A. J. Rockafellow.

Tempering Saw Plates.

No. 71330 Patented Nov. 26, 1867.

Fig. 1.

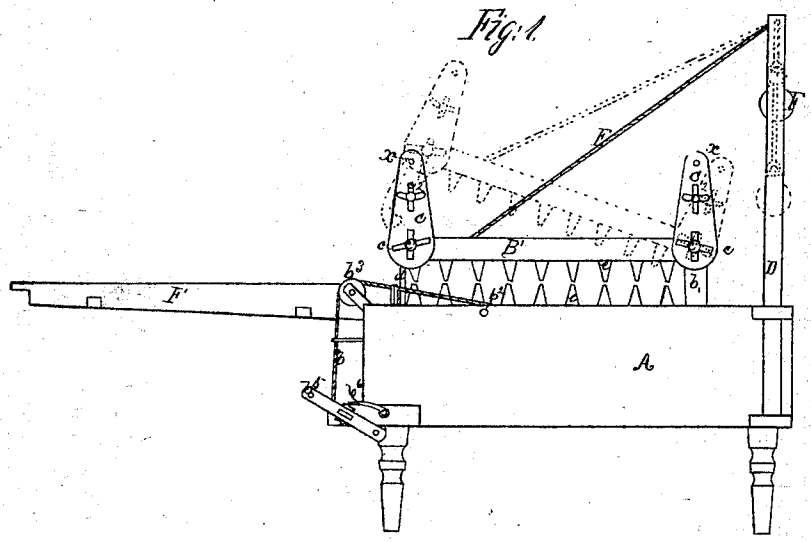


Fig. 2.

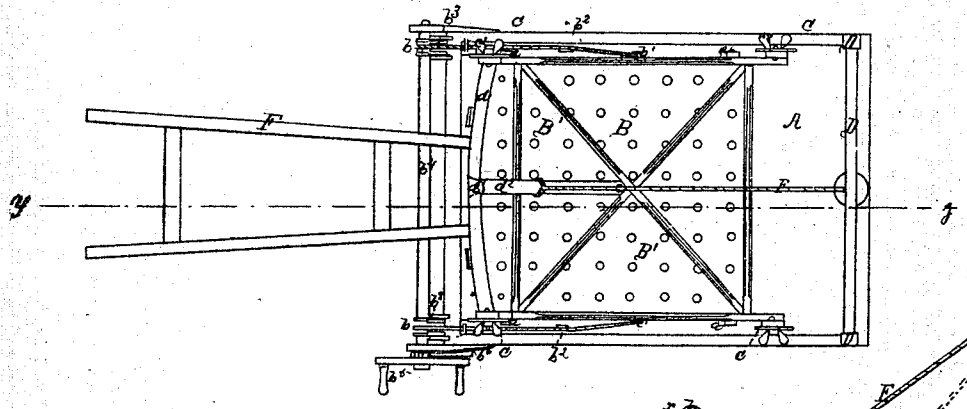
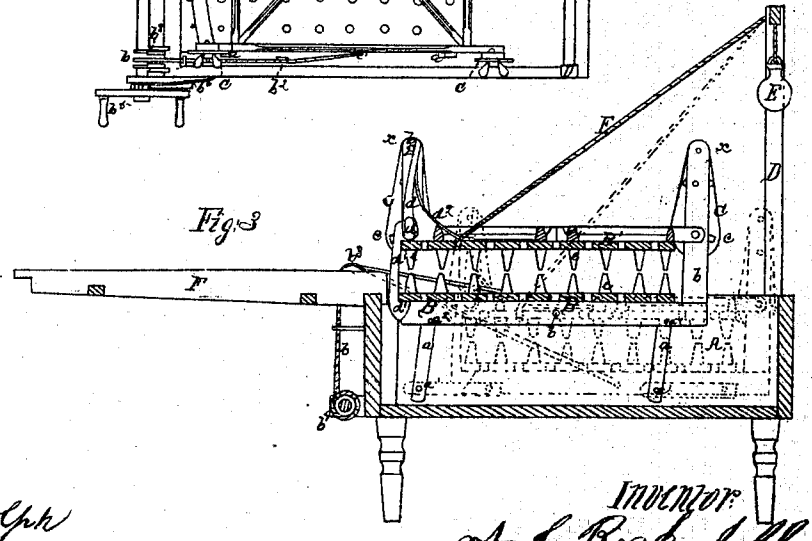


Fig. 3.



Witnesses
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A. J. ROCKAFELLOW, OF ST. LOUIS, MISSOURI.

Letters Patent No. 71,330, *dated November* 26, 1867; *antedated November* 8, 1867.

IMPROVED MACHINE FOR TEMPERING SAW-PLATES.

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, A. J. ROCKAFELLOW, of St. Louis, in the county of St. Louis, and State of Missouri, have invented a new and useful "Machine for Tempering Saw-Plates and other thin plates of steel;" and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 of the drawings is a side elevation of one of the improved machines.

Figure 2 is a plan of it.

Figure 3 is a longitudinal sectional elevation, taken on the line *y z* in fig. 2.

This invention relates, firstly, to the construction of the carriage and its cap, which hold the pieces to be tempered in a perfectly true position while being hardened or tempered; secondly, to the device for setting the cap at such a distance from the carriage as to enable it to hold any plate, whether thick or thin, in the desired position; thirdly, to the arrangements for lowering the cap-plate upon the carriage and confining it in the required relative position to the said carriage; and, fourthly, to the arrangement for lowering the carriage into the bath-tub in such a position as to make it strike the oil or other tempering-fluid squarely, thereby tempering the plates evenly throughout.

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

A is the bath-tub, into which the plates are to be plunged for the purpose of tempering them. B is the carriage, upon which the plates are to be placed, and where they are to be secured by means of the cap B′ before and during the operation of tempering. The carriage B is attached to the sides of the bath-tub by means of four or more parallel links, *a*, which are pivoted to the curb at a^1, and to the carriage at a^2. When the carriage is raised up to the top of the curb of the bath-tub, as shown in fig. 3, preparatory to receiving the plates to be tempered, it will rest on the links *a*, which will stand with their top ends inclining a little backward, as also shown in fig. 3. The interior length of the bath-tub will be longer than the carriage by as much as the length of the links *a*, so that when the carriage drops down to the position shown by red lines in fig. 3, there will be room enough for it to drop inside of the tub; and in changing from the upper to the lower position, the top ends of the links *a* will describe an arc of a circle drawn from the centre a^1. On either side of the carriage there is a cord, rope, or chain, *b*, attached to it at b^1, and passing thence over the sheaves b^2 b^3 down to the raising-shaft b^4, to which their other ends are attached. When the carriage is down in the bottom of the bath-tub, in the position shown by red lines in fig. 3, the cord or chain *b* will, if tightened up by turning the crank b^5 of the shaft b^4, be drawn from its points b^1 up toward the sheaves b^2 in such a position as to raise the carriage up into its links *a*, as shown in the full lines of fig. 3. When it is desired to drop the carriage down into the bath, all that it will be necessary to do will be to unloose the pawl b^6 from its hold on the ratchet on the end of the shaft b^4, when the weight of the carriage resting on the inclined legs or links *a* will drop down by means of its own weight into the bath-tub; for as soon as the cord or chain *b* is loosened from holding the carriage up, the backward inclination of the legs or links, already alluded to, will cause the carriage to drop back and down as above described, and the two ends of the carriage being held up and supported by the links or legs *a*, it will retain a horizontal position throughout its journey from its upward station to its lower one, and this is a very important consideration; for the plates to be tempered will by this arrangement be forced to strike the tempering-fluid evenly, and in a glancing manner, and the plates will therefore be tempered uniformly throughout, and the descending plate will strike the top of the fluid in the bath in such a glancing manner as not to impede the downward motion of the plates therein. This same glancing, lowering motion of the carriage might be accomplished by arranging two inclined ways or tracks on the sides of the bath-tub and fitting sheaves under the carriage to run thereon, care being taken to raise one end of the carriage higher on the sheaves than the other, to compensate for the lowering of the ways on that end, and to keep the carriage level. On the back end of the carriage there are two posts, b_1, erected, and placed between these and hinged to them is the cap B′ as clearly shown in the drawings. On the forward end of the cap there are two similar posts, b_2, and between these is the rocking-bar *d*, which finds its bearings in the said posts b_2 by means of journals passing through them. The journals of this rocking-bar, and the journals by means of which the cap B′ is hinged to the posts b_1, are made

to pass entirely through the said posts, and are permitted to play up and down therein. The outer ends of all of these journals are made to extend through the slots *c* in the setting-guides C, and are provided with the thumb-screw nuts c^1, which may be set up tightly to the guides, for the purpose hereinafter described. The setting-guides C are hinged or pivoted to the tops of the posts b_1 and b_2 at *x*, so that their bottom ends may have a swinging or pendulous motion longitudinally. About half way down the length of these guides are set-screws c^2, which work through segmental slots in said guides, the said slots being drawn from the centres *x*. The slots *c* are made straight, and lower at one end than at the other, and by swinging them to one side or the other, the journals which pass through them will be raised up or lowered down in the slots in the posts b_1 and b_2 through which they pass, and the cap B′ and the rocking-bar *d* may be raised up or lowered down by simply changing the setting-guides from one side to the other, and the cap may in this manner be set at any required distance from the carriage, according to the thickness of the plates that it is desired to handle, and when once set for any particular thickness of plates, they may be confined in that position so long as necessary by simply tightening up the thumb-screws c^1 *c*. The top side of the carriage and the bottom side of its covering cap should be studded with pyramidal studs, *e*, so arranged that when the cap is closed down upon the carriage the points of its studs will fall directly above the points of the lower studs, and between these two sets of points the plates to be tempered will be firmly and truly held. These studs should be such a distance apart as to enable the oil or other tempering-fluid to pass easily between them and reach every point in the plate that is being tempered. Both the carriage and cap pieces should be perforated with numerous holes, for the purpose of allowing the tempering-fluid to pass freely through. The rocking-bar *d* has a hook, d^1, projecting from its lower side, so as to hook under the bottom of the carriage when the cap is down, and hold the two together. The top of the hook-piece d^1 extends above the bar, and forms an abutment for the spring d^2 to rest against, in order to secure the hook under the carriage, and also forms a hand-piece, by means of which the operator may disengage the hook from its hold under the carriage when the cap is to be raised up. On the back end of the bath-tub the frame D is erected, for the purpose of furnishing a bearing for the counterpoising rope E. This rope is attached to the cap B′ near its forward end, and thence passing up over a sheave in the top of the frame D, and down to a weight, E′. When the cap is to be raised up, this weight will nearly counterbalance the weight of the cap B′, and will assist greatly in raising it. It will also act beneficially on the carriage to assist in pulling it back into the bath-tub when the strain from the shaft b^4 is withdrawn from it. The ways F are designed to lead from the furnace when the plates are heated to the carriage on which they are tempered, and the plates may be slid along on top of these ways quite easily.

Having described my invention, what I claim, is—

1. The construction and arrangement of the carriage B, and its cap B′, substantially as herein described and set forth.

2. I claim the setting-guides C, and in combination with these the set-screws c^1, for the purpose of adjusting the distance between the cap and carriage to any required thickness of plates.

3. I claim the cap B′, in combination with the rocking-bar *d*, and also with the rope and weight E and E′, substantially as described and set forth.

4. I claim the carriage B, when combined with the links *a* and the cord or chain *b* and raising-shaft b^4, or equivalent devices, whereby the carriage may be moved down into and up out of the bath-tub in a diagonal direction, and still retain its horizontal position, substantially as described and set forth.

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Witnesses:

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