E., E. W. & E. C. Strange,

Grinding Saws.

No. 84,916. Patented Dec. 15, 1868.

Fig: 3.

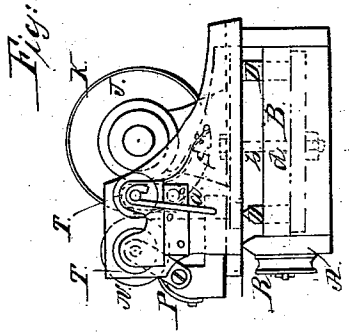


Fig: 4.

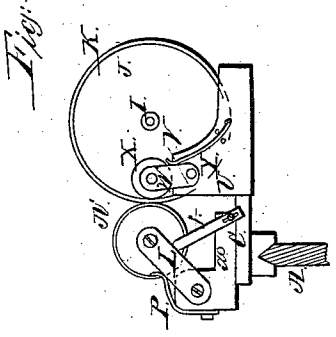


Fig: 1.

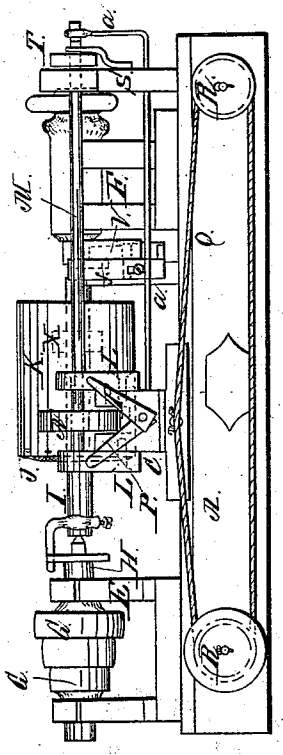
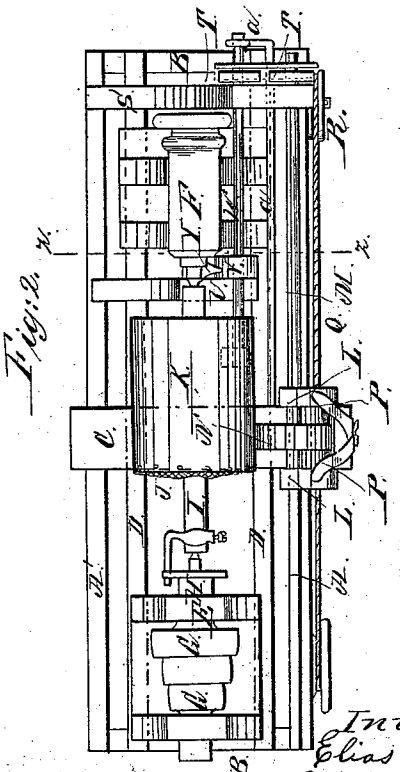


Fig: 2.



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ELIAS STRANGE, ELIAS W. STRANGE, AND EMERSON C. STRANGE, OF TAUNTON, MASSACHUSETTS.

Letters Patent No. 84,916, *dated December* 15, 1868.

IMPROVEMENT IN SAW-GRINDER.

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

To all whom it may concern:

Be it known that we, ELIAS STRANGE, ELIAS W. STRANGE, and EMERSON C. STRANGE, all of Taunton, Bristol county, State of Massachusetts, have invented certain new and useful Improvements in Machines for Grinding and Polishing Cylindrical Saws, and other cylinders; and we do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains, to make and use our said invention or improvements without further invention or experiment.

The nature of our invention and improvements consists in applying the grinding or polishing-wheels to the cylinder-saws, or other cylinders, with or by a yielding pressure of a spring or weight; and in applying the stone or wheel on the inside of the cylinder against a point some distance from the point opposite to the stone or wheel on the outside, to avoid heating the cylinder; also, in applying the grinding-stones or polishing-wheels to the inside and outside of the saw or other cylinder at the same time, so as to grind or polish the inside and outside at one operation.

In the accompanying drawings—

Figure 1 is an elevation of the front side.

Figure 2 is a plan or top view.

Figure 3 is an elevation of the right-hand end.

Figure 4 is a partial elevation, on the line *z z* of fig. 2.

In these drawings, A A′ are the sides, and B B, the ends, which may be made of iron, cast whole or in parts, and bolted together, to make a strong frame, the tops of the sides forming ways for the carriage C to traverse on.

Parallel with the sides A A′, and a little inside of them, there is a second pair of ways, D D, fastened to the ends B B, and upon these ways the head-stock E and tail-stock F are fastened, in some convenient manner.

These stocks are similar to those of a common lathe, with pulleys G G, for a band, to turn the spindle H and shaft I, arranged between the centres.

The head J is fastened to the shaft I, to support and turn the cylinder K, which is fastened to the disk or head J, in some convenient manner, so as to turn with it in the process of grinding.

The carriage C may be made in the form shown, and fitted to traverse on the sides A A′, as shown in the drawing. It is provided with two swinging arms, L L, which are perforated for the shaft M, which turns in them, and carries the grindstone or polishing-wheel N, fastened to the shaft, to grind or polish the outside of the cylinder K, when both are turned in the same direction, as indicated by the arrows, so that the surfaces in contact shall move in opposite directions, to grind rapidly.

The springs P P are fastened to the carriage, and act on the arms L, to press the stone N against the cylinder K, with a yielding pressure, and hold it constantly against the cylinder K, despite the inequalities of surface on the cylinder.

The carriage C is traversed by the band Q, which is fastened to it, and passes around the pulleys R R′; and there is a pulley fastened to R, which may be turned by a band or by hand; and when turned by a band, it may be provided with devices well known, and a tumbling-bob, to reverse the motion when the stone gets to the end of the cylinder.

The stand S is fastened to the sides A A′, and is perforated for the shaft M to traverse through, which shaft is provided with a groove for a spline in the pulley T which turns the shaft and stone, and is carried by a band from some moving-power. This pulley T may have a long hub, to project through and turn in the stand S.

To grind the inside of the cylinder K at the same time the outside is ground, the stand U is fastened to the ways D D, and has the swinging arm V fastened to it, which is perforated for the shaft W, which turns in the arm and in the stand S, and traverses through both, and carries the stone X, fastened to the end of the shaft W, to grind the inside of the cylinder K.

And the spring Y is fastened to the stand U, and acts against the arm V, to swing it, and press the stone, X, against the inside of the cylinder, with a yielding pressure, and grind it.

The swinging arms L L and V may have adjustable stops, *f f*, fastened to the stands on which they swing, to limit the motion of the grinding-stones towards the cylinder K.

The shaft W is grooved for a spline, in the pulley T′, which turns it by a band from some moving-power, while the shaft is traversed by the rod *a*, fastened to the carriage C, and passes through the stand S, and is turned up and forks or hooks on to the groove, near the end of the shaft W, so that the stone, X, is moved by the carriage C, at the same time it moves the stone, N, so that the inside and outside of the cylinder may both be ground at the same time.

The carriage C may be weighted to hold it down, or it may be held down by the bolt *b*, which passes down through the bar *d*, shown in fig. 3 of the drawings, which bar is arranged to traverse under the ways D D.

We contemplate that weighted levers may be substituted for the springs P P and Y, if preferred that way.

The drawings, figs. 1 and 2, show that the stone,

X, on the inside, is not opposite the stone, N, on the outside.

What we claim as our invention and improvement in the above-described machine for grinding cylindrical saws and other cylinders, is—

Applying the grinding or polishing-wheels to the cylindrical saws or other cylinders, with or by a yielding pressure of a spring or weight, substantially as described.

Also, applying the stone or wheel on the inside of the cylinder, against a point at some distance from the point opposite to the stone or wheel, on the outside, to avoid heating the cylinder by the grinding-stones or polishing-wheels.

Also, applying the grinding-stones or polishing-wheels to the inside and outside of the saw or other cylinder at the same time, so as to grind or polish the inside and outside at one operation.

In combination with the swinging arms and grinding-stones or wheels, pressed against the cylinder by a yielding pressure, the adjustable stops Y Y, arranged to limit the vibration of the arms, substantially as described.

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