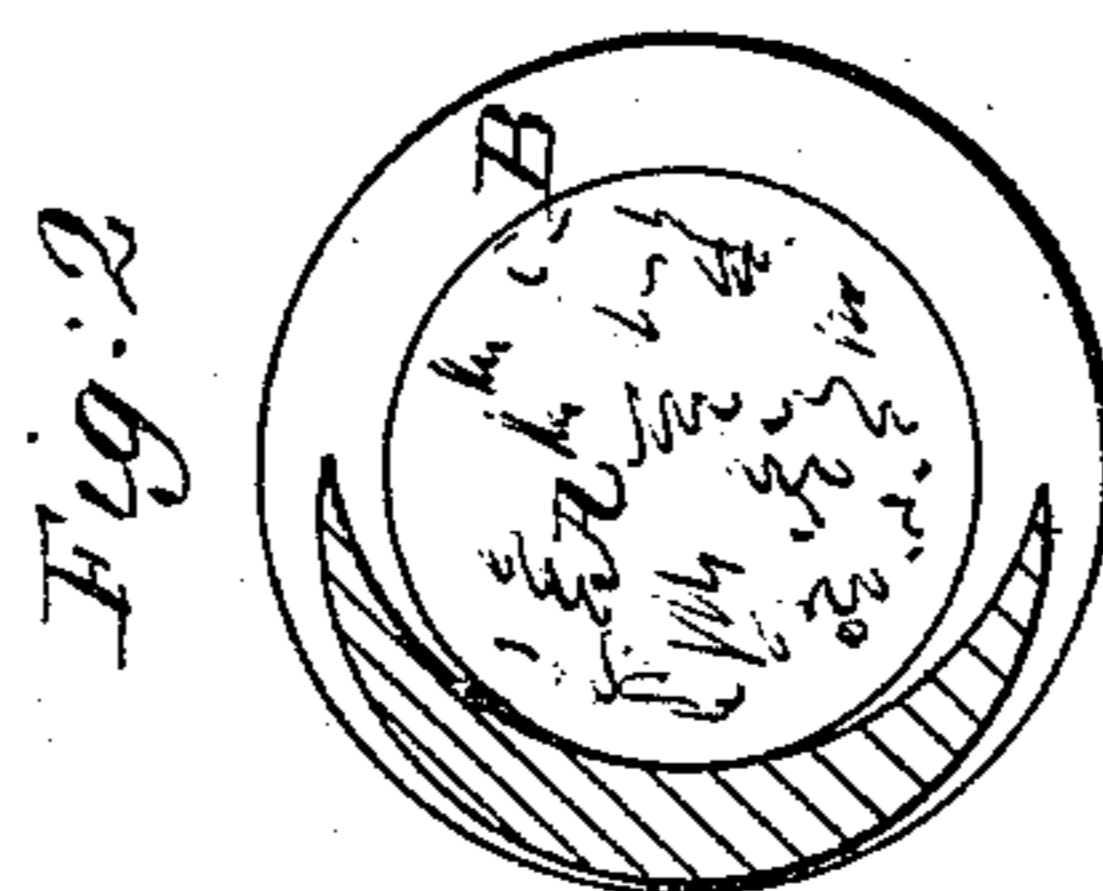
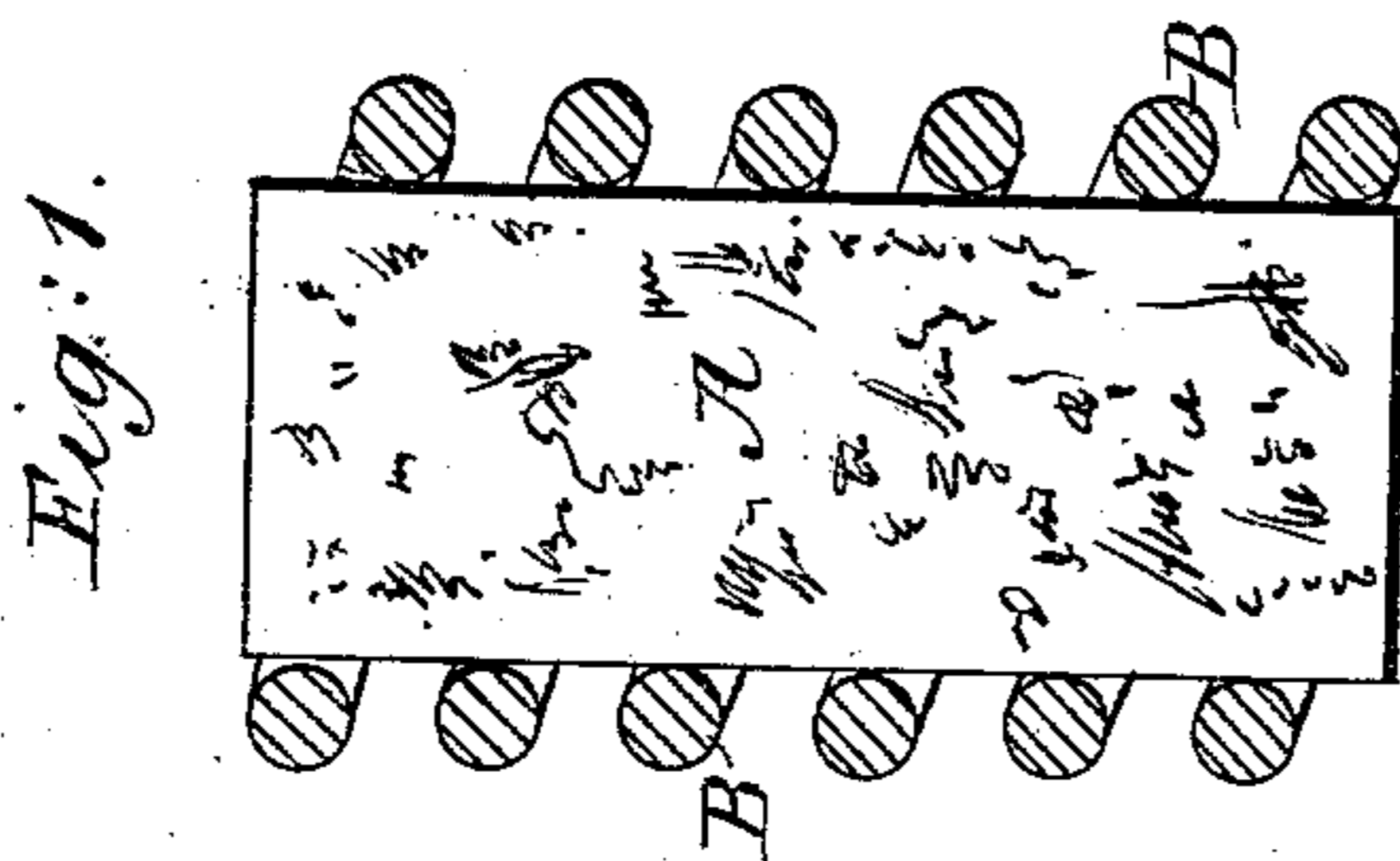
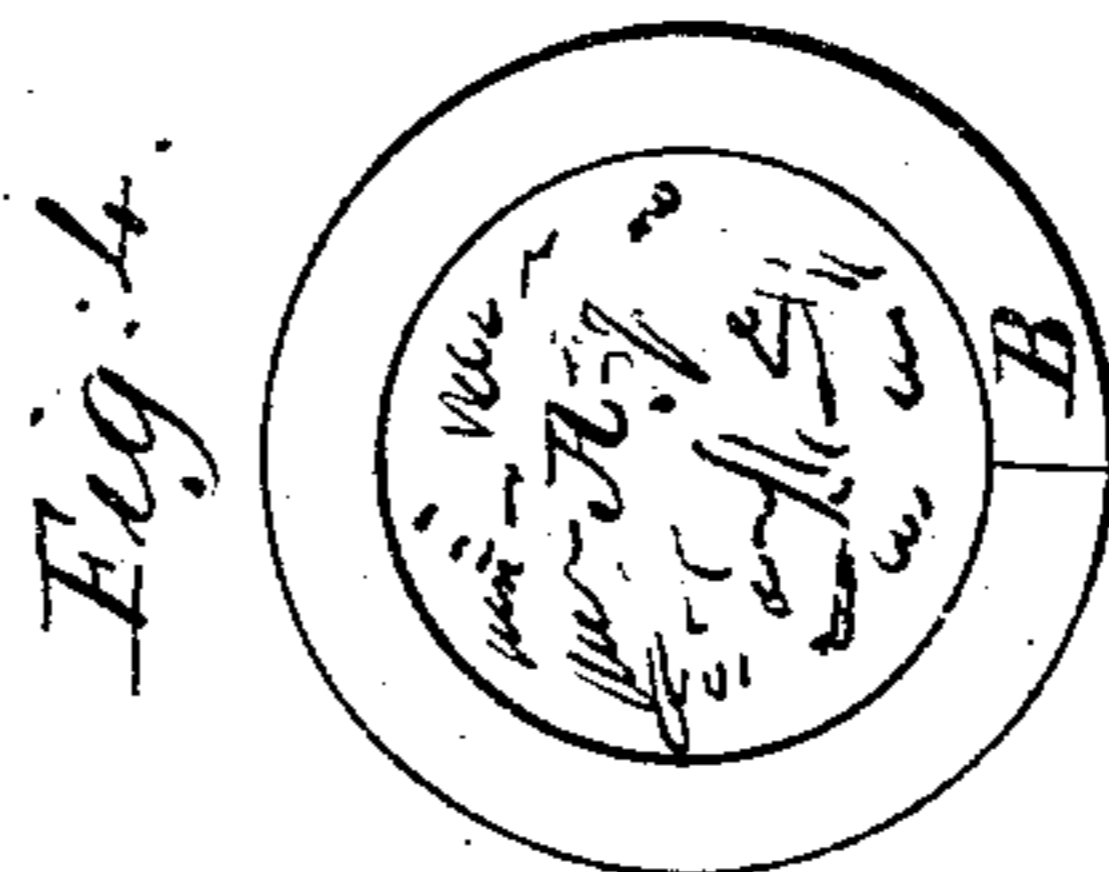
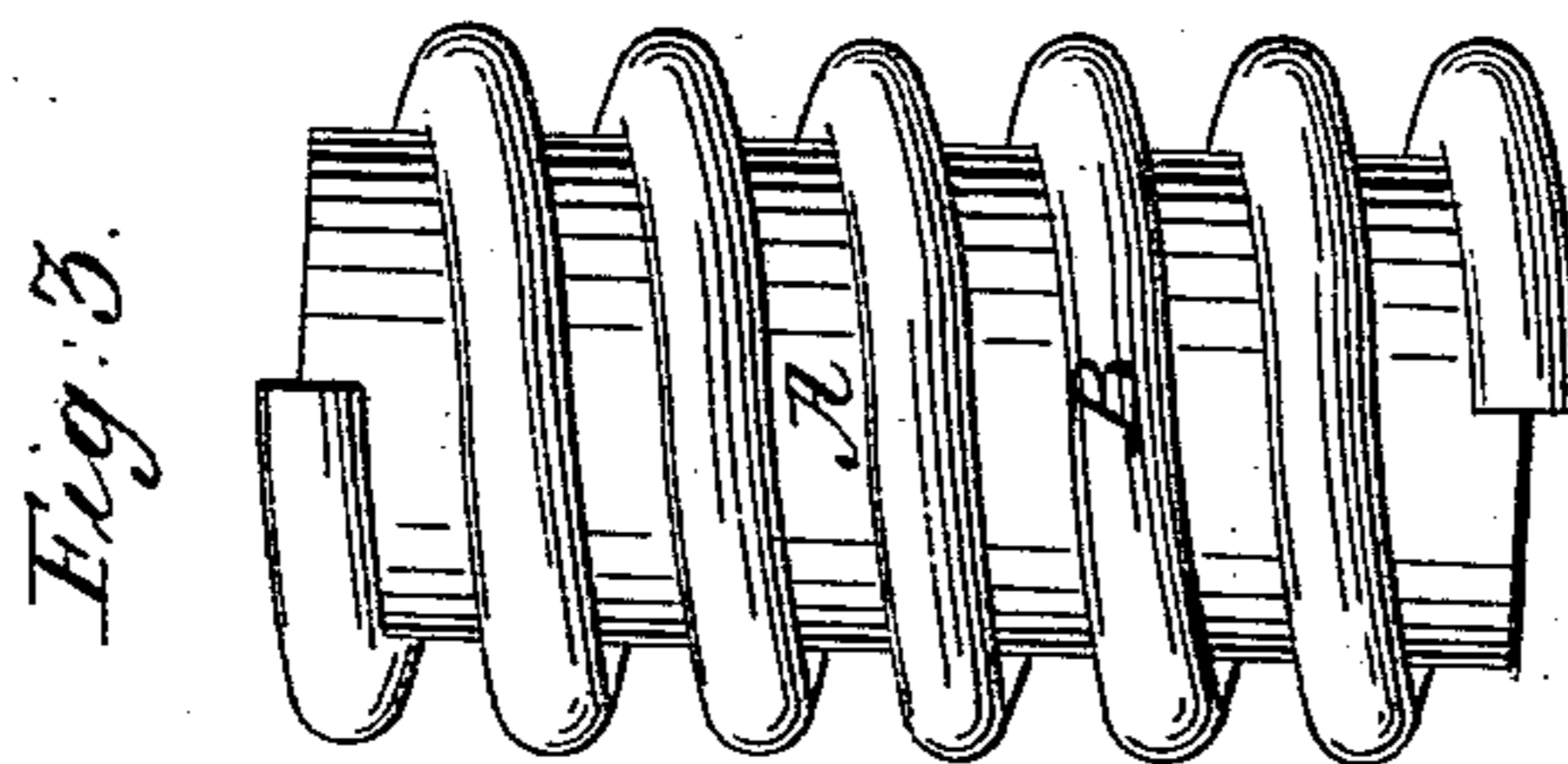
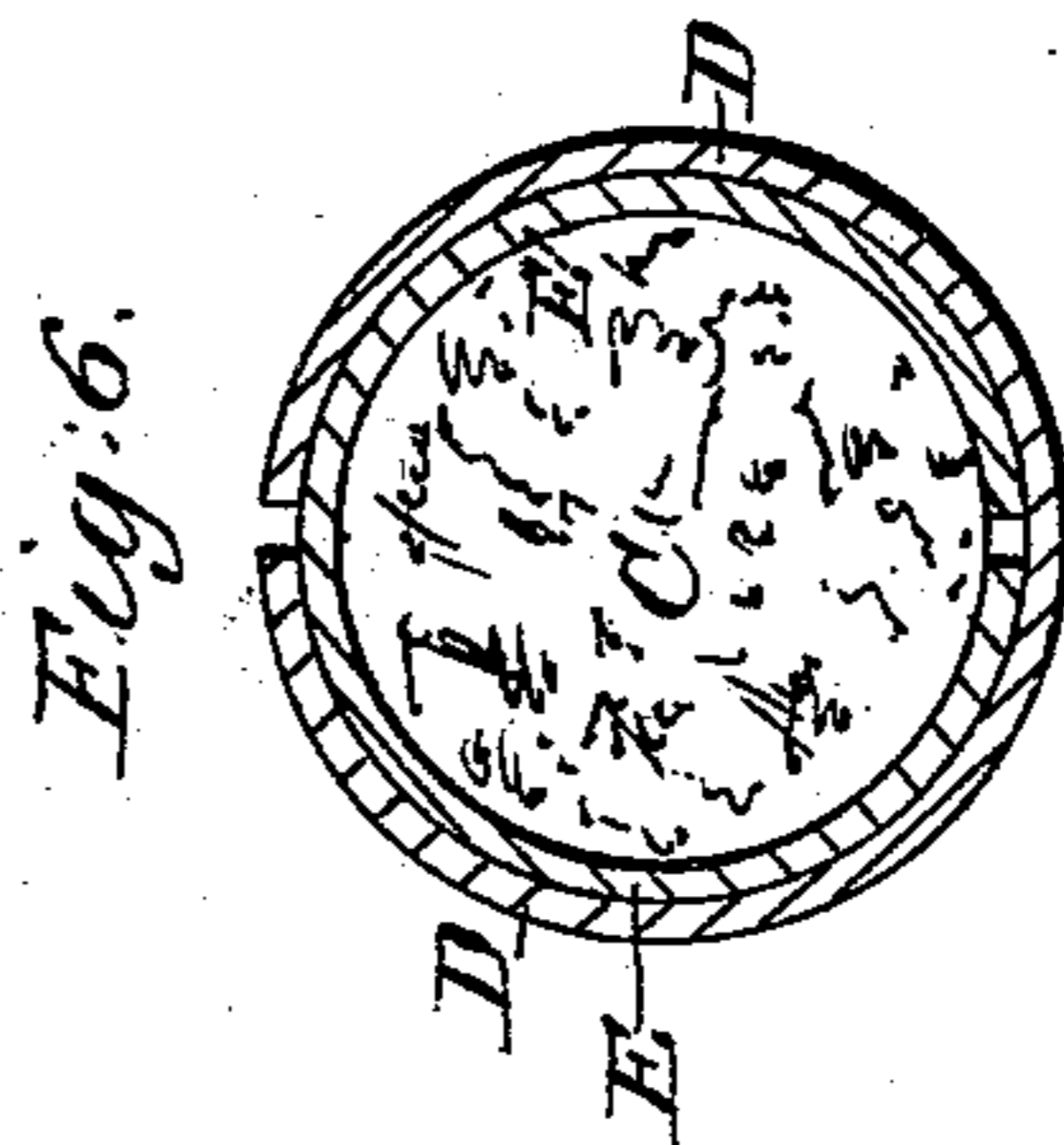
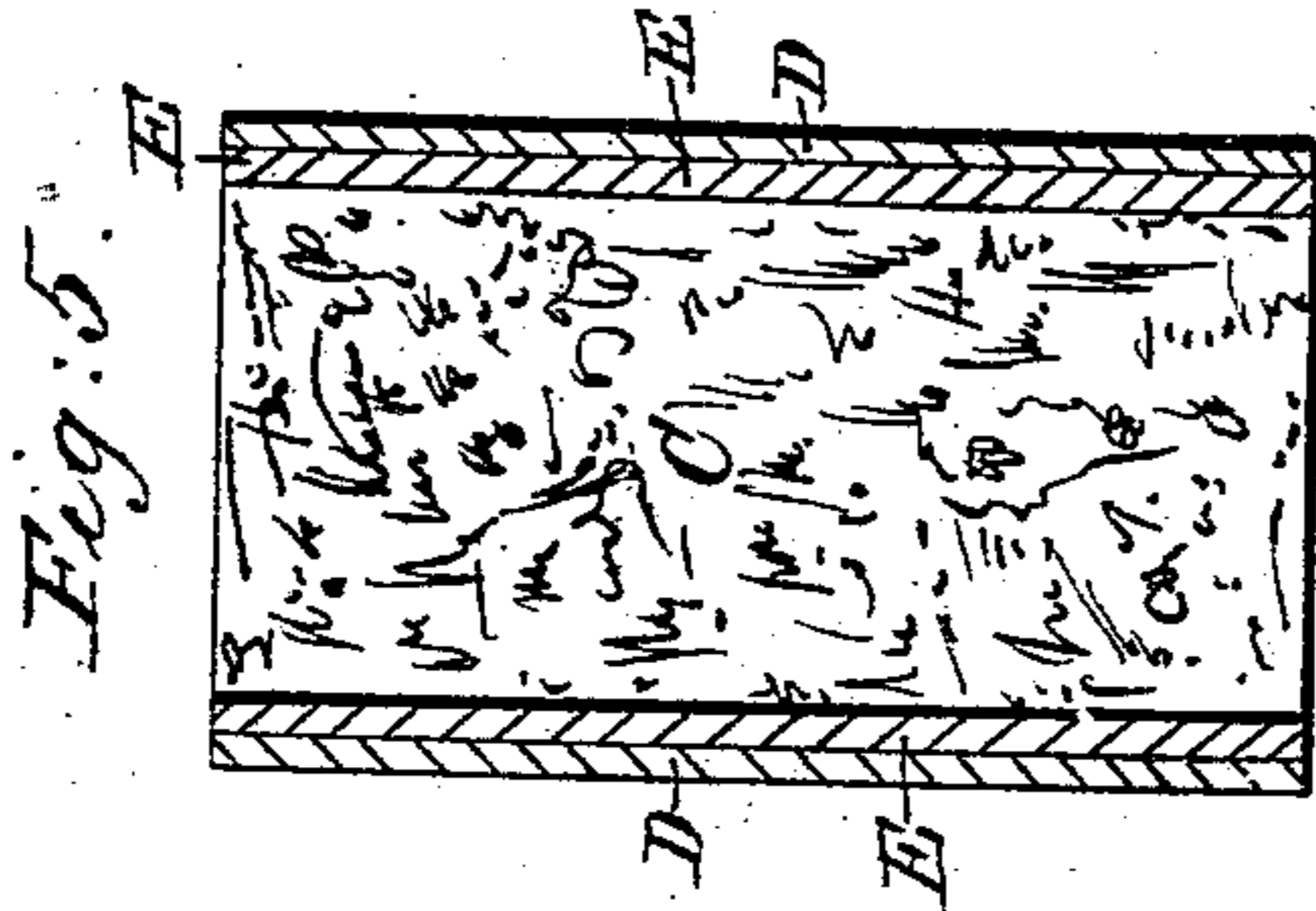


P. G. GARDINER.

Car Spring.

No. 94,101.

Patented Aug. 24, 1869.



Witnesses.  
Henry C. Roeder  
C. R. Wagner.

Inventor  
P. G. Gardiner

# UNITED STATES PATENT OFFICE.

PERRY G. GARDINER, OF NEW YORK, N. Y.

## IMPROVED RAILWAY-CAR SPRING.

Specification forming part of Letters Patent No. 94,101, dated August 24, 1869.

*To all whom it may concern:*

Be it known that I, PERRY G. GARDINER, of New York, in the county and State of New York, have invented a new and Improved Car-Spring, called the "Velvet Spring;" and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figures I and II represent vertical and cross sections, and Figs. III and IV side view and plan, of my improved spring.

The nature of my invention consists in the combination of a cylinder of cork and a spiral metallic spring in such a manner that the metallic spring shall surround and confine the cork and produce together a powerful, soft, and very cheap spring.

I am aware that cork has been used before, so as to act as a spring, and do therefore not lay any claim to cork alone, nor to the use of a spiral metal spring when separated, but only to the arrangement and combination of the two with each other. When cork is used as a spring by itself, unsupported by a metal spring, the same will bear a certain pressure or load in proportion to its diameter and length, but will break or burst after being in use only a short time, similar to solid india-rubber cylinders, which were in use about twelve or fifteen years ago; but when a cork cylinder is surrounded, and consequently confined, by a metal spring, its strength will not only be greatly increased, but all danger of its breaking or bursting will be obviated.

In the accompanying drawings, A repre-

sents a cork cylinder, made of any desired length and diameter, which is surrounded and confined by a metallic spiral spring, B. The cork is forced into the spiral spring under a pressure varying according to circumstances and to the nature of the spring required, but seldom under a pressure less than one thousand (1,000) pounds, whereby the strength of the whole combination is increased. The load is applied on the spring—both upon the spiral spring B and upon the cork spring A—at the same time. These springs may be placed in a suitable casing, or two or more may be arranged in the same casing. When the load is applied upon the spring, as above constructed, the cork will partly expand between the coils of the spiral spring, so as to support the same and prevent any injury to the metallic spring by any undue jar, while, on the other hand, the cork, being surrounded and confined by said spring, will be prevented from breaking or bursting. This combination produces, in comparison with its weight and expense, a spring stronger and superior almost to any other spring at present manufactured.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of a cork cylinder surrounded by a spiral metallic spring, constructed and combined substantially in the manner and for the purpose described.

P. G. GARDINER.

Witnesses:

HENRY E. ROEDER,  
C. PH. WAGNER.