

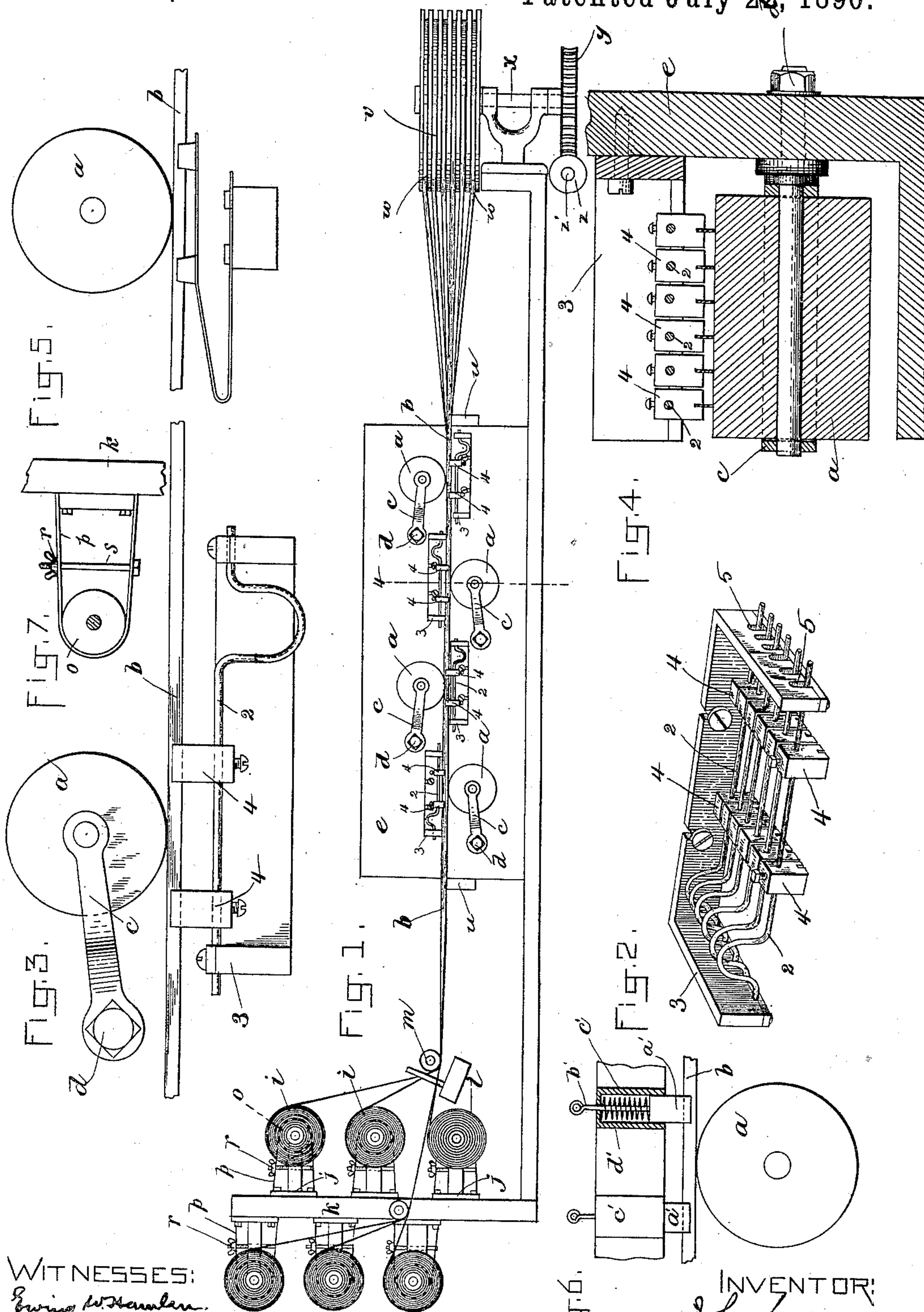
(No Model.)

J. LOGAN.

APPARATUS FOR POLISHING THE EDGES OF WATCH MAINSPRINGS.

No. 432,755.

Patented July 22, 1890.



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JOHN LOGAN, OF WALTHAM, MASSACHUSETTS.

APPARATUS FOR POLISHING THE EDGES OF WATCH-MAINSPRINGS.

SPECIFICATION forming part of Letters Patent No. 432,755, dated July 22, 1890.

Application filed February 28, 1890. Serial No. 342,115. (No model.)

To all whom it may concern.

Be it known that I, JOHN LOGAN, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Polishing the Edges of Watch-Mainsprings, of which the following is a specification.

This invention relates to apparatus for polishing the edges of watch-mainsprings before the same are coiled and while they are in the form of continuous ribbons or strips.

The invention consists, chiefly, in the combination of one or more polishing wheels or laps and spring-pressers adapted to guide the metallic ribbon or strip and hold its edges against the periphery of the polishing-wheels, and suitable means for moving the strip to bring different parts of its edge successively in contact with the polishing-wheels.

The invention also consists in certain details and combination of parts relating to an organized machine for polishing the edges of mainspring-strips, all of which I will now proceed to describe and claim.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of an organized machine embodying my improvement. Fig. 2 represents a perspective view of a portion of the machine. Fig. 3 represents an enlarged side elevation of a portion of the machine. Fig. 4 represents a section on line 4 4 of Fig. 1. Figs. 5 and 6 represent modifications. Fig. 7 represents a side view of the device for exerting tension on the strips.

The same letters and figures of reference indicate the same parts in all the figures.

In carrying out my invention I provide a series of polishing wheels or laps *a*, which are preferably made of box-wood, and are coated when in operation with a suitable paste or mixture. Said polishing-wheels are adapted to receive rotary motion by any suitable means, and are preferably arranged in pairs, one wheel of each pair being above and the other below the strip *b*, from which watch-mainsprings are to be made, so that the wheels comprising each pair act simultaneously on both edges of said strip.

I prefer to journal the shafts which carry the polishing-wheels *a* in bearings in brack-

ets *c c*, which are connected by bolts *d d* with a supporting-frame *e*, said brackets being capable of vertical adjustment by loosening the nuts on said bolts, so that the brackets may be swung upwardly or downwardly, and then tightening said nuts to hold the brackets at any position to which they may be adjusted, so that the wheels may be adjusted to compensate for wear of their peripheries, continued contact of the strip *b* with said peripheries causing the formation of grooves in the latter.

There may be one pair or more of the polishing-wheels *a*. I prefer to employ two or three pairs, all arranged to act upon the same strip, as shown in Fig. 1.

In suitable proximity to each polishing-wheel is located the spring-pressing device adapted to hold the strip *b* with a yielding pressure in contact with the periphery of the adjacent polishing-wheel. Said pressing device is preferably constructed as shown in Figs. 1, 2, 3, and 4, it being composed of an elastic wire arm 2, rigidly fixed at one end to a bracket or holder 3, which is attached to the supporting-frame *e* and provided at points between its attached and free ends with pressing-blocks 4 4, which may be made of vulcanized fiber or other suitable material and are secured to the wire arm 2 by set-screws. The free end of the arm 2 projects through a vertical slot 5 in the bracket 3, and is adapted to rise and fall therein, the sides of said slot guiding the arm and preventing its lateral displacement. The arrangement of the bracket 3 relatively to the polishing-wheel which it accompanies is such that the blocks 4 4 support one edge of the strip *b* and hold the other with a yielding pressure against the periphery of said wheel.

The blocks 4 4 are preferably grooved to receive the edge of the strip that bears upon them, the grooves being of sufficient depth to support the strip and prevent it from tipping over, thus assuring a firm bearing of the outer edge of the strip upon the wheel.

For the sake of convenience and rapidity of operation I make each polishing wheel or lap *a* of sufficient thickness to act simultaneously on a number of strips *b*, as shown in Fig. 4. A corresponding number of blocks

4 is provided to press said strips against the lap or polishing wheel, the blocks being mounted on a corresponding series of spring-arms 2.

5 As shown in Fig. 1, some of the laps or polishing-wheels are arranged above and others below the line of the strips, the spring-pressed blocks accompanying the upper line of polishing-wheels being arranged to force the
10 strips upwardly, while the blocks that co-operate with the lower line of polishing-wheels are arranged to press the strips downwardly.

The strips presented to the cutters are unwound from drums *i*, which are journaled in
15 bearings in brackets *j*, attached to a standard or support *k*. The strips, after leaving the drums *i*, pass under a guide-roller *m*, the under surface of which is arranged in line with the wheels or laps *a*. To maintain a suf-
20 ficient tension on the strips, the drums *i* are provided with small pulleys *o*, attached to their shafts, and on said pulleys are arranged flexible strips *p*, of metal, which constitute brakes to retard the rotation of the drums.
25 Said bands or brakes may be regulated by the action of thumb-nuts *r* on bolts *s*, which pass through the bands, as shown in Figs. 1 and 7. The ends of the strips *p* are secured in any suitable way to the standard *k* or to a
30 plate or bracket attached thereto. After the strips have passed from the polishing wheels or laps they emerge through a guide *u*, attached to one end of the support *e*, and are conducted to a horizontal winding-drum *v*, which
35 has a series of grooves *w* in its periphery, each of sufficient width to receive the width of one of the strips. The completed strips are thus wound in large coils, and may be afterward removed from the machine for fur-
40 ther treatment. The winding-drum *v* is attached to a shaft *x*, which is rotated by power applied in any suitable way, as by a worm-wheel *y*, attached to said shaft, and a worm *z*, attached to a driving-shaft *z'*.

45 I do not limit myself to the above-described construction of the spring-pressing devices which co-operate with the laps or polishing-wheels.

In Fig. 5 I have shown a modification in
50 which a semi-elliptical spring is employed to support the two blocks 4 4, and press the same against the wire strip interposed between said blocks and the adjacent polishing-wheels.

55 In Fig. 6 a single spring-presser is employed, the same being a plunger *a'*, attached to a rod *b'*, which is fitted to slide in a fixed casing *c'*, within which is a spring *d'*.

Other equally obvious modifications may

be adopted without departing from the spirit 60 of my invention.

I claim—

1. As an improvement in apparatus for polishing the edges of mainspring-strips, a ro-
tary lap or polishing-wheel, and a spring- 65 presser located outside the periphery of the wheel and adapted to press radially inward toward the center of the wheel and thereby to hold one edge of the strip in yielding contact with the periphery of said wheel, as set
70 forth.

2. The combination of guides adapted to conduct the mainspring-strip, the two polishing wheels or laps, one arranged to act on the upper and the other on the lower edge of
75 said strip, and spring-pressers located outside the peripheries of said wheels and adapted to press the edges of the strip radially inward toward the centers of the wheels and against the peripheries thereof, as set forth. 80

3. The combination of a polishing wheel or lap and a block pressed by a spring toward the periphery of the lap and provided with a groove formed to hold the mainspring-strip with one edge in contact with the periphery
85 of the lap, as set forth.

4. The combination, with a rotary polishing wheel or lap, of a frame or bracket, a series of spring-arms, each attached at one end to said bracket and free at the other end, and
90 pressing-blocks attached to said arms and pressed by the latter toward the periphery of the lap, as set forth.

5. The combination of a polishing wheel or lap, a spring-supported pressing-block
95 adapted to hold a mainspring-strip in contact with the periphery of the lap, and means for adjusting the lap to compensate for wear of its periphery, as set forth.

6. The combination of a series of polishing
100 wheels or laps, of which a part are arranged to act on one edge and a part at the opposite edge of a spring or series of springs, devices for pressing the edges of said spring or springs against the peripheries of said wheels,
105 and mechanism for feeding or progressively moving said strip or strips while they are in contact with said polishing-wheels, as set forth.

In testimony whereof I have signed my
110 name to this specification, in the presence of two subscribing witnesses, this 6th day of February, A. D. 1890.

JOHN LOGAN.

Witnesses:

D. H. CHURCH,
E. A. MARSH.