C. A. LOMBARD.

MACHINE FOR SURFACING LEATHER.

APPLICATION FILED FEB. 2, 1910.

963,303.

Patented July 5, 1910.

Fig: 1.

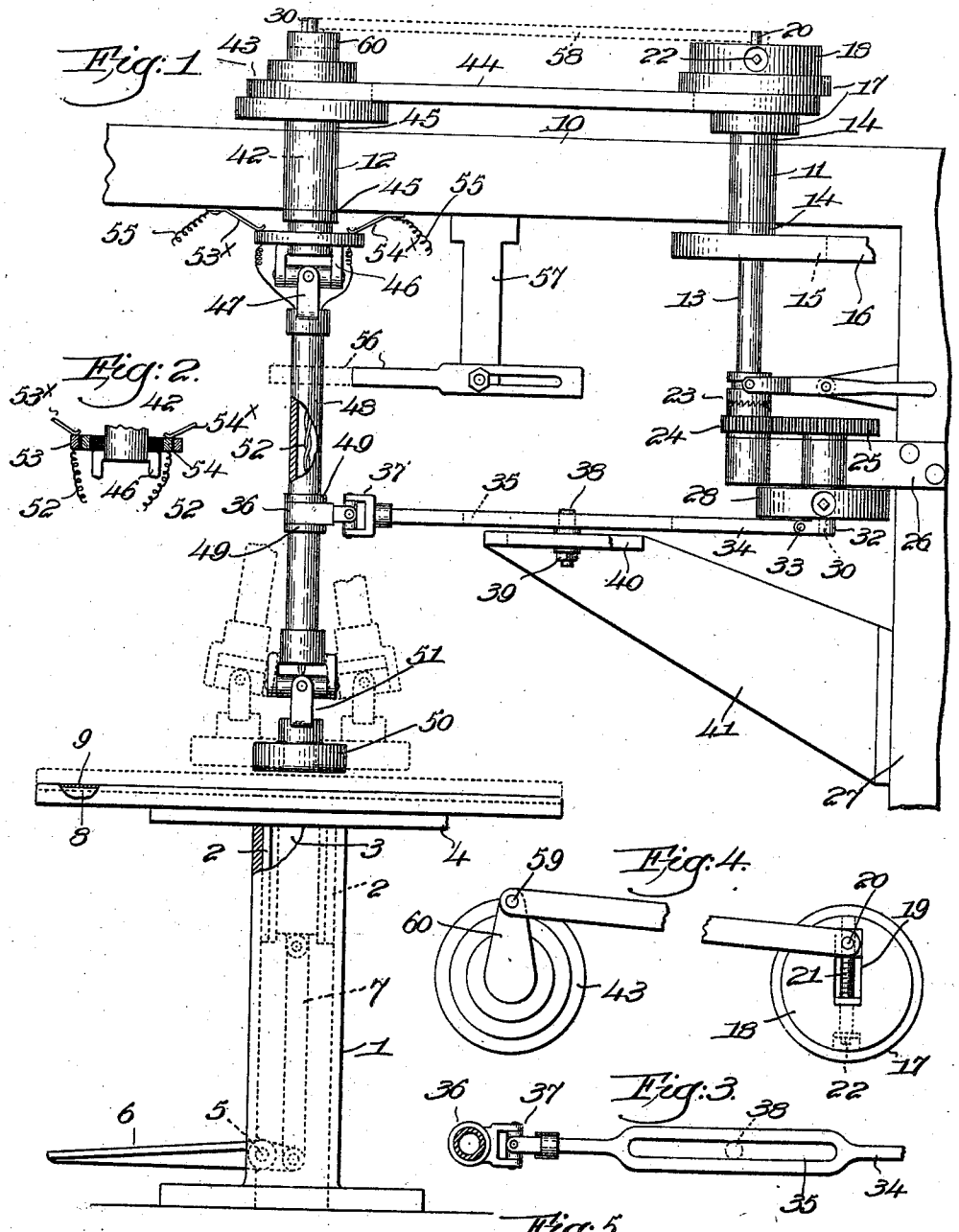
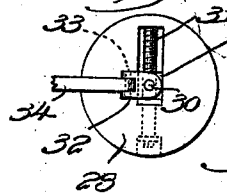


Fig: 2.

Fig: 4.

Fig: 3.

Fig: 5.



Witnesses,
Edward F. Allen
Joseph M. Ward.

Inventor:
Charles A. Lombard,
by Crosby Gregory,
Attys.

UNITED STATES PATENT OFFICE.

CHARLES A. LOMBARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ISAAC ISAACS, OF BOSTON, MASSACHUSETTS.

MACHINE FOR SURFACING LEATHER.

963,303. Specification of Letters Patent. Patented July 5, 1910.

Application filed February 2, 1910. Serial No. 541,424.

To all whom it may concern:

Be it known that I, CHARLES A. LOMBARD, a citizen of the United States, and resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Machines for Surfacing Leather, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of a machine for surfacing leather, whereby the hard manual labor now employed may be greatly reduced while at the same time the output of an operator is largely increased.

At the present time it is very common to surface or polish leather by hand, the piece of leather to be surfaced being supported on a table while the operator goes over the surface with a heavy heated iron, imparting various movements to the iron according to the requirements of the work, and adding his weight to that of the iron by bearing down upon it while it is moved over the leather. This operation is slow and very exhausting, not only by reason of the more or less constrained position necessarily assumed by the operator but also because of the strength which he has to exert in order to provide the necessary pressure.

In the machine forming the subject-matter of this invention I suspend the surfacing or smoothing iron above a work-support, the latter being vertically movable at the will of the operator to vary the pressure exerted by the iron upon the work.

The suspended iron is heated in any suitable manner, and I have provided mechanism for imparting to the iron various movements and combinations of movements, so that it closely simulates the movements of the hand-actuated iron now in general use.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a side elevation, partly broken out, of a machine for surfacing leather embodying one practical form of my present invention; Fig. 2 is a detail of the contact device for the electric heating means for the iron; Fig. 3 is a top plan view of a portion of the controlling means for effecting certain movements of the iron, to be described; Fig. 4 is a similar view, centrally broken out, of the device for imparting an oscillatory movement to the iron; Fig. 5 is an under side view of a portion of the controlling means shown in Fig. 3.

Referring to Fig. 1 a heavy upright hollow standard or pillar 1 is rigidly attached in suitable manner to the floor, and on its interior has upright guides 2, 2 upon which is slidably mounted a leg 3 secured to and depending from a flat, laterally enlarged head 4, shown as resting on the top of the standard 1. The latter sustains at 5 a foot-treadle 6, the short inner arm of which extends into the standard and is pivotally connected by a longitudinally-rigid link 7 with the leg 3. By depressing the treadle the link acts to raise the head 4 and with the latter the work-support 8, which latter is in practice covered with a blanket 9, said work-support being movable laterally upon the vertically-movable head 4 in order to bring different portions of the work within the field of action of the surfacing member. Above the work-support at a suitable distance therefrom I provide an overhead support, such as a heavy horizontal beam 10, provided with suitable vertical and parallel sleeve-like bearings 11, 12, a vertical driving shaft 13 being rotatably mounted in the bearing 11 and held in place by suitable collars 14. A pulley 15 fast on said shaft is driven by a belt 16 leading from a suitable source of power, not shown, and above the overhead support 10 said shaft has secured to it a stepped pulley 17 and a crank disk 18, shown in plan Fig. 4. The disk is radially slotted at 19 to receive and guide a block having a wrist-pin 20, Fig. 4, held in radially adjusted position by means of a threaded shaft 21, rotatably mounted in a part of the disk and engaging a threaded hole in the wrist-pin block. By applying a suitable tool to the exposed polygonal end 22 of said threaded shaft and turning the latter the wrist-pin 20 will be moved toward or from the center of the disk, as will be apparent.

The use of this device will be referred to hereinafter.

A manually controlled clutch 23, Fig. 1,

is arranged to connect or disconnect the lower end of the driving shaft 13 with a pinion 24 meshing with a gear 25, said pinion and gear being rotatably mounted on a bracket 26 extended horizontally from an upright 27 which sustains one end of the overhead support 10. The shaft of the gear 25 extends through a bearing in said bracket and has attached to it a disk 28, the under face of which is shown in Fig. 5, said disk being radially slotted to guide a block 29 having a headed wrist-pin 30, the latter being held in adjusted position by a screw-shaft 31, similar to the shaft 21 on the disk 18. Upon the wrist-pin is loosely mounted a coupling yoke 32 pivotally connected at 33 to a long, substantially horizontal link 34 having an elongated longitudinal slot 35, Fig. 3, said link having at its opposite end a collar 36 connected therewith by a universal joint 37. The link is sustained in horizontal position by a shouldered fulcrum-stud 38 which is adjustably held by a set nut 39 in a longitudinal slot 40 made in the end of an arm 41 extended from the upright 27.

When the wrist-pin 30 is off center rotation of the disk 28 will effect a longitudinal reciprocating movement of the link 34 and at the same time it will have a horizontal rocking motion about the fulcrum-stud 38, which extends through the slot 35, so that the collar 36 will be given a revolving motion in a horizontal path. By changing the position of the stud 38 the amplitude of movement of the collar will be increased or diminished, and by setting the wrist-pin 30 at the center of the disk 28 the collar will remain stationary whether or not the clutch 23 is in operation. A shaft 42 is rotatably mounted in the bearing 12 and has an attached step-pulley 43 on its upper end, reversed as to the pulley 18, and said pulleys are connected ordinarily by a belt 44, Fig. 1. Collars 45 on the shaft 42 retain it in position, the lower end of said shaft carrying one member 46 of a universal joint, the other member 47 thereof being rigidly attached to a hollow spindle 48 which is extended rotatably through the collar 36, rings 49 on the spindle above and below the collar positioning it on said spindle. A surfacing iron 50 is connected by a universal joint 51 with the lower end of the spindle, at such a height that normally the iron is held suspended far enough above the work-support 8, when the latter is in full-line position, Fig. 1, to permit the ready insertion or removal of the leather to be surfaced.

It will be understood that by the connecting belt 44 the spindle 48 and the connected iron 50 will be rotated at rather high speed, variable by means of the stepped pulleys, and when the clutch 23 is thrown in the rotation of the disk 28 will act by the means described to impart a bodily revolving movement to the iron, two extremes of such movement being shown by dotted lines in Fig. 1. This compound movement of the iron very closely approaches the circular motion imparted to the iron in hand surfacing, but herein the weight of the iron and its motion are taken care of mechanically, the operator having both hands free to manipulate the work beneath the iron, presenting one portion after another to be acted upon. Any desired pressure is attained by pressure on the treadle 6, by means of which the head 4 and work-support 8 are raised to press the work with the requisite force against the iron, the latter at all times resting flat upon the surface of the work.

In practice the iron will be heated in any suitable manner, by gas, steam, or electricity, the heating means forming no part of my invention, but I have shown leading-in wires 52 for an electric heater, carried down to the iron through the spindle 48, the upper ends of said wires being attached to insulated contact rings 53, 54, mounted on the shaft 42, see Fig. 2. Suitable contact fingers 53^{x}, 54^{x} engage the rings and form the terminals of the line wires 55. By throwing out clutch 23 the iron 50 is given a movement of axial rotation only, which is desirable when working on a very high finish or on leather which will not permit of rough usage, the blanket 9 on the work-support preventing the work from slipping about.

It is sometimes desirable to reciprocate the iron back and forth over the work while it is rotated, and this is readily effected by removing the fulcrum-stud 38 and moving into dotted line position, Fig. 1, a forked guide 56, which then embraces the spindle 48 and causes it to swing back and forth in a straight path as the disk 28 revolves, said guide being adjustably mounted on a hanger 57 on the overhead support 10. Sometimes a very slight ironing is required, or the leather may have a tendency to rough up under the other motions of the iron previously described, and in such cases I throw out clutch 23 and remove the transmitting belt 44. I now connect, by a link 58, Fig. 4, the wrist-pin 20 and a pin 59 on a radial arm 60 fast on the upper end of shaft 42 above the pulley 43, the link being indicated by dotted lines in Fig. 1. Now as the driving shaft 13 rotates the wrist-pin 20 will act through link 58 and the radial arm 60 to oscillate the shaft 42 and the iron 50, the amplitude of oscillation being determined by adjustment of the wrist-pin 20 toward or from the center of the disk 18. I can obtain a combination of such oscillating movement and a bodily revolving movement of the iron by throwing in the clutch 23, the link 34 rocking on the stud 38, this combined movement being very effective when ironing large hides or pieces of leather.

From the foregoing description it will be understood that I can obtain a great variety of movements for the surfacing member or iron; that the pressure exerted thereby upon the work can be increased and diminished as required, and that the surfacing operation can be carried on with very little manual labor and with much greater speed than is attainable by the present hand process.

Manifestly the oscillation of the surfacing member 50 is never possible when the said member is axially rotated, and vice versa, but the oscillation and bodily revolving movement can be combined, and the axial rotation of the member 50 can be combined with the bodily revolutions thereof, or with the reciprocating movement when the spindle 48 is in coöperation with the guide 56, or a purely rotary motion of the surfacing member can be had.

Various changes or modifications may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the annexed claims.

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

1. In apparatus of the class described, a work-support, a surfacing member, a rotatable overhead shaft mounted in a vertical bearing, a universally jointed spindle connecting said shaft and the surfacing member and suspending the latter, actuating means for said shaft, and manually controlled means to vary the pressure of the surfacing member upon the work.

2. In apparatus of the class described, a work-support, a rotatable, swinging spindle, a surfacing member, a universal joint connecting it with the lower end of the spindle, overhead supporting means for said spindle, a universal joint connecting said means and the upper end of the spindle, an instrumentality acting through said means to effect axial rotation of the spindle and surfacing member, means coöperating with said spindle to swing the latter upon the upper universal joint as a fulcrum and thereby impart a bodily movement to the surfacing member, and manually controlled means to move the work-support toward or from the said member.

3. In apparatus of the class described, a work-support, a heated surfacing iron, an overhead supporting shaft, a universally-jointed connection between it and the iron, to suspend the latter and effect rotation thereof in unison with the supporting shaft, a driving shaft, separate connections between said shafts, to oscillate or rotate, respectively, the iron-supporting shaft, mechanism intermediate the driving shaft and said universally jointed connection to impart a bodily movement to the iron over the work on the work-support, and manually-controlled means to regulate the pressure of the iron upon the work-support.

4. In apparatus of the class described, a work-support, a vertical, rotatable shaft, a universally-connected spindle depending therefrom, a surfacing iron connected with the lower end of and suspended by the spindle above the work-support, means to effect, through the shaft and spindle, axial movement of the iron, and other means coöperating with the spindle to swing the latter and thereby move said iron bodily over the work.

5. In apparatus of the class described, a manually controlled, vertically movable work-support, a heated surfacing iron, an overhead, vertical shaft, a spindle depending therefrom and jointed to the iron, to suspend the latter above the work-support, a driving shaft, separate connections between it and the spindle-supporting shaft, to rotate or oscillate the latter, respectively, means connected with the spindle to swing the latter and thereby effect bodily movement of the iron, and an instrumentality to connect or disconnect said means and the driving shaft.

6. In apparatus of the class described, a manually controlled, vertically movable work-support, a heated surfacing iron, an overhead, vertical shaft, a spindle, universal joints connecting it with said shaft and the surfacing iron, to thereby suspend the latter, separate means to respectively rotate and oscillate the shaft and the parts connected therewith, a link operatively connected with the spindle, to swing the same while permitting rotative movement thereof, and mechanism to actuate the link and thereby effect a swinging movement of the spindle, moving the iron bodily over the work.

7. In apparatus of the class described, a manually controlled, vertically movable work-support, a heated surfacing iron, an overhead, vertical shaft, a spindle depending therefrom and jointed to the iron, to suspend the latter above the work-support, a driving shaft, variable-speed transmitting means between it and the spindle-shaft, to rotate the latter, other means to effect oscillatory motion of the spindle-shaft, and means operatively connected with the spindle to swing the latter when either of said spindle-shaft actuating means is in operation.

8. In apparatus of the class described, a work-support, a heated surfacing iron, an overhead supporting shaft from which the iron is suspended and with which it rotates in unison, a driving shaft, separate connections between said shafts, to oscillate or rotate, respectively, the iron-supporting shaft, mechanism to impart a bodily move-

ment to the iron over the work on the work-support, a clutch intermediate said mechanism and the driving shaft, and manually controlled means to regulate the pressure of the iron upon the work.

9. In apparatus of the class described, a manually controlled, vertically movable work-support, a heated surfacing iron, an overhead, vertical shaft, a spindle depending therefrom and jointed to the iron, to suspend the latter above the work-support, a driving shaft, separate connections between it and the spindle-supporting shaft, to rotate or oscillate the latter, respectively, means connected with the spindle to swing the latter and thereby effect bodily movement of the iron, a clutch between the said spindle-swinging means and the driving shaft, and a guide movable into position to coöperate with, and confine the swinging movement of, the spindle to a straight path.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES A. LOMBARD. [L. S.]

Witnesses:

EDWARD F. ALLEN,

FREDK. L. SILVERSTEIN.