No. 652,130. Patented June 19, 1900.

E. A. MILLER & R. C. KNAPP.

COMBINATION BACK KNIFE FOR TURNING LATHES.

(Application filed Mar. 24, 1900.)

(No Model.) 2 Sheets—Sheet 1

Fig. 1.

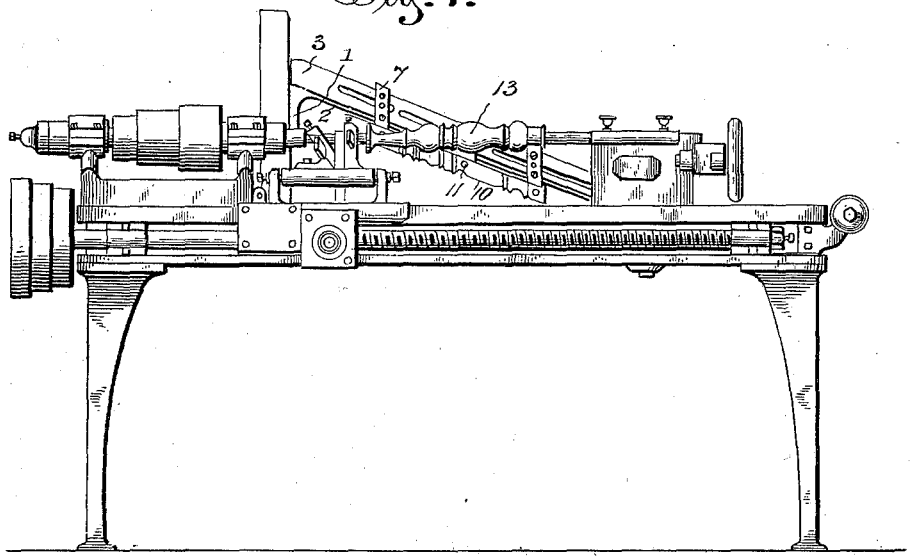

Fig. 2.

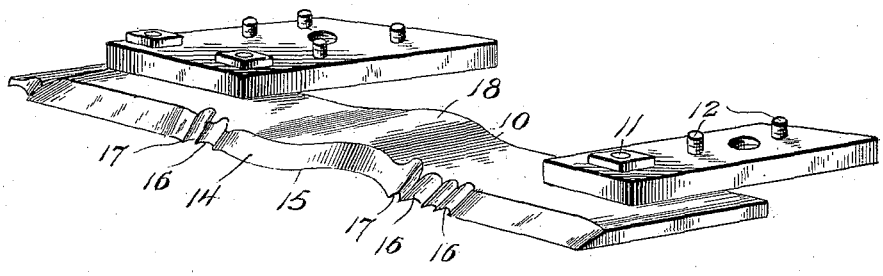

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Fig. 3.

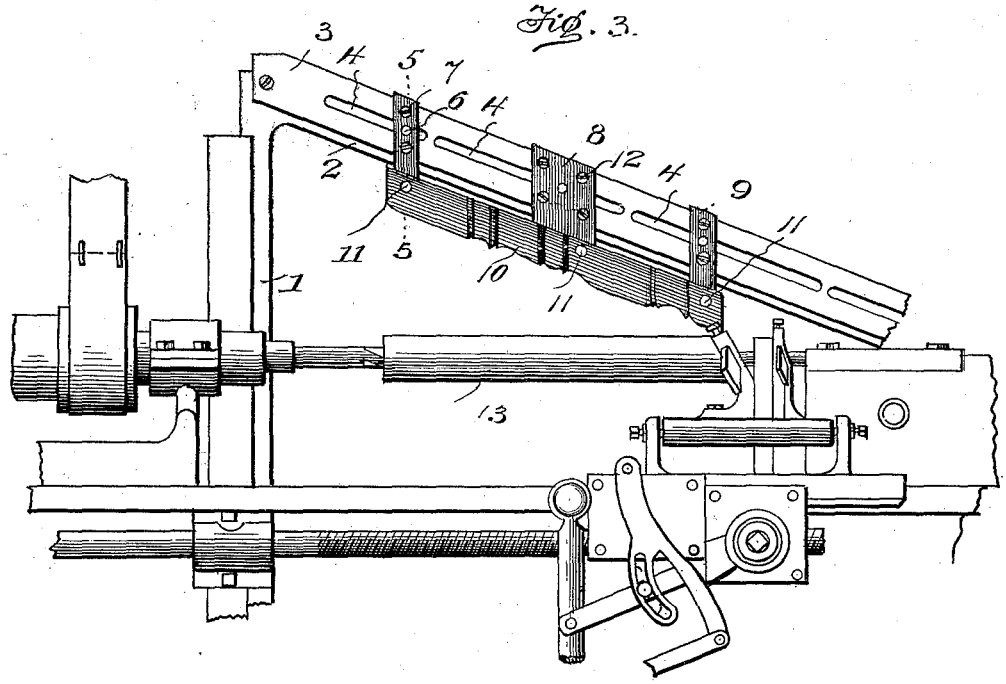


Fig. 5.

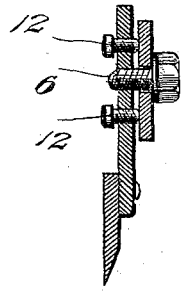
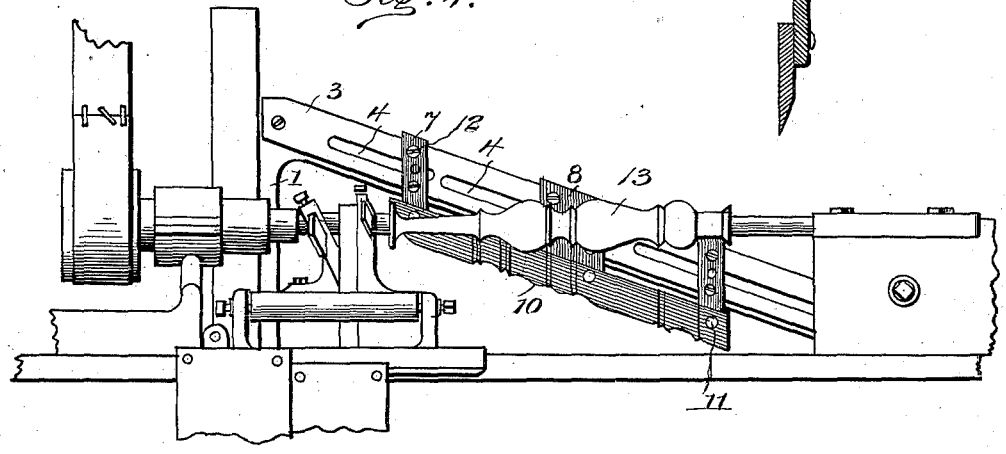


Fig. 4.



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UNITED STATES PATENT OFFICE.

EZRA A. MILLER AND REUBEN C. KNAPP, OF CAMDEN, NEW YORK.

COMBINATION BACK KNIFE FOR TURNING-LATHES.

SPECIFICATION forming part of Letters Patent No. 652,130, dated June 19, 1900.

Application filed March 24, 1900. Serial No. 10,050. (No model.)

To all whom it may concern:

Be it known that we, EZRA A. MILLER and REUBEN C. KNAPP, citizens of the United States, residing at Camden, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Combination Back Knives for Turning-Lathes; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to that class of lathes known as "back-knife" lathes, and especially to the knives used in such lathes and means for adjusting them.

The object of the invention is to provide an improved back knife and improved means for adjusting it, whereby certain objections existing in the construction and use of such devices are obviated and a much superior article capable of an improved and extended operation is provided.

With this object in view the invention consists in the improved construction, arrangement, and combination of parts hereinafter fully described and afterward specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in front elevation of a lathe provided with a back knife and adjusting means therefor constructed in accordance with our invention. Fig. 2 is a detail perspective view of part of our improved knife with attaching-bracket secured thereto, one end of the knife and one bracket being omitted. Fig. 3 is a fragmentary view, in front elevation, showing the parts of the lathe with our improved knife in its upper position. Fig. 4 is a similar view of the same parts, the knife being shown in its lower position. Fig. 5 is a sectional view on the plane indicated by the dotted lines 5 5 of Fig. 3.

Like numerals indicate the same parts wherever they occur in the several figures of the drawings.

Inasmuch as our invention relates, as aforesaid, only to the knife and the means for adjusting it, only so much of the lathe will be mentioned in this specification as is necessary to the proper understanding of the construction and operation of the invention, all the parts of the lathe proper being of any well-known or approved construction and arranged for operation in any well-known manner.

Referring to the drawings by numerals, 1 indicates the back-knife frame, which is secured to the lathe in the usual way, whereby it is reciprocated vertically. The top bar of this frame, as indicated at 2, is inclined from left to right downward, and the back-knife bar 3 is secured to said part 2. The back-knife bar 3 is longitudinally slotted, as at 4, to receive bolts 6, by means of which knife-carrying brackets 7, 8, and 9 are secured to the knife-bar 3. These brackets are vertically arranged, and at their lower ends the back knife 10 is rigidly secured by means of bolts, screws, or rivets 11. The position of the knife and its supporting-brackets 7, 8, and 9 with relation to the knife-bar 3 is adjusted by means of set-screws 12, which are threaded through the brackets and bear at their inner ends against the front face of the knife-bar 3 on the opposite sides of the longitudinal grooves 4.

The knife 10, of which the greater portion is illustrated in enlarged detail in Fig. 2, is made of steel of the right thickness to permit of its being sprung or bent by means of the adjusting-screws 12, such thickness, however, being sufficient to stand all strains usually brought upon it in its ordinary operation.

In Fig. 3 the parts are illustrated, as before stated, with the knife in its upper position, the lower right-hand end of the knife being about to contact with the piece 13 to be turned. As the knife is brought down, its front edge contacts with the piece 13, the result being that when the lower position of the knife, as illustrated in Fig. 4, is reached the piece will be shaped in accordance with the contour of the edge of the knife.

It will be observed that the knife is of substantially the same thickness throughout, as is best seen in Fig. 2, the lower face being beveled off at but slightly more than a right angle to the rear face 14 of the knife, leaving the cutting edge 15, which is the lower front edge, but slightly less than a right angle with the front face. The lower edge or bottom is also grooved or ribbed, as the case may be, as shown at 16 and 17, and the main body of

the knife is bent, as at 18, according to the pattern or shape to which the article is to be turned.

With a knife substantially of the form shown in Fig. 2 the piece 13 will be turned to substantially the form shown in Fig. 4; but a different form may be turned with the same knife in the manner hereinafter described.

Should it be desired to turn the right-hand end of the articles thinner than shown in Fig. 4, it will only be necessary to adjust the bracket 9, by means of its screws 12, away from the knife-bar 3, this adjustment being permitted by reason of the flexibility of the material of the knife before referred to. The like adjustment of the bracket 7 will throw the oppposite or upper end of the knife forward, the result of which would be the reducing of the thickness of the piece 13 at its left-hand end. The bracket 8 may also be similarly adjusted to cause the central portion of the piece 13 to be turned thinner. All of these adjustments may be made by loosening up the screws 6 until the screws 12 are allowed sufficient play to bring that portion of the knife which it is desired to adjust into its proper position.

The knife, as before stated, is rigidly secured to or might be made integral with the brackets 7, 8, and 9, whereby the adjustment of these brackets, as before described, will correspondingly adjust the shape and position of the knife.

In order to sharpen the knife, it is only necessary to grind its lower edge, the front face of the knife remaining undisturbed until as much of the material as possible has been ground off the lower edge.

The advantages attending the use of our improved knife and adjusting means will be obvious to those skilled in the art. Besides being able to adjust the knife in the manner hereinbefore described to turn different forms, it may also be adjusted by throwing the lower or cutting edge forward and the top slightly downward, whereby it will be able to cut clear and free, thus obviating a serious fault in the ordinary back knife, which will in the course of wear have its edges rounded by repeated whetting and as a consequence will burn the piece which it is turning.

While we have specifically described the construction of the different parts of our invention, we desire to be understood that we do not limit ourselves to the exact form shown, as many variations or slight changes might be made therein without departing from the spirit and scope of the invention.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination with the knife-bar of a lathe, of a knife consisting of a long flexible blade, and independent adjusting devices for securing the blade near each end adjustably to the knife-bar, whereby the blade may be bent or twisted, substantially as and for the purposes set forth.

2. The combination with the knife-bar of a lathe, of a knife consisting of a long flexible blade, brackets rigidly secured to the blade near each end, and means for securing the brackets independently and adjustably to the knife-bar, whereby the blade may be bent or twisted, substantially as and for the purposes set forth.

3. The combination in a back-knife lathe, of a knife-bar provided with longitudinal slots, a back knife formed of a flexible steel bar, vertical brackets rigid with said knife, bolts passing through the slots of the knife-bar into said brackets, and set-screws threaded through the brackets above and below the securing-bolts and having their inner ends abutting against the face of the knife-bar above and below its slots, substantially as described.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

EZRA A. MILLER.
REUBEN C. KNAPP.

Witnesses:
C. O. BIRDERMAN,
S. L. HARDING.