June 9, 1936. T. B. HAWKES 2,043,246

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Filed Dec. 3, 1932 4 Sheets-Sheet 1

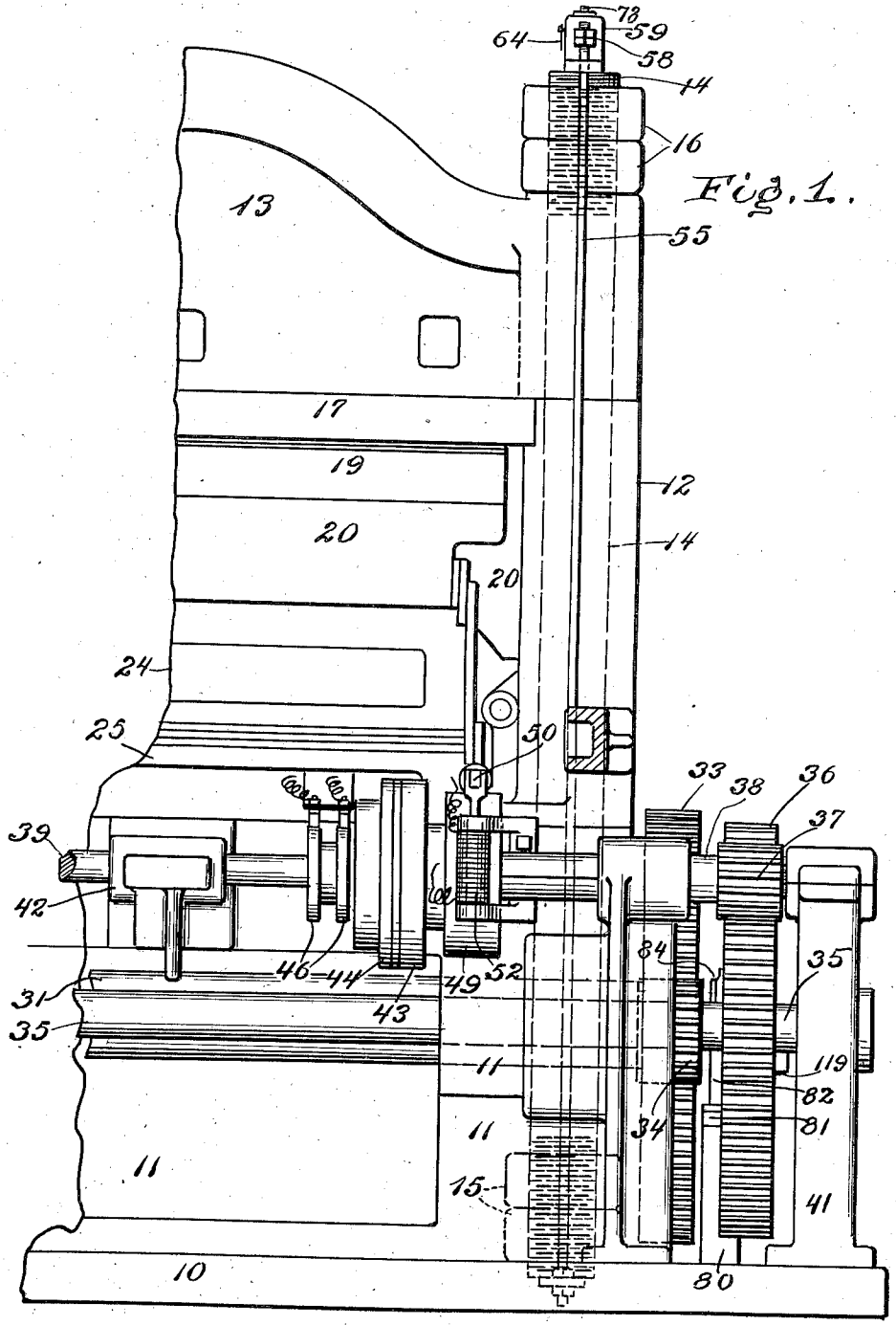


Fig. 1.

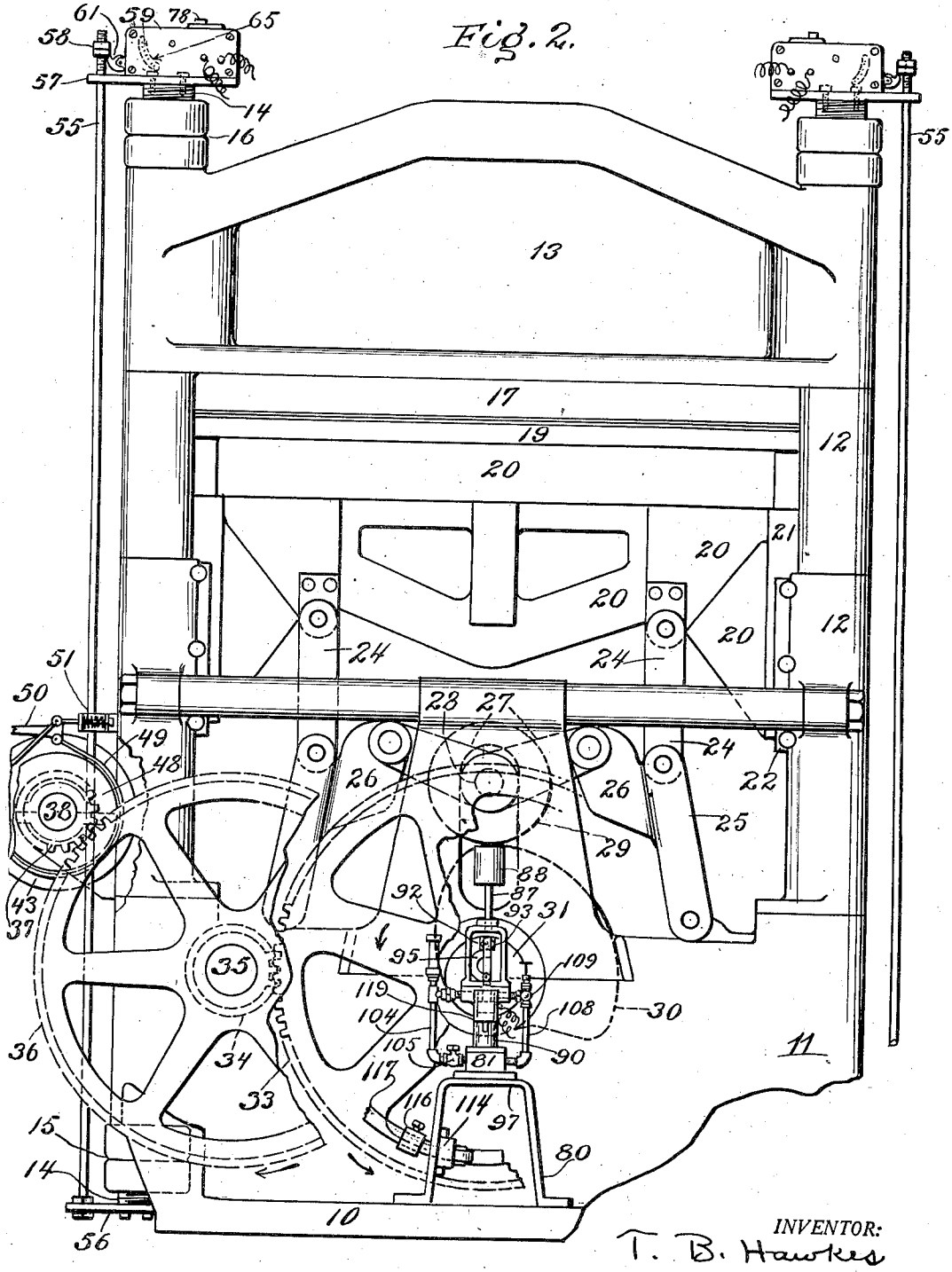
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Filed Dec. 3, 1932 4 Sheets-Sheet 2

Fig. 2.



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Filed Dec. 3, 1932 4 Sheets-Sheet 3

Fig. 3.

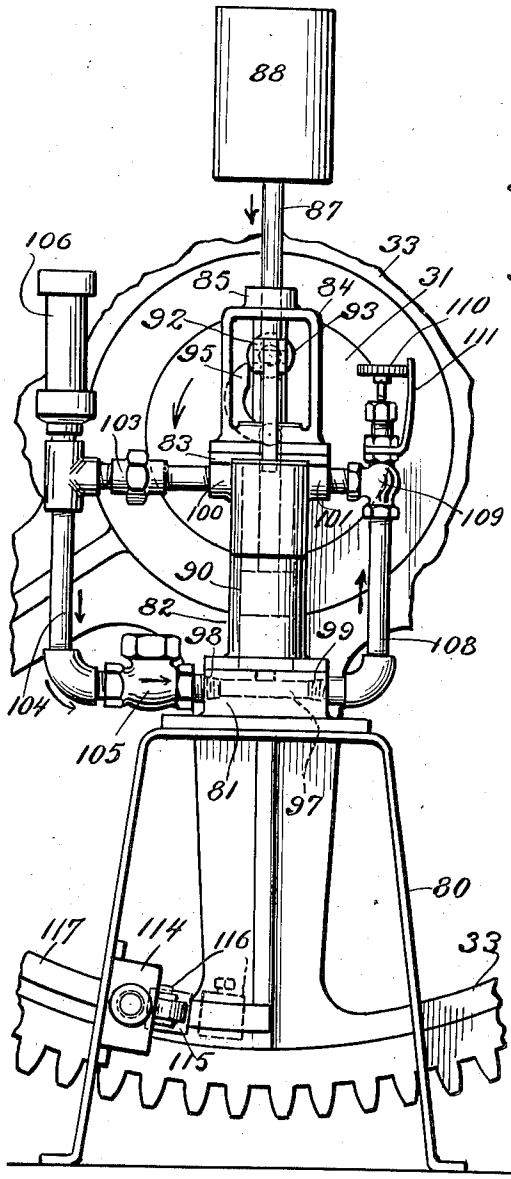
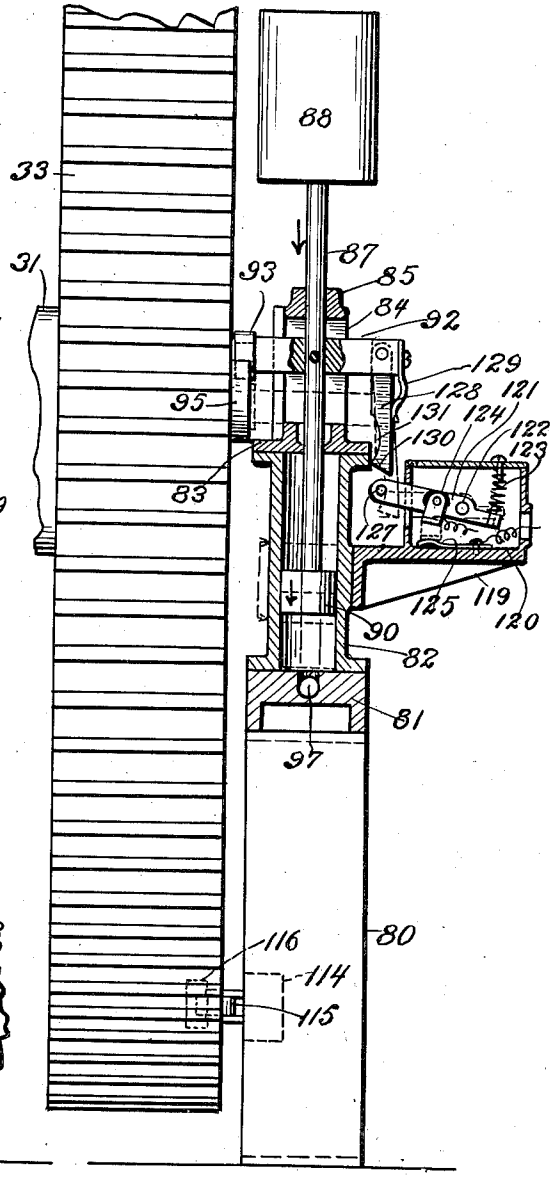


Fig. 4.



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Fig. 5.

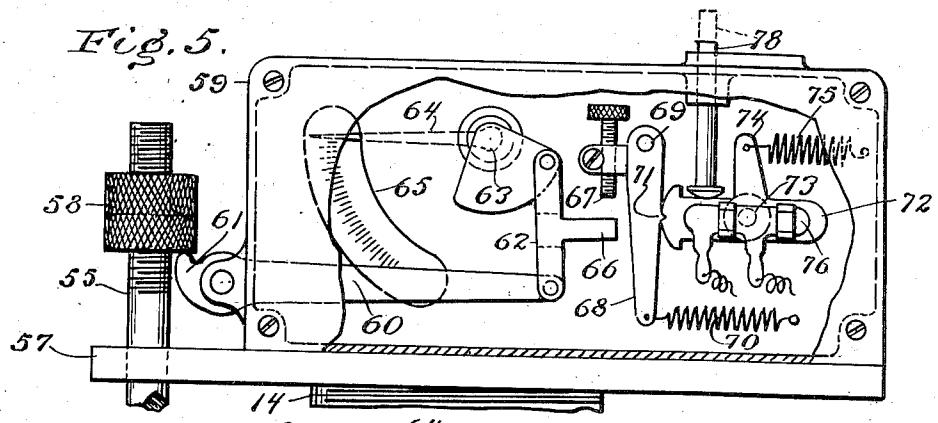


Fig. 6.

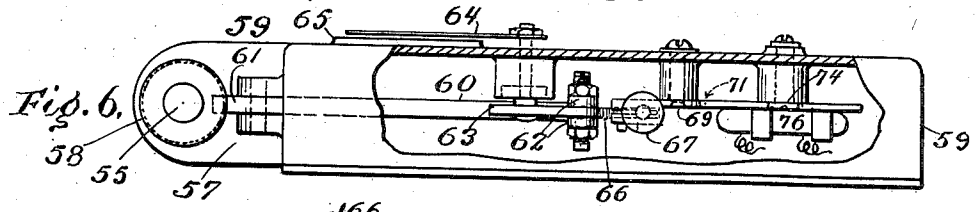
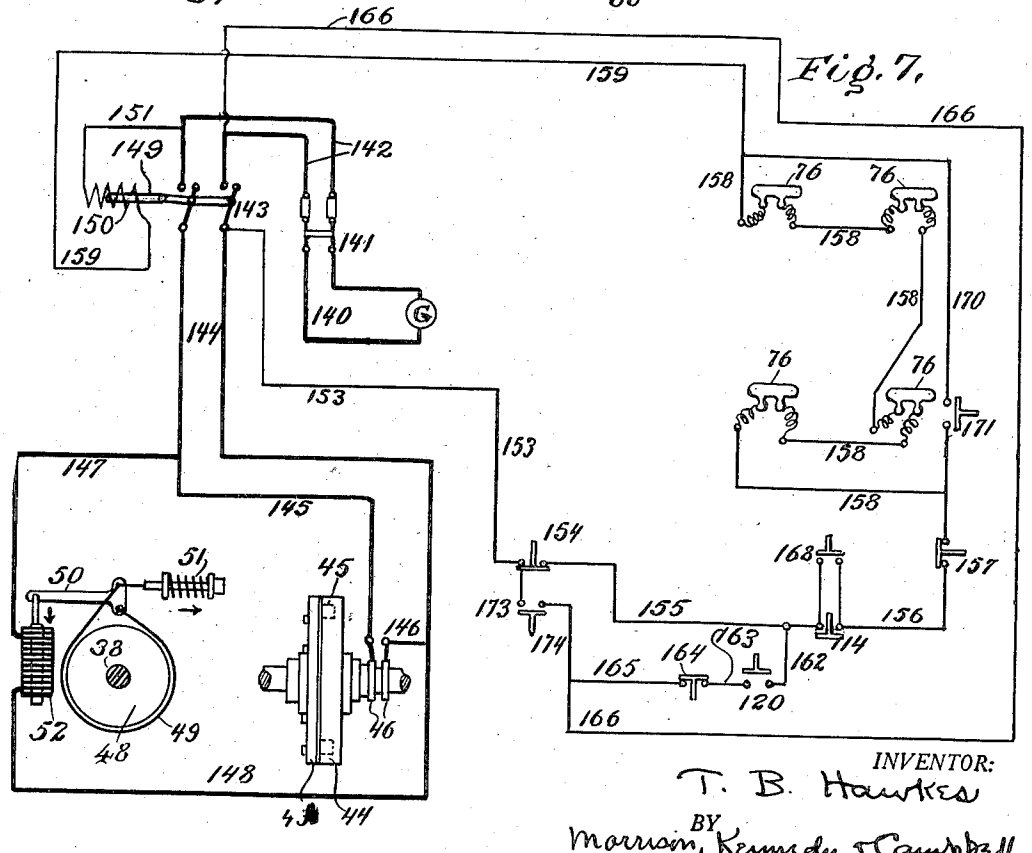


Fig. 7.



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Patented June 9, 1936 2,043,246

UNITED STATES PATENT OFFICE

2,043,246

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Thomas Blair Hawkes, Champlain, N. Y., assignor of one-half to The Sheridan Iron Works and one-half to The T. W. & C. B. Sheridan Company, corporations of New York

Application December 3, 1932, Serial No. 645,565

8 Claims. (Cl. 101—3)

This invention is a novel power press, and relates more especially to platen presses for leather or other sheet material such as cardboard, fiber and the like. Such type of press is typically illustrated by Bredenberg Patent No. 821,179 of May 22, 1906, or Blake Patent No. 1,285,600 of November 26, 1918, wherein are comprised upper and lower platens with power mechanism for causing their relative approach and separation, usually by elevation of the lower platen or bed, through a cam and toggle or other connections, to deliver a heavy squeezing pressure upon the work; so that the leather or other material may be suitably embossed, smooth plated or otherwise treated between the platens of the press; although other modes of causing the lifting of the lower platen may be employed with this invention.

The general objects of the present invention are to afford a power press of improved efficiency, convenience of operation and product. A particular object is to provide for imposing a controllable or variable pause or dwell in the action of the machine while the material is under the heavy pressure, thereby adjusting the time period during which the embossing or plating action is continued. A further object is to provide for convenience of operation and control through electrical connections arranged to effect the starting of the machine, the commencement and the ending of the period of dwell thereof, the restarting after the pause or dwell, and the final stoppage after the pressing is completed and the platens are separated. A further object is to afford an effective detector or safety device to prevent overstrain or undue pressure which might be injurious to the material being treated or even to the parts of the press itself.

Other and further objects of the invention will be explained in the hereinafter following description of an illustrative embodiment thereof or will be understood to those conversant with the subject. To the attainment of such objects and advantages, the present invention consists in the novel power press, and the novel features of combination, construction and detail herein illustrated or described.

In the accompanying drawings Figure 1 is what may be considered a front elevation of the right hand portion of a power operated platen press embodying the present invention.

Fig. 2 is a right elevation of the press shown in Fig. 1 with certain parts including shaft bearings and standards omitted to show better the novel features of mechanism.

Fig. 3, on an enlarged scale, is a right elevation showing certain details of the escapement or timing mechanism which determines the period of pause or dwell while the material is under compression.

Fig. 4 is a front elevation of the parts shown in Fig. 3, partly in central section.

Fig. 5 is a right elevation on an enlarged scale of one of the safety devices shown at the upper part of Figs. 1 and 2, partly broken out to show the interior construction.

Fig. 6 is a top plan view of the parts shown in Fig. 5, also broken away to show the construction.

Fig. 7 is a diagram of wiring showing a convenient mode of effecting electrical control of the several controllable parts and actions of the apparatus.

Referring first to Figs. 1 and 2, the machine is shown as mounted upon a heavy base 10 above which are the lower frame parts 11 and upstanding therefrom at the four corners a system of posts, the outer parts 12 of which may be hollow. On top of the posts 12 is the fixed head 13 of the press, preferably occupying the entire space between the four corner posts. The lower frame 11, the vertical posts 12 and the top or head 13 are securely and rigidly attached together by a system of interior rods 14 passing through the respective posts, each rod being provided with a lower nut or nuts 15 threaded on to the rod and an upper nut or nuts 16 threaded to the top end of the rod, by which the entire structure may be rigidly and permanently united. The parts 11, 12 and 13 may be constructed of cast iron and the tension rods or bolts 14 of steel; and the latter are therefore, when subjected to excessive stress, subject to slight elongation, which is taken advantage of by the safety device to be described to measure the tension or stress of the machine and to prevent dangerous overstrain.

The fixed head 13 may carry beneath it an upper platen 17, and directly below that is shown the lower platen 19 adapted to be lifted and lowered and shown as lifted to its full height. Depending upon the work to be performed, whether embossing, flat plating or the like, the upper and lower platens may be provided with dies, plates or embossing members. The lower platen 19 is shown mounted at the upper side of a rising bed 20, which has several underneath extensions all marked 20 and at the four corners slides or shoes 21 adapted to run on tracks or ways 22 carried by the corner posts of the machine, so that the bed may rise with true paral-

lel motion toward the head and descend therefrom; substantially as in said prior patents.

While the means for lifting the bed might be hydraulic or of various mechanical forms it is shown, as in said patents, as comprising a system of toggles. Thus extending directly below the bed near the front and back are upper toggle links **24**, these having their lower ends pivoted to the free upper ends of the lower toggle links **25** fulcrumed on the lower frame **11** of the press. The straightening of the opposed toggles **24**, **25** affords very powerful upward thrust of the bed **20**. This spreading action may be performed by a third toggle pair **27** each connected to a pivot extension **26** of one of the toggles **25**, and the two links **27** being mutually connected by a central toggle pin **28** which may have its ends suitably guided for central vertical motion, for example as shown in said prior patents. The central pin of the spreading toggle **27** is shown as carrying a roll **29** which rests upon an open cam **30** mounted on the main shaft **31** of the press. The cam **30** has an outer dwell which is shown as holding the bed in its lifted position, with inclines connecting said dwell with an inner dwell on which the roller rests when the bed is in its fully lowered position. If the shaft **31** be rotated continuously the cam **30** will alternately lift and lower the press bed with regular action, holding it lifted for a period depending upon the angular length of the outer dwell of the cam **30**. According to the present invention however, as will be further explained, the shaft and cam are to be brought to rest while the bed is fully lifted and the sheet material is under compression, so that the period of compression may be prolonged to a controllable extent as may be required for different classes of work. The cam may be designed with shortened dwell and the balance of the cycle altered to the improvement of the other parts of the cycle of operation, if desired in any case.

The power drive of the main shaft **31** may contain reducing gears described as follows. On the right end of shaft **31** is a large gear **33** which is in mesh with a pinion **34** mounted on a countershaft **35** which in turn carries a large gear **36** in mesh with a pinion **37** mounted on a clutch shaft **38** driven from a high speed power shaft **39** through a clutch device to be described. The shafts **31** and **35** may take their bearings in the lower frame **11** of the press, and in Fig. 1 is shown a standard **41** in which the shafts **35** and **38** take their bearings, this standard however being omitted from Fig. 2. The power shaft **39** turns in a bearing **42**, and at its left end it may have another similar bearing, the shaft being rotated from any source of power such as belt and pulley, or direct drive by electric motor, the gear system **37**, **36**, **34**, **33** reducing the speed of the main shaft to a suitable speed to deliver one complete cycle of operations for each rotation of the shaft.

While describing the shafts **38** and **39** and the power drive thereof the controllable clutch and brake may advantageously be described. The clutch is preferably magnetic and operated by electric current. It is shown in Figs. 1, 2 and 7 as comprising a pair of disks **43** and **44**, one of which carries a magnet coil **45** so that by applying current to the coil the disks are drawn together for frictional drive, whereas discontinuance of current releases the drive. Two insulated contact rings **46** are shown from which extend conductors for electric control of the clutch. The brake shown in Figs. 1, 2 and 7 comprises a drum **48** on the clutch shaft **38**, such drum being engaged by a brake band **49** fixed at one end and having its other end secured to a brake lever **50** so that swinging of the lever applies and releases the brake. A strong spring **51** is indicated as pulling the lever and tending always to apply the brake and stop the shaft **38**. For releasing the brake there is shown a magnet or solenoid **52** arranged to pull upon the lever **50** and thus relax the band **49**. The solenoid is operated through suitable electric conductors as will be further described. The magnetic clutch and brake may be of conventional character, for example of the so-called C-H type.

The safety device preventing overstrain to the frame parts and injury to the sheet material may be duplicated at each of the four frame rods **14** and may be described with reference to one of them as follows. Adjacent to each vertical frame rod **14** is shown an upright bar or tie rod **55** having its lower end anchored in a fixed position by a plate **56** mounted at the bottom end of the press or frame rod. The upper end of the bar extends loosely through a similar plate or table **57** mounted at the top end of the press rod. The top end of the tie rod or bar is threaded and carries a pair of lock nuts **58** constituting a stop or contact for the operation of the detector or safety device. Electrical control is preferred and a switch box **59** is shown mounted on the top plate **57**. A contact lever **60**, best shown in Figs. 5 and 6, has an external short arm **61** contacting against the underside of the stop or contact nuts **58**. The lever is fulcrumed on a ball bearing near its short end. The long end of the lever **60** is connected by a link **62** with a pivoted plate or segment **63**, the shaft of which has an exterior index finger or pointer **64** normally resting at the zero mark on a calibrated scale **65** at the exterior of box **59**. The stop nuts **58** are initially adjusted so that the pointer **64** will rest at zero, and any elongation of the main or press rod **14** relatively to the tie bar or rod **55** will be indicated upon the scale in a manner to disclose the amount of strain or elongation of the rod. In a sense the tie rod relatively shortens and so swings the lever **60** and the scale pointer. In this way the strain may be visually determined at each of the four corners of the machine and in case of overstrain or excess pressure suitable corrections of action may be effected.

To afford an automatic device the following further mechanism is illustrated. Projecting from the link **62** is a finger **66** which thus is lifted, with a multiplied motion, when the rod **14** is elongated by its strain. Spaced a suitable distance from the finger **66** is a contact **67**, which may be a micrometer screw and therefore finely adjustable to bring about a tripping action at any desired overstrain. The contact screw **67** is mounted on a depending finger or arm **68** fulcrumed at **69**. The arm **68** acts as a latch or trigger. It is held normally in place by a tension spring **70** but will be swung leftward when the rise of the finger **66** actuates the contact **67**. A notch or shoulder **71** is provided between the latch arm **68** and a pivoted switch lever **72**. The switch lever or carrier **72** is thus normally held in the position shown in Fig. 5 but it is swingable about a fulcrum **73** and has a lateral arm **74** pulled by a spring **75** tending to swing the switch out of normal position. While the switch might be of various types it is shown as comprising a mercury tube device **76**, for example with mer-

cury effecting electrical connection between metal parts embedded in the two depending legs of the tube as shown, this being a conventional form of mercury switch. When the overstrain on the rod 14 causes the arm 68 to be swung to the left the spring 75 comes into action to tilt the mercury tube and thereby break the electrical connection between the terminals in the depending legs of the tube. At will the switch lever and tube may be swung back to their normal horizontal position by depressing a finger piece or resetting button 78 until the catch or shoulder 71 engages again in the notch or shoulder of the lever; and this finger piece by its elevation thus visually shows that the switch has been tripped and requires resetting.

As indicated in Fig. 7 the four mercury switches 76 at the four corners of the machine may be connected in series in a closed circuit, so that excessive strain or compression at any one or more of the rods or corners will cause the opening of the corresponding switch or switches and the breaking of the circuit, which may be arranged immediately to open the driving clutch and apply the brake of the machine; or the relief against further overstrain might be by release of a hydraulic resistance, for example in the upper platen or head as in the Blake patent.

Coming next to the mechanism for timing and adjusting the extent of pause or dwell of the pressing action, this is mounted on a bracket 80 attached to the machine base. On top of the bracket 80 is a hollow base 81 for a cylinder 82 preferably containing a light oil but in some cases operable like a dashpot by air. The cylinder is shown as extending vertically upward above its base and its top end is closed by a cylinder head 83 above which is arranged an upward extension or bracket 84 carrying at its top end a guide 85. A piston rod 87 slides through the guide 85 and through the cylinder head 83, and at its top end is provided with a heavy weight 88 exerting a constant lowering force for the operation of the piston 90, although spring or other pressure might be used. Pinned to the piston rod and extending transversely through the bracket 84 is a crosshead 92, one outer side of which carries a roll 93 by which the head, rod and piston may be lifted at certain times and then released to be lowered by the pressure of the weight 88. The piston is shown partly lowered, and on its way down, after release by cam 95 to be described, and its extent of lift and drop is indicated by the dotted lines showing the highest and lowest piston positions in Fig. 4.

The intended operation is that the piston 90 shall rise as the press bed rises, and shall reach the top of its stroke as the lower platen of the press reaches the top of its stroke placing the leather or material under its full pressure, at which time certain actions will occur to arrest the motion of the machine, while the piston is at the same instant released to descend slowly until, at the end of its descent, it brings about certain control to restart the operation of the machine. While the piston and rod might be lifted by a direct mechanical connection with the lifting parts of the press bed it is preferred to effect the lifting by a special cam 95 shown mounted at the right end of the main shaft 31. This cam 95 has a substantially spiral outer contour, as best seen in Figs. 2 and 3, to lift steadily the rod and piston, but terminating abruptly to release them at the desired point of time, Fig. 3 showing the cam having reached the release position and having come to rest with the main shaft, and the roller 93 having passed off the cam and started its descent with the rod and piston.

The fluid circuits are sufficiently shown in Fig. 3. The cylinder base 91 is shown with a transverse passage 97, seen also in Fig. 4, which connects directly with the cylinder space below the piston. At one end of the passage 97 is a fluid inlet port 98 conducting liquid or air into the cylinder, preferably a light oil. At the opposite side is an outlet port 99 for the return flow of the liquid. Analogously, at the top of the cylinder, are an outlet port 100 and an inlet port 101.

When the piston is being lifted the liquid above it readily passes through top outlet port 100 and back to bottom inlet port 98 by the following route or idle circuit. A pipe 103 extends outwardly from outlet 100 and this is connected by a downtake pipe 104, with suitable unions and other fittings, the pipe 104 in turn delivering into a check valve 105 which permits flow only toward the bottom inlet 98, thus admitting liquid below the piston and permitting the free rise of the piston. The check valve however prevents reverse flow so that when the piston is descending the flow will be through the other circuit to be described. A fluid supply reservoir 106 is shown delivering into the circuit 103—104, and serving to discharge any air that may get into the system.

The operative fluid circuit may be as follows. When the piston has been released and is descending under the pressure of weight 88 the liquid below the piston passes into and through the cylinder bottom outlet 99 and thence into an uptake pipe 108 which leads to an adjustable valve 109, preferably a needle valve, adjusted by a handle 110, which may be in the form of a disk graduated to cooperate with an indicator or finger 111, the needle valve 109 delivering into the top inlet 101 of the cylinder. The speed of descent of the piston may thereby readily be regulated by the adjustment of the needle valve; for example the valve may be set so that the piston will occupy one minute more or less in descending through the cylinder, thereby prolonging the pressing pause or dwell of the machine to that extent. In effect the usual cycle is interrupted or suspended for the introduction of the slow release or escapement action, of predetermined period, so that the cycle is prolonged to that extent, to the enhancement of the pressing or embossing action, with the aid of the usual heat of the head, bed or both, and without the need of unduly or injuriously increasing the intensity of pressure.

As already explained, the main shaft 31, and therefore the large gear 33, make a single rotation in one cycle or operation of the machine. The spiral or mutilated cam 95 is mounted directly on the shaft end and therefore is accurately timed with the shaft rotation. When the roll 93 runs off the cam, which it is about to do in Fig. 2 but which it has done in Fig. 3, so as to trip or start the extra pause or dwell action of the machine, the rotation of the shaft should be stopped, and means are provided for effecting the stoppage preferably at this point of time, at or immediately after the release of the escapement or piston device. The platen operating cam 30 having a dwell of 90° more or less, the precise point of tripping the piston and stopping the machine within this part of the cycle is not important, as it obviously might occur to the

same effect at any time before the main cam 30 has rotated far enough to start the descent of the bed and the release of the pressure on the goods. In fact, the total period of pressure on the goods between the platens of the machine will usually be approximately the sum of the period represented by the dwell of the cam 30 and the period represented by the descent of the piston 90 during which the shaft and cam are pausing in their rotation.

Preferably the temporary stoppage of the machine is effected approximately simultaneously with the release of the piston, soon after the main cam 30 has fully lifted the lower platen, and the construction is shown so adjusted. To bring about the temporary stoppage or pause as described there is shown, mounted on the bracket 80, a stopping switch 114 having a contact finger 115 for operating it, this finger with its roll standing in the path of a contact or trip 116 mounted near the rim of the large gear or wheel 33. The tripping contact or cam 116 is of short length and is mounted on an arcuate rib or track 117 in a manner to be adjustable to time the stopping action. The wheel contact 116 in Fig. 2 is approaching the switch and in Fig. 3 is shown as having operated the switch 114 and having come to rest with the wheel or gear in its operating position, where the rotation of the machine has been brought quickly to a stop by the action of the switch 114 through electric connections or circuits to be described extending to the magnetic clutch 43, 44 to open it and to the magnetic brake 48, 49 to apply it. The trip 116 and switch 114 thus hold the circuit open, and the machine stopped, until otherwise restarted as will be described; and immediately after being restarted the trip 116 rides out from under the finger 115, and so closes the switch 114 for completion of the cycle.

Before describing the circuits by which the safety switch 59 or the stopping switch 114 may bring about the stoppage of the machine by the releasing of the clutch and the applying of the brake, the restarting switch will be described by which the machine is again set in motion following the pause and as the piston 90 reaches its lowered position. On the side of the cylinder 82 is shown a bracket 119 on which is mounted the restarting switch 120 consisting of a box containing the elements to be described. The switch lever 121 is pivoted in the box at 122 and a compression spring 123 is arranged to lower the outer end of the lever and thereby lift its inner end and open the switch. On the lever is shown the movable contact member 124 and below it is the complementary or stationary member 125, each of these being attached in an insulated manner, and wire leads being shown extending from them to the circuits to be described. The inner or left end of the switch lever 121 extends beyond the switch box to where it carries a pin 127 by which the lever may be swung by the descent of the piston. For this action the cross head 92 on the piston rod is shown as provided with a depending finger or wedge bar 128 held normally in vertical position by spring 129. The lower end of the finger has a wedge or cam surface 130 to cooperate with the pin 127, and above the apex of the cam surface is a recess 131 adapted to accommodate the pin when the cam surface has passed below the pin. The finger 128 is shown part way down; in its further descent its wedge end 130 depresses the pin 127 and switch lever until contact 124 meets 125, thus restarting the machine and continuing the motion long enough to permit the reclosing of switch 114. The spring 129 then yields and as the finger comes to bottom position, shown dotted, it may snap past the pin and let the contacts separate at once, due to the recess 131, thus reopening the restarting switch and circuit so that emergency stops will not be prevented. On the subsequent rise of the finger the spring may again yield to allow the wedge finger to pass the pin, without effect on the then moving parts.

While the circuits for the various controls and operations might be indefinitely varied, to afford an electrified press, an advantageous arrangement is that shown in Fig. 7. From a generator G or other source, affording for example 230 volts D. C., the current is shown carried by a pair of wires 140 which lead to and through a hand closed double pole switch 141 provided with fuses. Beyond the switch and fuses are parallel wires 142 leading to a main switch 143 arranged to be opened and closed automatically as will be described. Beyond the automatic switch 143 are parallel wires 144 leading to the circuits of the clutch 43, 44 and brake 48, 49. Thus from one wire 144 is a wire 145 leading to one of the brushes of the clutch, the other brush connected by wire 146 with the other wire 144. In parallel, the brake is connected with the one wire 144 by a wire 147 leading to the solenoid 52 and therebeyond a wire 148 leading back to the other wire 144. The hand switch 141 being normally closed the automatic switch 143 controls the clutch and brake; when the switch is closed the clutch is applied and the brake is released, and vice versa.

The main switch 143 is shown as a double pole switch, and it may for example be closed magnetically by the pull of a magnet or solenoid indicated by its core 149 and coil 150, the de-energizing of the same releasing the switch, to be opened for example by a spring. The main switch control circuit, while normally closed, is shown open to correspond with Figs. 1–6, and may be substantially as follows. From the switch solenoid coil 150 extends a wire 151 to one of the wires 142, the circuit passing thence through the source of current and back by the other wire 142. From there the circuit continues, when the switch 143 is closed, through one of the arms of said switch, and thence by wire 153 to a normally closed manual switch or button 154, connected in turn by wire 155 with the stopping switch 114, normally closed but shown open, seen also in Figs. 3 and 4. From there the circuit is continued through wire 156, manual or button switch 157, the wires 158 of the safety circuit which includes the four mercury switches 76 in series, and finally by wire 159 back to the solenoid coil 150. Corresponding with Figs. 1–6 the four mercury switches are all closed, but the circuit is interrupted due to the fact that the stopping switch 114 has been opened, as in Fig. 3, by the trip contact 116, in consequence of which the magnetic switch 143 is open, the clutch is released and the brake is applied. When, a little later, the stopping switch 114 is closed the circuit is not closed, as the magnetic switch 143 is open, but the circuit is all set to be closed by the restarting switch, whereby the brake is released and the clutch is closed, for continued advance of the main shaft.

The restarting switch 120 is in a circuit shunting the initial starting switch 173 to be described. Thus in Fig. 7 the restarting switch is shown

open, as it normally is, and connected by wire 162 with the wire 155. Beyond the switch extends a wire 163 to a cutout switch 164 from which extends wire 165 to the long return wire 166 leading back to one of the live wires 142. When the restarting switch is closed after the stopping switch has been closed this completes the circuit through the coil 150 and source G causing the reclosing of switch 143 and the restarting of the machine.

Supplemental to the stopping switch 114 is a normally open cutout switch 168 which may be closed when desired to cut 114 out of operation. The normal or main circuit may be broken by opening the button switch 154 or by the switch 157, which latter may be used for the final automatic stoppage at the end of the cycle. A shunt circuit 170 is shown shunting the safety switches and containing a normally open button switch 171, so that by closing this switch the current is passed around the safety switches, permitting closing of the clutch and rotation of the machine notwithstanding that one or more of the safety switches has been operated or is out of order.

An initial starting switch 173 is shown paralleling the local circuit of the restarting switch 120, the starting switch 173 being interposed in a wire 174 extending from the wire 153 or 155 to the wire 166. By closing either the restarting switch 120 or the initial starting switch 173, both of which are normally open, the circuits are made as follows. Both of these switches connect by the long wire 166 with one of the live wires 142 connected to the source G. In the other direction both of the switches connect with the wire 155 which extends through the normally closed switches 114 and 157 and the wires 156, 158 and 159, the latter leading to the coil 150 of the solenoid, the other terminal of the coil connected by the wire 151 to the other live wire 142. In this way the solenoid closes the main switch 143. As soon as the switch 143 is closed, by either means, this automatically establishes a circuit which maintains the switch closed notwithstanding the opening of both the starting and restarting switches. Thus when the switch 143 is closed this provides a circuit from one of the live wires 142 through wire 153, switch 154, wire 155, switch 114 and conductors 156, 158 and 159 through the solenoid coil and back by wire 151 to the other live wire 142. This establishes running condition, with the clutch closed and brake open, but subject to immediate stoppage upon the opening of the stopping switch 114 or of the button switch 154 or the switch 157 or any of the safety switches 76.

When it is desired to operate the machine without the automatic stopping switch 114 and restarting switch 120 it is only necessary to close the special switch 168, thus cutting out the switch 114, whereupon the closing of the initial starting switch 173 will put the machine into operation, while the opening of any of switches 154, 157, 168 or 76 will bring about the stoppage.

The final automatic stopping of the machine may be effected by the opening of the switch 157 in the main circuit, for which purpose the switch 157 may be similar to the switch 114 and cooperate with the same tripping contact 116 or a similar contact, properly timed, so as to open the clutch and close the brake at the end of the cycle when the lower platen has been dropped to its lowest position; or on the other hand this final stopping might be effected by the switch 114 itself, cooperating with a second trip contact similar to trip 116 but set at a different part of the periphery of the toothed wheel 33. In either case the main circuit is thrown open and the machine is stopped due to the opening of the magnetic switch 143 by the opening of the switch 157 or 114, the latter to be immediately reclosed to reset the circuit for restarting. After stoppage the leather or other work may be removed and another piece of material substituted by hand, or the well known scheme of progressively advancing a web of material step by step through the machine between pressing operations may be followed. The starting of the machine for the new pressing may be simply effected by the manual closing of the button switch 173, which closes the shunt circuit 155, 174, 166 thus energizing and closing the magnetic switch 143; and as soon as the machine is well started the switch 173 may be released as the main circuit will have been established through one arm of switch 143 and wire 153. When thus restarted the machine continues in motion until after the lower platen is fully raised and the material is under full pressure, when the trip 116 acts to open the switch 114 thus opening the clutch and applying the brake and so holding them until, after the slow descent of the piston, the restarting switch 120 is closed, thus first causing the restarting of the machine and thereupon the closing of the switch 114 to maintain operation until the final stoppage.

The described magnetic brake device constitutes a stop means for causing stoppage of the main or operating shaft when the drive is discontinued; but where the drag or natural friction of the machine is sufficient to cause quick stoppage when drive ceases, as is usually so especially at the extremes of platen movement, such drag may constitute a stop means without need of a brake device that is applied and removed.

The described clutch constitutes a power drive means and throw-off means for applying power and for discontinuing drive and permitting stoppage of the shaft; and is representative broadly of any power throw-off such as a belt-shift, or a switch to cut off current to a driving motor, serving the same general purpose.

The stopping switch 114 is in the main control circuit while the restarting switch 120 is in the shunt control circuit, these circuits operating through connections, in this case the magnetic switch 143 and operating circuit 144 to operate the drive means or clutch, opening and later closing it, and preferably also closing and later opening the brake means.

The fluid operated escapement device, dash pot or piston and cylinder constitutes a retarded circuit control means for operating the restarting switch by delayed closing of the contacts thereof, and is representative of any retarding circuit controller such as clock train mechanism.

There has thus been described a power press embodying and illustrating this invention and attaining its objects; but as many matters of combination, construction and detail may be variously modified it is not intended to limit the invention to such matters except so far as specified in the respective claims.

What is claimed is:

1. In a power driven platen press for embossing or pressing leather or like material having a frame and an operating shaft with connections for forcibly advancing or lifting the movable platen toward the other platen and causing its retraction in each cycle of the press; a power

drive and throw-off means or clutch for driving and discontinuing drive of the shaft, a stopping device or switch connected for temporarily throwing off the drive to stop the shaft and timed to operate when the movable platen is in full-pressure position, a timed cylinder and piston device set into operation when the movable platen is in full-pressure position and having a predetermined period of operation during which the shaft pauses, and the material remains under full pressure, and a restarting device or switch set into operation when the escapement device reaches the end of its period and connected to restore the drive of the shaft and complete the cycle of the press, the cylinder and piston device having a flow adjusting valve or escape to vary the pause of the shaft.

2. A power press as in claim 1 and wherein is a mechanical connection to lift the piston to the top of its stroke as the movable platen rises to full pressure position and to release it for gravity descent as the shaft comes to a pause, and an adjustable fluid escape from the cylinder bottom for controlling the rate and period of descent of the piston.

3. A power press as in claim 1 and wherein the cylinder carries liquid and has two external closed circuits, the first liquid circuit having an adjustable valve to regulate the piston speed, and the second circuit having a check valve permitting only return flow of liquid.

4. In a power driven platen press for embossing or pressing leather or like material having a frame and an operating shaft with connections for forcibly advancing or lifting the movable platen toward the other platen and causing its retraction in each cycle of the press; a drive means or clutch for driving and discontinuing drive of the shaft, a stopping switch for temporarily causing discontinuance of drive to stop the shaft and timed to operate when the platens are in material pressing relation, a timed retarding device set into operation when the platens are in pressing relation and having a predetermined period of delay during which the shaft remains stopped, and the material under pressure, a restarting switch operated when the retarding device reaches the end of its period to cause resumption of drive of the shaft and completion of the cycle of the press, and electrical control circuits containing said stopping and restarting switches and having connections for operating said drive means according to the operations of the switches; such control circuits comprising a main circuit containing the stopping switch normally closed during the running of the shaft, and a shunt circuit containing the restarting switch normally open; with timed means to open the stopping switch thereby to stop the shaft when the platens are in pressing relation, and means thereafter to close the restarting switch and shunt circuit at the end of the retarding period thereby to restart the shaft.

5. In a power driven platen press for embossing or pressing leather or like material having a frame and an operating shaft with connections for forcibly advancing or lifting the movable platen toward the other platen and causing its retraction in each cycle of the press; a drive means or clutch for driving and discontinuing drive of the shaft, a stopping switch for temporarily causing discontinuance of drive to stop the shaft and timed to operate when the platens are in material pressing relation, a timed retarding device set into operation when the platens are in pressing relation and having a predetermined period of delay during which the shaft remains stopped, and the material under pressure, a restarting switch operated when the retarding device reaches the end of its period to cause resumption of drive of the shaft and completion of the cycle of the press, and electrical control circuits containing said stopping and restarting switches and having connections for operating said drive means according to the operations of the switches; such control circuits comprising a main circuit containing the stopping switch normally closed during the running of the shaft, and a shunt circuit containing the restarting switch normally open; with timed means to open the stopping switch thereby to stop the shaft when the platens are in pressing relation, and means thereafter to close the restarting switch and shunt circuit at the end of the retarding period thereby to restart the shaft; the stopping switch opening means constructed to reclose the switch upon the restarting of the shaft, and the restarting switch closing means constructed to reopen the switch upon the reclosing of the stopping switch.

6. In a power driven platen press for pressing leather or like material having a frame and an operating shaft with connections for forcibly shifting the movable platen toward the other platen and causing its retraction in each cycle of the press; a drive means for driving and discontinuing drive of the shaft, a stopping switch for temporarily causing discontinuance of drive to stop the shaft and timed to operate when the platens are in material pressing relation, a timed liquid flow device set into operation when the platens are in pressing relation and having a predetermined period of liquid escape during which the shaft remains stopped, and the material under pressure, a restarting switch operated when the liquid flow device reaches the end of its period to cause resumption of drive of the shaft and completion of the cycle of the press, and electrical control circuits containing said stopping and restarting switches and having connections for operating said drive means according to the operations of the switches.

7. A press as in claim 6 and wherein the control circuits comprise a stopping switch circuit, and a restarting switch circuit, said liquid flow device arranged to operate the stopping switch to stop the shaft and thereafter to operate the restarting switch at the end of the flow period thereby to restart the shaft.

8. A power-driven opposed-platen press for embossing or pressing leather or like material comprising an operating shaft with connections for forcibly lifting the movable platen toward the other platen and causing its retraction in each cycle of the press; a power drive and throw-off means for driving and discontinuing drive of the shaft, a stopping device for temporarily throwing off the drive to stop the shaft and timed to operate when the movable platen is in full-pressure position, an escapement member fitted to travel in reverse directions, as upwardly and downwardly, along a given path between normal lowered and displaced elevated positions, driven connections for elevating the escapement member along such path into displaced position when the movable platen is advanced into full-pressure position, means operating independently of the shaft and power drive for controlling the

escapement device to have a predetermined period of progressive descending return travel from displaced to normal position, during which descent the shaft remains stopped and the material under full pressure, means for adjusting the period of the operation of the controlling means independently of the power drive and shaft operation, and a restarting device set into operation when the escapement member has reached its normal lowered position to restore the drive of the shaft thus to complete the cycle of the press.

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