W. NEUBAUER.

Car Spring.

No. 49,137. Patented Aug. 1, 1865.

Fig. 1.

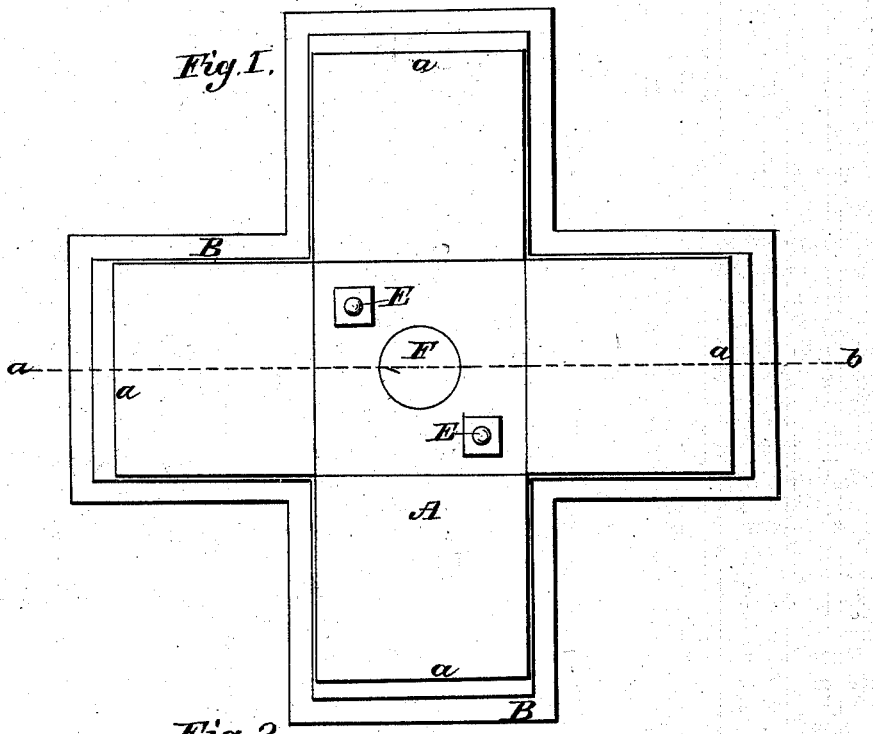


Fig. 2.

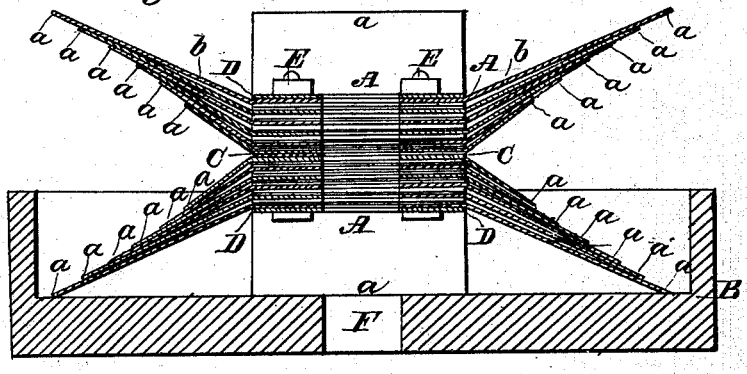
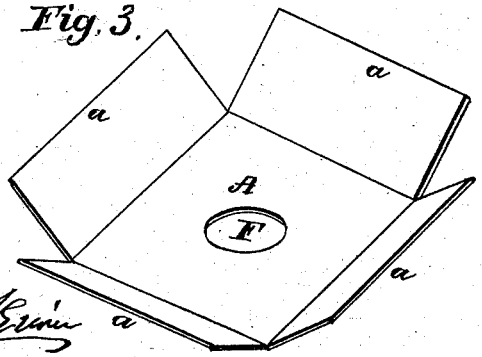


Fig. 3.



Witnesses:
Stephen Uthoff
Chas. A. Brinn

Inventor:
William Neubauer

UNITED STATES PATENT OFFICE.

WM. NEUBAUER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED CAR-SPRING.

Specification forming part of Letters Patent No. **49,137**, dated August 1, 1865.

To all whom it may concern:

Be it known that I, WILLIAM NEUBAUER, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Car-Springs; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a top view of the improved spring. Fig. 2 is a vertical section of the same at the red line *a b* of Fig. 1. Fig. 3 is a perspective view of one of the spring-plates A.

Like letters in all the figures represent the same parts.

The nature of my invention consists of an improvement on the car-spring for which G. Adolph Riedel obtained a patent August 2, 1864, which will be understood by the following description.

I make a spring with a combination of plates, A, which I usually construct with four resilient parts, *a a a a*, although I do not confine myself to that number. These spring-plates I arrange in cast-iron boxes B. The lower one is represented in Figs. 1 and 2. The upper box, which is left off for the purpose of showing the interior arrangement of the combined spring, is large enough to fit over the lower one. Each plate A has the resilient parts *a* turned on an angle from the central portion of the same. A curved form may, however, be used instead. The outer and longest springs in each section are shorter each way than the boxes B, to allow sufficient room for the lengthening of the springs during the compression of the same. Commencing at the outside plate of each section of the combined spring the resilient parts *a* of each succeeding plate are shortened in regular order for the purpose of increasing the elasticity and strength of the spring.

There are washers C, made of leather or other suitable elastic substance, between the plates A. Instead of these washers covering the whole central portion of the plates they may be put on in strips, with spaces between them.

D D are clamp-plates, between which the spring-plates A are confined by two or more screw-bolts, E, so as to bring the resilient parts *a* in contact, as represented in Fig. 2. The angles of the plates are so formed that when the latter are in position there shall be spaces *b* between them to secure the elasticity of the same; and when the spring is compressed these spaces should not be destroyed. The object of the washers C is for the purpose of preventing this. The central hole, F, is for the purpose of passing a bolt through the spring in attaching it to the pedestal of a car.

I have represented two sections in the spring, yet it will appear that for some purposes one will be sufficient.

The resilient parts *a* may be gradually thinned to increase their elasticity.

I do not claim, broadly, constructing a car-spring of plates or sheets of metal in which there are a plurality of resilient parts, as such a spring is embraced in the patent of G. Adolph Riedel, dated August 2, 1864; but

I do claim—

1. Constructing a spring, when made of plates or sheets of metal, with the resilient parts on angles from the central portion of the spring-plates which compose the combined spring, and decreasing the length of the said resilient parts of each plate in order from the outer plates for the purpose of increasing the strength of the spring and imparting increased elasticity to the same, substantially as described.

2. Varying the angles of the resilient parts of the spring in such a manner that there shall be spaces *b* extending over the whole surface of the spring-plates between their points of contact, substantially as represented, for the purpose of giving increased elasticity to the spring, substantially as above described.

In testimony that the above is my invention I have hereunto set my hand and seal this 28th day of March, 1865.

WILLIAM NEUBAUER. [L. S.]

Witnesses:
STEPHEN USTICK,
JOHN WHITE.