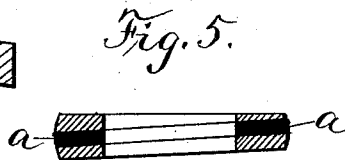
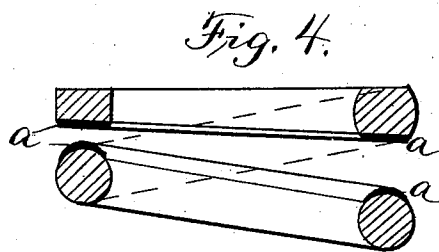
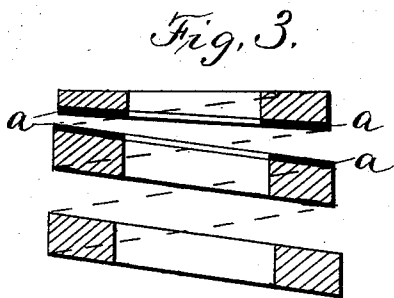
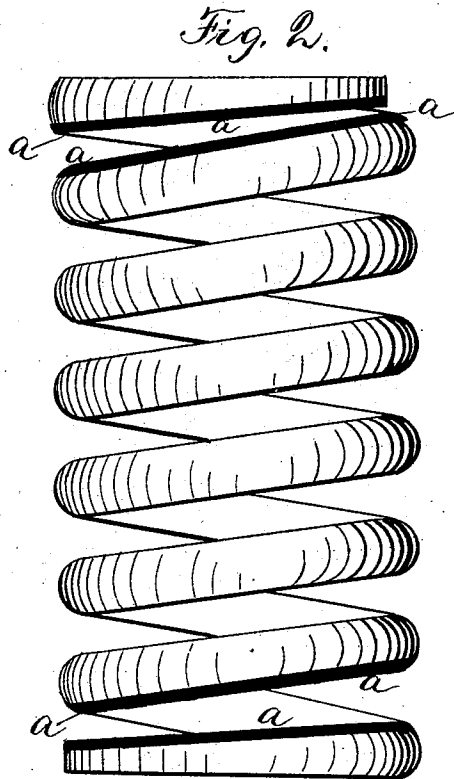
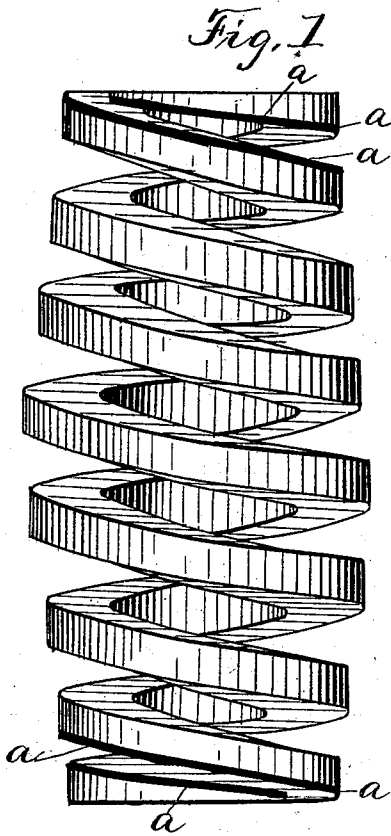


(No Model.)

G. W. MORRIS.
CAR SPRING.

No. 359,359.

Patented Mar. 15, 1887.



Witnesses
Ella S. Johnson.
Wm. R. Mackrill.

Inventor
George W. Morris
By his Attorneys
Johnson & Johnson

UNITED STATES PATENT OFFICE.

GEORGE W. MORRIS, OF PITTSBURG, PENNSYLVANIA.

CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 359,359, dated March 15, 1887.

Application filed December 28, 1886. Serial No. 222,818. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MORRIS, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Car-Springs, of which the following is a specification.

My invention relates to spiral or helical springs for railway-cars; and the object of my improvement is to prevent the ringing sound which results from the sudden contact of the end coils of the spring upon each other due to the jolting action of the car, and which in the service is very annoying. The end coils of such springs are necessarily made flat, to give a proper seating at the ends of the spring, and when the cars are in motion these flattened terminal coils yield quickly under the jolting action of the car and strike suddenly upon the next coil, producing an almost continuous ringing sound along the train. The remedy by which I avoid this objection consists in providing a contact-surface of some soft or dead metal between the first and second coils of each end of the spring. This I prefer to do by coating the contiguous surfaces of the first and second end coils preferably with a thin layer of lead, because that metal is the cheapest; but I may use copper, Babbitt, or other dead metals. In such application of the non-sounding metal to the end spring-coils the latter may be united to each other or remain separated.

I provide for the perfect union and adhesion of the soft metal to the coils by treating the end coils with a mixture of acids and zinc first, and then pour the molten lead or other metal upon such prepared surface, and thus effect a solid secure union of the two metals, so that the soft metal cannot get loose and drop out. In applying the soft-metal coating it should extend about half or two-thirds around the coils from the point of the end coil. It may be applied in the form of a tube to the

flattened end coil, and the contiguous surface of the next coil may be coated so as to give a soft-metal contact for both coils, and thus render it more durable and not so liable to be crushed and ground away from the steel surface; but a surface coating of such metal, however thin, will deaden the spring as if it were solid.

In the drawings, I have shown in Figures 1 and 2, in elevation, two forms of coiled springs, in which *a* represents the dead or non-sounding metal interposed between the two outer coils for about half around the end coil from its flat end. Figs. 3, 4, and 5 are sectional details.

In practice I consider the coating with soft metal the best way of carrying my improvement into effect, and to make such coating only of such thickness as to deaden the sound. This non-sounding surface is applied after the spring is made, and the soft metal may be poured or applied in any suitable way to the spring-coils.

I claim—

1. The end coils of a spiral or helical spring rendered non-sounding by the interposition of some soft dead metal, as described.

2. The first and second end coils of a spiral or helical spring coated on their contiguous surfaces for about half or two-thirds around from the point of the end coil with lead or other suitable soft dead metal, as described.

3. The end coils of a spiral or helical spring rendered non-sounding by means of a surface coating of soft metal applied thereto with a mixture of acids and zinc, as described, and for the purpose stated.

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

GEO. W. MORRIS.

Witnesses:

FRED DARGER,
ROBERT FARLEY.