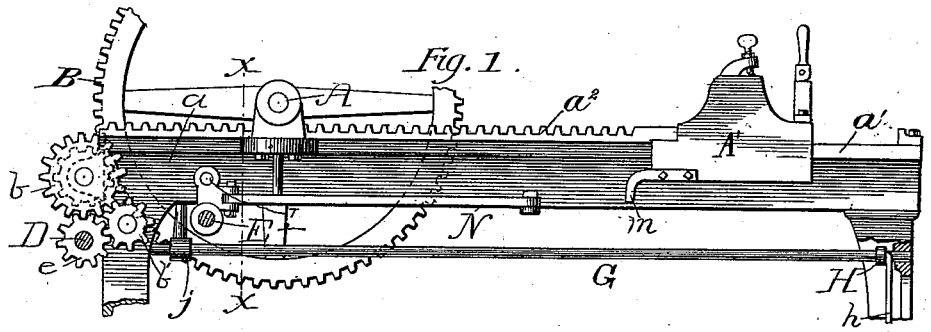
(No Model.)

G. E. LLOYD.

STEREOTYPE SHAVING MACHINE.

No. 418,799. Patented Jan. 7, 1890.

Fig. 1.



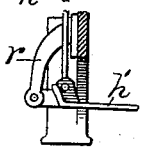


Fig. 2.

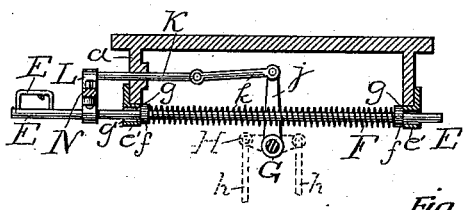


Fig. 3.

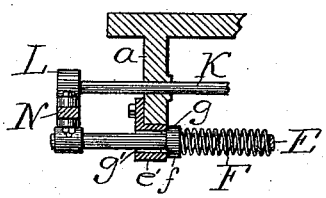


Fig. 4.

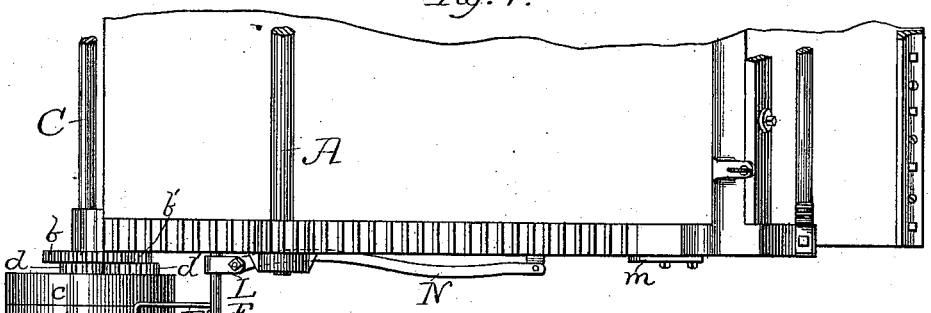


Fig. 5.

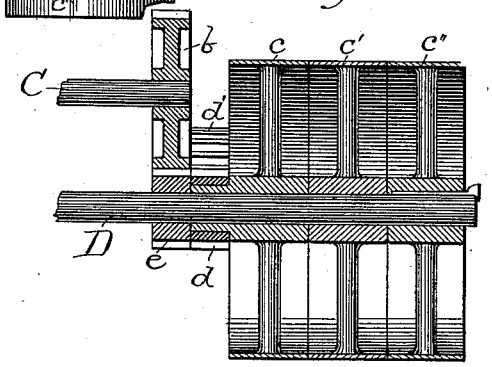
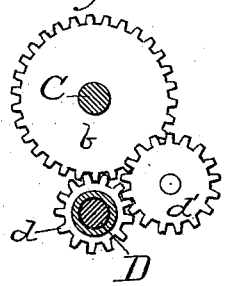


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE E. LLOYD, OF CHICAGO, ILLINOIS.

STEREOTYPE-SHAVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,799, dated January 7, 1890.

Application filed September 24, 1888. Serial No. 286,293. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. LLOYD, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stereotypers' Shaving-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is to apply steam-power to operate a stereotype-shaver by the use of such devices that the cutting motion of the knife or the withdrawal motion thereof can be easily controlled by the operator by a foot-treadle movement, which leaves the hands free to care for the work, and which, moreover, makes the cutting motion of the knife slower than the withdrawal motion thereof, substantially as hereinafter fully described, and as illustrated in the drawings, in which—

Figure 1 is a side elevation of my invention, showing the drive-pulleys removed and the legs of the supporting-frame omitted. Fig. 2 is a transverse vertical section of the same taken on line *x x*, Fig. 1. Fig. 3 is a detail view showing an enlarged sketch of the bearings of the shifting-bar. Fig. 4 is a plan view of the left-hand half of my improved machine, and Figs. 5 and 6 are detail views of the nest of gear adjacent to and actuated by the drive-pulleys.

Referring to the drawings, *a* represents the rectangular table-frame resting on suitable legs and supporting a bed-plate *a'*.

A' represents a frame, which carries the shaving-knife and which consists of end blocks that run along and on the side edges of the bed *a'* and are connected by a suitable cross-bar, against and to which the knife is adjustably secured. Secured to the rear of the end blocks of frame A', and extending longitudinally to the rear therefrom next to and parallel with the sides of the bed *a'*, are racks a^2. These racks pass under a transverse shaft A, which is journaled in suitable brackets secured to and projecting up from the sides of frame *a*, and said racks are engaged by small pinions mounted fast on said shaft with reference to them. This shaft A is usually turned by means of a hand spoke-wheel. I dispense with this, and instead make fast, preferably on the right-hand end of said shaft A, a large gear B. This gear B is engaged by a small pinion on the end of the transverse shaft C, journaled in suitable bearings projecting from the rear cross-rail of the table-frame supporting the bed, which shaft has the gear *b* on the end contiguous to the drive-pulleys *c c' c''*.

Pulleys *c*, *c'*, and *c''* are carried on the end of the drive-shaft D, the outside pulley *c''* being keyed to said shaft, the central pulley *c'* being loose thereon, and the inner pulley *c* moving freely on said shaft and being secured to or having secured to it the pinion *d*. Keyed to said drive-shaft D, next said pinion *d*, is a pinion *e*, which meshes with the gear *b* on the adjacent end of shaft C. Gear *d* engages with the idle-pinion *d'*, which has next its inner surface and preferably integrant therewith the idle-pinion *b*. Both of these pinions are journaled on a suitable stud projecting from the side rail of the supporting-frame *a*, and pinion *b'* is less in diameter than pinion *d'*. Now, bearing in mind that pinion *d* is fast to pulley *c*, it is obvious that when the single belt is shifted onto said pulley *c* said pinion *d* imparts its motion to the gear *d'*, which, being of greater diameter, does not travel so fast and imparts its reduced motion to gear *b* through the medium of the pinion *b'*. Thus the motion which is imparted to the shaft A through pulley *c* to drive the knife-carrying head forward is slower than that produced by shifting the belt onto pulley *c''*, which being fast to the shaft D imparts motion to the gear *b* more directly through pinion *e*, (also fast on said shaft,) and causes the said carrier-head to move faster during its withdrawal movement.

In order to shift the belt from pulley *c'* onto either pulleys *c* or *c''*, I provide a transverse shifting-bar E, which I journal in suitable hangers *e' e'*, secured to and depending from the sides of the frame *a*, and place on said bar next the inner surface of the hangers *e'* the loose collars *f f*, and between said collars I surround said shaft with a coil-expansion spring F. I likewise provide said bar with two pins *g g*, which, when said rod is in its normal position, rest within the

grooves g' g', made with reference thereto in the bearing-surface of the hangers e', which resists and keeps the collars f from spreading farther. Thus when the said bar is reciprocated in either direction the spring F is compressed and restores said bar to its normal position the moment the power exerted to reciprocate it is removed. The end of said bar on the same side of the machine as the pulley extends (when it is in its normal position, as above indicated) beyond the side of the machine sufficiently for the yoke E′ to keep the belt on the central or loose pulley c'. To shift said belt onto pulleys c or c'' the bar must be reciprocated to the right or left, respectively. To thus reciprocate bar E in the most convenient manner, I provide a longitudinal central rock-shaft G, which I journal in the cross-frame connecting the legs at either end of the machine. I rock this shaft by means of the rocking beam H, secured about its center of length to said shaft near the front of the machine, which has rods h h pivotally secured in the extremities thereof, as shown. These rods h are connected at their lower ends to the treadles h', which treadles are fulcrumed in the ends of the curved brackets r, secured to and projecting from a cross-rail of the front legs of the machine, as shown in Fig. 1.

Immediately to the rear of the transverse plane of the shifting-bar I secure to the rock-shaft G a vertically-projecting arm j, which I connect by means of a link k to the reciprocating rod K. This rod has its bearings in the side of the supporting-frame a, and has its outer end connected by means of a suitable boss L to the projecting end of the shifting-bar. As will be observed, by pressing the foot on the right-hand treadle the shifting-bar will be reciprocated so as to move the belt onto pulley c, and by pressing the foot on the left-hand treadle the belt is moved onto the pulley c''.

It is desirable, although not absolutely necessary, to provide some automatic devices for preventing the carrier from being drawn back too far toward the rear of the machine. To provide such means, I secure to the right-hand carrier-frame a finger m, which curves downward a suitable distance, and I pivot on a lug n, projecting from the side of frame A′, about the position shown in the drawings, the oscillating arm N, which pursues a longitudinal course to the rear to and connecting with boss L, and is so curved that when the carrier-head has moved to about the safe limit of its withdrawal movement the finger m strikes against said arm and oscillates it so as to move the shifting-bar and shift the belt onto the loose pulley, thus stopping the machine.

If desired, the nest of pinions for giving a slow cutting-movement to the knife and a faster withdrawal movement can be dispensed with and the three pulleys c c' c'' be placed on the end of shaft C and operated by the shifting devices hereinbefore described. Moreover, while I prefer the automatic safety belt-shifting devices consisting of the finger m and arm N, yet they can be omitted.

The shifting devices themselves could be dispensed with and the belt actuating the nest of pulleys be shifted by the usual hand devices, but I much prefer their use.

What I claim is—

1. In a stereotyper's shaving-machine, the combination, with the cutter thereof and devices carrying the same, the shaft A, gear B, and shaft C, having the pinion b on the end thereof, of idle-pinions b' and d', shaft D, pulleys c, c', and c'', and pinions e and d, said pulley c'' and pinion e being keyed to said shaft E, said pulley c' being loose thereon, and pulley c and pinion d being secured together, as set forth.

2. In a stereotype-shaving machine, the combination, with pulleys c, c', and c'', of the shifting-bar E, having a yoke E′, rock-shaft G, arm j, link k, rod K, and boss L, as set forth.

3. In a stereotyper's shaving-machine, the combination, with pulleys c, c', and c'', of the shifting-bar E, having a yoke E′ on its end and provided with loose collars f between its bearings, spring F, surrounding it between said collars, and pins g, which prevent said collars from spreading too far apart and when said bar is reciprocated move in suitable grooves in the bearings of said bar, and means for reciprocating said bar, as set forth.

4. In a stereotyper's shaving-machine, the combination, with pulleys c, c', and c'', of the shifting-bar E, having a yoke E′, the oscillating arm N, knife or cutter carrier, and finger m, secured to and projecting therefrom.

5. In a stereotyper's shaving-machine, the combination, with pulleys c, c', and c'', as described, of the shifting-bar E, the boss L, the rod K, link k, arm j, rock-shaft G, rocking beam H, rods h, and treadles h', as set forth.

GEORGE E. LLOYD.

Witnesses:
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