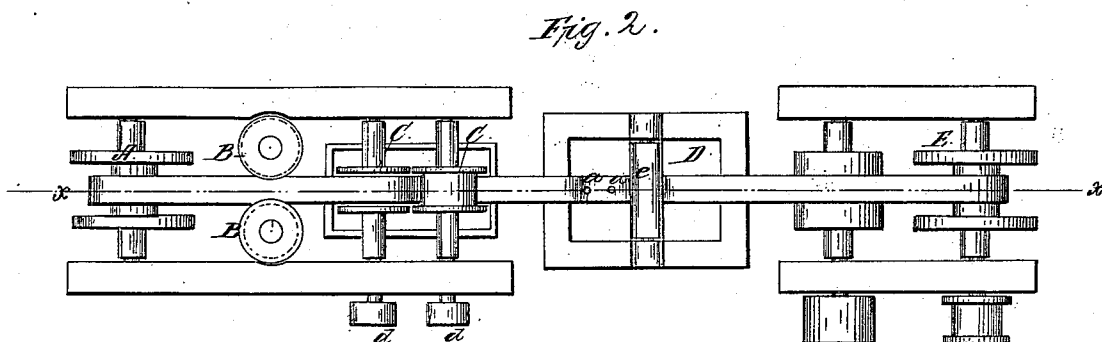
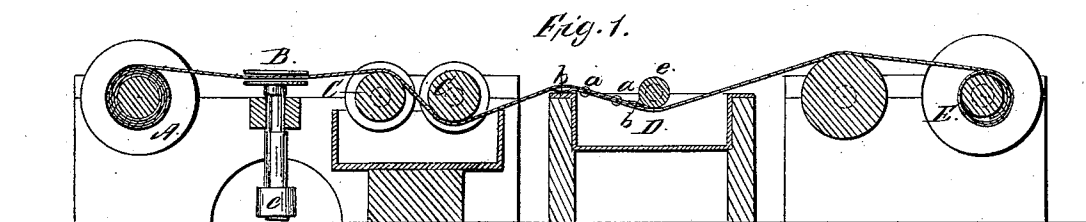


A. B. Doolittle,
Burnishing Steel Springs.
N^o 64,506. Patented May 7, 1867.



Witnesses:
E. J. Tusch
J. A. Serrin

Inventor:
A. B. Doolittle
Per Wm. M. Co.
Attorneys

United States Patent Office.

ABRAHAM B. DOOLITTLE, OF HARTFORD, CONNECTICUT, ASSIGNOR TO ELI TERRY, OF TERRYVILLE, CONNECTICUT.

Letters Patent No. 64,505, dated May 7, 1867.

IMPROVEMENT IN MACHINES FOR POLISHING METAL SPRINGS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ABRAHAM B. DOOLITTLE, of Hartford, in the county of Hartford, and State of Connecticut, have invented a new and useful Improvement in Splicing, Burring, Burnishing, and Blueing Steel Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to understand the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention, the line *x x*, fig. 2, indicating the plane of section.

Figure 2 is a plan or top view of the same.

Similar letters of reference indicate like parts.

This invention relates to a machine which is intended to burr and burnish steel springs after the same have been hardened and tempered, and to blue them when burnished, all in one operation.

To prevent the rivets which are used in splicing the springs from injuring the burnishing rollers, the ends of said springs are struck up, so that the heads of the rivets are not allowed to come in contact with the burnishing surfaces.

A represents a reel on which the steel springs are coiled as the same leave the tempering bath. Said springs are made in pieces of suitable length, and the several pieces are spliced together by rivets *a*, as clearly shown in the drawing, so that in passing said springs through the burring and burnishing apparatus no interruption takes place, and the operation can be completed with the least possible loss of time. The heads of the rivets used in splicing the various pieces are liable to produce creases in the burnishing surfaces when they are allowed to come in contact with the same, and thereby said burnishing surfaces are liable to be injured. This difficulty is obviated by striking up the ends of the springs so that the same form curves *b* sufficiently high to prevent the heads of the rivets from coming in contact with the burnishing surfaces. These curves are plainly shown in fig. 1 of the drawing.

On being taken from the reel A, the spring is first drawn through between the burring rollers B, which serve to smooth and polish the edges of the springs, and to which a quick-revolving motion is imparted by belts passing over pulleys *c*, which are mounted on the bottom ends of the arbors carrying said burring rollers, or the desired revolving motion may be produced in any other suitable manner. On emanating from the burring rollers, the spring is conducted through between the burnishing rollers C, which are so arranged that they act on the opposite surfaces of the spring, and that by this action both surfaces of said spring are burnished simultaneously. These burnishing rollers are made of steel or any other suitable material, and they receive a revolving motion by belts passing over pulleys *d*, or in any other suitable manner. When the spring has been burnished by the action of the rollers C, it passes through the bath D, containing fused lead or other suitable material, into which it is depressed by a roller, *e*, said bath being heated to such a temperature that the spring is blueed while passing through it. On emanating from the bath D the spring winds up on reel E, from which it is removed as it is to be used.

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

The combination of the reels A E, burring rollers B, burnishing rollers C, and bath D, when all are respectively constructed and arranged to operate either in one and the same machine or in separate machines, substantially as and for the purpose described.

The above specification of my invention signed by me this 8th day of September, 1866.

A. B. DOOLITTLE.

Witnesses:

SAM. V. WOODRUFF,
W. EDGAR SIMONDS.