(No Model.)

2 Sheets—Sheet 1.

N. HARRIS.

CONVERTIBLE AXLE LATHE.

No. 343,955. Patented June 15, 1886.

Fig. 1.

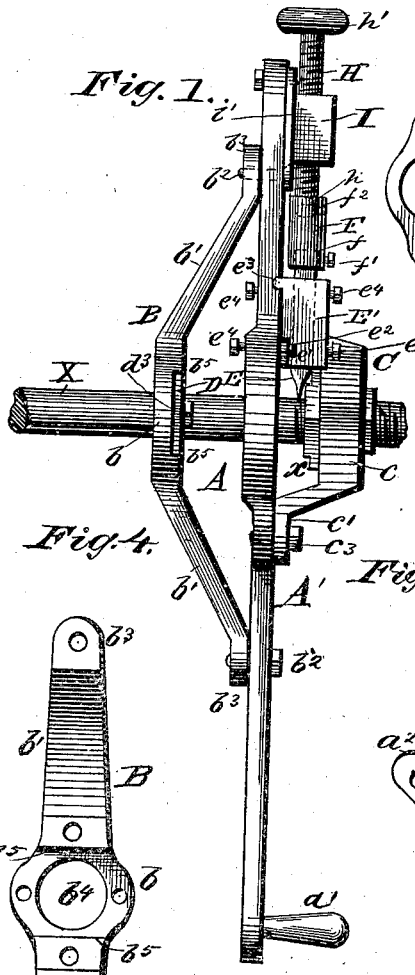
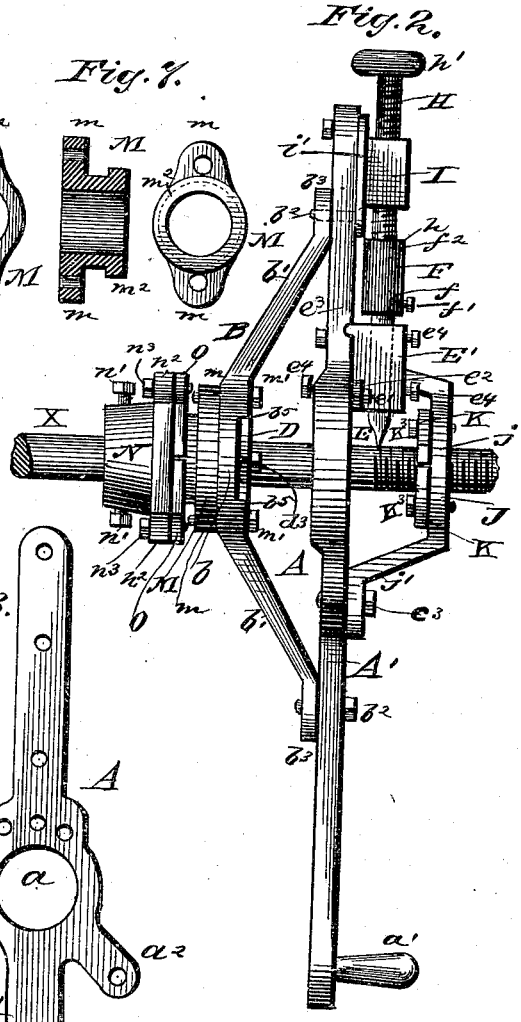


Fig. 7.

Fig. 2.



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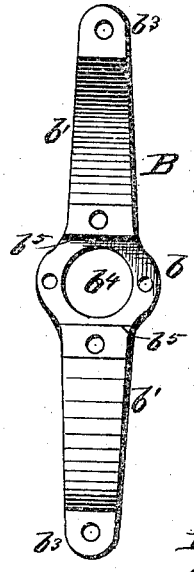


Fig. 3.

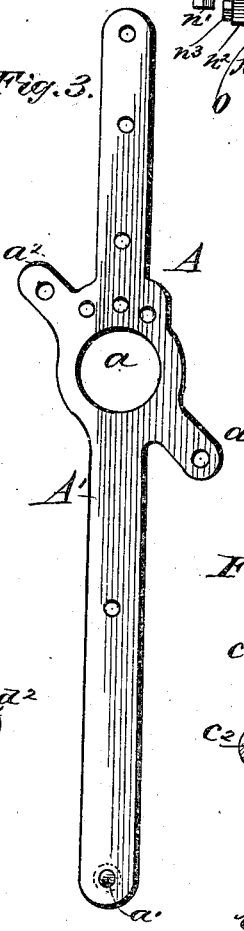


Fig. 5.

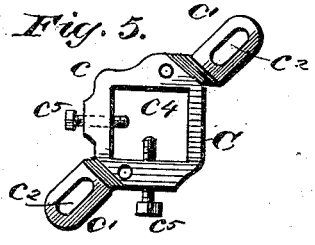
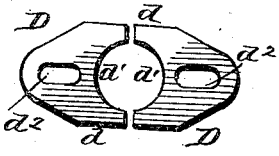


Fig. 6.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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CONVERTIBLE AXLE LATHE.

No. 343,955. Patented June 15, 1886.

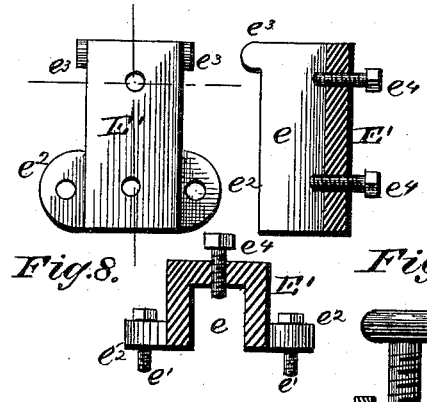

Fig. 8.

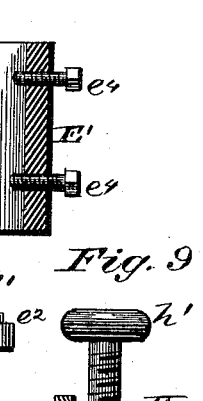

Fig. 9.

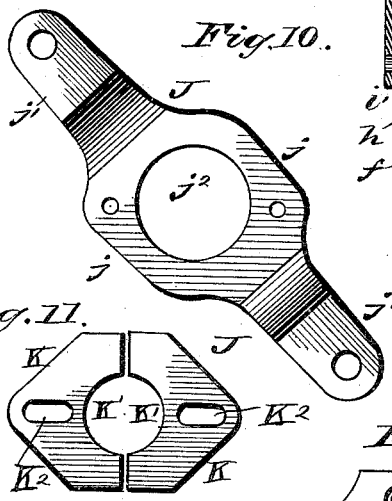

Fig. 10.

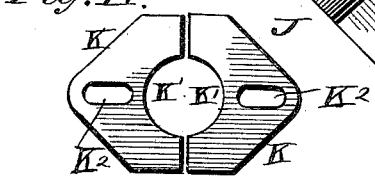

Fig. 11.

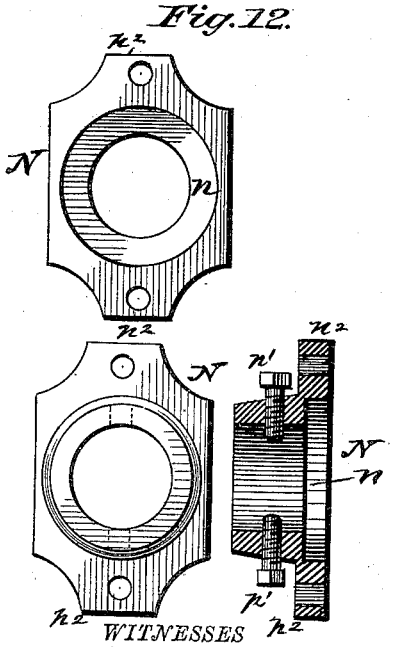

Fig. 12.

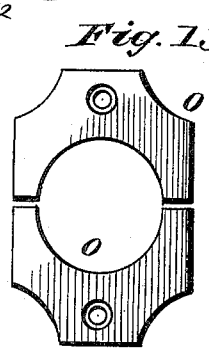

Fig. 13.

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UNITED STATES PATENT OFFICE.

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CONVERTIBLE AXLE-LATHE.

SPECIFICATION forming part of Letters Patent No. 343,955, dated June 15, 1886.

Application filed December 28, 1885. Serial No. 186,913. (No model.)

To all whom it may concern:

Be it known that I, NOAH HARRIS, a citizen of the United States, residing at Vincennes, in the county of Knox and State of Indiana, have invented certain new and useful Improvements in Convertible Axle-Lathes; and I do 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figures 1 and 2 are side views of my improved machine. Fig. 3 is a view of the main bar of the main frame. Fig. 4 is a view of the brace-bar. Fig. 5 is a view of the piece C employed in cutting additional threads. Figs. 6, 11, and 13 are views of the guide-plates. Fig. 7 shows the sleeve M in section, and also in elevation. Fig. 8 shows different views of the guide-block with attaching-screws. Fig. 9 is a sectional detail view. Fig. 10 is a view of the piece J. Fig. 12 shows different views of the thimble N.

This invention is an improved convertible axle-lathe provided with interchangeable and removable parts, which adapt it for use in cutting threads on unthreaded or partially threaded rods, or turning up collars or shoulders on such rods, and cutting off or shortening the same when desirable. It is of especial use in threading and shortening the spindles of vehicle-wheels, so as to take up the lost motion of the said wheels.

The invention consists in the construction and novel arrangement of parts hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings by letter, A designates the frame of the device, consisting of the straight bar A′ and the brace-bar B, which consists of the central portion, *b*, parallel to the bar A′, and the similar inclined legs *b′ b′*, running from each end of said central part, and secured to the bar A′ by the bolts, b^2 b^2, which pass through properly-threaded openings in said bar and in feet b^3 of the brace-bar. The middle of the portion *b* of the brace-bar is widened and provided with an opening, b^4, preferably circular, on each side of and at equal distances from which are the shoulders b^5 b^5, which serve a purpose hereinafter explained. The part of the bar A′ opposite said widened portion of the brace-bar is similarly widened, and is provided with an opening, *a*, similar and opposite to the opening b^4. Standing out at right angles from one end of the bar A′ is a handle, *a′*, by means of which the frame A may be turned.

C is a piece which is attached to the bar A′ on the side opposite to the brace-bar when cutting additional threads on a partially-threaded rod. The said piece consists of the central portion *c*, and legs *c′*, through slots c^2 c^2 in the feet of which the bolts c^3 c^3 pass, engaging in threaded openings in the ends of the arms a^2 a^2 of the bar A′. The said arms make angles of forty-five degrees with the said bar, and their central line runs through the center of the opening *a*.

c^4 is a square opening in the portion *c* of the piece C. The center of the opening is in line with the centers of the openings *a* and b^4, and the rod to be operated on passes through the three openings, the nut on said rod entering the opening c^4, and being held therein by the set-screws c^5 c^5, which enter adjacent sides of the said opening and bind on the adjacent sides of the nut. Nuts of different sizes may be properly aligned by means of the slots c^2 and bolts c^3, as the central line of the slots coincides with the diagonal of the opening c^4, passing between the points of the set-screws c^5, so that the center of the nut can be always brought in line with said diagonal, and there properly aligned, as described.

D D are guide-plates, having the straight parallel edges *d d*, which lie against the shoulders b^5 of the brace-bar B and the meeting concave edges *d′*, which together form an opening surrounding the rod when in position. For rods of different diameters, guide-plates with edges of corresponding degrees of concavity are used. The plates are secured to the brace-bar by means of the slots d^2 and set-screws d^3, so that the plate can be properly adjusted on the rod and the latter truly aligned.

E is a cutting-tool of proper shape, and hav-

ing a square shank which rests in and passes through the rectangular recess *e* of the guide-block E′. The said block is secured to the bar A′ by bolts *e′* passing through proper openings in the ears or legs e^2 near its lower end.

e^3 e^3 are lugs near its upper end, adapted to lie against the sides of said bar and aid in retaining the guide-block in place.

e^4 e^4 are sets of two adjusting-screws each, which pass through threaded openings in the block and the bar A′ on opposite sides, and by means of which the tool E may be aligned at right angles to the rod operated on.

F is a socket-block provided in its inner end with a rectangular socket, *f*, for the outer end of the tool, which is fixed therein by the set-screw *f′*, and in its outer end with a spherical or spheroidal socket, f^2, for the corresponding end, *h*, of the screw-rod H, provided on its outer end with the handle *h′*, as shown. The said rod passes through the longitudinal threaded opening *i* of the block I, the flanges *i′* on the end of which are bolted to the bar A′ near its end, as shown.

In additionally threading a partially-threaded rod, X—such as the spindle of the wheel of a vehicle—the nut of the same is secured, as described, in the opening c^4 of the piece C, the plates D clamped upon it, the tool E set to make a cut of proper depth, and the frame A rotated by means of its handle. In turning the nut travels on the thread of the rod, and consequently causes the tool to make a similar thread.

In cutting off the rod or turning up a collar on the same the piece C is removed and a piece, J, substituted therefor. The said piece has a central portion, *j*, and the inclined legs *j′*, through openings in the feet of which the set-screws c^3 pass to engage in the same openings in the arms a^2, as before.

j^2 is a circular opening in the enlarged central portion of the piece J. Over this opening are secured the guide-plates K, similar to the guide-plates D, and having similar curved edges, K′, slots K^2, and screws K^3.

By means of the guide-plates D and K the shaft is properly aligned.

M is a sleeve surrounding the rod, and provided on its inner end with the ears *m m*, through openings in which it is secured to the outer surface of the brace-bar by means of the bolts *m′ m′*, as shown.

m^2 is a circumferential flange on the outer end of said sleeve, which flange enters the circumferential recess *n* at the inner end of the bore of the thimble N, also surrounding the rod.

n′ n′ are set-screws by means of which the thimble is secured on the rod X, and n^2 n^2 are ears on the inner end of the thimble, through openings in which ears pass the screws n^3 n^3, holding the retaining-plates O upon the inner ends of the thimble. The said plates are concave on their meeting edge and surround the sleeve M on the inner side of the flange m^2, so that it can turn freely on the rod X, but is prevented from moving longitudinally by means of the thimble N and retaining-plate D. The device is thus fixed at one point on the rod, but rotates freely thereon, so that by setting the tool deeper after every revolution of the device the same can be speedily cut through, or by using a tool properly bent at its cutting end a collar can be turned true.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the rotatable frame, adjustable braces attached thereto on opposite sides, interchangeable guiding devices, as described, connected with said braces, and the adjustable cutter, substantially as specified.

2. In a portable hand-lathe, the combination of the frame A, composed of the straight bar A′, provided with the arms a^2 and the brace-bar B, the adjustable guide-plates D D, attached to the brace-bar, the cutter-tool E, passing through the block E′, and made laterally adjustable thereon by means of the set-screws e^4, the socket-block F, the screw H, and adjustable nut-holding piece C, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

NOAH HARRIS.

Witnesses:
CHARLES HAWK,
CHARLES BYERS.