2 Sheets—Sheet 1.

# E. FISHER.

## Leather-Cutting Machine.

No. 211,841. Patented Feb. 4, 1879.

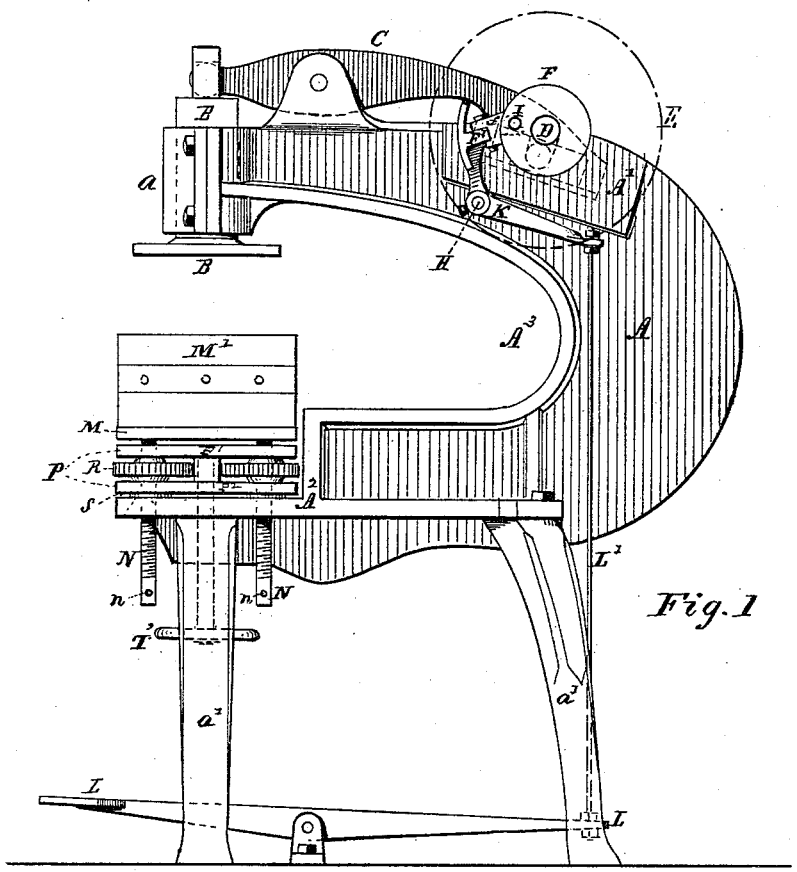


Fig. 1

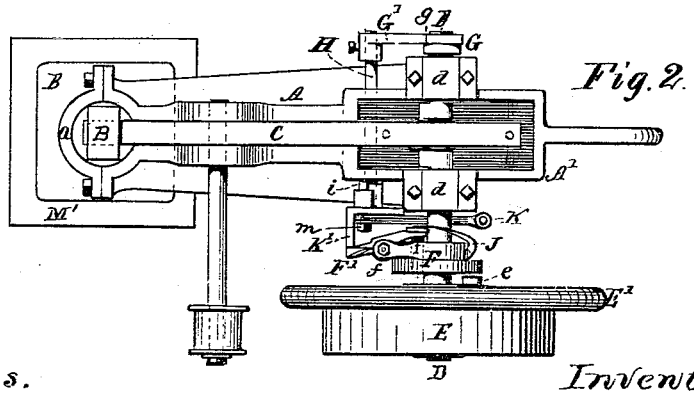


Fig. 2.

Witnesses.

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2 Sheets—Sheet 2.

# E. FISHER.

## Leather-Cutting Machine.

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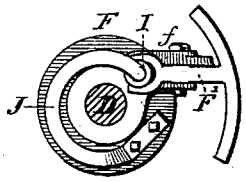

Fig. 5

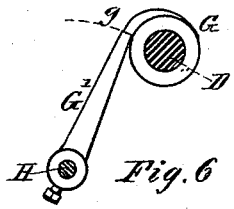

Fig. 6

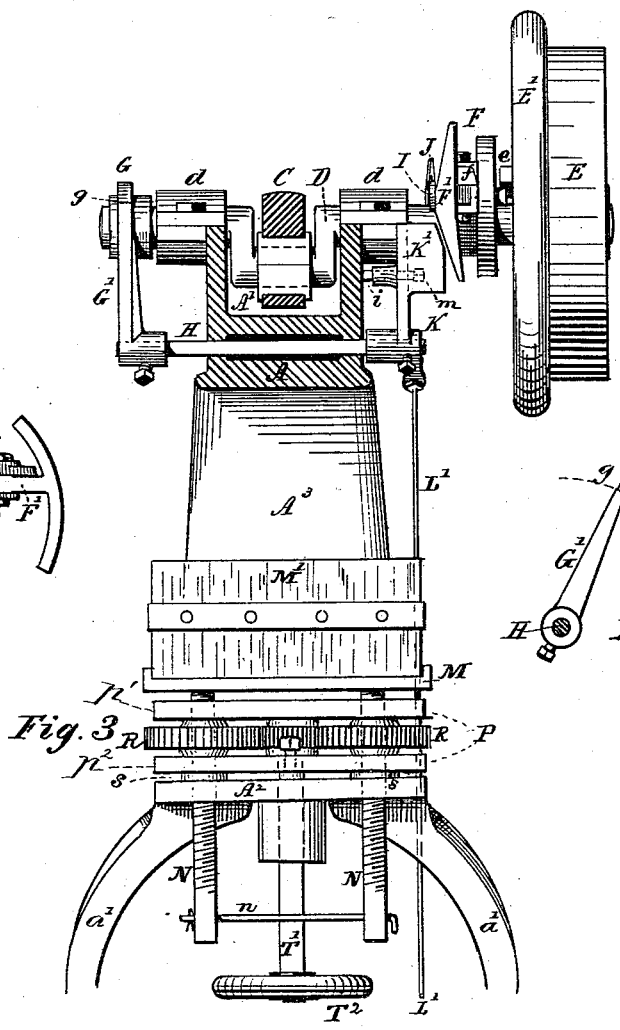

Fig. 3

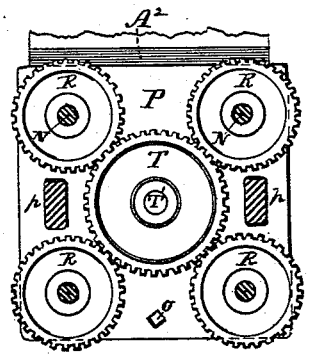

Fig. 4

Witnesses.

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# UNITED STATES PATENT OFFICE.

EDWIN FISHER, OF WORCESTER, MASSACHUSETTS.

## IMPROVEMENT IN LEATHER-CUTTING MACHINES.

Specification forming part of Letters Patent No. **211,841**, dated February 4, 1879; application filed November 7, 1878.

*To all whom it may concern:*

Be it known that I, EDWIN FISHER, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Leather-Cutting Machines; and I declare the following to be a description of my said invention, sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of a leather-cutting machine embracing my invention. Fig. 2 is a plan view of the same. Fig. 3 is a part front, part sectional, view, on a somewhat larger scale. Fig. 4 is a horizontal section of the gear-plate, showing the arrangement of the block-adjusting devices. Fig. 5 is a back view of the shaft-clutch mechanism, and Fig. 6 is a side view of the stop-finger device.

My invention consists in the peculiar construction and arrangement of the block supporting and adjusting devices, as hereinafter more fully specified; also, in the peculiar construction and arrangement of stopping and starting mechanism, as hereinafter described, the particular features claimed being hereinafter definitely specified.

In the drawings, A denotes the main frame, formed of cast metal, with a forward bearing, *a*, for the striker B, a box or recess, $A^1$, for the play of the crank devices and lever-arm, a forward lower offset, $A^2$, for the block-support or gear-plate and adjusting mechanism, and a deep throat or space, $A^3$, in which to handle the stock, the whole being supported at the desired height by suitable legs *a'*.

The striker B, which consists of a flat face-plate on a cylindrical body, is arranged to move up and down in the bearing *a* by the action of the striker-lever C, actuated by the crank of the driving-shaft D, in the manner as heretofore employed.

The driving-shaft D is supported to turn in bearings *d d* on the upper part of the frame, at the sides of the recess $A^1$, said shaft being transverse to said frame, with its crank located centrally between the bearings *d*, and the end of the lever C connected therewith by a sliding box working in a suitable opening at the end of the lever.

At one end of the shaft D, and running loose thereon, is the driving-pulley E and balance-wheel E', the hub of which is provided with a steel lug or pin, *e*, for engaging with the pin on the clutch device F, which is keyed to the shaft D between the pulley-hub and bearing *d*, while upon the opposite end of said shaft D is arranged the stop-cam G, rigidly secured to the shaft, and having a notch or lug, *g*, for engaging with the guard or finger G'.

The clutch F consists of a disk and hub, with a movable pin, I, working through it, parallel with, but at one side of, the shaft D, as shown.

Ears *f* project at one side of the disk F, between which is pivoted the forked lever F', by which the clutch-pin I is drawn back. Said lever F' is provided with an inclined segment at its outer end for engaging with the shipper-guard, while its forked inner end passes beneath the flanged head of the clutch-pin I at the back of the disk.

A circular flat spring, J, is attached to the back of the disk, the end of which rests upon the head of the clutch-pin I, for throwing said pin forward when the parts are released, and causing it to engage with the lug *e* of the pulley-hub.

Below and forward from the driving-shaft D, and parallel therewith, is a shaft, H, having fixed to one end the shipper-lever K, and to its other end the stop-guard or finger G'. The shipper-lever is made in bell-crank form, with an inclined side guard, K', in proper position to engage the segment-head of the clutch-lever F', while its lower arm is connected with the treadle-bar L by means of the rod L', for operation in the usual manner.

At the inner side of the shipper-lever, opposite the guard K', I arrange a projecting sleeve, having a stud, *i*, fitted therein, which stud extends to the side of the main frame A, and forms a brace against the strain of the clutch mechanism when the segment of lever F' strikes the guard K' for withdrawing the clutch-pin I and unlocking the clutch.

A set-screw, *m*, is arranged through the lever K against the end of the stud *i*, by means of which the length of projection of the stud *i* can be adjusted for supporting the shipper-guard at greater or less distance from the side

of the frame, and so as to draw the pin I to a greater or less extent by giving more or less movement to the segment-head of the withdrawing-lever F′.

The shaft D is set in motion by downward pressure on the treadle, the shipper-lever K and stop-finger G′ being thereby swung forward, so as to release the segment and permit the spring J to force forward the pin I, which is caught and carried around by the lug *e* on the hub of the constantly-moving driving-pulley, the finger at the same time releasing the notch or lug *g*.

When the shaft has made one revolution the segment-head runs onto the inclined guard K′, causing movement of the lever F′, which draws back the pin I from in front of the lug *e*, and the movement of the shaft is arrested by the finger G′ engaging the notch *g*. The revolution of the shaft D gives one blow to the striker B.

The cam G is formed to hold the finger G′ raised until the segment F′ has passed beyond the guard after the parts have been released, so that the guard will not pound against the outer edge of the segment if the treadle is quickly relieved of pressure.

By constructing the parts in the peculiar manner described, a long free leverage is obtained by the part F′ for drawing the pin I, while the spring J, pressing directly on the head of the pin in opposition to the lever F′, takes up all backlash between the parts, and prevents any rattling when the parts become slightly worn. It also gives an easy and free action to the pin.

The stud *i* not only renders adjustment easy, but prevents all liability of breakage from the side strain or shock when the segment of lever F′ strikes the guard of the shipper-lever.

The cutting-block M′ is placed upon a plate, M, which rests near its four corners upon the adjusting-screws N, which pass up vertically through openings in the frame A and gear-plate P, and are provided with spur-gear nuts R, arranged between the upper and lower sections of the gear-plate, as shown.

The lower ends of the screw-spindles N are coupled in pairs by means of small rods *n*, which pass through openings drilled laterally through said spindles. Said rods prevent the screws from turning when their nuts R are revolved.

The gear-plate P, which is made with upper and lower sections, $P^1$ $P^2$, connected by standards *p*, so as to form a chamber for the gears, as shown, is seated upon and secured by bolts *o* to the lower offset portion, $A^2$, of the main frame A, bosses S being formed around the screw-openings on the lower side of the plate P, so that the plate can be readily leveled up in firm position, regardless of the level of the main frame A. As it is quite difficult to obtain heavy frame castings which are uniformly level at the part $A^2$, the plate P and bosses S permit of the block supporting and adjusting mechanism being readily placed in proper relative position with the striker B.

The gear-nuts R are made of plain spur-gears, and all mesh with a single central spur-gear, T, (see Fig. 4,) from which a vertical shaft, $T^1$, extends to beneath the frame, where it is provided with a hand-wheel, $T^2$, by means of which all of the screws can be simultaneously operated up or down for adjustment of the cutting-block.

By removing the coupling-rods *n*, either screw can be operated independently of the others, if desired. This is the work of but a moment, and is often of great convenience.

It will be observed that, by arranging the screws with spur-gear connected nuts in the manner shown, a very simple and quick operating adjusting mechanism is produced—one much more convenient than where the nuts are operated by a worm, and one capable of irregular adjustment by the operation of a single screw independent of the others, with very little labor and trouble in the removal of the rod *n*.

I do not desire herein to claim, broadly, the adjustment of the cutting-block by means of screws having geared nuts, as I am aware that screws have heretofore been used with geared nuts connected by a worm-shaft. Neither do I desire to claim, broadly, a clutch device consisting of a locking-pin and a withdrawing-lever, since my present invention relates to the improved construction of such devices.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the driving-shaft D, loose pulley E, having lug or pin *e*, and treadle L, of the clutch device F, having pin I, withdrawing-lever F′, projecting beyond the disk, with long segmental head, and flat circular spring J, the shaft H, shipper-lever K, with guard K′, stop-finger G′, and cam G, said parts being constructed and arranged for operation substantially as and for the purposes set forth.

2. The combination, with the shipper-lever K, of the sleeve and stud *i* and adjusting-screw *m*, substantially as shown, and for the purpose set forth.

3. The combination, substantially as hereinbefore described, of the block-plate M, gear-plate P, screws N, spur-gear nuts R, central spur-gear T, vertical shaft $T^1$, hand-wheel $T^2$, and rods *n*, for the purposes set forth.

4. The combination, with the frame A and block-supporting screws N, of the gear-plate P, provided with bosses S around the screw-openings and beneath the bearings of the nut-gears, substantially as shown and described.

Witness my hand this 29th day of October, A. D. 1878.

EDWIN FISHER.

Witnesses:
CHAS. H. BURLEIGH,
S. R. BARTON.