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J. J. LITTLE

2,627,883

CONTINUOUS PLYWOOD PRESS APPARATUS

Filed May 29, 1948

3 Sheets-Sheet 1

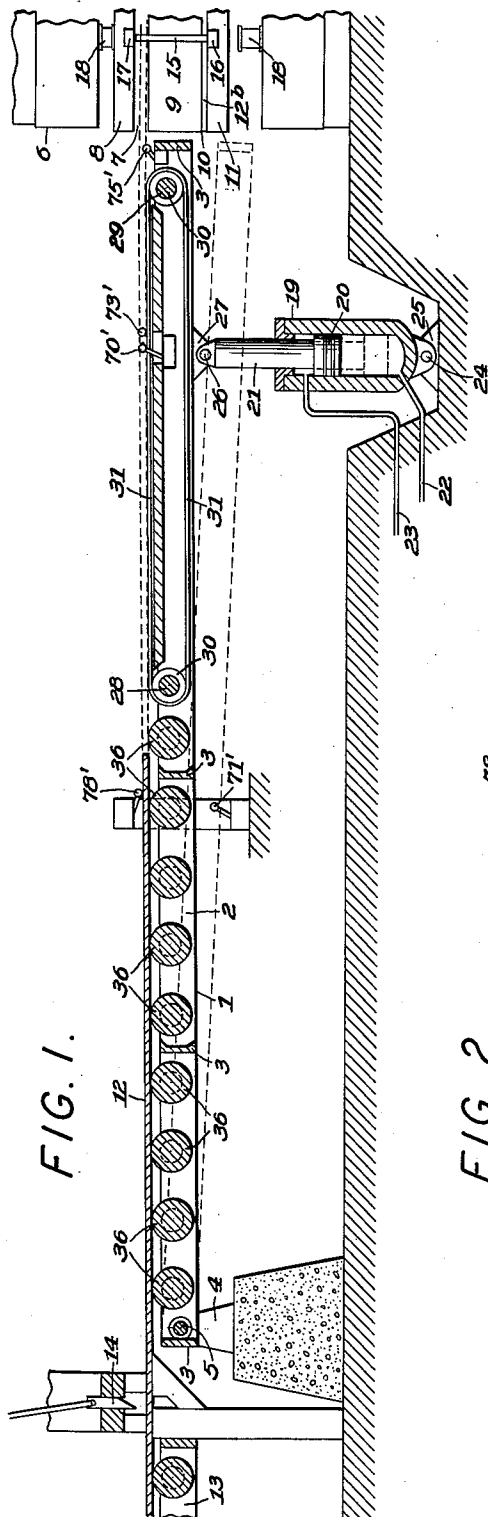


FIG. 1.

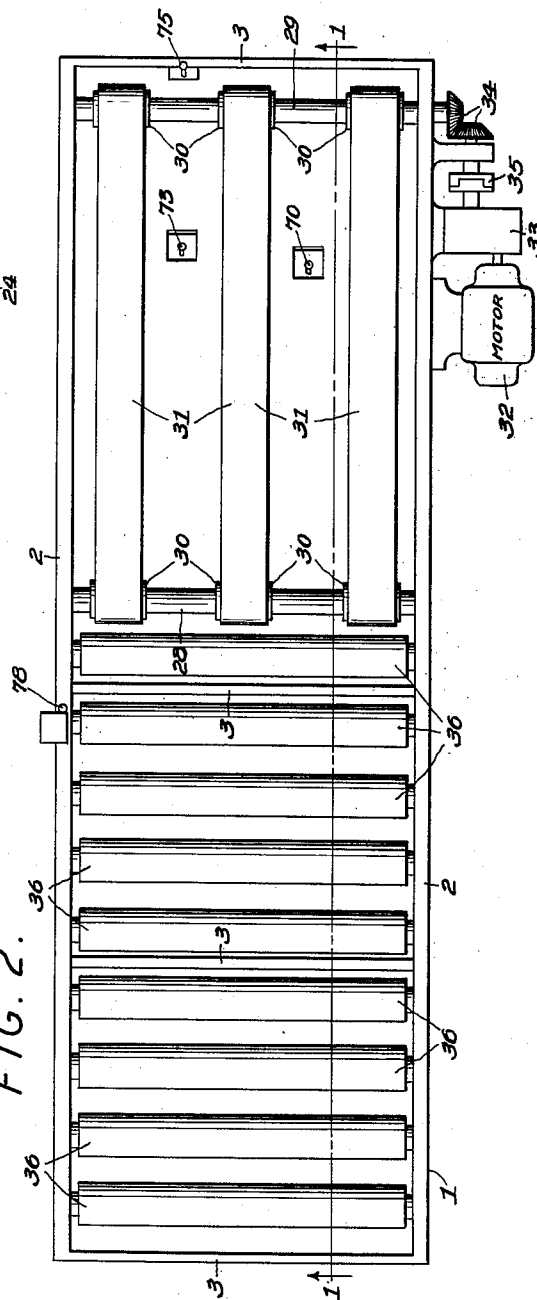


FIG. 2.

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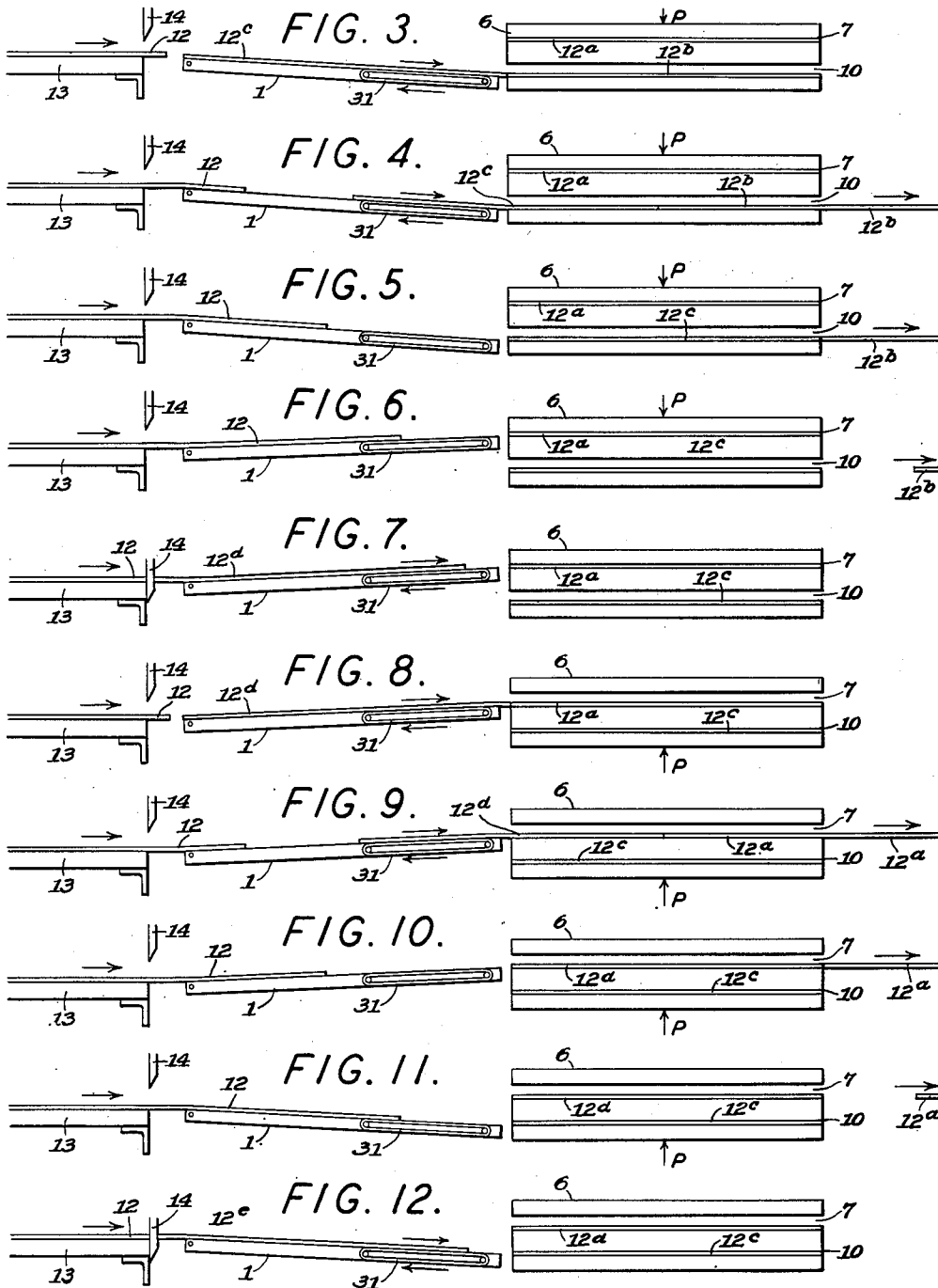
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CONTINUOUS PLYWOOD PRESS APPARATUS

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3 Sheets-Sheet 2



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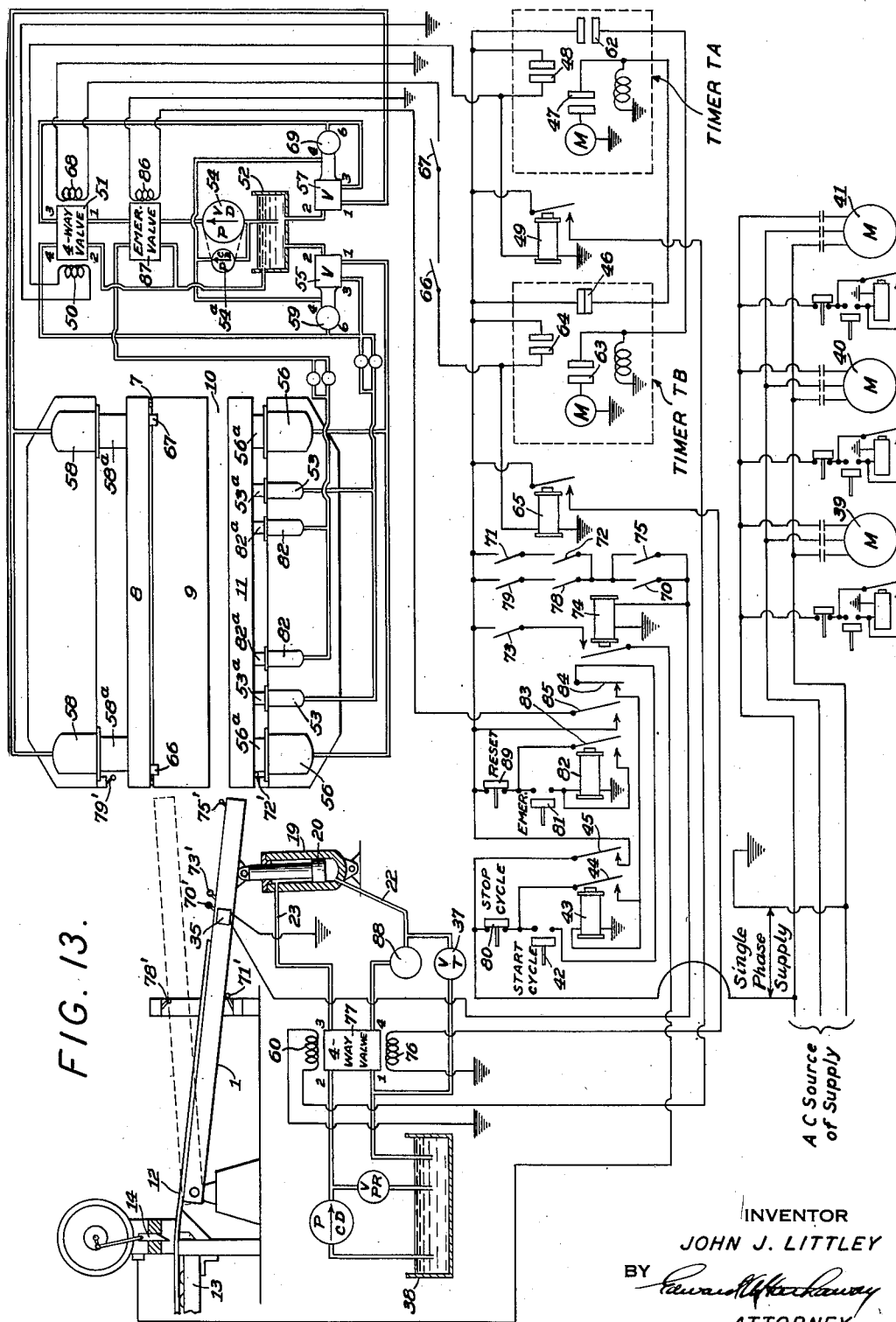
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CONTINUOUS PLYWOOD PRESS APPARATUS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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CONTINUOUS PLYWOOD PRESS APPARATUS

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Application May 29, 1948, Serial No. 29,990

1 Claim. (Cl. 144—281)

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This invention relates generally to apparatus for making sheet material under heat and pressure such, for example, as plywood, etc., and it is an object of my invention to provide an improved system and apparatus for making materials of that type from a continuous supply of strip material.

In my improved apparatus I accomplish the foregoing result by employing an automatic multiple platen press of the type having alternately available openings between platens and combining therewith means for supplying an uninterrupted flow of a single continuous strip of material which is sectionalized and then controlled in a manner for feeding into said press openings in timed relation with their intermittent alternate openings without impeding the uninterrupted flow.

As is well understood in the art, a duplex platen press of this type consists primarily of a stationary platen and two connected vertically moving platens disposed above and below the stationary platen and spaced apart from each other such distance as to provide an upper opening when the moving platens are in the raised position and a similar lower opening when the moving platens are in the lowered position. While material between one pair of platens is being cured by the application of pressure and heat thereto, I feed into the opening between the other pair of platens an uncured section of material, the material just previously cured between this latter pair of platens being suitably discharged as the new material is fed in. I combine with this type of press an automatic feeding means that intermittently feeds the alternate press openings with sections of material cut off in predetermined lengths from the single continuous strip of material that is continuously advanced towards the press at a constant rate of speed, the intermittent feed from the continuous supply being coordinated by shifting the cut-off sections of material alternately to said press openings and causing each cut-off section to be disposed of before the immediately following cut-off section is in a position to interfere with shifting of the feed means. There must also be exact coordination between the movement of such feed means and that of the press so that as each pair of platens is alternately opened, the feed means will be in the proper position to direct an uncured cut-off section of material into such opening, a cured section being discharged therefrom at the same time.

In presses of this type it is also desirable to provide that both press openings can be instantly opened in the event of an emergency as, for example, where cut-off sections of material become jammed in a press opening. I have provided an improved emergency control whereby both moving platens, no matter in what positions they

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may be at the time, will be immediately caused to assume a position midway between their open and closed positions.

While the feed means disclosed herein may be used to feed cut-off lengths of almost any kind of material of continuous strip formation, the material for which my improved apparatus and system is particularly adapted is a continuous laminated strip composed of wood, glue, etc., for curing into plywood sheets through the application of pressure and heat in a usual manner. This material strip is moved at a constant rate by a conventional conveyor powered by a source independent of any power source hereinafter mentioned. As an end of the strip is fed to the platen press openings in cut-off sections of predetermined length, the other end is continuously extended by the addition thereto of the plywood ingredients. It is this work of extending the strip that requires the strip to be moved along at a continuous rate, while it is the capacity of the platen press to cure the cut-off sections of material that determines the rate of speed at which the strip is able to travel.

A further object is to provide an emergency control means, integrated with said feed and press control means that will immediately stop the feed means and cause the moving platens of the press, no matter in what position they may be at the time, to assume a position midway between their open and closed positions.

Other objects and advantages will be more apparent to those skilled in the art from the following description of the accompanying drawings in which:

Fig. 1 is a sectional elevation, along the line 1—1 of Fig. 2, of my novel continuous automatic feed means, shown in association with the two openings of a platen press of the type described and with a conventional conveyor;

Fig. 2 is a plan view of said feed means;

Figs. 3 to 12 illustrate diagrammatically ten phases in an operating cycle of my feed means associated with a platen press of the type described; and

Fig. 13 is a schematic diagram of a platen press and of my feed means, showing the integrated control means I employ for coordinating the movements of the feed means with the openings of the press, and for operating the emergency control means.

In the particular embodiment of the invention which is disclosed herein merely for the purpose of illustrating one specific form among possible others that the invention might take in practice, I show in Figs. 1 and 2 a conveyor table 1 having longitudinal sides 2 and end and intermediate braces 3, and pivoted at one end to a rigid support 4 by a pin 5. The free or delivery end of this conveyor table which is in proximity to the feed

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end of an automatic duplex platen press 6 is thus enabled to be raised to the position shown in full lines in Fig. 1 to engage an upper opening 7 formed by an upper moving platen 8 and a centrally disposed stationary platen 9 of said press, or lowered to the position shown in dotted lines in Fig. 1 to engage a lower opening 10, shown closed in Fig. 1 but open in Figs. 3 to 7, formed by a lower moving platen 11 and said stationary platen 9. Hence, strip material 12, after being delivered onto conveyor table 1 by conventional conveyor means 13 and cut into predetermined lengths or sections by a conventional flying shear 14, may be delivered alternately, in the manner hereinafter described, into said press openings 7 and 10 as each is opened intermittently in the normal operation of the press. In Fig. 1 a section 12b of material strip 12 is shown under compression between the last mentioned pair of platens in the process of being cured. As is well understood in the art, upper moving platen 8 and lower moving platen 11 are adapted and arranged to move together in spaced relationship on either side of stationary platen 9. This is accomplished by means of a plurality of vertical compression rods 15, the lower ends of which are secured to lugs 16 projecting from the sides of lower platen 11, while the upper ends thereof engage similar lugs 17 projecting from the sides of upper platen 8. When lift rams 53a, Fig. 13, located beneath lower platen 11, are raised the movement of lower platen 11 is transmitted to upper platen 8 through compression rods 15, and when the lift rams are lowered upper platen 8 moves downwardly by gravity against the upper ends of said rods. Stops 18 limit the vertical movement of the platens in both directions. Thus, while one pair of platens is closed applying pressure and heat to a cut-off length of material, the other pair of platens is open to receive from the feed means a newly cut-off uncured length. The section of material that has just been cured in the press is discharged from the press opening at the opposite end thereof by conventional means.

While various means may be employed to raise and lower conveyor table 1, in the embodiment shown I use a vertically disposed hydraulic actuating cylinder 19, Fig. 1, in which a piston 20, having a piston rod 21, is moved upwardly by the introduction of fluid pressure through a pipe line 22 into that part of actuating cylinder 19 that is below piston 20, and is moved downwardly both by gravity and by the introduction of fluid pressure through another pipe line 23 into that part of actuating cylinder 19 that is above piston 20. The connections of pipe lines 22 and 23 with the integrated control system, hereinafter described, are shown diagrammatically in Fig. 13. The lower part of cylinder 19 is pivoted by a pin 24 to a stationary support 25, preferably, though not necessarily, located in a pit for the sake of convenience, while the upper end of piston rod 21 is pivoted by a pin 26 to a lug 27 affixed to the forward underside of conveyor table 1, thus allowing cylinder 19 lateral movement as the pivoted end of piston 20 is moved through an arc described by the movement of the table and so enabling the table to be raised and lowered to the level of the press openings by and in accordance with hydraulic pressures exerted within actuating cylinder 19.

A feed means of this type would clearly be inoperative if it merely provided that the forward edge of the continuously moving material strip were to remain in continuous abutting engage-

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ment with the rear edge of each newly cut-off section of material until such section had been pushed into a press opening. This is so because the conveyor table could not at any time be raised or lowered to its other position without interfering with this uninterrupted flow of material across the conveyor table. I overcome this difficulty by providing that such continuous flow be interrupted between cut-off lengths without stopping or slowing down the material strip, to permit the delivery end of the table to be free of material so that the conveyor table can be shifted to its other position without interfering with the material. In the half of conveyor table 1 nearer the press I provide an accelerating conveyor means designed to speed cut-off sections alternately into the press openings. Such acceleration is from the moment the length is cut off from the material strip by flying shear 14 to the moment such section is fully deposited in the press opening. By thus increasing the speed of each cut-off length over the speed of the constantly advancing material strip, there is created between the rear edge of such length and the forward edge of the material strip a space that rapidly increases in extent until such length has been deposited in the opening. As soon as the length has been brought to a stop, this space starts to diminish, but at a slower rate, as the forward edge of the material strip continues its advance towards the delivery end of the conveyor table. This space allows sufficient time for the shifting of the conveyor table to the other position, which requires only a few seconds, before the forward edge of the material strip has advanced to the delivery end of the table. Such accelerated rate may be as much as twice that of the constantly moving material strip. While such accelerating conveyor means may be obviously constructed in a number of ways, I prefer to employ the form shown in Figs. 1 and 2. Journalled in and between sides 2 of the conveyor table are two free-turning transverse shafts 28 and 29. Affixed to each of these shafts is a number of pulleys 30 so adapted and arranged that each pulley on one shaft is in longitudinal alignment with a pulley on the other shaft. Each of these pairs of pulleys is joined together by an endless conveyor belt 31 so that rotation of transverse shaft 29 in a clockwise direction, as viewed in Fig. 1, will turn all conveyor belts 31 simultaneously in the same clockwise direction and cause the cut-off length of material deposited thereon to be moved longitudinally along the conveyor table in the direction of the press. These conveyor belts are driven by an electric motor 32 which through a speed reduction unit 33 of suitable ratio rotates a pair of meshing beveled gears 34, one of which, being affixed to an extension of shaft 29, also causes said shaft and the pulleys thereon to be rotated. A conventional solenoid-operated clutch 35, located between speed reduction unit 33 and beveled gears 34 provides means for rapidly and effectively accelerating conveyor belts 31 and material deposited thereon. The other half of the conveyor table is provided with a plurality of transverse free-turning conveyor rollers 36, also journalled in and between sides 2, whose function is merely to convey the material strip along the conveyor table and onto conveyor belts 31 which, as will be seen, remain free-turning until a section of material has been cut-off from the material strip. Limit switches which I employ to complete electrical circuits to solenoid-operated clutch 35, to flying shear 14 etc., are not, for the sake of clarity, lo-

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cated or described at this point but are dealt with hereinafter in connection with the integrated control system that coordinates the operation of the feed means with that of the platen press.

Operation.—Figs. 3 to 12 show schematically ten principal phases of the cycle of mechanical operation of the feed means in conjunction with an automatic platen press having two openings. While specific measurements of time and distance are given in describing these phases, it is of course understood that they are merely by way of example and may be varied in whole or in part to meet different conditions. If it is assumed that the material strip is traveling at a speed of 1.3 feet per second, that it requires 18 seconds to complete a cure of material in the upper opening, 18 seconds to complete a cure of material in the lower opening, two seconds to shift the press from the down position to the up position, and two seconds from the up position to the down position, it is seen that a total of 40 seconds is required to complete a cycle of operation. In Fig. 3 upper opening 7 of the press has just been closed on a section or length 12a of material to begin an eighteen second cure thereof. Lower opening 10 has of course been opened simultaneously with the closing of upper opening 7 and cured section 12b in the lower opening is ready to be discharged therefrom. A cut-off section 12c which is in abutting engagement with section 12b, has just been cut-off by flying shear 14, now retracted, and is being rapidly speeded into lower opening 10, the conveyor table being in the down position, under action of conveyor belts 31, the pairs of arrows in Figs. 3, 4, 7, 8, 9 and 12 serving to indicate that such belts are in motion. The forward end of material strip 12 continues to advance at its constant rate of 1.3 feet per second. Fig. 4 shows the positions of the moving parts at the end of five seconds of operation. Section 12c has been speeded by conveyor belts 31 about half way into lower opening 10, while cured section 12b is being ejected therefrom in a conventional manner. It is seen that an ever-increasing space between the rear edge of section 12c and the constantly advancing forward edge of material strip 12 has appeared. Fig. 5 shows the positions at the end of ten seconds of operation. Section 12c has now entirely entered lower opening 10 and cured section 12b completely discharged therefrom. There being no further work for conveyor belts 31 to perform at this moment, clutch 35 is disengaged and conveyor belts 31 ride free, i. e. the belts are not then driven by power but are free to idle. It will be noted that the forward end of material strip 12 has reached only the half way point of the conveyor table and that it will therefore be another nine or ten seconds before it reaches the end of the table. In Fig. 6, which shows the positions of the moving members after fifteen seconds of operation, the conveyor table has been raised by actuating cylinder 19 (not shown in these schematic drawings for the sake of clarity) to serve in a similar capacity upper opening 7 which has not yet been opened. As the forward edge of the material strip has traveled only three-fourths of the length of the conveyor table, it is seen there has been no interference from said strip during such shifting of the table. During these operations described above and illustrated in Figs. 3 to 6, pressure has been continuously exerted on section 12a by upper main rams 58a, Fig. 13, of the press, as diagrammatically shown by arrows P in Figs. 3 to 6. In Fig. 7, which shows the positions after eighteen

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seconds of operation, such pressure of the large rams has ceased, the cure of section 12a now being completed. Another section 12d is shown in the act of being cut-off from material strip 12 by flying shear 14 and again conveyor belts 31 have been set in clockwise motion to speed section 12d, at a faster rate than that of the material strip, towards and into upper opening 7 which still remains closed. The foregoing five phases complete a half cycle of operation and deal with the feeding of the lower opening of the press. Except for the positions of the conveyor table and of the press openings, it will be seen that the remaining Figs. 8 to 12 correspond respectively to Figs. 3 to 7 and deal in like manner with the feeding of the upper opening of the press. Fig. 8, which is only two seconds later than Fig. 7, shows upper opening 7 now open with the forward edge of section 12d in contact with section 12a and conveyor belts 31 still in motion. Lower opening 10 has of course been simultaneously closed to begin the eighteen-second cure of section 12c. In Fig. 9, which is twenty-five seconds after the beginning of the cycle, section 12d has been speeded by conveyor belts 31 to a point about half-way into upper opening 7, while section 12a is being ejected therefrom. Again an ever increasing space between the rear edge of section 12d and the forward edge of constantly advancing material strip 12 has appeared. In Fig. 10, which shows the position of the moving parts after thirty seconds of operation, section 12d has completely entered upper opening 7 and cured section 12a entirely discharged therefrom. Conveyor belts 31 have again been stopped. Fig. 11 which is thirty-five seconds after the beginning of the cycle, shows the table moved to the lower position to serve lower opening 10 which has not yet been opened. As in the case of Figs. 3 to 6, while section 12a was being replaced by section 12d, as above described and illustrated in Figs. 8 to 11, pressure from lower main rams 58a, Fig. 13, was being continuously exerted on section 12c, as shown by vertical arrows P in Figs. 8 to 11. In Fig. 12, which is forty seconds after the cycle began, the forward edge of material strip 12 has reached the predetermined length and flying shear 14 is in action to cut off a new section 12e while conveyor belts 31 are again set in clockwise motion to speed the section towards and into lower opening 10 which is shown still closed. As this is the end of the complete cycle, the next phase would be that shown in Fig. 3. It is to be understood that the reason for providing a means that will accelerate the cut-off sections of material towards and into the openings of the press is to clear the delivery end of the conveyor table of material so that the conveyor table may be shifted from one position to the other without interference by or with the material.

Integrated control system.—The integrated control system that I have devised to coordinate the movements of my improved feed means in combination with those of the platen press and to provide a stopping of the feed means and the midway positioning of the platens in the event of an emergency is shown diagrammatically in Fig. 13. It will be noted that the nine limit switches I use to complete circuits to the solenoid-operated clutch, to the flying shear etc. are located on the schematic drawings of the conveyor table and press in said Fig. 13, and are shown in the electrical circuits of the control system. Each of these limit switches is spring-loaded so

as to keep a circuit closed only so long as the switch is held down by an engaging cut-off section or by a press platen, as will be made clear later. To prepare for operation, a throttle valve 37 in the hydraulic system for the conveyor table is opened allowing oil to flow from cylinder 19 into tank 38 and causing piston 20 and the conveyor table 1 to move downwardly to their lowest limit. The forward edge of material strip 12 is then set at a predetermined point on the conveyor table and motors 39, 40 and 41 started. The press is started by depressing start cycle button 42. Depressing start cycle button 42 energizes coil 43 which closes two contactors 44 and 45. Contactor 44 holds the circuit closed around the start cycle button, while contactor 45 completes circuit to other controls. At this stage all circuits are open except timer TA. Timer TA is energized through points 46, closing points 47 and 48. Points 48 start time delay relay 49 and energizes solenoid 50 on four-way valve 51 in the hydraulic system for the press. This valve moves from a neutral position to position "1 to 4", permitting oil to flow from main pump 54 to lift cylinders 53 raising lift rams 53a. Pressure from constant displacement pump 54a holds filling valve 55 in position to permit lower main cylinders 56 to fill directly from tank 52. Pressure on port 4 of filling valve 57 permits oil in upper main cylinders 58 to drain back into tank 52. As lift cylinders 53 are filled in the manner described, press platens 11 and 8 rise rapidly but at low pressure until closed at which time pressure rises to setting of sequence valve 59, port 6, of filling valve 55. Pressure through port 6 overcomes pressure at port 4 thereof and filling valve 55 shifts, permitting high pressure to enter port 3 and exit at port 1, causing lower main rams 56a to move up at low speed and high pressure against stationary platen 9. When time delay relay 49 runs out, circuit is closed to solenoid 60, causing conveyor table 1 to remain in the down position (first cycle only). As timer TA runs out, points 47 and 48, and delay relay 49 are opened and points 62 closed, energizing timer TB and closing points 63 and 64. This action starts delay relay 65. The opening of points 48 caused solenoid 50 to be de-energized, permitting rams and platens to move downwardly by gravity. The oil in the lower cylinders is forced back to tank 52 through filling valve 55, while upper cylinders 58 are filled through filling valve 57. The downward movement of upper platen 8 closes limit switches 66 and 67, located between upper platen 8 and stationary platen 9, Fig. 13, completing circuit through points 64 and thus energizing solenoid 68 on four-way valve 51. The energization of solenoid 68 causes main four-way valve 51 to shift, opening ports "1 to 3" and placing pressure at port 6 on filling valve 57. Pressure builds up almost immediately. Sequence valve 69 opens and overcomes low pressure at port 4, shifting filling valve 57, permitting high pressure to enter port 3 and exit port 1 to upper main cylinders 58, causing upper main rams 58a to exert high pressure against upper platen 8. It should be noted that no material has at this time entered the press. While pressure is thus being applied to upper moving platen 8, as above described, conveyor table 1, which has not moved from its down position, begins to function as follows: The forward edge of material strip 12 when set in motion by conventional conveyor 13 trips and closes a limit switch 70, Figs. 1, 2 and 13, whose operating lever 70' is

located at a predetermined point between the conveyor belts and in the path of the material strip. Since, and only if the conveyor table and press are in down position, limit switches 71 (whose operating lever 71' is positioned beneath the conveyor or table to be closed by the lowering thereof, Figs. 1 and 13) and 72 (whose operating lever 72' is positioned beneath lower platen 11 to be closed by the lowering thereof, Fig. 13) are closed, completing the circuit through limit switch 70, and solenoid-operated clutch 35 is thus energized, setting into motion conveyor belts 31. Almost simultaneously with the closing of limit switch 70 by the forward edge of material strip 12, limit switch 73, Figs. 1, 2 and 13, whose operating lever 73' is also located between conveyor belts 31 and in the path of the material strip, is also tripped and closed in similar manner, and circuit to shear 14 is completed, but only if, however, limit switches 70, 71 and 72 are closed (which closes contactor 74), thus preventing the piling up of sections of material on the press should a malfunction occur in normal operation. A section of material having now been cut off from material strip 12 by action of shear 14, the section is accelerated into lower opening 10 of the press by rotating conveyor belts 31. As the cut-off section strikes limit switch 75, whose operating lever 75' is located at the delivery end of the conveyor table, Figs. 1, 2, 13, the switch is closed, causing the circuit that drives conveyor belts 31 to remain complete even after the cut-off section has passed over and released limit switch 70. When the cut-off section has completely entered the press opening, limit switch 75 is also released, de-energizing solenoid-operated clutch 35 and allowing conveyor belts 31 to ride free. At a predetermined time after the cut-off section has fully entered the opening, delay relay 65 times out, completing circuit to solenoid 76 on four-way valve 77 in the hydraulic circuit for the conveyor or table and allowing oil from tank 38 to enter actuating cylinder 19 through pipe line 22. The table accordingly moves upwardly until reaching a fixed stop. Timer TB then times out (which is at the end of the curing period), opening points 63, 64, 46 and 65. The opening of points 64 releases solenoid 68, breaking down the pressure in upper main cylinders 58. The opening of points 46 de-energizes clutch system in timer TA, resetting timer TA, which in turn resets timer TB. In resetting timer TB, timer TA is again energized, closing points 47 and 48, as before, energizing solenoid 50, and causing the press to rise, and starting delay relay 49. When the press has reached the up position, upper opening 7 is ready for loading. The forward edge of the constantly moving material strip now again reaches limit switch 70, closing it, which again completes circuit to solenoid-operated clutch 35 and again starts conveyor belts 31 rotating but only if, however, limit switches 78 (whose operating lever 78' is positioned above the conveyor table to be closed by the raising thereof, Figs. 1, 2 and 13) and 79 (whose operating lever 79' is positioned above upper platen 8 to be closed by the raising thereof, Fig. 13) have been closed by the upward movement of the conveyor table and press platens, as they would be in normal operation. Almost simultaneously with the closing of limit switch 70, limit switch 73 is also closed by the material strip completing circuit to flying shear 14, but only if, however, limit switches 78 and 79 are closed. Another section is accordingly

sheared off to the proper length. The cut-off length is accelerated into upper opening 7, closing limit switch 75 at the end of the conveyor table and keeping it closed until the section has fully entered the opening when it is released, as before, and the circuit actuating solenoid-operated clutch 35 driving conveyor belts 31 is broken. The reason for cutting off the power to the conveyor belts after they have delivered a section of material into a press opening is to prevent wear of the belts that would occur were the moving material strip allowed to move onto the faster moving conveyor belts. The cycle described above will, of course, continue to repeat until such time as stop cycle button 80 is depressed or, in the case of an emergency, emergency button 81 is depressed.

The emergency control I have devised, whereby the moving platens of the press may be made to assume a position half way between their open and closed positions, consists of a number of emergency cylinders 82 having rams 82a, Fig. 13, that are similar to lift rams 53a in that they are mounted beneath lower moving platen 11 and are enabled to lift both moving platens rapidly. However, these emergency rams are designed to have a stroke that will raise the platens only half the distance that lift rams 53a are capable of raising them, so that when lifted to their extreme limit both upper opening 7 and lower opening 10 will be opened only half way. These emergency rams function in the following manner: When emergency button 81 is depressed, three sets of contactors are activated. One contactor 83 holds the circuit around the emergency button. The second contactor 84, which is normally closed, breaks the normal cycle circuit at any instant of operation, de-energizing all valves in the normal circuit and causing moving platens 8 and 11 to become free-floating and to move downwardly under their own weight. The third contactor 85 is closed, energizing coil 86 of an emergency four-way valve 87. This diverts all fluid through main pump 54 to emergency cylinders 82, causing emergency rams 82a to rise to the mid position. It is immaterial in what position the moving platens may be at the moment the emergency button is depressed. If the platens are in a down position at this time, emergency rams raise the platens to the half way position; if the platens are in an up position at the time, they move downwardly by their own weight until stopped at the mid position by the raised emergency rams. The conveyor table is also stopped by the action of contactor 84 in breaking the normal cycle circuit, but will remain in whatever position it may be at the time owing to a foot valve 88 which restricts the flow of oil back to tank 38 unless, as in normal operation, fluid pressure is introduced through pipe line 23 into that part of actuating cylinder 19 that is above piston 20. To resume operation of the press and feed means after an emergency stopping thereof, re-set button 89 is pressed, throttle valve 37 in hydraulic circuit of the conveyor table is opened, as before, and the forward edge of material strip 12 relocated at the starting point. The throttle valve is then closed and start cycle button 42 depressed, as previously described.

From the disclosure herein, it is seen that I have provided, in combination with an automatic multiple platen press having at least two openings, simple and efficient means for continuously supplying strip material that is alternately fed

into intermittently available press openings without interfering with the continuous rate of supply. In addition, I have provided an integrated control means that coordinates the movements of such means with those of the platen press and to effect a complete stopping of the feed in whatever position it may be at the time and simultaneously cause the moving platens of the press to assume a midway position.

It will of course be understood by those skilled in the art that various changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as set forth in the appended claim.

I claim:

Pressing apparatus comprising, in combination, a multiple-opening platen press, means for opening one set of platens while closing another set and vice versa, means for supplying a single continuous strip of material which moves at a substantially constant rate, means for cutting the material into sections, conveyor means for accelerating the movement of each cut-off section as it approaches the press, the delivery end of the accelerating conveyor being immediately adjacent said platens to deliver the sections alternately into the platen openings, shifting means for causing the accelerating conveyor to be moved alternately from a closed set of platens to an open set, and means for controlling said accelerating conveyor automatically in accordance with the position of the accelerating conveyor and press platens so that during pressing of the material between the closed platens the open set of platens may have an accelerated cut-off section inserted therein while allowing the continuous strip of material to continue to travel at its constant rate, said accelerating conveyor for speeding each cut-off section towards and into the press openings at a rate faster than that of the material strip consisting of a conveyor table, one end of which is pivoted, and the other end being in engagement with and actuated by the shifting means, rotatable shafts transversely journaled in the conveyor table, pulleys affixed to the shafts, endless conveyor belts longitudinally disposed about pulleys on both shafts and positioned so that a portion of each section at the time of its severance from the material strip is in contact with the belts, means for rotating the shafts and belts in such direction as to convey each section in contact therewith towards and into a press opening, electrically-operated clutch means for causing the shafts and belts to ride free after accelerating each section into a press opening, and means controlled by an accelerating cut-off section of material during a predetermined position of its movement so as to control said clutch means to effect the free riding of said belts.

JOHN J. LITTLE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,809,456	Streeter	June 9, 1931
1,928,395	Schreck	Sept. 26, 1933
1,959,662	Ellis	May 22, 1934
2,084,980	Sweeney	June 22, 1937
2,085,083	Delany	June 29, 1937
2,129,276	Herr	Sept. 6, 1938
2,172,002	Stanley	Sept. 5, 1939