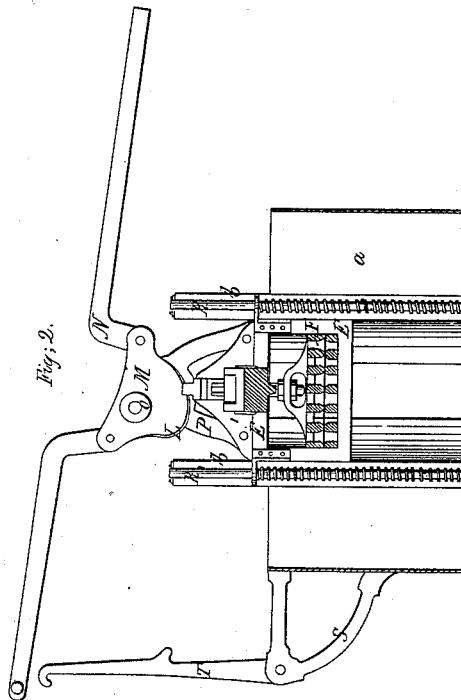
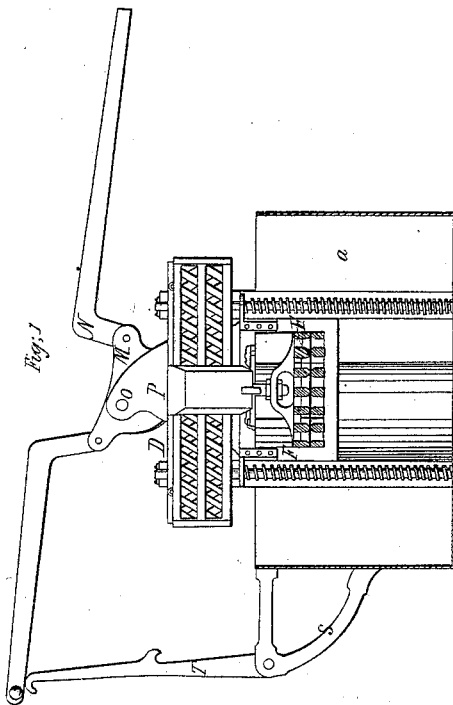
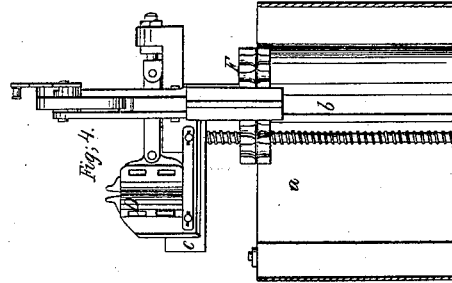
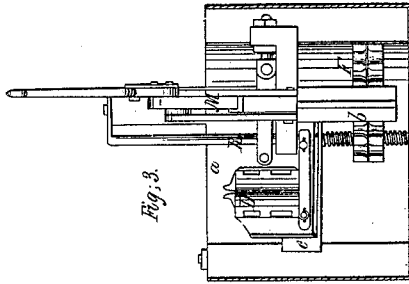


E. S. PIPER.  
MACHINE FOR HARDENING SAWS.

No. 65,598.

Patented June 11, 1867.



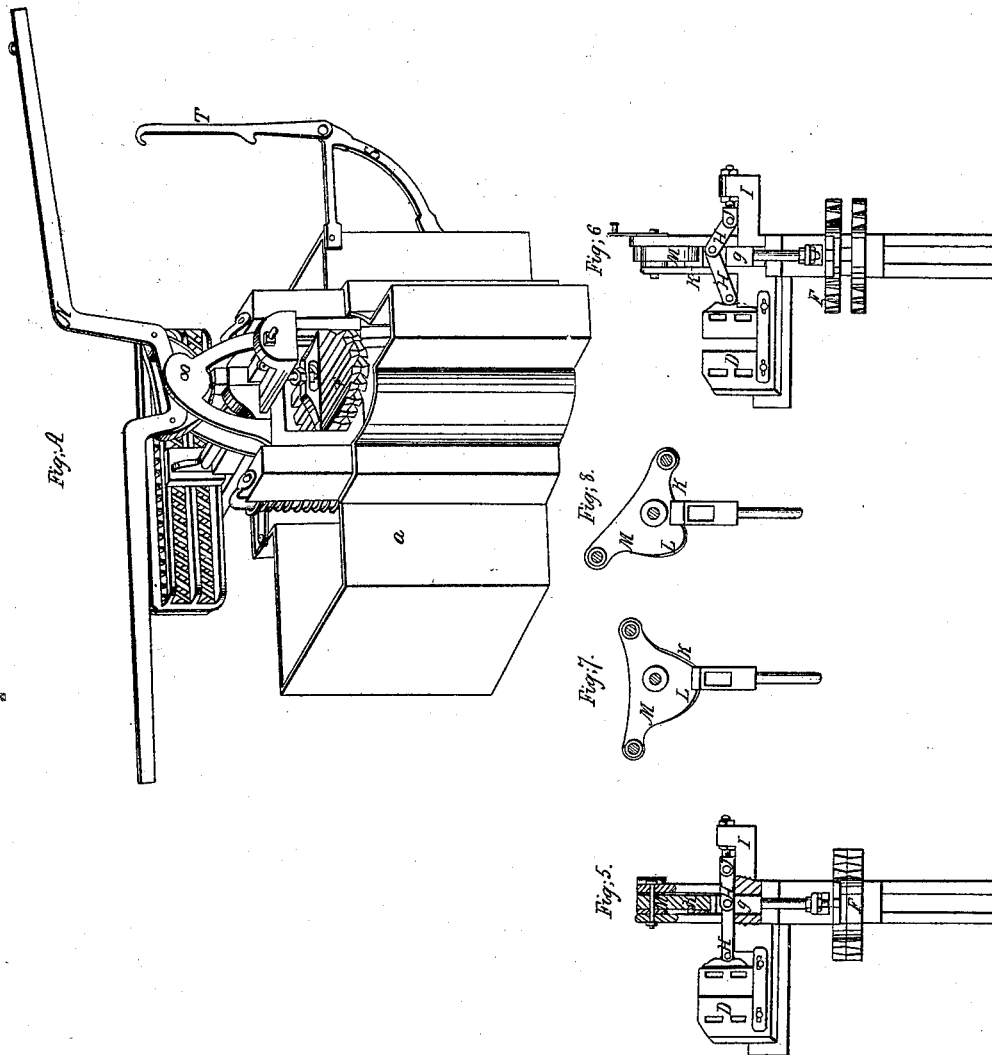
Witnesses.  
*Jas M. Cooper.*  
*Henry R. Ketchum.*

Inventor.  
*Edwin S. Piper*

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MACHINE FOR HARDENING SAWS.

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Witnesses.

*Jan M. Lape*  
*Henry R. Kuhn*

Inventor.

*Edw. S. Piper*

# United States Patent Office.

EDWIN S. PIPER, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO HIMSELF  
AND ATKINS AND CO., OF SAME PLACE.

*Letters Patent No. 65,598, dated June 11, 1867.*

## IMPROVEMENT IN HARDENING SAWS.

*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, EDWIN S. PIPER, of Indianapolis, in the county of Marion, and State of Indiana, have invented a new and improved Mode of Preventing Saw-Plates from Springing during the Process of Hardening, and that I have also invented a machine to apply this mode to all sizes and shapes of saws; and I do hereby declare that the following is a full, clear, and exact description of the mode and machine, *i. e.*, the mode of operation and the description of the machine, reference being had to the annexed drawings, making a part of this specification, in which—

Figure A represents a perspective view.

Figures 1 and 2, longitudinal sections.

Figures 3 and 4, transverse sections.

Figures 5, 6, 7, and 8, parts of the machine.

The nature of my invention consists in constructing a machine for the purpose of hardening all kinds of saws, and all sizes, in such a manner as to prevent them from springing during that process.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct a cast-iron box, called hardening-trough A, with its necessary additions for slides, &c. This trough is shaped to accommodate straight and circular saws, and contains the hardening oil. Its size and shape are made to suit the requirements. To this box are fastened the slides *b b*, in which the framework *c* for the circular and straight saw-clamps slides up or down. I construct the framework E, which holds the circular saw-clamp F, in such a manner that the upper part of this clamp F can be raised from the lower part, for which purpose it is made to slide in two slots in the framework E. This upper part of the clamp F is attached to a plunger, G, which is connected with two knuckle-joints H H by means of one common pivot. The plunger is mortised out where these knuckle-joints join, to suit them. One end of one of these knuckle-joints is pivoted to the staple J, which is fastened to the framework I by means of a set-screw, so as to suit the thickness of the saw to be hardened in the clamp D. The upper part of this plunger G is provided with a hook, K, which hooks into the rim L on the cam M. The cam M is provided with a lever, N, and works on a pivot in O, which passes through the upper framework P. The combined framework C (for the straight and circular saw) moves in the slides *b b*, to which slides are attached iron rods, which are provided with spiral springs for lifting this frame C, with the saws, up, as soon as the pressure upon the lever N ceases. By this means the saws are raised out of the oil-trough after being hardened. S represents a bracket, fastened to the oil-trough. Upon this bracket rests the double hook T, and acts as a fulcrum. The other end of the other knuckle-joint is attached to the inner half of the clamp D, which is movable. The clamps are made of cast iron, like the balance of the machine. The insides of the clamps are made of iron lattice-work, the laths set at an angle of thirty degrees. The edge of the lattice towards the saw is about one-sixteenth of an inch thick, and runs back to half an inch thickness. The space between the laths varies from one and a quarter to three-eighths of an inch. The guides on the long saws are screwed to the top of the clamps.

### Operation.

To harden circular saws, the spiral springs will be permitted to raise the framework C up, so as to bring the clamp for circular saws on a level with the top of the hardening-trough. Raising up the lever N will make the little hook K on top of the plunger G catch into the rim L on the cam M, and raise the plunger G, and with it the upper part of the clamp F, so as to permit the saw to be placed on the lower part of the clamp F. Pressing down the lever N to cramp the saw will raise up the other end of it, which will, on its passage up, catch into the upper part of the hook T, and acting as a fulcrum, will bear down upon the whole framework C, forcing it, with the saw, into the oil.

To harden long saws, the spiral springs are compressed to the extent so as to bring the clamp D to a level with the top of the hardening-trough A. The lever N is raised, and draws the plunger G, with its knuckle-joints, up by means of the hook K, which catches in the rim L on cam M, whereby the clamp is opened for the

saw. Pressing down the lever N to cramp the saw will raise the other end of the lever, which will, on its passage up, catch in the lower part of hook T. Acting as fulcrum, it will bear upon the whole framework Q, and force it and the saw into the oil.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The preventing of springing of saws during the process of hardening.
2. The construction of the clamps; and
3. The combination of the lever N, cam M, hook K, rim L, double hook T, plunger G, and knuckle-joints H H, with the clamp D and clamp F, all arranged and operating substantially as set forth, and for the purpose described.

EDWIN S. PIPER.

Witnesses:

JAS. WM. LOEPER,  
HENRY R. HUEBNER.