

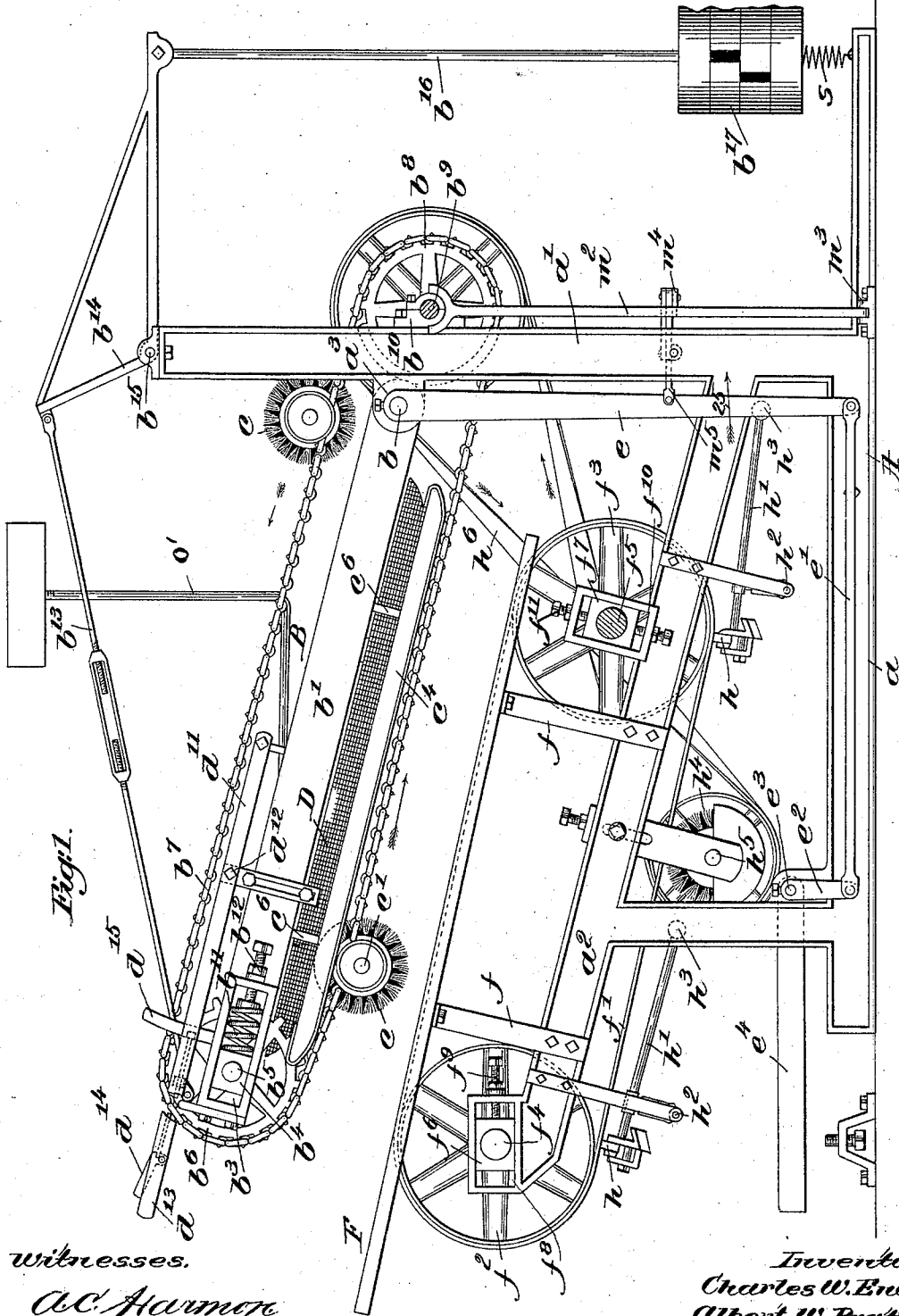
(No Model.)

2 Sheets—Sheet 1.

C. W. ENOS & A. W. PRATT.
MACHINE FOR COLORING AND POLISHING LEATHER.

No. 542,439.

Patented July 9, 1895.



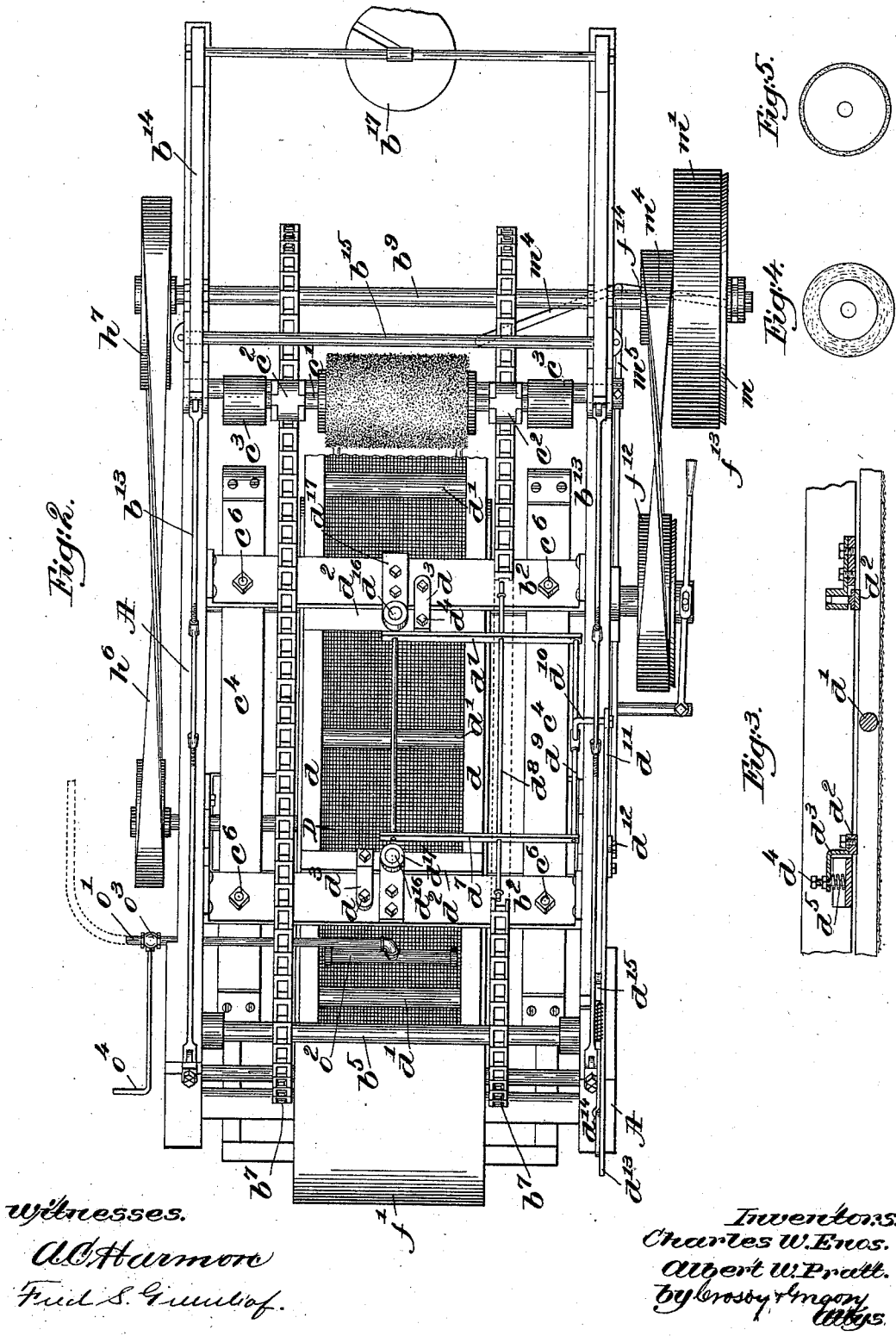
(No Model.)

2 Sheets—Sheet 2.

C. W. ENOS & A. W. PRATT.
MACHINE FOR COLORING AND POLISHING LEATHER.

No. 542,439.

Patented July 9, 1895.



Witnesses.
A. C. Harmon
Fred S. Gumbel.

Inventors.
Charles W. Enos.
Albert W. Pratt.
by Crosby & Ingersoll
Attys.

UNITED STATES PATENT OFFICE.

CHARLES W. ENOS, OF PEABODY, AND ALBERT W. PRATT, OF SALEM,
MASSACHUSETTS.

MACHINE FOR COLORING AND POLISHING LEATHER.

SPECIFICATION forming part of Letters Patent No. 542,489, dated July 9, 1895.

Application filed September 24, 1894. Serial No. 523,903. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. ENOS, of Peabody, and ALBERT W. PRATT, of Salem, in the county of Essex, State of Massachusetts, have invented an Improvement in Machines for Treating Leather and the Like, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a novel machine for treating leather.

Our improved machine, by the substitution of different working devices, is designed for use in blacking, seasoning, buffing, &c. Inasmuch as substantially the same conditions are present and the same mode of operation is pursued in all these operations referred to, we have herein confined our disclosure of this present invention principally to its use in connection with the blacking of leather, it being understood, however, that our invention is not limited to this alone.

In accordance with our invention, the working device, preferably in the form of a cylindrical brush, is mounted upon a suitable carrier, preferably an endless belt or chain, which imparts to the said working device a body movement upon the leather sustained upon a suitable work-support. In addition to this body movement of the working device, the same has imparted to it also, by suitable devices to be described, a rotary movement about its own axis. The material to be applied to the surface of the leather is preferably deposited in or upon a screen of suitable mesh, in contact with the opposite side of which the working device travels, it removing from and through the meshes of the screen the material which is afterward applied to the leather. The work-support may be of desired form and construction adapted for the particular class of work to which the machine is to be applied, I preferring, however, to employ for this purpose an endless traveling apron or belt, having a speed and direction of movement preferably the same as the working device, so that if the working device runs off or through the leather upon the work-support the latter by traveling with the working device prevents the latter spreading the material or

blackening over the surface of the work-support, confining such application to the line of contact between the work-support and the working device. This traveling work-support is preferably provided with one or more cleaning devices of suitable construction adapted to remove therefrom any blacking or material applied thereto in the manner described, so that a clean work-support is always presented to the leather, maintaining the grain side of the latter always clean. The endless carrier for the working device is mounted in a suitable frame made adjustable to enable the said device to be moved into and out of contact with the leather upon the work-support. Suitable mechanism is also preferably provided for automatically stopping movement of the working device when the latter is raised or moved out of contact with the leather, and again automatically thrown into operation when moved into contact with the leather.

In the drawings, Figure 1 is a side view of a machine constructed in accordance with one embodiment of our invention, the friction driving-pulley and driving-pulley for the work-support being removed for the sake of clearness; Fig. 2, a top or plan view thereof; Fig. 3, a sectional detail on the irregular dotted line *x x*, Fig. 2, showing the manner of supporting the screen; and Figs. 4 and 5, views showing different forms of working devices which may be employed in our machine.

In the particular machine illustrated in the drawings and selected by us for a disclosure of our invention, A is a frame of suitable shape and construction to sustain the several working parts, it, as herein shown, comprising a base *a*, two vertical standards *a'*, and two inclined arms *a''*. The standards *a'* of the frame are shown provided with ears *a'''*, in which is journaled the shaft *b*, to which is fixedly attached one of the ends of the two side members *b'* connected by the cross members *b''*, (see Fig. 2,) which together constitute what we shall hereinafter designate as a "vertically movable or swinging" frame B. The members *b'* of the swinging frame B are slotted at their outer ends, as indicated at *b'''*, to receive the boxes *b''''*, in which is journaled the shaft *b'''''*, carrying two sprocket-wheels *b''''''*, about which are passed the endless carrier-

chains b^7 , passed at their opposite ends about suitable sprocket-wheels b^8 fast on a driving-shaft b^9 , journaled in suitable bearings b^{10} , secured to the standards a' of the frame, the said shaft b^9 constituting the main driving-shaft of the machine. The tension upon the carrier-chains b^7 is regulated by springs b^{11} , interposed between the boxes b^4 of the shaft b^5 and the adjusting screws or devices b^{12} .
 (See Fig. 1.)

In the construction herein shown the working devices which perform the work of the machine are shown in the form of rotatable brushes c , preferably cylindrical in form, mounted upon suitable shafts c' journaled near their ends in boxes c^2 of suitable construction and secured to the endless carriers b^7 at desired points, the said shafts c' in the present instance being prolonged beyond the boxes c^2 and provided at their outer ends with friction-wheels c^3 , which, during the travel of the carrier b^7 , are caused to move in contact with the stationary friction-strips c^4 , carried by the swinging frame B, which strips cause the said working members to be rotated about their axes c' during their body movement by the carrier, the said working members therefore having a combined body and rotative movement.

In the present construction the stationary members c^4 are secured to the side bars b' of the swinging frame by means of the adjusting-screws c^6 , by means of which their position and contact with the friction-wheels of the brushes may be varied as desired.

D is a screen, of suitable mesh, and in the construction shown is stretched between the two side pieces d , connected at suitable points by cross-pieces d' , constituting a screen-frame. This screen-frame is supported as shown in Fig. 3, wherein d^2 d^2 are two cross strips or stays extending from one to the other side bars d . Upon each of the stays d^2 is mounted and secured an L-shaped bracket d^3 , both of which are shown in Fig. 2, but one only in Fig. 3, inasmuch as the said brackets are not located in the longitudinal center line of the machine, but at opposite sides, respectively, of the said center line, each of these brackets being threaded to receive the adjusting and supporting screw d^4 , which rests upon one of the connecting-bars b^2 of the swinging frame B. Springs d^5 are interposed between the brackets d^3 and the said cross-bars b^2 to maintain the said screen normally in an elevated inoperative position.

The screen is thrown down into operative position by means of a rod d^6 , shown as connecting the stays d^2 of the frame, to which is jointed one of the ends of the two levers d^7 , fulcrumed on the rod d^8 , carried by the cross-bars b^2 of the swinging frame, and connected at their opposite ends by a rod d^9 , connected by an angle-rod d^{10} , with one end of the actuating-lever d^{11} , fulcrumed at d^{12} , and having its operating end at d^{13} . (See Fig. 1.) This lever d^{11} is provided with suitable latch-mech-

anism d^{14} , co-operating with a curved sector d^{15} to maintain the said lever in position with the screen depressed, the said lever when drawn down into its full-line position, Fig. 1, acting through the levers d^7 to depress the screen D into operative position against the action of the springs d^5 , which latter, when the lever is released, immediately raise the said screen into its inoperative position. To guide the screen in its vertical movement we have provided the same with two guide-studs d^{16} , located, as shown, at diametrically-opposite points; the same sliding in suitable guiding-sleeves d^{17} on the cross-bars b^2 of the frame.

The swinging frame B is shown as sustained at its outer end by a rod b^{13} , jointed to one arm of the bell-crank lever b^{14} , pivoted at b^{15} , and to the other arm of which is hung the weight-rod b^{16} , sustaining at its lower end one or more counterbalancing-weights b^{17} . The weights b^{17} serve to counterbalance the swinging frame and enable the latter to be easily raised and lowered to bring the brushes c in contact with the work. This movement of the swinging frame is accomplished, in the present instance, by means of a lever e , depending from and fast to one end of the shaft d , on which the said frame is fulcrumed and to the lower end of which is jointed one end of a connecting-rod e' , jointed at its opposite end to the lever e^2 fast on the end of a shaft e^3 , journaled in suitable bearings in the frame and carrying the treadle e^4 , arranged in position to be actuated by the operator, who, by depressing the said treadle, moves the lever e in the direction of the arrow 25 and throws the frame into its lowermost operative position, releasing the lever, permitting the weight d^{17} to again raise the said frame.

F is a work-table shown as sustained by suitable brackets f on the inclined arm a^2 of the frame. At the center of this table, and in the present instance constituting the work-support proper, we have arranged the endless apron or belt f' , passed about suitable sheaves f^2 f^3 , mounted upon shafts f^4 f^5 journaled, respectively, in the boxes f^6 f^7 . The boxes f^6 are shown as horizontally adjustable in slots f^8 in the ends of the inclined arms a^2 by means of adjusting-screws f^9 for the purpose of regulating the tension upon the said apron or belt f' . The boxes f^7 at the opposite end of the said belt are adjustable in a nearly vertical direction in suitable slots f^{10} in portions of the arms a^2 by means of suitable adjusting-screws f^{11} .

In Fig. 1 h h are two cleaning devices (shown as rubber or other suitable scrapers) mounted upon the levers h' , fulcrumed at h^2 and actuated by proper weights h^3 . (Shown in dotted lines.) Between these two cleaning devices h we have herein arranged a third cleaning device h^4 , in the form of a rotating brush, journaled at h^5 and driven by a cross-belt h^6 from a pulley h^7 fast on the main shaft b^9 of the machine. Rotation of the main shaft b^9 is controlled preferably by a suitable friction-

clutch mechanism, we having herein shown the said shaft as having splined upon its end a friction-disk m , adapted to be moved into and out of contact with the pulley m' loose on the said shaft and belted to and driven from some suitable source of power. The friction-disk m is moved into and out of contact with the pulley m' by a forked lever m^2 , fulcrumed at m^3 and actuated by the toggle-levers m^4 , which latter are connected by a link m^5 with the lever e depending from the shaft b , (see Fig. 1,) so that whenever the said lever e is released to allow the weight d^{17} to raise the swinging frame B to remove the work devices c from operative position the toggle-levers m^4 will by the same movement be straightened to remove the disk m from frictional engagement with the pulley m' , thereby stopping movement of the working devices. When the treadle e^4 is depressed to move the lever e in the direction of the arrow, Fig. 1, and drop the working devices c again into operative position, the same movement of the treadle and the lever e will, through the toggle-levers m^4 , place the disk m again in frictional engagement with the driving-pulley to set the parts in operation.

The shaft m^6 , which drives the traveling work-support f , is herein shown as driven by a pulley f^{12} , connected by a belt f^{13} with a pulley f^{14} fast to the continuously-rotating friction-pulley m' , so that the said work-support f is maintained always in motion, in order that any drippings from the working device or the screen while the swinging frame B is not in use will be at once removed by the cleaning devices referred to.

The operation of the machine is as follows, viz: The blacking or other substance to be applied to the leather and in the present instance contained within a suitable supply-tank o , arranged at a convenient point, preferably above the machine, is conducted through a preferably flexible connection to the supply-pipe o' , which delivers the said blacking or material to the distributing device o^2 , which deposits the same uniformly across the screen D, the flow of blacking or material to this distributing device being regulated by a suitable valve o^3 , under the control of a handle o^4 , arranged in position convenient for the operator. The blacking or material deposited upon the screen, as described, flows uniformly down over the inclined surface thereof, usually throughout the entire length of the said screen, the supply being regulated in such manner as to maintain the screen constantly covered at its upper surface. The leather or skin to which the blacking or material is to be applied is now placed by the operator upon the traveling work-support f' , the operator, however, holding the leather or skin in his hand to prevent it being moved by the said work-support. The operator then depresses the treadle e^4 with his foot and through the mechanism described drops the frame B into

working position, and at the same time automatically throws the driving-shaft d^9 into gear to set the carrier b^7 in operation, the same bringing the brushes c successively along the under side of the screen and with their friction-wheels in contact with the stationary members c^4 , which latter rotate the said brushes as they move along the same and cause the said brushes by their moving contact with the under side of the screen to uniformly remove the blacking or material contained in the screen and uniformly and thoroughly apply the same to the leather or skin held by the operator upon the work-support. The operator manipulates the leather or skin until the latter by the successive passages of the brushes over the same has received the desired application of blacking or material. The operator now, and without stopping the movement of the working devices c , grasps the handle d^{13} , and, releasing the locking device d^{14} , permits the springs d^5 , which control the position of the screen, to raise the latter into inoperative position—that is, to such a level that the working devices c in their movement will not contact therewith, and thereafter continued movement of the said working devices acts to work or rub into the surface of the leather or skin the blacking or material previously applied, this operation being continued for a desired length of time, when the treadle d^4 is released and the entire frame B raised and the movement of the working devices stopped, when the leather or skin is removed and a new one substituted in its stead. During this time if either of the working devices c should by reason of the irregular shape of the leather or skin, or a hole in the latter, run from the leather or skin upon the work-support, the blacking or substance would be applied to the latter, and if the work-support were stationary it would soon become smeared with the blacking or material in use and the under or grain sides of the leather or skins would be soiled thereby. It is, however, very desirable that the under sides of the leather or skins should be preserved at all times clean, and for this reason we have made the work-support to travel as described and preferably at a speed and in a direction corresponding to that of the working devices, so that if one of the said devices should momentarily, or throughout the length of its operative movement, chance to contact with the said work-support, the blacking or material carried by the said working device will be applied to the work-support only in the line of contact of the said working device with the said support and not over any considerable surface of the latter, this blacking or material thus applied being at once removed by the cleaning devices described.

When the working devices c after continued use have become worn and thereby reduced in diameter, the frame B may be permitted to drop enough lower to bring the said work-

ing devices at the beginning of their operative movements into proper contact with the leather or skin upon the work-support, this change in the movement of the swinging arm being permitted by the adjustable stop *p*, against which the treadle is moved by the workman.

When the swinging frame B is dropped into a lower position, as and for the purpose described, the working devices will be thereby caused to travel in a different radial line with relation to the axis of the shaft *b*, upon which said frame is mounted. To compensate for this change in radial direction of travel, the boxes *f*⁷, in which the shaft of the work-support carrying-wheels *f*³ are mounted, may be raised slightly by the devices described to change the angle of the work-support to correspond with that of the travel of the working devices.

In the present construction we have shown the lower end of the counterbalancing-rod *b*¹⁶ as connected with the base by a spring *s*, which may assist in the counterbalancing effect produced, and at the same time prevent lateral vibration of the said rod during operation of the machine.

When our improved machine is to be used for seasoning purposes—that is, for the application of seasoning substances to the leather or skin—we prefer to use cylindrical pads or padded rollers in place of the brushes shown in Figs. 1 and 2, and when the machine is to be used for buffing the grain sides of skins sandpaper or buffing-rollers of suitable construction—such, for instance, as illustrated in Fig. 6—will be substituted for the brushes, Figs. 1 and 2. In like manner any other desired working device may be used in the machine to adapt it for any desired class of work to which it is otherwise suitable.

Our invention is not limited to the particular embodiment of the same herein shown and described, for the same obviously may be varied and still come within the scope of our invention as claimed.

We have herein shown and described our machine in connection with the treatment of leather, and have so entitled our invention; but the same may be used for applying sizing and the like to paper or other like sheets or material.

We claim—

1. In a machine of the class described, a work-support or table, an endless carrier, a carrying frame therefor, said carrying frame and work-support having a relative movement to separate the working device from or bring it in contact with the work upon the support, a working device rotatably mounted in fixed position upon said endless carrier, driv-

ing mechanism for said carrier, and means to rotate the said working device about its own axis during its body movement by said endless carrier, substantially as described.

2. A machine of the class described containing the following instrumentalities, viz:—a work-support, a working device, an endless traveling carrier having bearings for said working device, a vertically movable frame sustaining the said carrier, and manually operated means to raise and lower said frame to remove said working device from and to place it in operative contact with its work, at will, substantially as described.

3. A machine of the class described containing the following instrumentalities, viz:—a work support, a screen having its perforations extended in the direction of the travel of the working device, the material to be applied being deposited upon one side of said screen, and a working device, and means to move the same in contact with the opposite side of said screen to thereby remove the said material through the successive perforations past which it travels, and apply the same to the work, substantially as described.

4. In a machine of the class described, a work-support, a working device, and a movable frame therefor, whereby the said working device may be moved toward and from its work, and driving mechanism for the said working device connected with the frame for the latter whereby movement of said frame out of operative position automatically stops movement of the said working device, substantially as described.

5. In a machine of the class described, one or more working devices and an endless carrier therefor, a vertically movable frame for the said endless carrier, a screen in contact with which the said working device or devices move, a work-support, and means to separate the said screen and working devices whereby the latter may be used for rubbing-in purposes, substantially as described.

6. In a machine of the class described, one or more working devices, and a swinging frame as B carrying the same, combined with a work-support, and means to adjust the angle of its inclination to correspond with the line of travel of said working device and to hold the same fixedly in said adjusted position, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES W. ENOS.
ALBERT W. PRATT.

Witnesses:

FREDERICK L. EMERY,
AUGUSTA E. DEAN.