2 Sheets--Sheet 1.

EDWARD FITZHENRY.

Improvement in Hide and Leather Working Machines.

No. 125,276. Patented April 2, 1872.

Fig. 1.

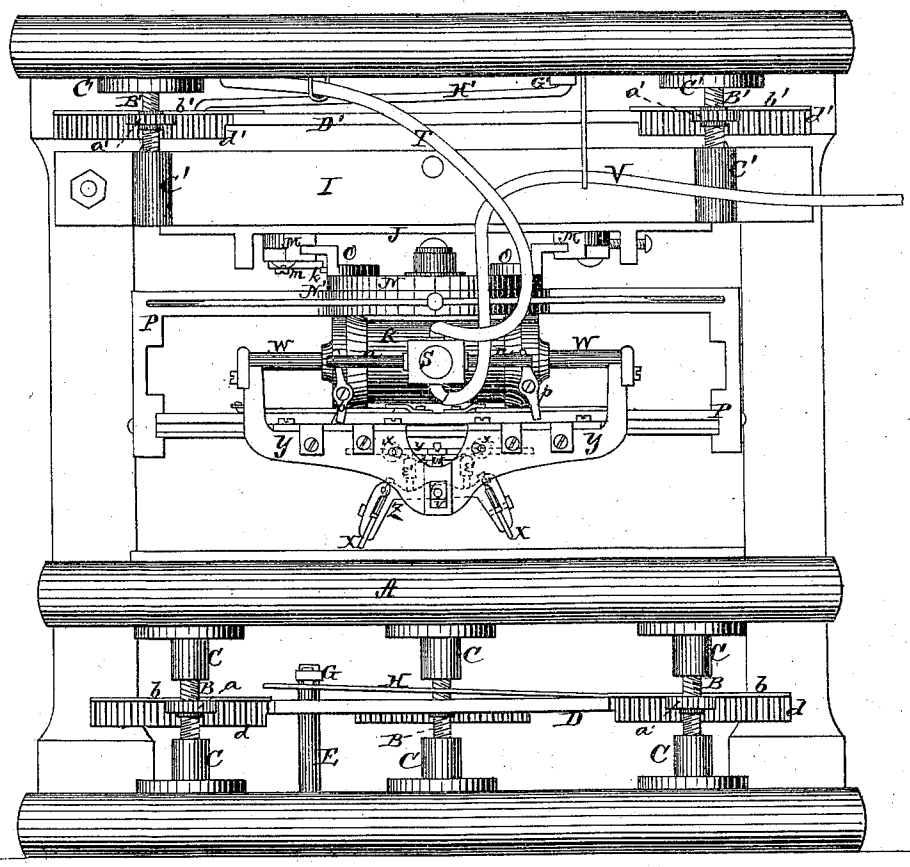


Fig. 3.

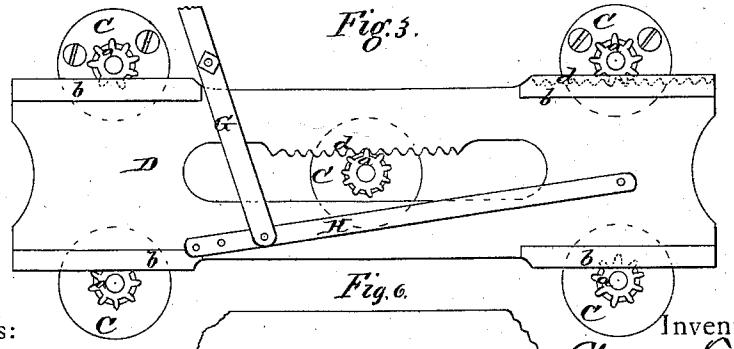
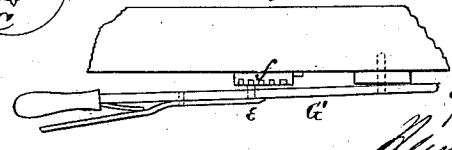


Fig. 6.



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2 Sheets--Sheet 2.

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Fig. 2.

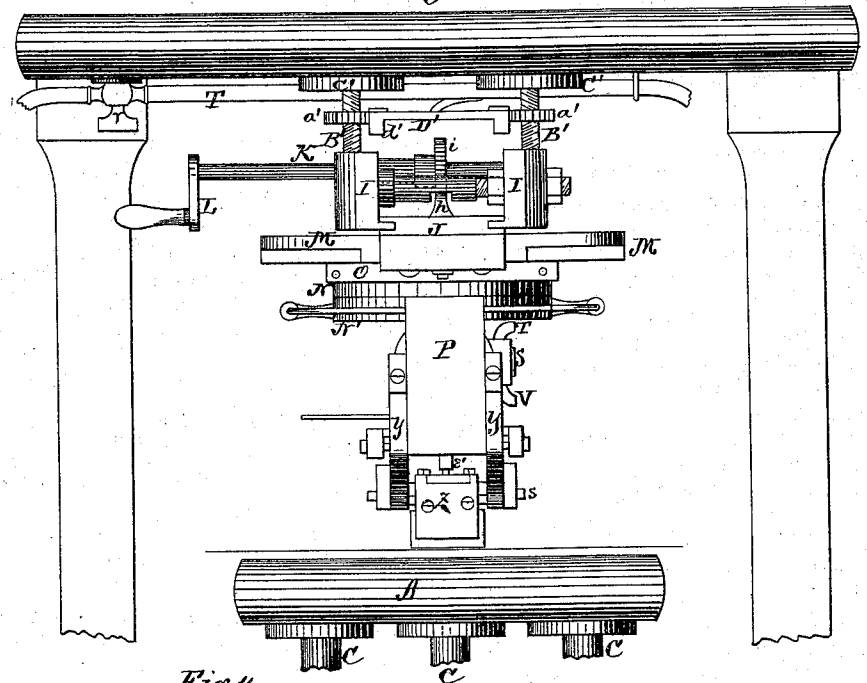


Fig. 4.

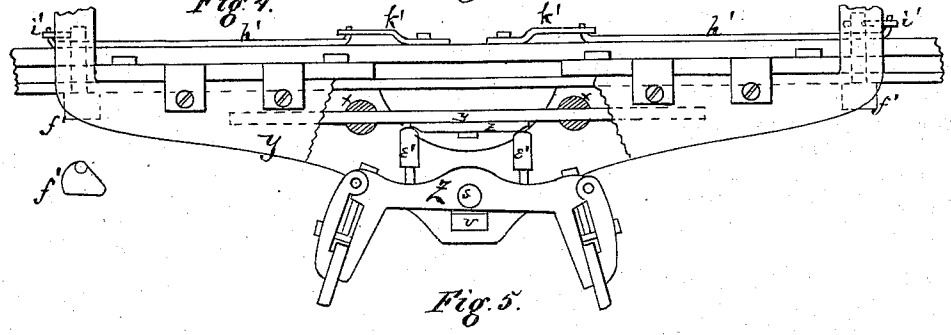
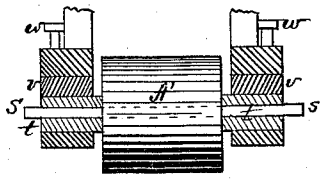


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWARD FITZHENRY, OF SOMERVILLE, MASSACHUSETTS.

IMPROVEMENT IN HIDE AND LEATHER WORKING MACHINES.

Specification forming part of Letters Patent No. 125,276, dated April 2, 1872.

To all whom it may concern:

Be it known that I, EDWARD FITZHENRY, of Somerville, in the county of Middlesex and in the State of Massachusetts, have invented certain new and useful Improvements in Hide and Leather Working Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a machine for working hides and leather, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a rear elevation, and Fig. 2 a side elevation of my entire machine. Fig. 3 is a plan view of the mechanism whereby the table is raised and lowered. Fig. 4 is an enlarged side view of the sliding carriage which carries the working-tools. Fig. 5 is a cross-section of the carriage, showing a roller inserted in place of the working-tools shown in Figs. 1, 2, and 4. Fig. 6 is a view of the lever for raising and lowering the operating mechanism.

A represents the table upon which the leather or hide to be worked is laid. In a full-sized machine this table is ten feet long by four and one-half feet wide, or of any other suitable dimension. It is supported upon five right and left hand screws, B B, one under the center of the table, and one under, or nearly under, each corner of the same. These screws work in hollow posts C C, provided with female screw-threads and secured to the under side of the table and to the floor, so that each end of each screw works in one of these hollow posts. The screws B B being each right and left hand, it will be seen that by turning them in one direction each screw works out of both of its posts, while by turning them in the other direction each screw works into both of its posts, and thus raises or lowers the table A. In the center of each screw B, where the threads diverge, is firmly attached a pinion, *a;* and upon the pinions attached to the four corner-screws is supported a plate, D, by means of strips or flanges *b b*, which are attached to said plate and rest upon the pinions, as shown in Fig. 3. Under these flanges *b b*, and on the edges of the plate, are formed or attached rack-bars *d d*, which gear with the said pinions on the four corner-screws. The center screw passes through a longitudinal slot in the plate D, on one side of which slot is formed or attached a similar rack-bar, *d*, which gears with the pinion on said center screw, so that by the movement of the plate D toward either end all the five screws are simultaneously turned, thus either raising or lowering the table A. The plate D is moved by means of a lever, G, pivoted on a post, E, under the table and at the front side, the inner end of said lever being attached to a spring-bar, H, pivoted to the plate D. By this means the operator, at his place in front of the table, can readily adjust the table to any height desired.

In the ceiling of the room in which my machine is placed, or on the under side of a platform built over the machine, are suspended two parallel beams or bars, I I, connected at the ends by suitable bolts or other means to insure their retaining their relative positions. These bars are suspended by means of four right and left hand screws, B′, provided with pinions *a′*, and working in hollow posts C′, and adjusted by means of a plate, D′, having rack-bars *d′* and flanges *b′* engaging with the pinions *a′*, the whole operated by a lever, G′, and connecting-rod H′, all in precisely the same manner as above described for adjusting the table A. This lever G′ is provided with a spring pin or pawl, *e*, which enters a segmental rack, *f*, attached to the ceiling for holding said lever at any desired point, and thus prevents the bars I I from becoming deranged, after having been adjusted, by the operation of the machine.

The entire operating mechanism of my hide and leather working machine being attached or connected to the bars I I in the manner hereinafter described, it will be seen that the operator from his position in front of the table cannot only raise and lower the table, as already mentioned, but also raise and lower the entire operating mechanism, as occasion may require.

The bars I I are, at their lower edges, provided with inward-projecting flanges running

the entire length of said bars. These flanges enter longitudinal grooves made in the edges of a bed plate or bar, J, so that the same may slide back and forth on said flanges, as may become necessary during the working of my machine. On the top of the bed-plate J, in the center, is a rack-bar, *h*, running lengthwise of the plate. Into this rack-bar gears a pinion or cog-wheel, *i*, on a shaft, K, which has its bearings in the bars I I, and is, upon its front end, provided with a crank, L, so that the operator can at any time, by the turning of said crank, move the bed-plate J, with the entire operating mechanism, endwise on the bars or ways I I. To the under side of the bed-plate J are attached grooved guides or ways M M, running at right angles with the line of motion of said bed-plate; and in said guides or ways moves the upper circle N of a turn-table, N N′, by means of suitably-flanged bars O O′, attached to the upper side of said upper circle and fitting in the guides or ways M M. The lower circle N′ of the turn-table is formed in the center of the upper side of a rectangular frame, P, which contains the operating mechanism; and the two circles are firmly joined together by any suitable means, so that the frame P can easily swing on its pivot. At or near each end of one of the flanged bars O is a pin, *k*, which is intended to come in contact with a projection, *m*, on the under side of the guide M, to prevent the turn-table and frame from, by any accident, coming out of said guides. In the center of the frame P is secured a horizontal steam or air cylinder, R, provided on the rear side with the steam-chest S. This cylinder and chest are constructed in any of the known and usual ways, and the valve-stems *n n* are, at their outer ends, attached to short levers *p p*, which are pivoted, one at each end, on the rear side of the cylinder.

Steam or compressed air is admitted into the steam-chest S through a flexible pipe, T, which is suspended from the ceiling above the entire mechanism, and provided with a stop-cock, *r*, within reach of the operator, so that he can at any time shut off or let on the steam or air, and regulate the supply, thereby regulating the speed of the machine. The steam or air is exhausted, through a flexible pipe, V, to the outside of the building or any other place desired. These flexible pipes form no impediment in the way of the various manipulations of my machine, but admit of its free and easy movement in every direction. These pipes may be further suspended by cords, pulleys, and weights, so as to be always drawn up out of the way of the machine.

The piston in the cylinder R is provided with two rods, W, which pass out, one through each head of the cylinder, and are attached to the ends of a carriage, Y. This carriage is suspended from and slides in grooves on the sides of the lower bar of the frame P; and the ends of said carriage strike the levers *p p*, one at every stroke, thereby operating the valve in the chest S.

In the lower central part of the carriage Y is hung the double tool-holder Z, on a rod, *s*, which passes through boxes *t* placed in recesses or slots in the sides of the carriage. Under each box *t*, in its slot, is a rubber spring, *v*, and a set-screw, *w*, operating or bearing on top of said box, regulates the pressure as occasion may require. At each end of the tool-holder Z are suitable jaws for holding the sleekers X X or other tools necessary in the working of the leather.

In the carriage Y under the frame P are two rods or bolts, *x x*, which are slotted or mortised for the passage of a horizontal bar, *y*, provided on its under side, at the center, with an additional bar, *z*. This additional bar *z* is for the purpose of alternately striking two set-screws, *e′ e′*, arranged on the upper side of the tool-holder, one on each side of the center, thereby tipping said tool-holder and holding either end thereof down, so that the tool in the same will bear on the leather lying on the table A. This tipping or turning of the tool-holder is produced just before the completion of each stroke of the carriage Y, when the bar *y* strikes an eccentric, *f′*, on the under side of the frame P, whereby said bar is stopped while the carriage completes its movement. This stoppage of the bar *y* causes one of the set-screws *e′* to pass from under the additional bar *z*, while the other set-screw passes under the same, and thus turns the tool-holder on its pivot.

The rod which pivots each eccentric passes through the lower bar of the frame P, and is, at its upper end, provided with an arm or crank, *i′*, connected, by a rod, *h′*, with a lever, *k′*, pivoted on said portion of the frame P and under the cylinder R. The two levers *k′ k′* are thus within reach of the operator, and when said levers are turned inward toward the center the eccentrics *f′ f′* are in position to operate in the manner above described; but, when turned outward the eccentrics assume such a position that the sliding-bar *y* will strike them only so much in advance of the completion of the stroke of the carriage as will relieve the tool from its pressure without placing the other tool under any pressure; or, when desired, only one of the eccentrics may, so to say, be thrown out of gear, and thus only one of the tools operate on the leather.

In the working of hides and leather it is necessary to roll it. For this purpose the tool-holder Z is removed and a roller, A′, placed on its rod *s;* but in this case the rubber springs *v v* are placed on top of the boxes *t t*, as the pressure in this case is upward, while with the tool-holder it is downward in the center.

This machine possesses a number of very important advantages over any machines of its kind heretofore used. In other machines the table upon which the leather is placed is turned, which necessitates a very large room to work in, and, also, it prevents the table from

being made thick enough, as then it would be too heavy for operation. In this machine the table is stationay, or, at least, is not turned, having only the up-and-down motion, and hence it does not require such a large room; and it may be made of wood running crosswise, and of any desired thickness to keep it from warping; or it may even be made of metal or a stone or marble slab. In other machines the pressure of the tools is never equal. At certain points of the stroke it is heavier than at others, and hence is very apt to tear the leather, while in this machine the pressure is always the same from the time the tool first strikes the leather till the instant when it is raised up from the same. There is also economy of power, as the power is located right in the machine, and hence needs no shafting or pulleys, which always increase friction and waste power. It is very durable, and not so much liable to get out of order as other machines now in use.

The machine may be run by steam or air; and, to prevent undue heat for the operator, the cylinder is to be covered by any suitable non-conducting substance.

The motion of the tools can be stopped without being obliged to touch any of the machinery which is in motion. This is of great importance. In other machines the tool-stopping mechanism is on the moving carriage, and, as this moves generally at the rate of one hundred and sixty strokes per minute, it is next to an impossibility to catch the levers for stopping the tools while the machine is in motion. In this machine the levers are away from the moving carriage, and the motion of the tools can be stopped. It does not matter how fast the carriage is running.

The levers for raising and lowering the table and the operating mechanism, the levers for starting and stopping the motion of the tools, and the stop-cock for regulating the power are all so arranged that the operator can conveniently, while in his position at the front of the table, attend to the whole without assistance.

If desired or deemed necessary, a shaft and fly-wheel and eccentric may be added to the machine; but I deem this of minor importance.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A hide and leather working machine, in which the entire operating mechanism is capable of swinging and moving in every direction, substantially as set herein set forth.

2. The arrangement, in a hide and leather working machine, of a steam or air engine upon and with the operating mechanism of said machine, substantially as herein set forth.

3. The adjusting mechanism for the table A, consisting of the five right and left hand screws B B, hollow posts C C, pinions *a a*, and plate D, with flanges *b b* and racks *d d*, the whole operated by means of the lever G and connecting-bar H, substantially as and for the purposes herein set forth.

4. The bars I I, supporting from their under sides the entire operating mechanism, and adjusted by means of the right and left hand screws B′, hollow posts C′, pinions *a′*, and plate D′, with flanges *b′* and racks *d′*, the whole operated by means of the lever G′, connecting-bar H′, spring-pin *e*, and rack *f*, all substantially as and for the purposes herein set forth.

5. The combination of the sliding bed-plate J, with rack-bar *h*, pinion *i* on the crank-shaft K, guides M, flanged bars O, turn-table N N′, and frame P, all constructed and arranged substantially as and for the purposes herein set forth.

6. The combination of the turning and sliding frame P, engine R S, and carriage Y, all substantially as and for the purposes herein set forth.

7. The engine, arranged to operate with its piston-rods directly upon the sliding carriage containing the tool-holder in a hide and leather working machine, substantially as herein set forth.

8. The arrangement of the valve-stems *n n* and levers *p p*, as shown and described, so as to be operated by the ends of the carriage Y, substantially as herein set forth.

9. The tool-holder Z, constructed as shown, and hung upon the rod *s*, in combination with the boxes *t*, with rubber springs *v* underneath, and set-screws *w* on top, substantially as and for the purposes herein set forth.

10. The sliding-bar *y* provided with the enlargement or additional bar *z*, in combination with the set-screws *e′* on the tool-holder, substantially as and for the purposes herein set forth.

11. The eccentrics *f′ f′* pivoted on the under side of the frame P, and operating in combination with the sliding-bar *y*, substantially as and for the purposes herein set forth.

12. The combination of the eccentrics *f′*, arms or cranks *i′*, connecting-rods *h′*, and levers *k′*, all constructed and arranged, substantially as and for the purposes herein set forth.

13. In a hide and leather working machine, the arrangement of the tool-stopping levers away from the moving carriage which contains the tools, substantially as and for the purposes herein set forth.

14. The roller A′ hung upon the rod *s*, in combination with the boxes *t*, with rubber springs *v*, and set-screw *w*, both on top of said boxes, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 31st day of January, 1872.

EDWARD FITZHENRY.

Witnesses:

C. L. EVERT,

A. N. MARR.