No. 807,672. PATENTED DEC. 19, 1905.

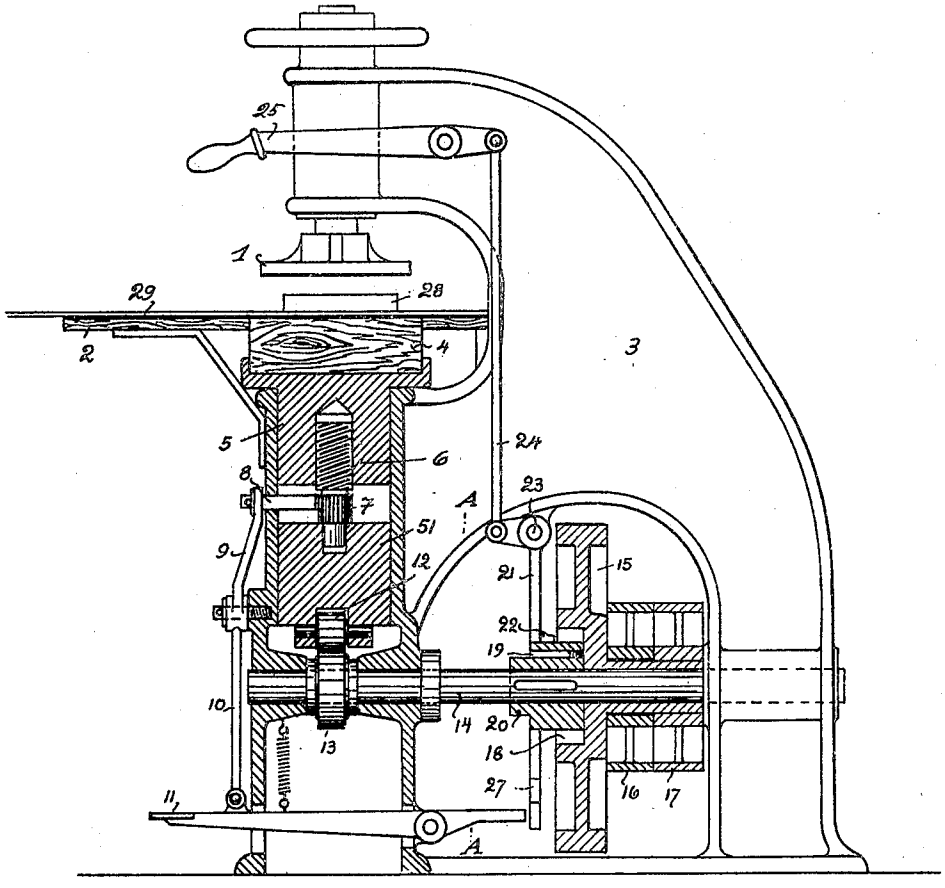
H. C. GROS.

MACHINE AND APPARATUS FOR DYING OUT LEATHER AND OTHER FIBROUS MATERIAL.

APPLICATION FILED MAR. 18, 1903.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

Jean Grund

Carl Grund.

Inventor.

Hermann Carl Gros

No. 807,672. PATENTED DEC. 19, 1905.

H. C. GROS.

MACHINE AND APPARATUS FOR DYING OUT LEATHER AND OTHER FIBROUS MATERIAL.

APPLICATION FILED MAR. 18, 1903.

3 SHEETS—SHEET 2.

Fig. 2.

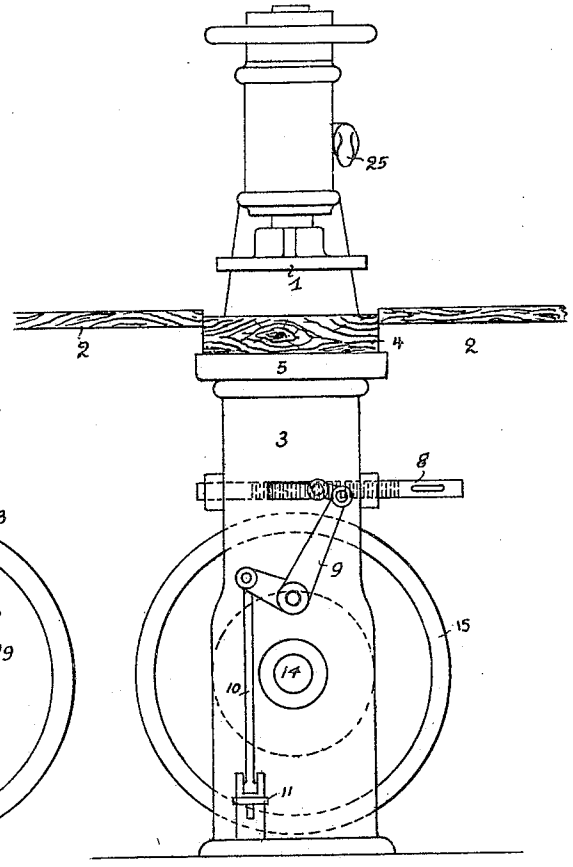
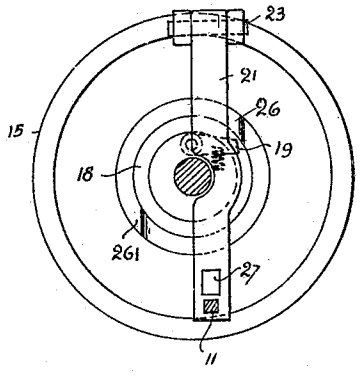


Fig. 3.



Witnesses
Jean Grund.
Carl Grund.

Inventor
Hermann Carl Gros

No. 807,672. PATENTED DEC. 19, 1905.

H. C. GROS.

MACHINE AND APPARATUS FOR DYING OUT LEATHER AND OTHER FIBROUS MATERIAL.

APPLICATION FILED MAR. 18, 1903. 3 SHEETS—SHEET 3.

Fig. 4.

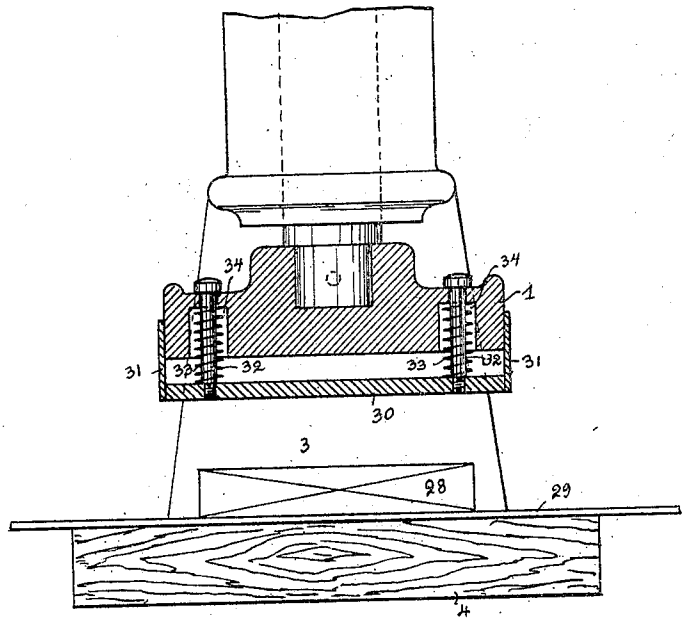
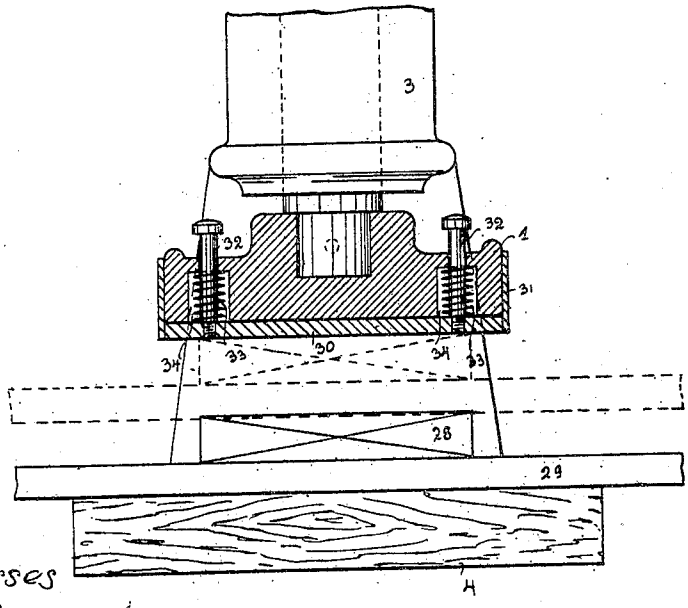


Fig. 5.



Witnesses
Jean Grund.
Carl Grund.

Inventor.
Hermann Carl Gros

UNITED STATES PATENT OFFICE.

HERMANN CARL GROS, OF LEIPSIC-LEUTZSCH, GERMANY.

MACHINE AND APPARATUS FOR DYING OUT LEATHER AND OTHER FIBROUS MATERIAL.

No. 807,672. Specification of Letters Patent. Patented Dec. 19, 1905.

Application filed March 18, 1903. Serial No. 148,403.

To all whom it may concern:

Be it known that I, HERMANN CARL GROS, a subject of the King of Würtemberg, residing at Leipsic-Leutzsch, Germany, have invented a certain new and useful Improvement in Machines and Apparatus for Dying Out Leather and other Fibrous Material, of which the following is a specification.

My invention relates to a machine for dying out pieces of leather, cardboard, or other material in such a manner that accidents which hitherto very frequently occurred to the attendant operating the machine are practically absolutely excluded. Generally machines of this kind are arranged so that the material out of which the various pieces are to be died or stamped is spread on a table, and the loose die is placed on the spot where the dying out is to take place underneath an adjustable counter or head plate. The head-plate is then either suddenly brought down to the table or upper surface of the die or the table, with material and die thereon, is suddenly raised against the upper counter-plate or head. The die is then forced through the material and the latter is suitably stamped or died out. In operating machines of this character the attendant at times allows parts of his body—as, for example, a hand or fingers—to remain between the die and counter-plate at the moment when power is suddenly applied to the pressing or dying-out mechanism, thus injuring the respective parts of his body. My present new machine is so constructed and devised that without the aid of specially-arranged guards or protectors heretofore occasionally attached to such machines such accidents are excluded.

In carrying out my invention I employ an auxiliary mechanism by means of which the loose die having been placed properly on the material is moved with gentle pressure against the counter-plate or head before the mechanism exerting the main pressure and forcing the die through the material can be put in action. Consequently as all parts, with their respective surfaces, fit closely together before the main pressure can be put in operation it is impossible for the attendant at the machine to insert any part of his body between the actuated parts.

The accompanying drawings represent one mode of constructing a machine in which my invention is embodied.

Figure 1 is a sectional side elevation. Fig. 2 is a front view. Fig. 3 shows details of the interlocking mechanism in section following line A A of Fig. 1. Figs. 4 and 5 show a special construction and arrangement of the counter-plate or head required when the continuous supply of material to the press varies in thickness.

The machine is provided with a vertically-adjustable resisting or counter plate 1, mounted in an arm of the main frame 3, reaching over the table 2 on which the material is placed. Just below the counter-plate 1 the table 2 is hollowed out, and fitted in this hollow space is the die-block 4, reaching with its upper surface up to about the same level with that of the table 2. The die-block 4 is mounted in a cavity of a pressure-piston. This pressure-piston, vertically movable in a cylinder-shaped guide connected with the bottom part of main frame, is made in two parts 5 and 51, which are linked together and connected by a screw-threaded spindle 6. The latter has its bearing and is capable to revolve in the lower part 51 of the pressure-piston, while its upper end, provided with a screw-thread, fits in a corresponding screw-hole of the upper part 5 of the pressure-piston.

Mounted firmly upon the spindle 6 between the lower and upper piston is a cogged wheel 7, into which engages a corresponding rack or cogged bar 8, capable of a horizontal reciprocating sliding motion. Thus a revolving motion can be imparted to the spindle 6 in one direction or another, according to the way in which horizontal sliding motion is imparted to the cogged bar 8. A connecting-link joins the cogged bar 8 with a bell-crank lever 9, which again on its other arm is connected by a connecting-rod 10 with treadle 11, so that by means of the latter motion may be transmitted to the cogged bar 8 and spindle 6.

On the lower end of the lower part 51 of the pressure-piston is mounted a roller 12, resting on and engaging with an eccentric 13, fixed on the main shaft 14. This main shaft has its bearings in the lower part of the main frame, and its hinder end is fitted with a fly-wheel 15, the extended hub of which forming the bearing for the loose and fast driving-pulleys 16 and 17.

The arrangement of suddenly engaging and disengaging the pressure-producing mechanism consists, as usual, in a notch 18, provided in the fly-wheel next to the shaft, into which engages a thumb or link 19, acted upon by a spring which imparts to it the tendency of an upward or outward motion. The thumb or link 19 is mounted to a muff 20, fitted over

and keyed to the shaft 14, and is controlled from the engaging rod 21 by means of a projection or nose 22. Bracket 23 is provided on the main frame for the engaging rod 21, allowing it a swinging motion. It is provided with a short arm which, by means of a connecting-rod 24, connects it with the hand-lever 25 on the top of the machine-frame. In the position shown in the accompanying drawings engaging rod 21 and nose 22 hold the thumb or link 19 disengaged with the tooth-like projections 26 and 26′, formed in the body of the fly-wheel; but when swinging the engaging rod 21 to the left the thumb or link 19 is freed and, influenced by its spring, engages with the projections 26 or 26′ in the fly-wheel, thus causing one revolution, at the end of which nose 22 disengages thumb or link 19. The lower end of the swinging engaging rod 21 rests against the rear end of foot-lever or treadle 11 while the latter is in position as shown. When the foot-lever or treadle 11 is pressed downward and its rear end upward, the latter comes in a position opposite a corresponding opening formed in the lower end of the lever 21, the latter now being enabled to carry out its swinging motion toward the rear end of the treadle when imparted to it by hand-lever 25.

When a continuous supply of material varying in thickness has to be handled under the machine and to maintain the effect aimed at without having to adjust the position of the counter-plate for each thickness, I provide a special construction or arrangement of the counter-plate. (Shown in Figs. 4 and 5.) For this purpose an additional pressure-plate 30 is brought in combination with the counter-plate 1, covered with and fitted to the circumference of the latter by a tubular mantle, which simultaneously serves as a guide for the pressure-plate. This arrangement provides against any open space occurring at any time between the main body of the counter-plate 1 and the pressure-plate 30. Bolts 32 are fastened to the plate 30 and are received by corresponding holes in the counter-plate 1, such holes serving as guides for the bolts, which latter are provided with heads on the top or other suitable means to prevent their dropping through the holes. Coiling around the bolts 32 and placed in suitable cavities 34 in the lower surface of the counter-plate, between the latter and the top surface of the lower plate 30, springs 33 are arranged, so that by means of the latter the lower plate 30 is under a continuous downward pressure and has the tendency always if upward pressure is exercised against it on being released to return to its lowest possible position. (Shown in Fig. 4.) The cavities 34 in the upper counter-plate 1, in which the springs 33 are located, are so arranged that when the lower plate is pressed upward and the springs are pressed together the full body of the latter can be received by the said cavities, so that at the highest point of pressure the upper surface of the lower plate 30 and the lower surface of the upper counter-plate 1 fit closely together, as shown in Fig. 5. The distance left between the upper surface of plate 30 and the lower surface of plate 1 when plate 30 is in its lowest position is so measured out that it corresponds with the difference in thickness between the thinnest and thickest material coming to the machine. For other well-known purposes—as, for instance, differences in the height of the dies used—the counter-plate is vertically adjustable by the usual means of slide-screw and hand-wheel, which need no further description.

The handling of the machine is as follows: Die 28 is placed, as usual, on the top of the material 29, lying on the table 2, and die-block 4 on the chosen spot where the required piece is to be died out. Material and die together are now receiving upward motion against the counter-plate 1 by acting upon the treadle 11, the downward motion of the treadle transmitting a horizontal sliding motion to the cogged rod 8, as shown, which latter by engaging the cog-wheel 7 turns the spindle 6, thus moving upward the upper pressure-piston 5, with wooden die-block, material, and die. This movement is naturally effected under comparatively gentle pressure, the operator having his hands free to hold die and material together, if required, and should it happen in the latter case that he brings any part of his body, especially finger or hand, in between the surface of die and that of the counter or pressure plate the force of treadle action now exercised is not sufficient to do any serious injury and chance is given to withdraw the endangered parts before the main pressure is put in action by means of the hand-lever 25. This hand-lever can only be acted upon and sudden power for main pressure be transmitted when both the surface of the die and that of the counter or pressure plate are brought in close contact together. After having effected this adjustment, which of course is but a moment's work, and no open space then is left between the several parts on which main pressure is to be exercised, the latter is brought in sudden activity by means of the hand-lever 25. The connection of this hand-lever with the mechanism engaging the transmission of sudden power for one revolution of the main shaft has been described above, showing the lock which exists on the possibility of moving the said hand-lever downward up to the moment downward motion has been imparted to the treadle, and its end can enter the opening 27, formed in the lower part of lever 21. In case materials varying in thickness have to pass the machine the above-mentioned special arrangement of the counter-plate, in combination with an additional pressure-plate, adjusts itself hereto in the following manner: Taking

the thinnest material in consideration, (see Fig. 4,) material 29 and die 28 are raised by the treadle, as described, so that the upper surface of die and lower surface of the lower pressure-plate just touch while yet a short upward motion of material and die is taking place, which latter end motion places the interlocking lever arrangement for suddenly engaging the main pressure in position to admit action of hand-lever 25. The action of eccentric 13 on the pressure-piston 5 and 5′ following hereupon first causes the lower pressure-plate 30 to rise and compress the springs 33 until the inner surface of lower pressure-plate and counter-plate 1 touch. The rest of the pressure exercised by eccentric 15 forces the die through the material. When thick material passes the machine, (see Fig. 5,) then parts 4, 28, and 29 are at once brought in the position shown in dotted lines, Fig. 5, by the treadle, whereupon the main pressure action is engaged and takes place. When materials of thickness lying between the thinnest and thickest pass the machine, the action is divided between treadle and eccentric. By these above-described means it is achieved that with a certain given unvarying lift of the treadle and pressure motion produced by the eccentric through various thicknesses of material pass the press the touching of upper surface of die and lower surface of pressure-plate effected by the treadle always takes place before the power for main pressure is engaged.

The operation carried out by hand-lever 25 may also be effected by a second treadle or be combined with the motion of treadle 11.

I have preferred to arrange my new machine so that all acting parts to produce pressure lie below and the pressure-piston rises from below upward against the counter-plate; but I do not confine myself to this arrangement, as all or parts of the acting mechanism may be reversed and the pressure piston or bar be made to descend on die and material lying on an adjustable stationary lower table.

Having now described the nature of my invention, what I claim as new, and desire to be secured by Letters Patent, is—

1. In a dying-out press or machine, the combination with a die-block and a counter-plate, of clamping means for clamping the die-block and counter-plate together, driving means for causing the block and counter-plate to die out interposed material, and coupling means for the driving means, said clamping means being extended into the path of the coupling means to lock the latter until the block and counter-plate have been clamped.

2. A dying-out press or machine comprising a counter-plate and die-block, a clamping-screw for moving or clamping the block to the plate, a gear and a rack for actuating the screw, means for actuating the rack, and a cam-shaft actuating the block.

3. A dying-out press comprising a die-block with clamping-screw therefor, an actuating gear and rack for actuating the screw to clamp and unclamp, a lever and a treadle for actuating the rack, a driving-shaft for the block, a coupling for the driving-shaft, and a lever or shifter for actuating the coupling.

4. A press having a die-block made in sections, a clamping-screw between the sections for spreading the same to clamping position, a rack for actuating the spreading-screw, a lever and a pedal for actuating the rack, a cam for actuating the sections to give a cutting or dying stroke, and a coupling or release for the cam.

5. A press having a die-block and a counter-plate provided with a loose plate extended underneath and about the same, bolts for loosely suspending the loose plate from the counter-plate, springs between the plates to press the same apart, a clamping-screw with gear and rack for clamping the block to the plate, a treadle for operating the rack and a cam and shaft for driving the block to give a dying stroke.

6. In a dying-out press or machine, the combination with a die-block and a counter-plate, of clamping means for clamping the die-block and counter-plate together, driving means for causing the block and counter-plate to die out interposed material, and coupling means for the driving means, said clamping means being extended into the path of the coupling means so that the starting of the latter cannot take place before block, die and counter-plate have been clamped.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HERMANN CARL GROS.

Witnesses:
JEAN GRUND,
CARL GRUND.