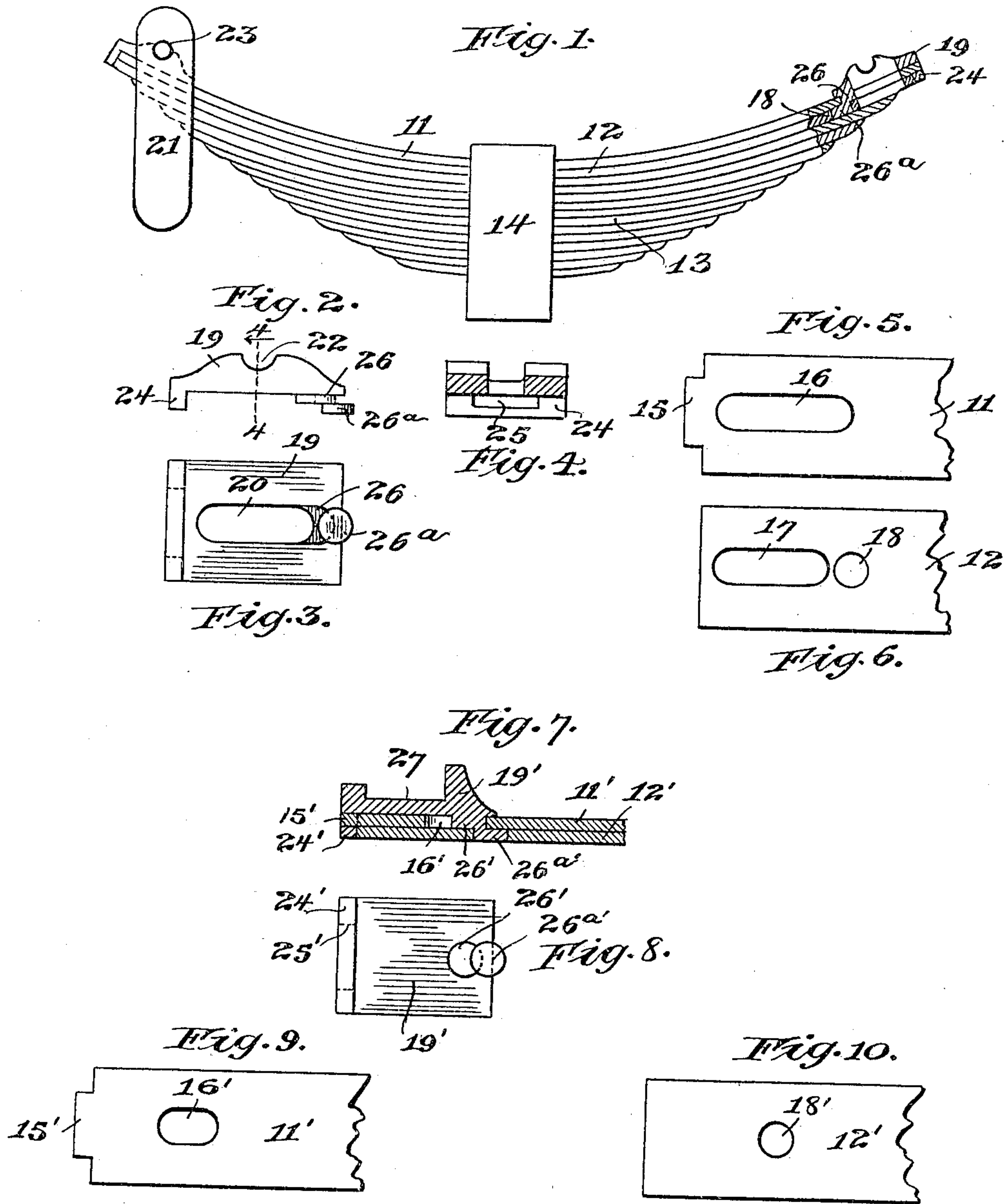


No. 801,504.

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G. BAURMANN.  
SEMIELLIPTIC SPRING.  
APPLICATION FILED JAN. 28, 1905.



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# UNITED STATES PATENT OFFICE.

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## SEMIELLIPTIC SPRING.

No. 801,504.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, GUSTAV BAURMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Semielliptic Springs, of which the following is a specification.

My invention relates to end plates for semielliptic springs, to which the stirrup or gib 10 carrying the load is fitted.

The object of my invention is to provide a simple and inexpensive end plate of the class mentioned capable of being set or adjusted in position on the end of the main leaf 15 of a multiple-leaf spring of usual construction and locked securely in place by the assembling of the other parts of the spring without requiring bending or welding of the parts into engagement and involving but 20 slight modification in the form of the spring, easily produced by ordinary cutting and punching tools.

To this end my invention consists principally in an end plate characterized as to its 25 novel features by the provision of a downwardly turned and slotted or socketed outer end, adapted to engage a tongue on the main leaf in association with a lug on the under side of its opposite end adapted to fit a slot 30 in the main leaf, said lug having, preferably, a longitudinally-offset portion underlying the main leaf and seated in an aperture in the second leaf.

Referring to the accompanying drawings, 35 which illustrate the preferred form of the invention, Figure 1 is a side elevational view of a semi-elliptic leaf-spring, showing my improved end plate in side elevation at one end and in longitudinal section at the other. Fig. 40 2 is a side elevational view of the end plate detached. Fig. 3 is a bottom plan view of Fig. 2. Fig. 4 is a transverse sectional view on the line 4-4 of Fig. 2 looking toward the outer end of the plate. Fig. 5 is a plan view of 45 the end portion of the main leaf. Fig. 6 is a similar view of the end portion of the second leaf. Fig. 7 is a longitudinal sectional view of the device when made in the form of a stirrup end plate, the same being shown as 50 engaging the main and second leaves of the spring. Fig. 8 is a bottom plan view of the form of plate shown in Fig. 7, and Figs. 9 and 10 are plan views of the end portions of the main and second leaves when adapted to re-

ceive the stirrup form of end plate shown in 55 Figs. 7 and 8.

Referring to the drawings, 11 designates the main leaf, and 12 a second leaf of a semielliptic spring, designated as an entirety by 13, the leaves being united centrally by the usual 60 tie-clip 14. In the form of the invention illustrated in Figs. 1 to 6, inclusive, each end of the main leaf 11 is cut away to provide a short longitudinally-projecting tongue 15, and in rear of the latter is provided with an elongated slot 16. 65 Each end portion of the second leaf 12 is provided with an oblong slot 17, and in the preferred form of the invention with a round aperture 18, lying inwardly of the inner end of slot 17. 19 designates as an entirety the end 70 plate, provided with a longitudinally-oblong slot 20 to accommodate the depending hanger or gib 21, by which the load is hung from the ends of the spring. The upper surface of the end plate has the usual transverse groove 22, 75 which forms a seat for the pin 23, by which the gib is suspended. On its outer end the plate 19 has a downwardly-turned flange 24, disposed at right angles to the body of the plate, said flange having formed thereon or 80 therethrough a transversely-extending opening, herein shown as a slot 25, which slot is adapted to engage the tongue 15 of the main leaf 11. At its opposite or inner end the plate 19 is provided on its under side with a de- 85 pending lug 26, adapted to engage the inner end of the slot 16 of the main leaf 11. This lug in the preferred form herein shown has formed integral therewith a longitudinally-offset portion 26<sup>a</sup>, which latter is adapted to 90 underlie that portion of the main leaf 11 adjacent to the inner end of slot 16 and fit into the hole 18 of the second leaf, all as clearly shown at the right-hand end of Fig. 1.

In assembling the parts before the leaves of 95 the spring are united by the clip or band 14 the end plate is applied to the main leaf by introducing its slotted flange 24 over the tongue 15 and at the same time passing the offset lug 26 26<sup>a</sup> through the slot 16, the in- 100 ward movement of the end plate over the leaf carrying the offset portion 26<sup>a</sup> of the lug underneath the main leaf at the same time that the slot 25 is drawn over and into en- 105 gagement with the tongue 15. The second leaf 12 is then applied, its outer end abutting against the lower portion of the flange 24 and its hole 18 projecting over the offset portion



26<sup>a</sup> of the lug. The spring may then be built up by the addition of the remaining leaves and the application of the tie-clip 14, the registering slots 20, 16, and 17 accommodating the usual gib or hanger 21 and the transverse groove 22 seating the suspension-pin 23 of the gib. When the spring has been thus assembled, the end plate 19 is securely held against displacement or loss, being held against inward longitudinal movement by the flange 24 and lug 26 against outward movement by the offset portion 26<sup>a</sup> of the lug engaging the second leaf, against lateral movement in either direction by both the flange 24 and the lug 26 26<sup>a</sup>, and against upward movement by both the slotted flange 24 and the offset portion 26<sup>a</sup> of the lug.

Figs. 7 to 10, inclusive, show the same principle of construction as embodied in what is known as a "stirrup" end plate. In these views 11' designates the main leaf, and 12' the second leaf. The main leaf has the end tongue 15', as in the construction previously described, and the short longitudinal slot 16', while the second leaf has simply a hole 18'. 19' designates the end plate, which is provided with a broad transverse seat 27, adapted to receive the cross member of the usual stirrup. (Not shown.) The end plate is provided, as in the construction previously described, with the end flange 24', having transverse slot 25', and with a double offset lug 26' and 26<sup>a'</sup>. The engagement of this form of end plate with the main and second leaves and the relative arrangement of the cooperating parts is the same as that already described in connection with Figs. 1 to 6, Fig. 7 clearly showing the engagement of the offset lug with the second leaf and the under side of the main leaf.

It will be observed that by my improved construction the end plate is securely maintained at both ends against lateral displacement relatively to the spring, and by reason of the peculiar engagement of the offset portion 26<sup>a</sup> or 26<sup>a'</sup> with the under side of the main leaf and with the hole of the second leaf it is securely maintained against longitudinal or upward displacement relatively to the spring. By reason of the fact that the natural tendency of the end plate when in service is to move longitudinally of the spring in an inward direction, which movement is resisted by the end flange 24 or 24', as well as by the engagement of the lug 26 with the inner end of slot 16, the employment of the longitudinally-offset portion 26<sup>a</sup> of the lug is not an absolute necessity; but I prefer to retain the same, since it renders the fixed relation of the plate to the spring all the more secure.

Changes and modifications within the range of mechanical equivalents may be made in the above-described device without departing from the principle of the invention or lessen-

ing any of the advantages secured thereby. For instance, the slot 25 of the flange 24 of the end plate need not extend entirely through said flange, but might take the form of a groove or socket seating a correspondingly-shortened tongue 15 of the main sleeve, or said flange may be made solid and simply abut against the ends of the main and second leaves. Hence I do not limit the invention to the details of construction and relative arrangement of parts shown and described, except to the extent that the latter may be made the subject of specific claims.

I claim—

1. As a new article of manufacture, an end plate for a leaf-spring having a depending flange on its outer end provided with a transversely-extending opening adapted to receive a projecting tongue of the main leaf, and with a depending lug on its under side adapted to engage an opening in the main leaf.

2. As a new article of manufacture, an end plate for a leaf-spring having a depending flange on its outer end provided with a transversely-extending opening adapted to receive a projecting tongue of the main leaf, and with a depending offset lug on its under side adapted to engage an opening in and the under side of the main leaf and an opening in the second leaf.

3. In a semielliptic spring, the combination with the main leaf having a projecting tongue on its outer end, and the second leaf, of an end plate adapted to seat on said main leaf and having a depending flange on its outer end slotted to receive said tongue of the main leaf and lying across the end of said second leaf.

4. In a semielliptic spring, the combination with the main leaf and an end plate adapted to seat thereon, of independent devices on both ends of said end plate, respectively, interlockingly engaging said main leaf through a relative longitudinal-sliding movement thereon to prevent lateral displacement of said end plate.

5. In a semielliptic spring, the combination with the main leaf and an end plate adapted to seat thereon, of independent devices at both ends of said end plate, respectively, interlockingly engaging said main leaf through a relative longitudinal-sliding movement thereon to prevent both lateral and upward displacement of said end plate.

6. In a semielliptic spring, the combination with the main leaf having a longitudinally-projecting tongue and an opening in rear of the latter, of an end plate adapted to seat thereon, said end plate having a slotted end flange engaging said tongue, and a depending lug engaging said opening.

7. In a semielliptic spring, the combination with the main leaf having a longitudinally-projecting tongue and a slot in rear of the latter, of the second leaf having an opening



inwardly offset relatively to the inner end of the slot of the main leaf, and an end plate adapted to seat on said main leaf, said end plate having a slotted end flange engaging  
5 said tongue, and an offset depending lug engaging the slot of said main leaf and the opening of said second leaf.

8. In a semielliptic spring, the combination  
10 with the main leaf and second leaf both having openings formed therethrough, of an end

plate adapted to seat on said main leaf, said end plate having a depending flange contacting the ends of said leaves, and a depending laterally-offset lug engaging the openings in said leaves, substantially as described.

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