(No Model.)

J. H. MINER.

SAW LEVEL.

No. 429,144. Patented June 3, 1890.

Fig. 1.

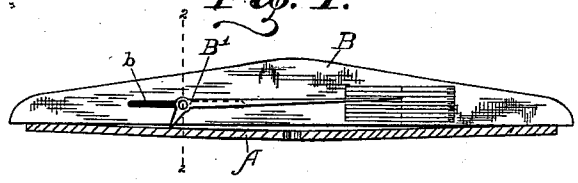


Fig. 2.

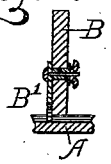


Fig. 3.

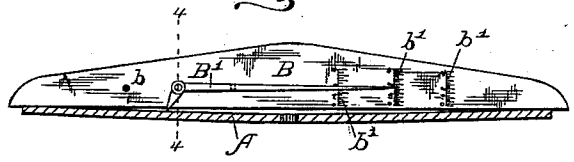


Fig. 4.

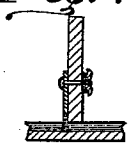


Fig. 5.

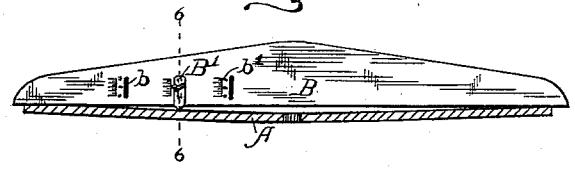


Fig. 6.

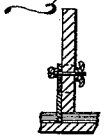


Fig. 7.

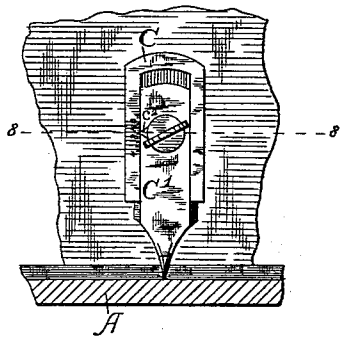
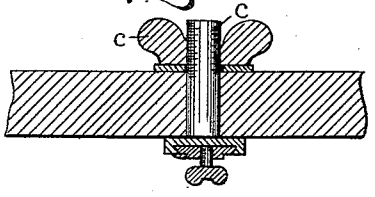


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES H. MINER, OF BATON ROUGE, LOUISIANA, ASSIGNOR TO THE E. C. ATKINS & COMPANY, OF INDIANAPOLIS, INDIANA.

SAW-LEVEL.

SPECIFICATION forming part of Letters Patent No. 429,144, dated June 3, 1890.

Application filed November 19, 1889. Serial No. 330,866. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MINER, a citizen of the United States, residing at Baton Rouge, in the parish of East Baton Rouge and State of Lousiana, have invented certain new and useful Improvements in Saw-Levels, of which the following is a specification.

The object of my said invention is to provide a level for use in determining the "tension" of circular saws, which shall be cheap in construction, convenient in operation, and by which the desired result can be accurately and easily ascertained, as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a view in elevation of a saw-level embodying my said invention, being shown in position for use on a saw-plate, which is shown in section; Fig. 2, a sectional view on the dotted line 2 2 in Fig. 1; Fig. 3, a view similar to Fig. 1, illustrating a modification in construction; Fig. 4, a sectional view on the dotted line 4 4 in Fig. 3; Fig. 5, a view showing another modification in construction; Fig. 6, a sectional view on the dotted line 6 6 in said figure; Fig. 7, a detail view, on an enlarged scale, illustrating yet another modification in construction; and Fig. 8, a sectional view on the dotted line 8 8 in Fig. 7.

In said drawings the portions marked A represent the saw-plate, and B the level.

As is well known, circular saws are commonly made of a slightly-dished formation, as illustrated in the drawings in a somewhat exaggerated degree. The plate, being straight from the eye to the edge, is termed "tight" or "firm" with reference to its radii; but if a straight-edge is placed upon the saw, as indicated in the drawings, it will fall away therefrom at the center, and it is therefore termed "loose" with reference to its whole diameter. The degree of looseness is termed the "tension" of the saw, and is governed by the size or style of the saw, the speed at which it is to run, and the work it is designed to do. The saw A therefore represents any circular saw the tension of which it is desired to ascertain.

The level B is a bar of wood or metal or wood and metal, as may be preferred, the edge of which is formed perfectly straight and the back of which is of the form to give it necessary strength, preferably substantially of the form shown in the drawings.

In the construction shown in Fig. 1 an indicator B′, formed with an angle or two arms, is pivoted at the point of the angle in a sliding bearing mounted and adjustable to various positions in a longitudinal slot *b*, formed in the level parallel with its front edge. One arm of said indicator is arranged to point downward and measure the tension and the other extends longitudinally, and a vertical scale or scales *b′* are arranged on the face of the level, over which this point of the indicator is adapted to move and point out thereon the degree of tension which the other point measures. A scale is also provided along one edge of the slot in which the sliding bearing is mounted, by which the position to which it is desired to adjust the indicator may be determined.

The means shown for securing this device in the position desired consists simply of a thumb-nut on the opposite end of the pivot-bolt, as shown in Fig. 2, which is adapted to bear against the opposite face of the level or a washer thereon, whereby the parts may be tightened sufficiently to render them rigid in position.

In Fig. 3, instead of a slot, I have shown a series of holes arranged on a line parallel with the front edge of the level, into each of which the pivot-bolt is adapted to be placed, or in which separate indicators may be mounted. In both forms the longitudinal arm or indicator-point is preferably of considerably greater length than the vertical or measuring-point, and thus its point moves a much greater distance than does the point of the vertical point, and thus a very slight tension will be indicated by a movement sufficient to be easily and accurately discerned.

In operation the level is laid upon the saw the tension of which it is desired to ascertain, and the pivot on which the indicator is mounted is adjusted that distance from the end of the level which will correspond with

the point upon the saw at which it is desired to know its tension. The longitudinal arm is then raised up until the point of the vertical arm strikes the surface of the saw, when by reference to the figures on the scale opposite the point of the longitudinal arm the tension of the point where the saw is tested is seen. It being desired to test the saw at another point, the indicator is moved to such point as desired and the operation repeated. A register being kept of the number of the saw and of its tension at various points, an exact duplicate of said saw can be readily produced at any time, as will be readily understood.

In Fig. 5 I have shown a series of vertical slots having adjustable indicator-fingers therein with vertical scales arranged opposite thereto, which construction can be used in lieu of the one above described and the same result obtained; but I prefer the construction shown in Figs. 1 and 3, because of the greater accuracy which can be secured by reason of the greater movement of the point which registers with the scale in relation to the point which measures the tension, which thus enables a very small or slight tension to be indicated by a mark easily discernible.

It will be understood, of course, that an indicator may be fixedly pivoted on each side of the level in different positions, and a level thus provided which will answer for ordinary purposes without being adapted for any adjustment at all.

In Figs. 7 and 8 I have illustrated another form of indicator which may be substituted for the indicator shown in Figs. 1 and 3. It consists of a plate C, having a stud *c* on its rear side, adapted to be inserted in the bearing provided for the pivot on which the indicator shown in the other figures is pivoted, being secured in position by means of a thumb-nut *c'*. In its front side it is provided with a vertical dovetailed groove in which is mounted a sliding indicator C', provided with an indicator-point c^2 and a scale on the side of the plate opposite said point for indicating the tension. These modifications and many others may of course be substituted for the form shown in the principal figures of the drawings; but I prefer said form because of the greater accuracy with which the tension may be ascertained by means of the relative lengths of the points which indicate and measure the tension, as before described.

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

1. A saw-level consisting of a "straight-edge" provided with a movable indicator thereon and a scale arranged thereon with said indicator for determining the tension of the saw, substantially as set forth.

2. A saw-level consisting of a straight-edged bar having an indicator thereon formed of two arms extending at an angle from each other, one of which is arranged to extend below said bar to measure the tension of the saw, said indicator being pivoted on said bar, and a scale being provided opposite the point of the other arm by which the tension thus measured may be ascertained, substantially as set forth.

3. A saw-level consisting of a straight-edged bar formed with a longitudinal slot therein parallel with said straight-edge, an adjustable bearing mounted in said slot, and an indicator-arm pivoted in said bearing and formed with two arms extending out from said pivot at an angle with each other, a scale being formed on said bar opposite the point of one arm, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Baton Rouge, Louisiana, this 12th day of November, A. D. 1889.

JAMES H. MINER. [L. S.]

Witnesses:
M. P. ROBERTSON,
F. H. WOODS.