

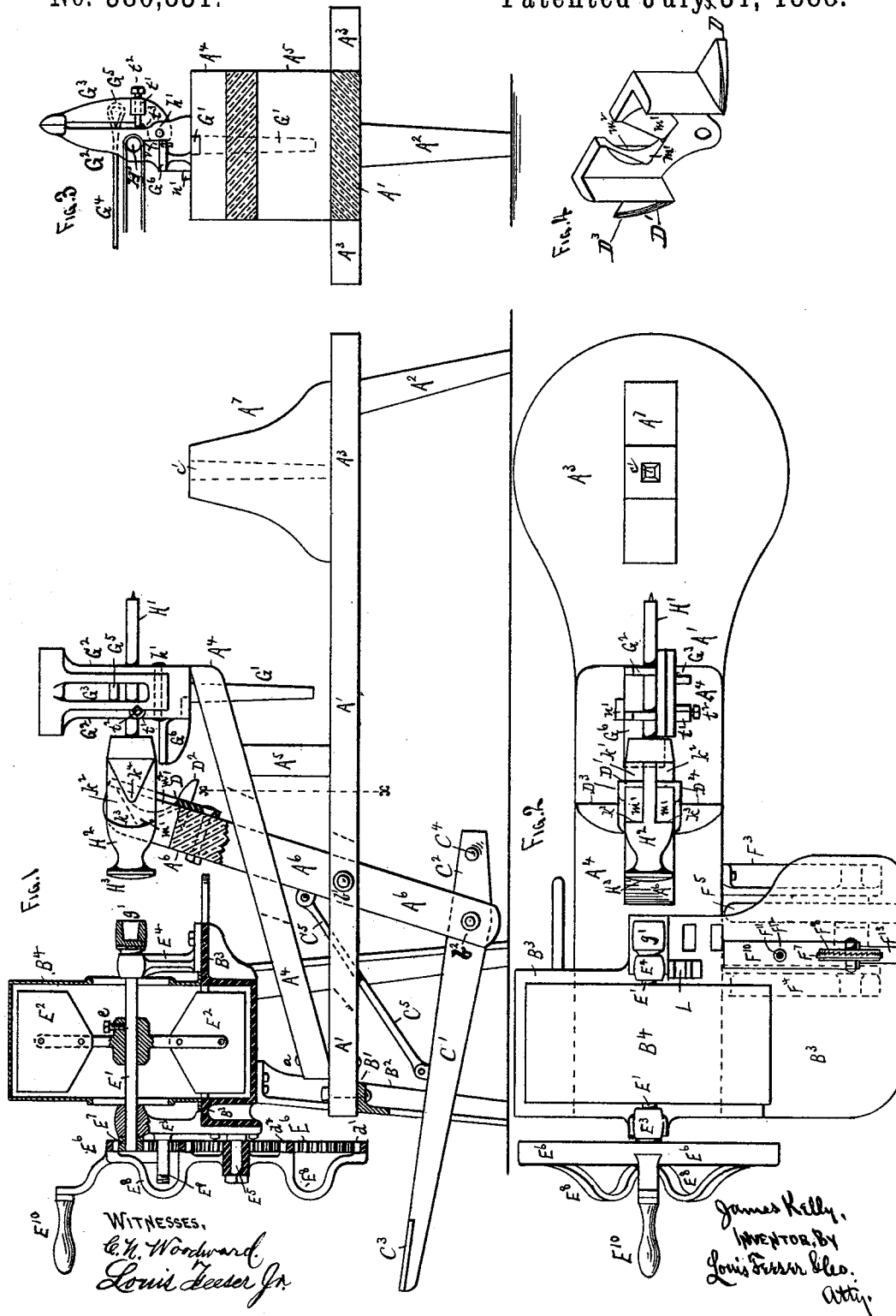
(No Model.)

3 Sheets—Sheet 1.

J. KELLY.  
WORK BENCH.

No. 386,831.

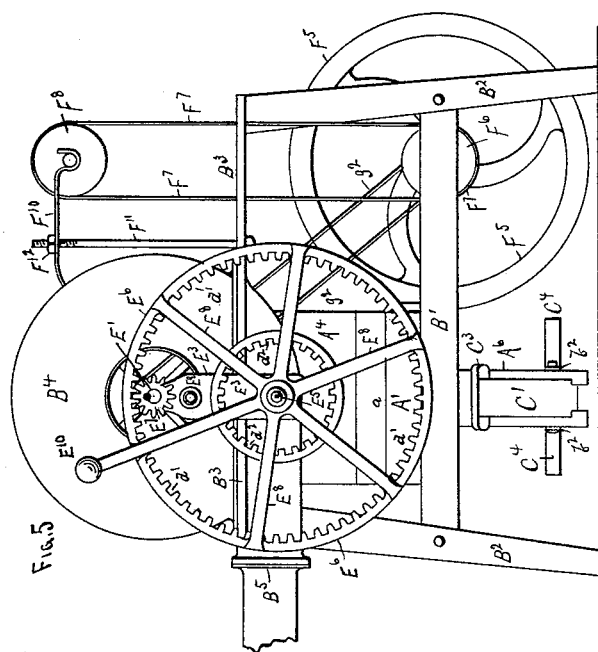
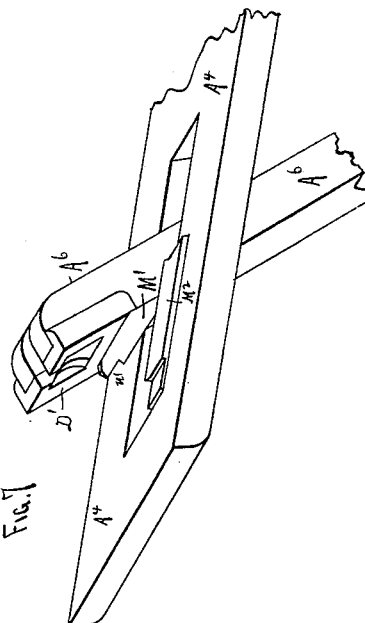
Patented July 31, 1888.



3 Sheets—Sheet 2.

No. 386,831.

Patented July 31, 1888.



C. H. Woodward.  
Louis Hooser Jr.

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INVENTOR, BY  
Louis F. Fiske, Esq.  
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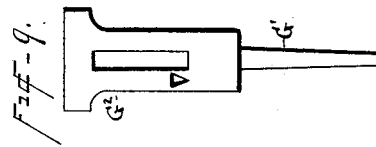
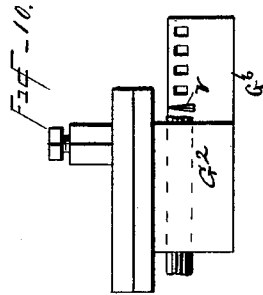
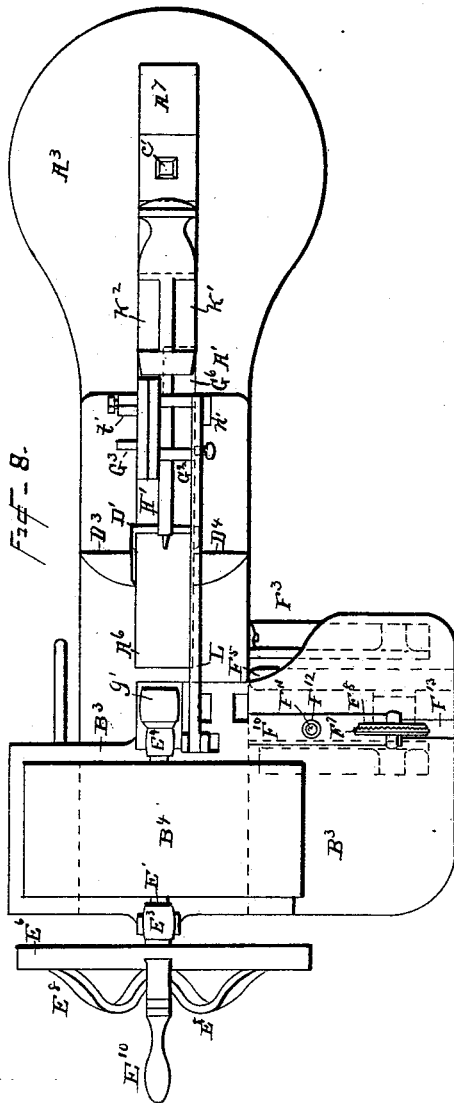
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3 Sheets—Sheet 3.

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WITNESSES -  
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INVENTOR -  
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# UNITED STATES PATENT OFFICE.

JAMES KELLY, OF CARVER, MINNESOTA.

## WORK-BENCH.

SPECIFICATION forming part of Letters Patent No. 386,831, dated July 31, 1888.

Application filed September 21, 1885. Serial No. 177,661. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES KELLY, a citizen of the United States, residing at Carver, county of Carver, and State of Minnesota, have invented certain new and useful Improvements in Combined Work-Benches, of which the following specification is a full, clear, and exact description, reference being also had to the accompanying drawings.

This invention relates to the combination, in one machine and on one base-frame, of several implements; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and then specifically defined by the claims.

In the drawings, Figure 1 is a sectional side elevation. Fig. 2 is a plan view. Fig. 3 is a cross sectional elevation on the line *x x* of Fig. 1, looking away from the fan. Fig. 4 is an enlarged perspective view of one of the shaving-horse jaws. Fig. 5 is a rear elevation. Fig. 6 is a front elevation on the line *x x* of Fig. 1, looking toward the fan. Fig. 7 is a perspective view of a section of the shaving-horse portion of the implement, illustrating the manner of attaching the leather-cutting blade, &c. Fig. 8 is a plan view of the bench and parts attached thereto, showing the tail-stock reversed in position as compared with the position in Fig. 2 and showing the tool-rest in place. Fig. 9 is an inner view of the fixed cam of the tail-stock, showing the cavity therein for setting saw-teeth. Fig. 10 is a top view of the jaws separate, showing the sockets for adjusting the leather-splitting knife.

A' represents the bench proper, formed of wood and supported at its rear end by one or more legs, A<sup>2</sup>, beneath a seat, A<sup>3</sup>, and at its front end by a cross-bar, B', connected by its ends to the legs B<sup>2</sup> of a table or platform, B<sup>3</sup>. Upon the top of this bench A' is an inclined plank, A<sup>4</sup>, connected at one end at *a* to the bench A' and held up away from the said bench at the other end by a bridge-block, A<sup>5</sup>, as shown.

A<sup>6</sup> is a lever passing down through the plank A<sup>4</sup> and bench A' and pivoted at *b'* in the base A' and having a long lever-arm, C' C<sup>2</sup>, pivoted at *b*<sup>2</sup> in its lower end. The long arm C' of this lever projects out beyond the table B<sup>3</sup>, and is provided with a foot-board, C<sup>3</sup>, while the short

arm C<sup>2</sup> projects backward in the opposite direction, and is provided with a cross-bar, C<sup>4</sup>, convenient to the foot of the operator sitting upon the seat A<sup>3</sup>. A block, A<sup>7</sup>, having a tapered square hole, *c'*, is shown upon the seat A<sup>3</sup>; but this will be removable, so that the seat will be unobstructed when it is desired to use it. The use and object of this block will be explained hereinafter.

The lever A<sup>6</sup> and the long arm of the lever C' will be connected by a brace-rod, C<sup>5</sup>, to hold them in fixed relations. On the face of the upper end of the lever A<sup>6</sup> is secured a metal plate, D', having a lug, D<sup>2</sup>, Fig. 1, projecting from its face, and ears or arms D<sup>3</sup> D<sup>4</sup> projecting from its sides. When the lower end of the lever A<sup>6</sup> is pushed backward by the foot of the operator, the lug and ears D<sup>2</sup>, D<sup>3</sup>, and D<sup>4</sup> are pressed down toward the upper surface of the plank A<sup>4</sup>, and serve to thus firmly hold any article which the operator desires to work at. The device thus forms a "shaving-horse," to hold any work on which a drawing-knife or similar implement is to be used.

Upon top of the table B<sup>3</sup> is mounted a fan-case, B<sup>4</sup>, the lower part of the casing and the exit-pipe B<sup>5</sup> being formed in the table B<sup>3</sup>, as shown. This table is shown formed of cast-iron, but may be formed of wood, if preferred.

E' is the fan-shaft, and E<sup>2</sup> the fan buckets or blades, the shaft being supported from the table B<sup>3</sup> by standards E<sup>3</sup> E<sup>4</sup>, as shown. The standard E<sup>3</sup> is formed with two studs, E<sup>5</sup> E<sup>6</sup>, each adapted to receive and support a double internal gear, E<sup>7</sup>. This gear is provided with a set of large internal gear-teeth, *d'*, adapted to engage with a pinion, E<sup>7</sup>, on the shaft E' when the hub of the gear E<sup>7</sup> is set on the stud E<sup>5</sup>, and with a set of small internal gear-teeth, *d*, adapted to engage with the same pinion when the gear is set on the hub E<sup>6</sup>.

In the drawings, the gear E<sup>7</sup> is shown set on the stud E<sup>5</sup>, and with its teeth *d'* engaging with the pinion E<sup>7</sup>; but it will be readily understood that by merely transferring the gear E<sup>7</sup> to the stud E<sup>6</sup> the teeth *d* will engage with the pinion E<sup>7</sup>. By this simple arrangement the speed of the shaft E' may be increased or decreased, as desired.

The hub of the fan E<sup>2</sup> is adapted to be connected to or disconnected from the shaft E' by

a set-screw,  $e$ , or other suitable means, as required, so that the shaft  $E'$  may be used independently of the fan. This fan is to be used for any of the purposes required about a workshop to produce a blast—as, for instance, to supply a blacksmith's forge or for melting metals in pots or crucibles. The air is conducted in the ordinary way from the fan-case to the place where the blast is to be applied through a pipe or passage, and the means require no further description here.

The arms  $E^8$  of the gear  $E^6$  are shown bowed outward to enable them to pass over the end of whichever one of the studs  $E^9$  or  $E^5$  happens, for the time being, to be the idle one, and the gear is also shown provided with a handle,  $E^{10}$ , by which to operate it.

The end of the shaft  $E'$  opposite the gear  $E^6$  is formed with a square socket,  $g'$ , forming or adapted to receive a mandrel in which a drill, lathe-center, emery-wheel, or other implement or tool may be placed. The outer surface of this socket  $g'$  is shown formed into a belt-pulley, from which a belt,  $g^2$ , may be led down through the table  $B^3$  and around another pulley on a shaft,  $F^2$ , journaled in brackets  $F^3$   $F^4$  from the base  $A'$  or other part of the machine.

$F^5$  is a large balance-wheel on the shaft  $F^2$ ; and  $F^6$  is a drum on the same shaft, adapted to carry the lower section of a band-saw,  $F^7$ , the upper portion of the saw being borne by a pulley or drum,  $F^8$ , supported above the table by a spring arm or standard,  $F^{10}$ . This spring-arm  $F^{10}$  is provided with a rod,  $F^{11}$ , connecting it with the table  $B^3$  by a nut,  $F^{12}$ , on its upper end, so that the tension of the saw may be regulated. The turning around of the nut  $F^{12}$  also forces the spring-arm downward for the removal of the saw. A removable slide,  $F^{13}$ , will be arranged in the table  $B^3$ , by which the saw  $F^7$  may be removed and inserted.

A clamp adapted to support a saw while being filed, or pieces of harness or other work while being sewed, is shown set by a tapered leg,  $G'$ , in the end of the plank  $A^4$ . This clamp consists of two jaws,  $G^2$   $G^3$ , pivoted together at  $h'$ , and adapted to be held together by a strap,  $G^4$ , fastened to a cross-bar,  $G^5$ , in the jaw  $G^3$ , and passing through jaw  $G^2$ , and thence downward to the foot of the operator, or fastened to the lower end of the lever  $A^6$ , or to any other suitable part of the machine. Through the two arms of the jaw  $G^2$  are formed holes  $i$  to receive a rod,  $H'$ , of a "head,"  $H^2$ , the latter provided with a curved face,  $H^3$ , adapted to be pressed against the article which the drill or other implement in the socket  $g'$  is acting upon. On opposite sides of the head  $H^2$  are formed recesses  $K'$   $K^2$ , the ends of the recesses next the face  $H^3$  being curved, as at  $k^3$ , and the ends of the recesses next the rod  $H'$  being pointed, as at  $k^4$ . The upper end of the lever  $A^6$  and the plate  $D'$  are formed and adapted to embrace the head  $H'$  between the recesses  $k' k^2$ , and the plate  $D'$  is also provided with pointed portions  $m'$ , adapted to rest against the curved portions  $k^3$  of the head  $H^2$ ,

and also provided with curved portions of hollows  $m^2$ , in which the pointed portions  $k^4$  of the head  $H^2$  fit. By this simple arrangement the curved motion of the lever  $A^6$  imparts a horizontal movement to the head  $H^2$ . The points  $m'$  act upon the curves  $k^3$  to push the head  $H^2$  toward the socket  $g'$ , and the curves  $m^2$  act upon the points  $k^4$  to push the head  $H^2$  away from the socket when the motion of the lever  $A^6$  is reversed.

The rod  $H'$ , sliding back and forth through the clamp-arms  $G^2$ , keeps the head  $H^2$  and face  $H^3$  in a horizontal plane, while the peculiar manner of connecting the head  $H^2$  and lever  $A^6$  insures the action of the latter upon the former without any cramping or straining from their distinct lines of movement.

The end of the rod  $H'$  opposite to the head  $H^2$  will be pointed, so that it forms a back-center to hold a piece of wood in the socket  $g'$ , or against a face-center therein, when it is desired to use the implement as a turning-lathe. When the rod  $H'$  is thus to be employed, the clamp in which it is mounted is to be reversed in position from the position shown in Figs. 1 and 2, which is readily effected by inserting the tapered leg  $G'$  in the opposite direction in its socket in the plank  $A^4$ .

Attached to the table  $B^3$ , alongside the standard  $E^2$ , is a forked standard,  $L$ , in which one end of a tool rest will be supported, while the other end of the tool rest will be supported on a small lug,  $n'$ , on the base of the clamp  $G^3$   $G^2$ , and will be bolted fast to the clamp. By this means a tool-rest for use when the machine is used as a turning-lathe will be provided.

In the drawings, the lug  $n'$  is shown on the opposite side of the clamp from the support  $L$ ; but when the lug  $n'$  is to be used the mere reversal of the clamp  $G^3$   $G^2$  will bring it in the right position.

As before stated, a removable block,  $A^7$ , is shown upon the seat  $A^3$ , which is intended to form a support for the clamp  $G^3$   $G^2$  when a longer piece is to be turned or otherwise acted upon than the space between the socket  $g'$  and the end of the plank  $A^4$  will permit.

$t'$  is a small lug on the side of one of the arms of the jaw  $G^3$  of the clamp, through which a set-screw,  $t^2$ , is shown tapped and formed with its inner end triangular to form a saw-set. When thus used, the saw will be inserted between the jaws  $G^3$   $G^2$ , with its teeth downward and resting upon a small lug or support,  $t^3$ , Fig. 3. The jaw  $G^3$  is then opened and closed to cause the end of the set-screw  $t^2$  to press against the saw-teeth and set them to any required extent. For thus operating the jaw  $G^3$  the strap  $G^4$  will not be used; but a simple pressure of the hand against the jaw is sufficient for setting saw-teeth, or, if desired, any other known means may be used for the purpose. A small cavity will be formed beneath the point in the jaw  $G^2$  opposite the set-screw  $t^2$ , in which the saw-teeth will be pressed when acted upon by the set-screw.

In Fig. 7 is shown a perspective view of a

portion of the plank A<sup>4</sup>, and the upper end of the lever A<sup>5</sup>, and the plate D', illustrating still another feature of my invention, consisting in a sharp blade, M', attached to the side of the lever A<sup>5</sup> or plate D' and adapted to form, in conjunction with a sharp-edged plate, M<sup>2</sup>, on the plank A<sup>4</sup>, a shear-like cutting implement which is rendered operative by the movement of the lever A<sup>5</sup>. This will be found very convenient in cutting thin metallic substances, &c. The blade M' is shown with its outer end cut out at u'. This portion u' is intended to be thinner and sharper than the remainder of the knife and will be used to cut straps or other similar substances.

On the side of the base of the clamp G<sup>3</sup> G<sup>2</sup> is shown a projection, G<sup>6</sup>, to form a small anvil, and inserted into this anvil I have shown a small upright knife, v, which will be found very convenient to use in cutting leather into straps or strings.

By forming a series of holes in the anvil in which to insert the knife v, or by inserting a block of the proper width between the knife and the clamp, the width of the strap or string to be cut can be regulated.

By placing the rod H' through the clamp and drawing the leather being cut around the rod the latter forms a guide to the leather and insures an even and uniform cut.

The manner of applying the strip of leather to cut out the straps or strings is shown in Fig. 3, which represents the leather doubled around the rod H', so as to be drawn around and under the same in contact with the knife v, the rod thus holding the leather to the knife and forming a guide to the same. The width of the straps or strings is determined by

the distance between the knife and the edge of the jaw G<sup>2</sup>.

When used as a drill or turning-lathe, the fan will be disconnected from its shaft, the latter then revolving loosely therein.

Having described my invention and set forth its merits, what I claim is—

1. The combination, with a work-bench having a work-plank thereon, of a lathe mandrel or chuck mounted on a frame secured to the bench, a tail-stock mounted on the plank removable and reversible in position, a lever pivoted to the bench and adapted to move the tail-center to the work, and a treadle for operating the said lever, all arranged in relation to one another substantially as herein set forth.

2. The combination, with a work-bench having a work-plank thereon provided with a socket, of a lathe tail-stock fitted in the said plank-socket removable and reversible therein and provided with clamp-jaws, and a lathe tail-center sliding in one of the jaws of the clamp, substantially as herein set forth.

3. The combination, with a work-bench having a work-plank thereon provided with a socket, of a lathe tail stock fitted in the said plank socket, a lathe tail-center sliding in the said tail-stock, and a leather-splitting knife inserted in an anvil on the tail-stock, the said tail-center being adapted to act as a guide to the leather split by the said knife, substantially as and for the purpose herein set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES KELLY.

Witnesses:

LOUIS FEESER, Jr.,  
M. ROBERTSON.