of steel rod or bar suitably coiled, as shown, to provide a plurality of coils, preferably two, as at 1 1. From these coils extend the upper arms 2 2, the ends of which are preferably bent at right angles and brought together, as shown at 3 in Fig. 2. These upper arms may be secured to the under side of the seat by means of stirrups, consisting of bolts 4 4, passing through the bottom plank of the seat and through the tie-piece 5, as shown, or they may be secured thereto in any other desired manner. As shown at the right hand of Fig. 2, one of these stirrups is located in connection with each arm 2, and the third stirrup is located at the point of junction of the inwardly-turned ends of these arms, holding them together and rigid at that point. It will be obvious, however, that, if desired, the two ends of the spring at the point 3 may be fastened together with a lap-joint or welded or otherwise secured in order to provide the necessary rigidity and proper connection of the parts. From each coil 1 an arm 6 extends downwardly and outwardly, the two arms 6 being connected by an integral cross-piece 7, as shown at the right hand of Fig. 2, it being clear that such construction of spring can be obtained by bending a single rod properly tempered so that the only point of severance or only joint in the spring is at the point 3, previously referred to. The advantages of this construction in ease of riding and strength will hereinafter appear more clearly. The lower-cross-piece 7 of each spring is connected to the longitudinal clip-bearing D, so as to allow free rocking motion thereof by means of what may be termed a "bearing-piece" 8. This bearing-piece comprises two bosses or sleeves 9, connected by a suitable cross-piece and having extensions or shoulders 10 therefrom, through which screws for attachment to the bars D may pass, or they may be otherwise connected to said bars, as desired. It is preferable that

a connection between these bearing-pieces and the springs should be made by bending or swaging the material of the boss or sleeve around the spring after the spring is tempered.

5 Thus there is provided a bearing-piece which is of sufficient strength and not brittle or liable to break, as it would be if it were assembled or put in position on the spring before the spring was tempered. In Fig. 4 the bearing-
10 piece is shown as in the preliminary state before the metal at 11 of the sleeve is bent or swaged down around the spring.

The advantages of the above-described construction of seat-spring will in general be ob-
15 vious, but may be briefly enumerated. The construction whereby the lower ends of what may be termed the "spring-arms" 6 are rigidly connected, so that they will move together and not independently, is of importance to the
20 proper action of the spring. If they were allowed to move independently, the seat could tip forward or back, which is a disadvantage inherent in the seats provided with the usual construction of springs. This rigid connec-
25 tion between the two ends of the spring-arms is provided for, as here described, by making the spring in one piece, so that the two arms and the cross-piece are integral, and, further, by the provision of the bearing-piece, which
30 is adapted to be rigidly connected to the hangers suspended from the wagon-body and swingingly or pivotally connected to the spring-arms, as shown. The movement of the two spring-coils and of the two spring-arms must
35 be substantially together, so that it is not possible for one coil and arm or either to move to any great extent independently of the corresponding coil or arm, and the force upon the two springs will be so distributed that the
40 seat will always remain substantially parallel with the wagon-body, which is not possible with the elliptic springs commonly used with seats of this class nor with other springs known in the art. A further advantage of
45 these springs resides in the fact that while the points of support are well toward the ends of the seat the springs and all the parts connected therewith are directly below the seat, so that there are no projecting parts. The advan-
50 tages herein in compactness and in providing a spring which is entirely out of the way are of great practical importance. A further advantage resides in the fact that this construction provides a convenient and effective means
55 of applying the principle of a coil-spring support for supporting the seat in vehicles of the general type set forth which is very useful in that it provides a long spring capable of withstanding severe shocks and one which will at
60 all times resume its normal resiliency when the load is removed therefrom.

It will be obvious that a greater number of coils than those shown may be provided for

each spring; but the construction shown, which provides two coils for each spring, one located 65 near the front edge of the seat and one located near the back edge, is preferable. It will also be understood that various other changes may be made in details of construction without departing from the scope of the invention. 70

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a seat-spring, in combination, a plurality of inwardly-extending spring-coils from 75 which the seat is supported, a plurality of spring-arms extending downwardly from said coils, means for suspending said arms from the wagon-body, and means whereby said arms are connected to move substantially in unison. 80

2. In a seat-spring, in combination, inwardly-extending spring-coils from which the seat is supported, spring-arms outwardly extending therefrom and adapted to be suitably 85 suspended from the wagon-body, and means for equalizing the strain upon each of said coils.

3. In combination, a one-piece seat-spring comprising coils 1, 1, bent arms 2, 2 upon which the seat is adapted to be supported, arms 6, 6, 90 an integral cross-arm 7, and means for connecting said cross-arm to the wagon-body so as to be free to rock with reference thereto.

4. In a seat-spring, in combination, coils adapted to be connected to and support the front 95 and rear edges of the seat, arms extending downwardly and outwardly from said coils, within the plane of said seat, a connection between said arms integral therewith, and means for detachably supporting said arms from the 100 wagon-body.

5. A seat-spring comprising inwardly-extending coils 1, 1, bent arms 2, 2 adapted to be suitably secured to the seat, a continuous connection between said coils formed by the 105 spring-arms 6, 6 and the cross-arm 7 freely supported in the bearing 8, a bar D to which said bearing is secured, and means to detachably support said bar from the wagon-body.

6. In a seat-spring, in combination, in- 110 wardly-extending coils adapted to be connected to and support the front and rear edges of the seat, a continuous connecting-piece between said coils, and means for detachably supporting said connecting-piece from the 115 wagon-body such that it is free to rock with reference thereto.

7. In combination with a wagon seat and body, a spring located under each end of the seat, each of said springs comprising coils lo- 120 cated within the plane of said seat and connected thereto adjacent the front and rear edges thereof, arms extending downwardly and outwardly from said coils within the plane of said seat, a continuous connecting-piece 125 between said arms, and means for supporting

said connecting-piece from the side of the wagon-body so that it is free to rock with reference thereto.

5 8. In combination, a seat, an integral seat-spring comprising bent arms 2, 2 rigidly secured to the front and rear edges of said seat, inwardly-extending coils, arms 6, 6, a cross-piece 7 connecting said arms, a bearing 8 freely supporting said cross-piece, a vehicle-

body, and means for detachably supporting to said bearing upon said body.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES L. THOMAS.

Witnesses:

BURTON FISHER,
THOMAS J. MAGNER.