

(No Model.)

2 Sheets—Sheet 1.

W. BEHAN & P. FRIENSEHNER.

GIN SAW SHARPENING MACHINE.

No. 365,567.

Patented June 28, 1887.

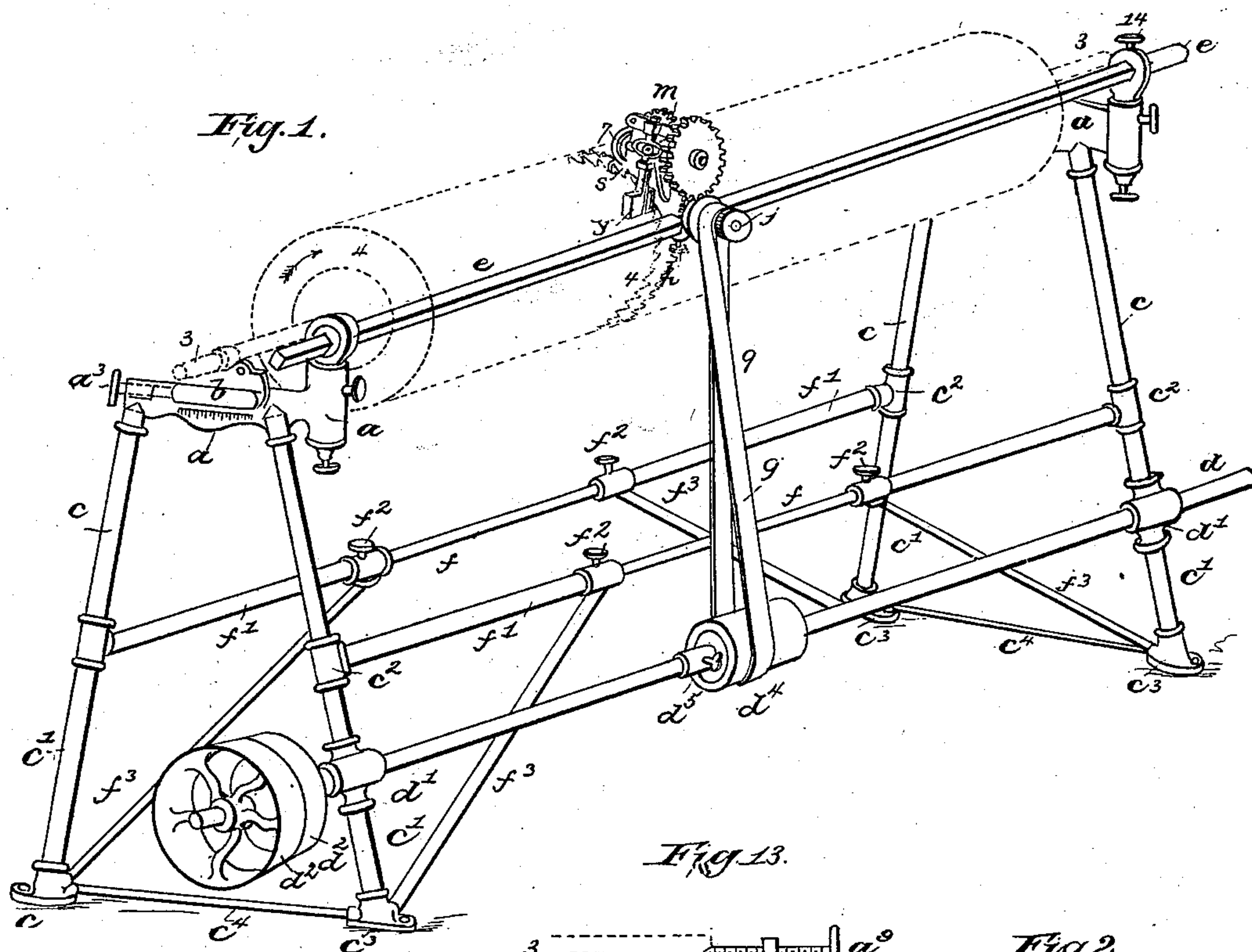


Fig. 13.

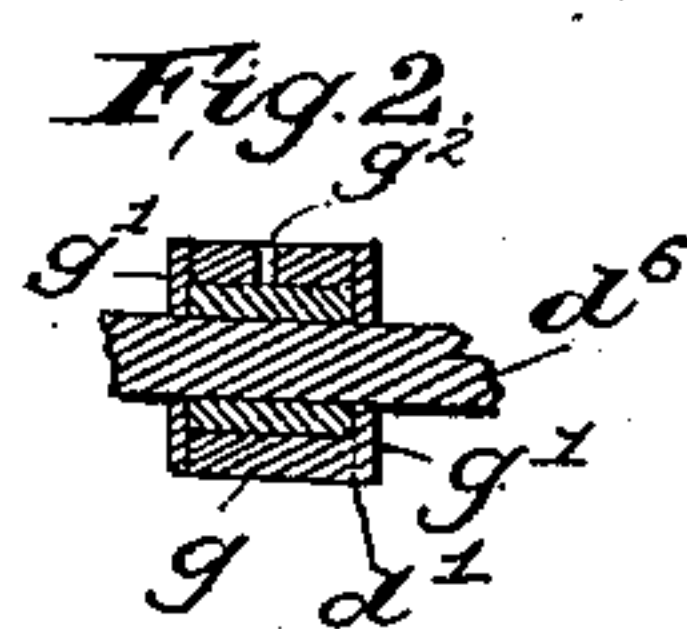
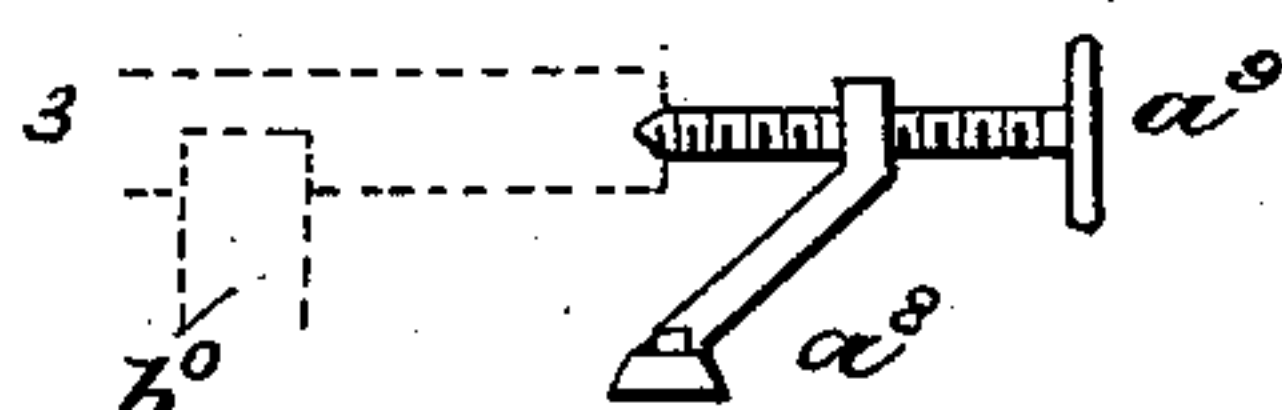


Fig. 14.

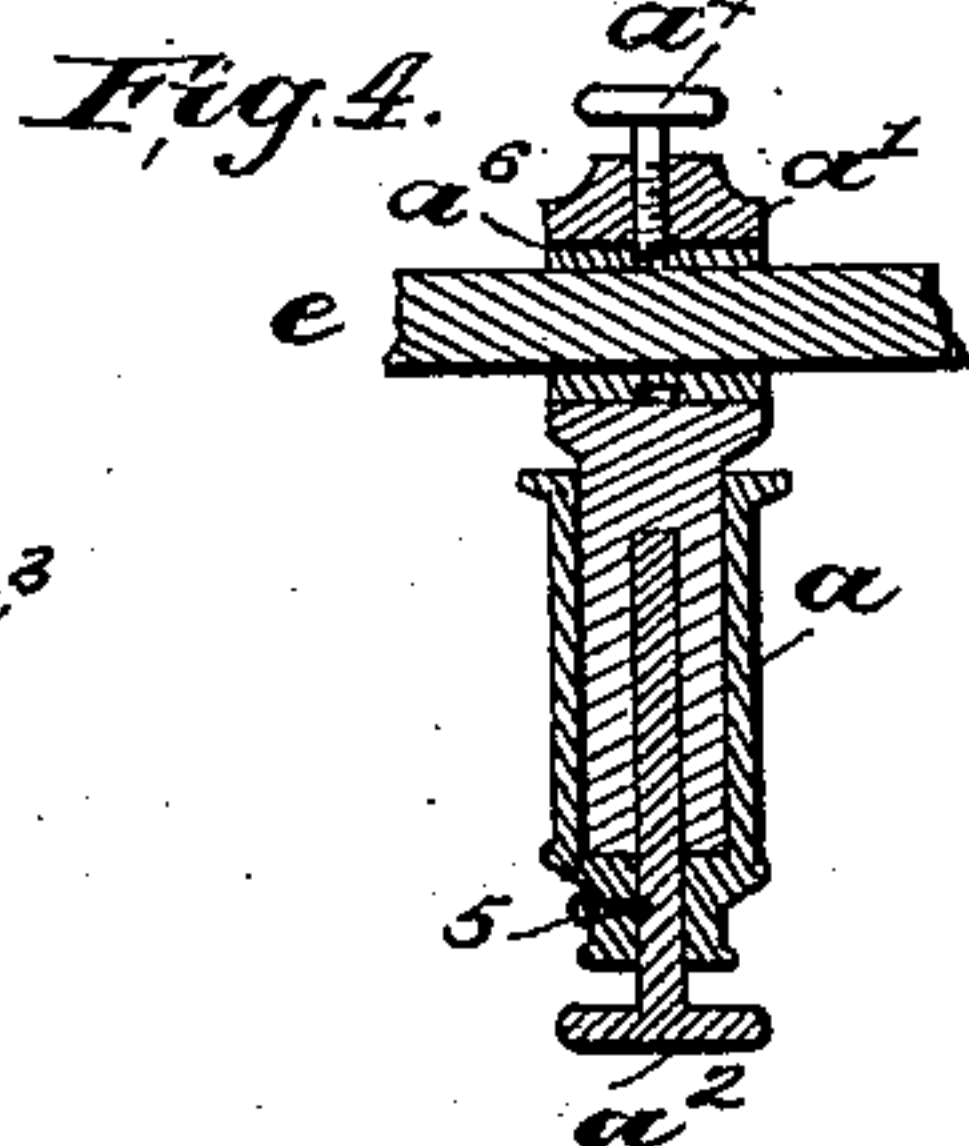
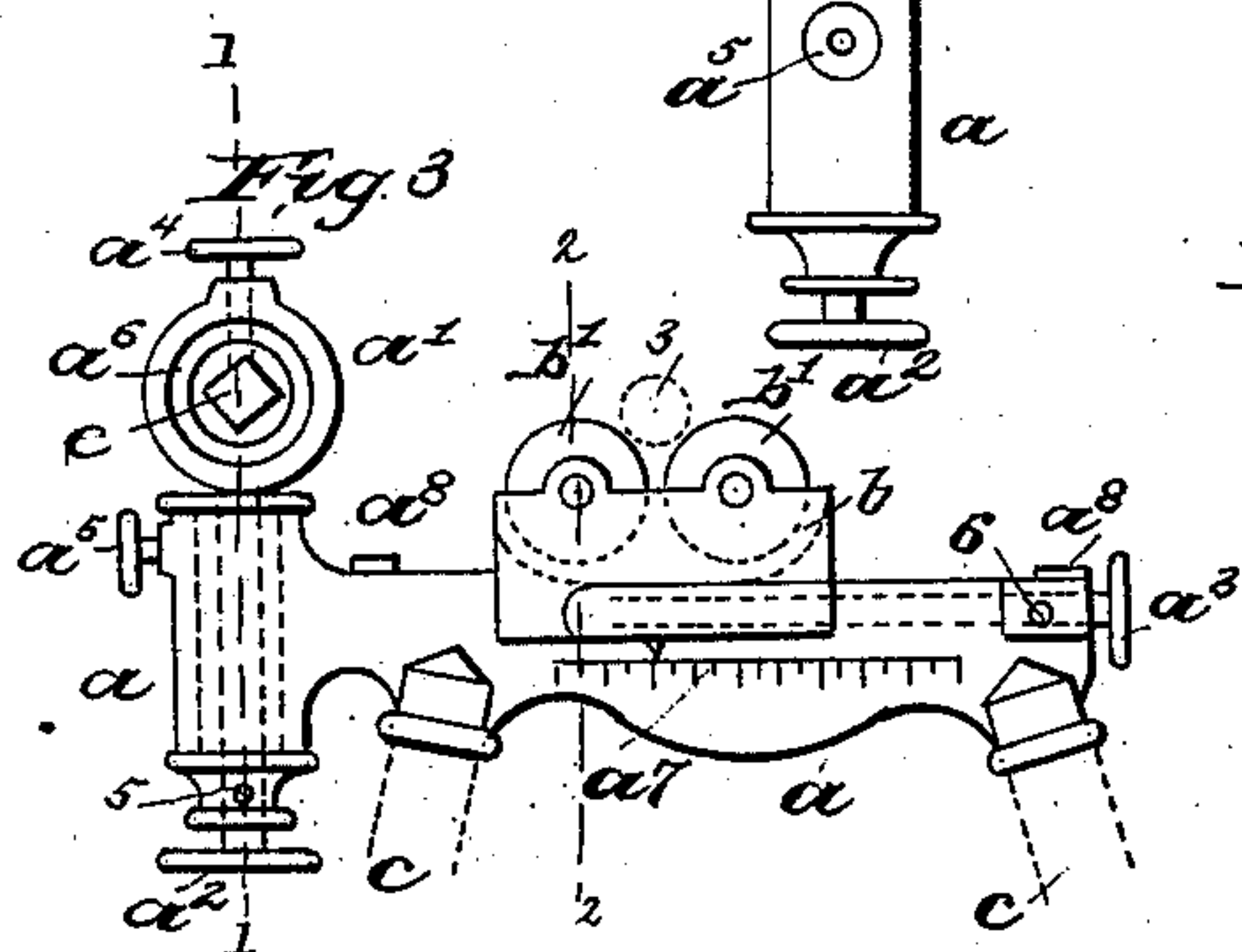
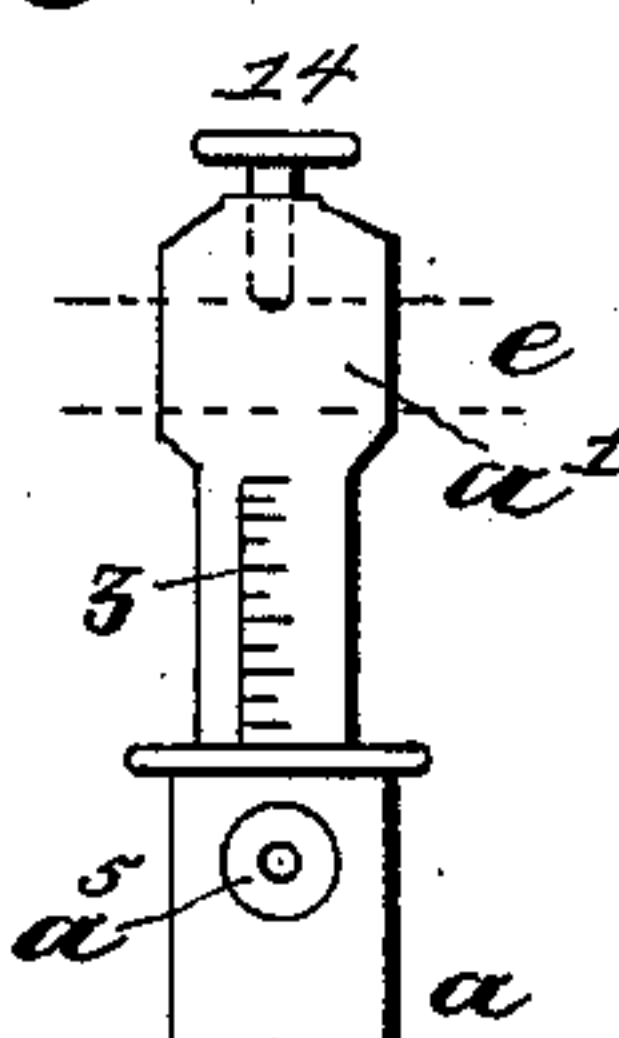
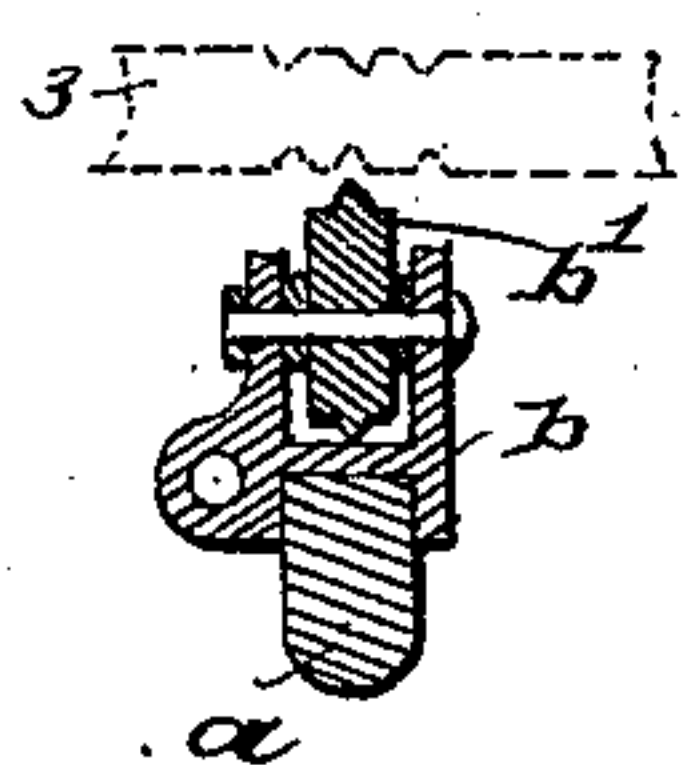


Fig. 5.



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2 Sheets—Sheet 2.

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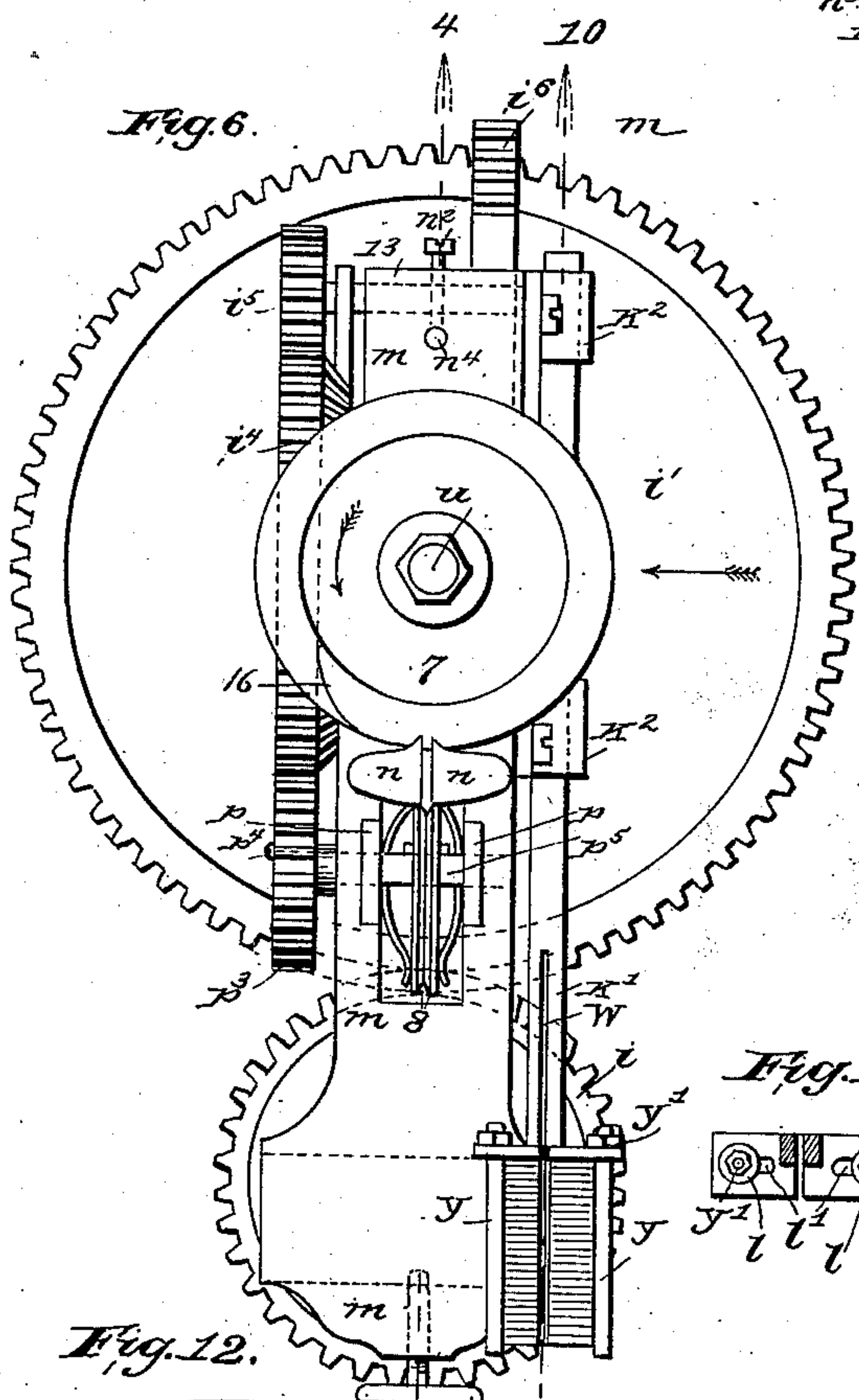
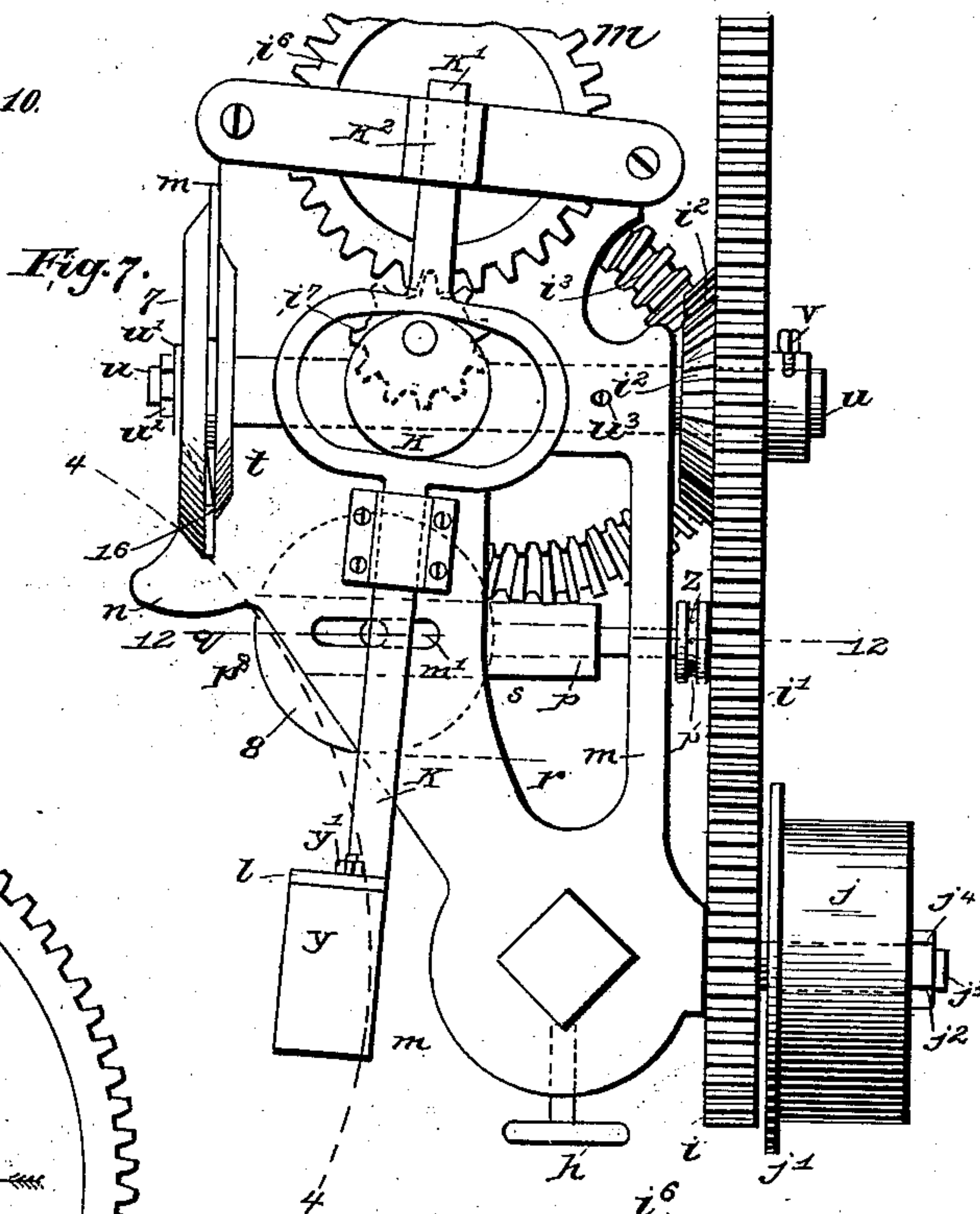
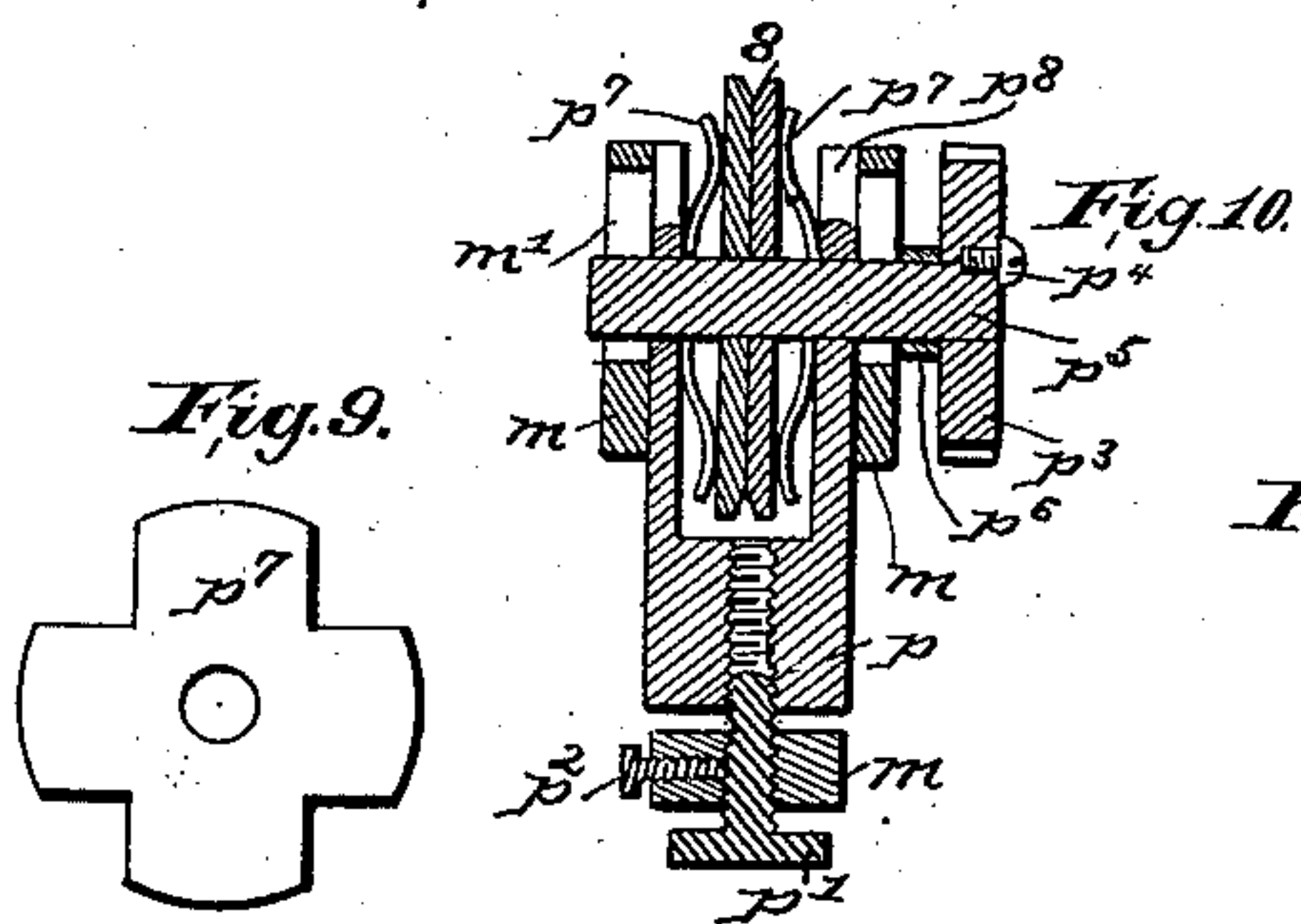
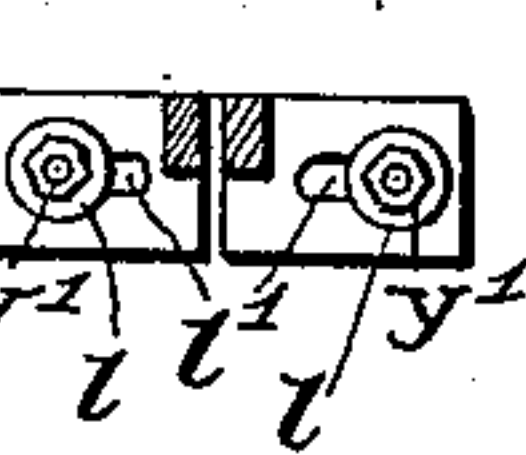


Fig. 8.

Fig. 11.



UNITED STATES PATENT OFFICE.

WILLIAM BEHAN AND PAUL FRIENSEHNER, OF TEXARKANA, TEXAS.

GIN-SAW-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,567, dated June 28, 1887.

Application filed July 6, 1886. Serial No. 207,282. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM BEHAN and PAUL FRIENSEHNER, of Texarkana, in the county of Bowie and State of Texas, have invented certain new and useful Improvements in Gin-Saw-Sharpening Machines, of which the following is a specification.

Figure 1 is a perspective view of the stand and machine, showing how they are used together, dotted lines 3 and 4 showing a gin-saw spindle and saws and how they are placed on the stand and how the machine is applied to them to do its work. Fig. 2 is a sectional view of a box for a square shaft to revolve in, in place of a round shaft. Fig. 3 is a detailed side view of the adjustable top of frame or stand with friction-roller box. Fig. 4 is a sectional front view through line 1 1 of Fig. 3 of the up-and-down adjusting mechanism of the shaft-arm of top of frame. Fig. 5 is a sectional end view through line 2 2 of Fig. 3 of the adjusting roller-box. Fig. 6 is a front view, on a larger scale, of the machine. Fig. 7 is a side view of Fig. 6, looking in direction of the arrow. Fig. 8 is a side view from the opposite side. Fig. 9 is a detail view of a side file-spring. Fig. 10 is a sectional view through line 12 12, Figs. 7 and 8, of side file-adjusting mechanism. Fig. 11 is a top view of the brush-holders and their adjusting mechanism. Fig. 12 is a side view of the tallow-fountain. Fig. 13 is an end view of the center screw for spindle-bar. Fig. 14 is a front view of square shaft-arm.

The object of our invention is to improve the construction of gin-saw sharpeners, so that gin-saws may be sharpened with greater rapidity, certainty, exactness, and smoothness than by machines heretofore constructed.

Our invention is described as follows:

The stand, Fig. 1, is made to hold any size and length of gin-saw spindle or arbor by the rollers b' , Figs. 3 and 5. The adjustable box b , with rollers b' and spindle 3, can be brought to and from the shaft e and machine m by the adjusting-screw a^3 , so that any size gin-saw, or one worn down to its smallest circle, can be sharpened, and the machine m being stationary on square shaft e , Fig. 1, and shaft held to its place by screw 14, (right side arm,) it will be seen that the saws 4 can be sharpened and kept true to circle until worn out.

The scale a' , Fig. 3, is to be a guide for adjusting roller-box b to an exact distance from shaft e on either end of stand, so that the saws 4, Fig. 1, will be filed by machine m to an exact diameter from one end to the other. To keep spindle 3, Fig. 5, from moving to the left, which it will do when self-feeding file 7, Fig. 6, is at work, we shape rollers b' , Fig. 5, to fit in grooves usually turned in gin-saw spindles to keep them running true in their Babbitt bearings. Where these grooves are not turned in, we have flat-faced rollers b^0 , Fig. 13, and keep spindle 3 in its place by centering-screw a^9 screwing through frame a^8 , which is screwed to top of stand a , Fig. 3, at $a^8 a^8$. The rollers b' , b' , and b^0 , Figs. 3, 5, and 13, are made not only to fit grooves and any size spindle, but also to allow as easy a rotation to same as possible, in order to preserve the feed-tail of gumming-file 7, Fig. 6.

Just here we would state that, the mechanism of machine m being stationary on the square shaft e , Fig. 1, the action of said machine gives rotation to the saws 4 and spindle 3, carrying same toward machine m one tooth after another, as indicated by arrow on saw 4. This is accomplished by aid of the feed-tail 16 of self-feeding file 7, Fig. 6, and side files, 8, Fig. 7, rotating as shown by arrows. We do not in this application claim the mechanism of self-feeding file 7, this having already been patented by R. S. Mudford, July 27, 1880, No. 230,489. The stand is made to be adjustable in lengths to take up saw-spindles having forty, sixty, eighty, or one hundred or more saws by loosening set-screws $f^2 f^2 f^2 f^2$, Fig. 1, by which adjustment the rods $f f$ can be slid out of their tubes $f' f' f' f'$ until the required length is obtained.

The tubes $f' f' f' f'$ are screwed into T-couplings $c^2 c^2 c^2 c^2$, into which the two halves of iron-pipe legs $c c$ and $c' c'$ are screwed, holding the shaft-boxes $d' d'$. The legs $c' c'$ are screwed into feet $c^3 c^3 c^3 c^3$, that have holes for screwing to the floor, to which feet braces $f^3 f^3 f^3 f^3$ and connecting-rods $c^4 c^4$ are secured, giving strength and firmness to stand. Tight and loose pulleys $d^2 d^2$ can be belted to pulley of any shaft. On shaft d is arranged a sliding pulley, d^4 , with key and set-screw d^5 , which pulley can be slid to where it may be wanted. For large (one hundred and twenty-

five saw) gins we use the round shaft d , Fig. 1; but for small country gins we make round or square shaft turned round on left side, where it is stationary and left loose for adjustment in the right-side box, d' , Fig. 1, which is made as shown in sectional view, Fig. 2, where a round collar, g , has a square central hole that square shaft d' fits into, and which collar runs in a box, d' , kept in oil by oil-hole g^2 , and kept in its place by flanges $g' g'$, that are screwed to box d' .

Square machine-shaft e , Fig. 1, is turned round on right end and tightened by set-screw 14, that works in a conical hole bored in shaft e , Fig. 14. Said shaft is left loose for adjustment on left end, as shown in sectional view, Fig. 4, where a round collar, a^6 , has a square central hole for shaft e , and a groove turned in collar a^6 for screw a^4 , to keep it from slipping out of shaft-arm a' . By loosening screw 14, Fig. 1, the machine m can be moved about shaft e away from the saws 4, and by rotating saws 4 by the hand in the direction of arrow, to help the feeding-file 7 out of saw-teeth, the machine m is freed from saws. The machine set-screw h , Fig. 6 or 1, having also been loosened, the machine m can be slid to the next saw and moved circularly toward the saws 4 again until files 7 and 8 and brush $y y$ are in their place on saw-teeth. The machine set-screw h and shaft-screw 14 are then to be tightened, and the machine m is ready for work again. Belt 9 conveys power from sliding pulley d' to machine-pulley j . We make machine m for steam or hand power. For hand-power we fit a crank on file-arbor $u u$ or on gear i , Fig. 7 or 8. The scale z , Fig. 14, is a guide for the up-and-down adjustment of shaft-arm a' to bring machine-shaft e to an equal height on either end.

The machine m , Fig. 1, is shown in detail on a larger scale in Figs. 6, 7, 8, and 10, where in Fig. 6 $n n$ are the saw-guides, keeping the saws from moving sidewise. The circular side files, 8 8, are to sharpen the saws to a sharp-pointed taper, as shown at the ends of dotted lines 4 4 and 10 10 in Fig. 6, representing saws, 4 4 being the center one that files 7 and 8 8 are at work on, and 10 10 the one next to it on which the smoothing-brushes $y y$ are at work.

In position on the machine over the central saw, 4 4, is placed the tallow-feed fountain n^3 , Fig. 12, of conical shape, with a small bottom that has a cut through center, where saw 4 extends through to the full depth of its teeth, or more. This cone-shaped box n^3 contains the tallow, which is kept pressed by the hand to the saw. Saw 4 carries the tallow as it rotates through the box n^3 to the files 7 and 8, Fig. 6, 7, or 8. Onto the tallow-box n^3 , Fig. 12, is riveted an arm, n' , which is slid into a hole, n^4 , Fig. 6, and tightened by set-screw n^2 , Fig. 6 or 8. In Fig. 10 is shown the adjusting mechanism of the side files, 8 8.

The side files, 8 8, Fig. 10, and their springs $p^1 p^1$, (full view of which is shown in Fig. 9,) are held by a spindle, p^5 .

These springs bear upon files, keeping same in center, filing one side of saw as even as the other, and allow them to give when necessary instead of holding them rigid. The files 8 are rotated by a gear, p^3 , keyed to spindle p^5 by a screw, p^4 , which gear is offset from machine-frame m by a collar, p^6 .

The files and spindle are held in a slide, p , fitted to a straight groove, p^8 , milled through the machine-frame m , (also seen by dotted line p^8 , Fig. 7.) The side-file spindle p^5 runs through the slide p and through slot m' , Figs. 10 and 7. The adjusting-screw p' is held in machine-frame m by a screw, p^2 , fitted loose into a groove of adjusting-screw p' , as in Fig. 10. The side files, 8, Figs. 7 and 8, are thus made adjustable horizontally in machine-frame m , room being milled out of frame, as shown by dotted lines r and q , where the frame is made in two halves. The smoothing-brushes $y y$, Figs. 6, 7, and 8, move up and down vertically to the pitch of the saw-teeth. Brushes $y y$ are screwed by threaded stems $y' y'$ to holders l , that have slots $l' l'$, Fig. 11, to allow of adjustment of brushes $y y$ until worn out. The lower end of eccentric-rod k' , Fig. 6, is cut in two halves at w , serving as springs for brushes. The eccentric-rod k' , Fig. 7, runs through guides k^2 , and is set in motion by eccentric k , which is fastened to gear i^7 , that is rotated by gear i^6 , which latter is keyed to a spindle, 13, Fig. 6 or 8, that runs in a bored hole in machine-frame m . At 15, Fig. 8, gear i^5 is keyed by key-screw 11 onto spindle 13, receiving its rotation from gear i^4 , which also rotates gear p^3 of side files. Gear i^4 is a spur and a miter gear. The miter side i^3 , Fig. 7, is rotated by miter-gear i^2 , which is fastened to spur-gear i' , that is fastened to file-spindle u by screw v and rotated by gear i , which latter is fastened to a flange, j' , and pulley j , that revolves on a spindle, j^3 , and is kept in place by a collar, j^2 , and set-screw j^4 . In Fig. 7, t is a projection of machine-frame; u^3 , a screw to keep file-spindle u in place; u^2 , a nut, and u' a washer.

Having thus described our invention, what we claim as new is—

1. A machine for sharpening gin-saws, consisting of a frame provided with bearings for the gin-saw shaft, a horizontal rod or shaft, e , arranged in bearings adjustable both vertically and horizontally to suit the saws, a filing-machine supported upon and made longitudinally adjustable on said shaft e , and means for operating said filing-machine, substantially as shown and described.

2. The combination, with a frame with vertically-adjustable shaft e , bearing a filing-machine, of the horizontally-sliding box b , bearing rollers $b' b'$ for the gin-saw shaft, and the adjusting-screws a^3 , substantially as and for the purpose described.

3. The combination of the frame having end legs, $c c'$, hollow bars f' , rods f , sliding therein for lengthening the frame, the shaft e , bearing

the filing-machine and having a longitudinal adjustment in the end frames, and means for supporting the gin-saw shaft and adjusting it to the filing device, substantially as and for the purpose described.

4. The yielding circular filing-disks 8 8, arranged to press together against the opposite sides of the saw-teeth to file them to a taper, in combination with the supporting-frame and means for rotating said filing-disks, substantially as shown and described.

5. The combination of the filing-disks 8 8, springs p^7 p^7 , shaft p^5 , with gear p^3 , the sliding frame p , and set screw p' , substantially as and for the purpose described.

6. The combination, with a gin-saw-filing machine, of the reciprocating cleaning-brushes arranged to reciprocate upon opposite sides of the saw-teeth to remove the burr left by filing, as described.

7. The combination, with a gin-saw-filing machine, of a lubricating cup or reservoir arranged to feed a lubricant to the teeth just before they are filed, as set forth.

8. The combination, with the frame having bearings for the gin-saw shaft, the shaft e , bearing the filing-machine, with means for adjusting it along said shaft, the drive-shaft d , having tight and loose pulley therein, and a longitudinally-adjustable pulley, d^1 , and connect-

ing-belt adapted to be adjusted on said drive-shaft to correspond with the adjustment of the filing-machine on shaft e , substantially as and for the purpose described.

9. The combination of the circular gumming-file 7, the yielding circular filing-disks 8 8, and the reciprocating cleaning-brushes y y , with means for operating them, substantially as shown and described.

10. The combination, with the filing devices, of a cleaning-brush arranged, as described, to operate on a different saw from that which is being filed, substantially as set forth.

11. The frame having bearings for the gin-saw shaft at each end, adjustable boxes carrying said bearings, gages at each end for preserving an even adjustment of both ends of the gin-saw shaft, and the filing devices, substantially as and for the purpose described.

12. The frame having bearings for the gin-saw shaft, and a horizontal shaft, e , carrying the filing devices, bearings for said shaft made vertically adjustable at each end, and provided with gages for securing an even adjustment of the opposite ends of said shaft, as described.

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