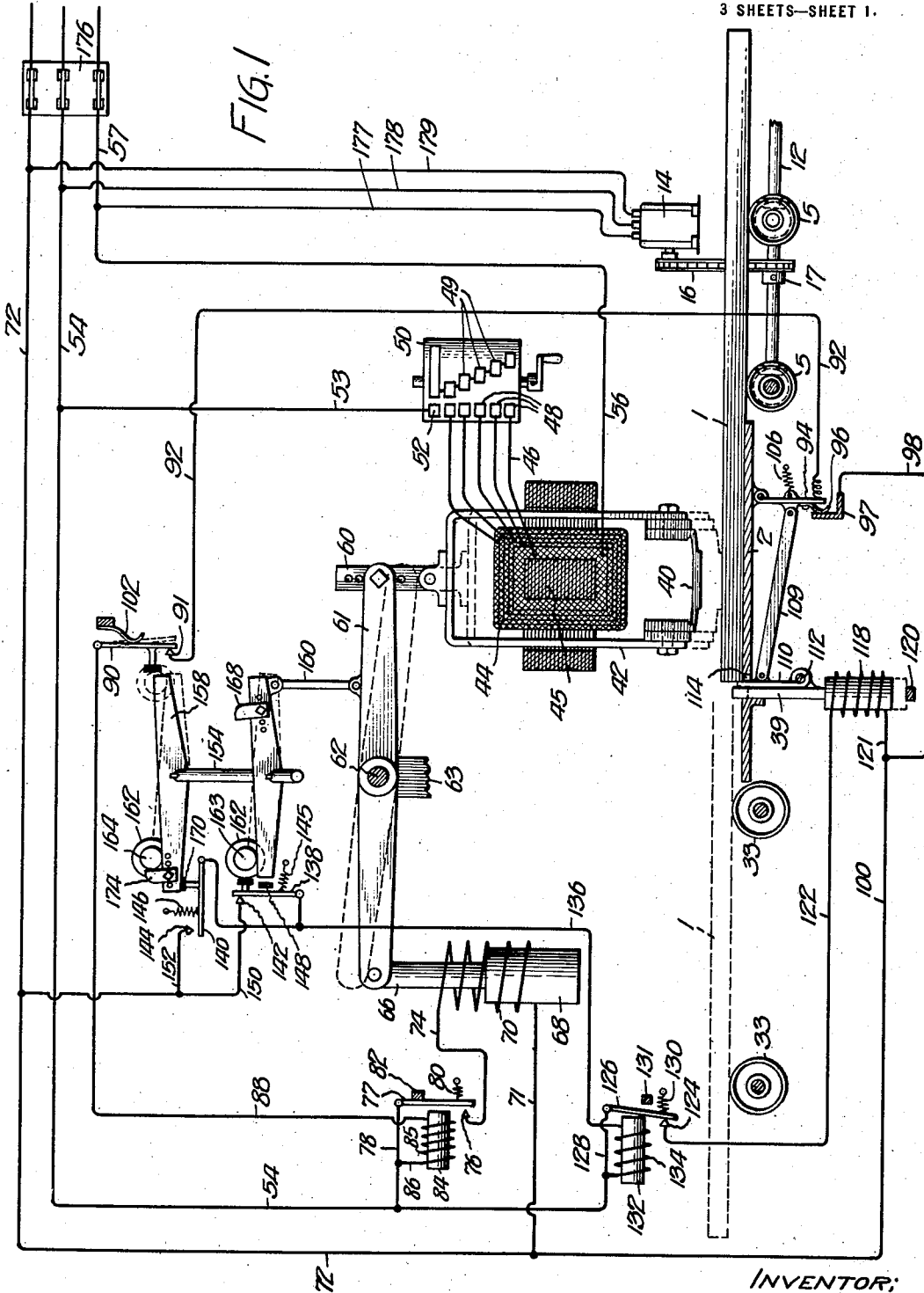


A. H. ONSTAD.
BRANDING MACHINE.
APPLICATION FILED FEB. 16, 1920.

1,369,934.

Patented Mar. 1, 1921.

3 SHEETS—SHEET 1.

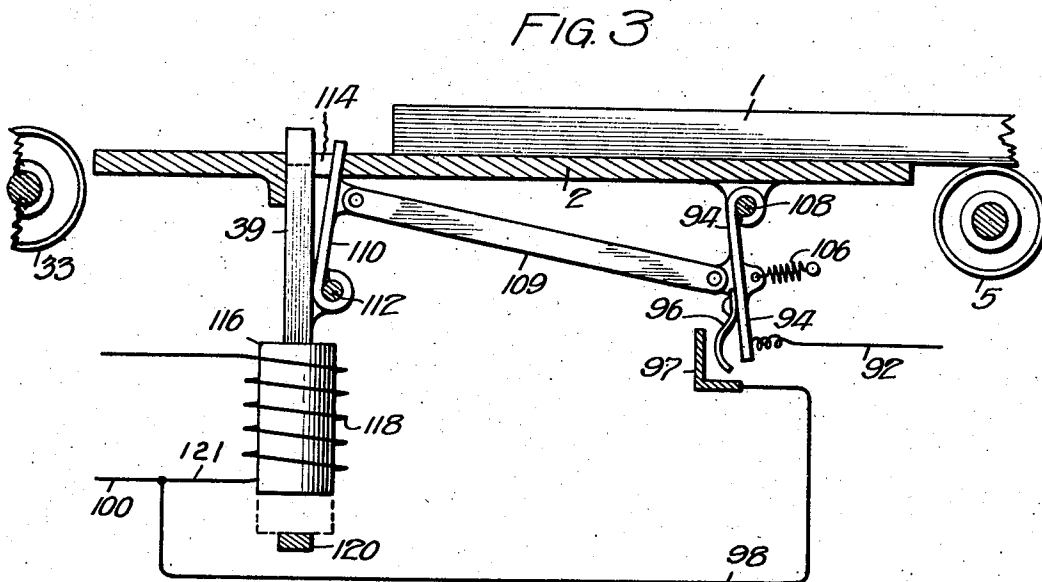
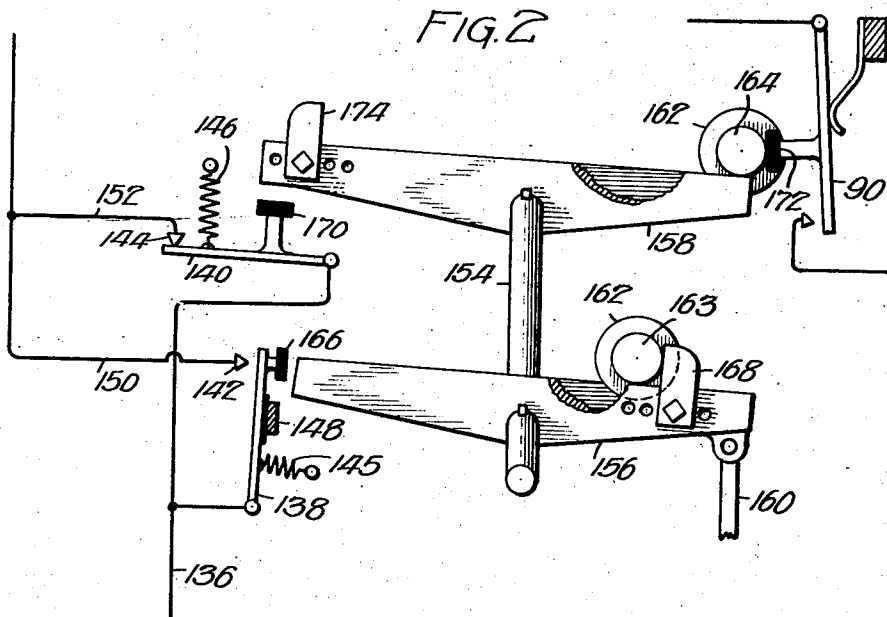


INVENTOR;
ALBERT H. ONSTAD,
BY *Frank F. Reed* and
Edward S. Rogers ATTYS.

1,369,934.

A. H. ONSTAD.
BRANDING MACHINE.
APPLICATION FILED FEB. 16, 1920.

Patented Mar. 1, 1921.
3 SHEETS—SHEET 2.



INVENTOR:
ALBERT H. ONSTAD,
BY *Frank A. Reed* and
Edward S. Rogers
ATTYS.

A. H. ONSTAD.
BRANDING MACHINE.
APPLICATION FILED FEB. 16, 1920.

1,369,934.

Patented Mar. 1, 1921.

3 SHEETS—SHEET 3.

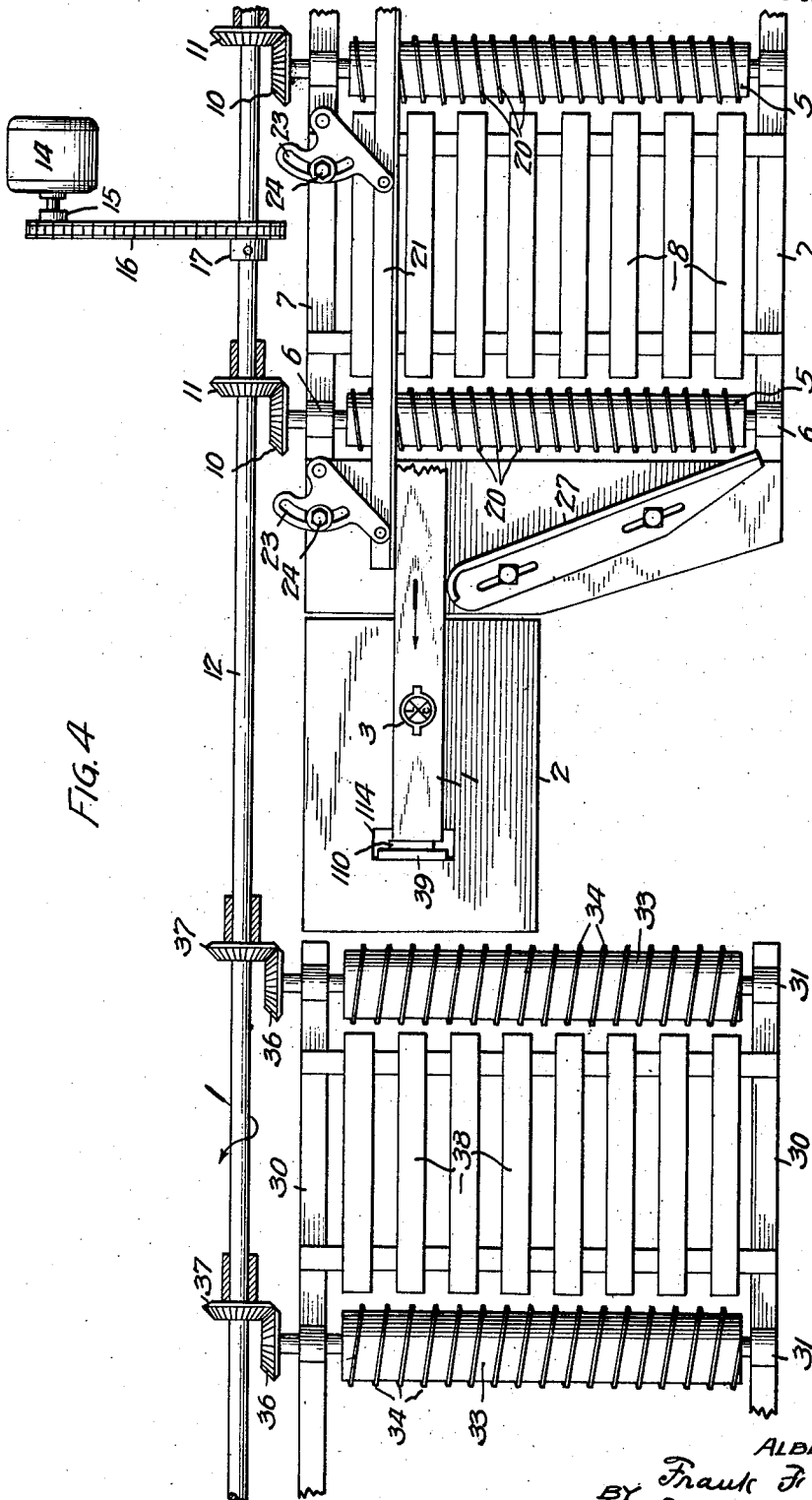


FIG. 4

INVENTOR:
ALBERT H. ONSTAD,
BY Frank F. Reed and
Edward S. Rogers ATTYS.

UNITED STATES PATENT OFFICE.

ALBERT H. ONSTAD, OF TACOMA, WASHINGTON, ASSIGNOR TO WEYERHAEUSER
FOREST PRODUCTS, OF ST. PAUL, MINNESOTA, AN UNINCORPORATED ASSO-
CIATION.

BRANDING-MACHINE.

1,369,934.

Specification of Letters Patent.

Patented Mar. 1, 1921.

Application filed February 16, 1920. Serial No. 358,959.

To all whom it may concern:

Be it known that I, ALBERT H. ONSTAD, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented a certain new and useful Improvement in Branding-Machines, of which the following is a specification.

My invention relates to branding machines and is particularly adapted for branding lumber. The general object of the invention is to provide safe and efficient means for burning trade-marks or other brands onto the surface of boards, timbers and other mill products. It is my purpose to provide a machine of this character that shall be simple, reliable and automatic in its operation. It is also my object to so construct the machine that it shall be operable on pieces of various dimensions. Another object is to provide means for regulating the period of time during which the brand shall remain in contact with the surface to be branded. These general objects are accomplished by combining and correlating a number of individual elements, the specific objects and characteristics whereof will become apparent as the description proceeds.

I accomplish my objects by the mechanism illustrated in the accompanying drawings in which,

Figure 1 is a diagram showing the general principle of operation.

Figs. 2 and 3 are also diagrammatic in character, showing, on an enlarged scale, certain component mechanisms found in the diagram.

Fig. 4 is a top plan view of the central portion of the machine showing the branding table, the feed rollers, the guide rail and associated parts.

Like numerals denote like parts throughout the several views.

As a brief preliminary description will facilitate an understanding of the machine, it may be stated that in the form selected to illustrate the invention, a branding head is provided which may be heated in any suitable manner, but preferably electrically. This branding head is vertically movable and descends onto the boards one by one as they are brought on onto the branding table. The boards are advanced by suitable

feed rollers which rotate continuously. When an advancing board has reached proper position beneath the branding head, it is held there automatically by a stop which projects upward a slight distance through a slot in the table. This stop is vertically movable and descends after the board is branded to permit it to pass on to delivery rollers which take the board away. Both the stop and the branding head are controlled electromagnetically and the sequence of the operation is this: Assume the branding head to be raised and the stop to be up in acting position: A board moves forward under the action of the feed rollers until it engages a trigger which forms part of the stop. The board is arrested and the trigger initiates a sequence of operations which first causes the branding head to descend and remain in contact with the board for such interval as may be necessary to brand it. The interval is determined by time limit mechanism and when the proper period has elapsed, this time limit mechanism initiates a sequence of operations which causes first, the branding head to rise and then the stop to descend. The descent of the stop releases the board and permits the feed and delivery rollers to move the board forward for delivery; but before the board has moved very far, the stop again rises. It tends to rise to highest position, but as the just branded board has not yet had time to move away, the stop cannot rise to its full operating position. It is under constant urge or bias to do so, however, and the consequence is that it will do so as soon as the board permits. The upper surface of the delivery rollers is at a higher elevation than the operating table and hence as soon as a full half of the length of the board has passed over the first delivery roller, the board will become overbalanced and will rest entirely upon the delivery rollers. Thus the under surface of the board will be elevated before the board has passed entirely beyond the stop. This permits the stop to rise to acting position and it will acquire this position before the fresh board has reached it. It is rendered certain, therefore, that the stop will be up in acting position before the forward end of the oncoming board has had time to reach it.

To now refer to the machine more in detail, the branding operation takes place while the board 1 lies upon the branding table 2. The term "board" is used in the general sense to include commercial lumber and mill products of any and all dimensions. For illustrative purposes, a brand mark is shown at 3, Fig. 4.

In the preferred physical construction shown in Fig. 4, the boards are fed to the branding table by feed rollers 5 journaled in bearings 6 mounted on stationary side frames 7 which form part of the stationary feed table. The spaces between the rollers may be filled in any suitable manner, as for example by gratings 8. The rollers are driven continuously by suitable mechanism such as the gear wheels 10 which mesh with gear wheels 11 secured to a main shaft 12 running lengthwise of the machine. This shaft is driven by any suitable power device, such as a motor 14, provided with a sprocket 15 driving a chain 16 which in turn drives a sprocket 17 rigidly fastened to the shaft. In the best form, the feed rollers have helical ridges or rows of teeth 20 which may be either cast or machined. These are adapted to engage the boards and feed them forward and at the same time shift them laterally toward and keep them in contact with a guide rail 21. This rail is adjustably held by appropriate mechanism, for example, the slotted quadrants 23 which are pivoted to the side frame members 7 and held by set bolts 24. It is desirable to place, near the delivery end of the feed table, an adjustable stop and shear plate 27.

Beyond the branding table is a delivery table which may be of a design similar to the feed table. As here shown, it has side frames 30, 30 provided with bearings 31 for delivery rollers 33. The delivery rollers have spiral ridges or rows of teeth 34 and they are otherwise like the feed rollers, except that they are of larger diameter, thus having a greater peripheral speed and their upper surfaces being at a higher level than the upper surfaces of the feed roller. The delivery rollers are driven by gears 36 meshing with gears 37 fastened to the main shaft 12 previously mentioned. The spaces between the delivery rollers are preferably filled by gratings 38. It will be understood that in the actual machine the feed and delivery tables are extended to greater length than shown in the drawings, there usually being at least three or four feed rollers and three or four delivery rollers with gratings or other platforms located between them. As the delivery rollers are of greater diameter than the feed rollers, but rotate at the same angular velocity, the boards will move faster as they leave the branding table than they do as they approach it. It will also be evident that as soon as the center of

gravity of a board has passed beyond the first delivery roller, it will lie horizontal but at a slightly greater elevation than it occupied when resting upon the branding table. It is this rise which permits the prompt rise of the stop 39 ahead of the arrival of the oncoming board as will hereinafter more fully appear.

Now referring more particularly to Figs. 1 to 3, which are chiefly diagrammatic, but which nevertheless indicate the physical structure of some of the parts: The branding head is provided with a die 40 which consists of a mixture of steel and cast iron or other metal or alloy having high resistivity. This die is fastened at its ends to a yoke 42 which consists of a heavy bar of copper or other metal of high conductivity which constitutes the secondary of a transformer. The primary coils 44 of the transformer are wound around the center leg 45 of the transformer core 44. These primary coils are wound for standard voltages and are provided with taps 46 which lead to individual stationary contacts 48 adapted to be engaged, respectively by contacts 49 on the surface of the drum 50 of a drum controller. Contacts 49 are electrically connected together but arranged in echelon and one of them is adapted to engage a stationary supply contact 52. Contact 52 is connected by a conductor 53 to one of the supply conductors 54. The opposite ends of the secondary windings are connected by a conductor 56 to another of the supply conductors 57. Thus by the aid of the drum controller any desired number of secondary transformer coils may be energized, thus inducing any desired amperage in the single closed loop consisting of yoke 42 and die 40 and constituting the secondary of the transformer. Yoke 42 is made large enough to carry the full amperage without undue heating, but the die, due to its higher resistivity, will be brought to a high temperature which may be regulated by properly adjusting the drum controller.

By preference, the primary windings and core are stationary while the yoke 42 is long enough to permit vertical reciprocation without interference. This permits the necessary vertical movement of the branding head. I do not herein claim the electrically heated branding die as it forms the subject of a separate application filed January 10, 1921, Serial No. 436,069. The yoke 42 above mentioned is adjustably connected by a link 60 to a walking beam 61 which is fulcrumed upon a stationary pin 62 carried by a standard 63 or other suitable support. This walking beam is connected by a link or stem 66 to an element 68 which, according to the present design, constitutes a counterweight so proportioned as to overbalance the branding head, and also constitutes the movable

core or plunger of an electromagnet. Said electromagnet is vertically movable within a coil 70. When the coil is deenergized, the plunger 68 will overbalance the branding head and hold it in raised position, but when the coil is energized, the plunger will be raised and the branding head lowered onto the lumber to brand it.

controlled," and the means for accomplishing this will now be explained:

For convenience, the principal parts concerned are shown on an enlarged scale in Fig. 3. The trigger switch is pivoted upon a stationary pin 108 carried by the branding table 2 or any convenient part of the machine. It is connected by a link 109 to a trigger 110 pivoted by a pin 112 to the front of stop 39. The branding table has a slot 114 large enough to accommodate both the stop and the trigger when expanded or open as shown in Fig. 3. The parts are so designed that spring 106 tends to hold the trigger in this open position. The stop 39 is controlled by a movable core or plunger 116 which is vertically movable within a coil 118. The parts are so arranged that when the coil is deenergized, the plunger will rest upon a stop 120 and the stop 39 will descend to or below the level of the branding table; but when the coil is energized, the plunger will tend to rise and bring the stop and trigger 110 above the surface of the table into the path of the oncoming board, as suggested in Fig. 3. The coil is connected at one end by a conductor 121 to conductor 100 and at the other end by a conductor 122 to a stationary contact 124 which is adapted to cooperate with a switch arm 126. Said switch arm is permanently connected by a conductor 128 to conductor 54. The result is that when switch 126 is closed coil 118 will be energized as follows: from supply conductor 72 to conductor 100, to conductor 121, through coil 118, to conductor 122, to contact 124, to switch arm 126, to conductor 128, to supply conductor 54. The energization of coil 118 therefore depends upon the position of switch arm 126, which for identification will be termed "the stop controlling switch." Said switch is biased toward open position by a spring 130. A stop 131 is provided for limiting the movement of the switch under the influence of the spring. The switch arm is controlled by a magnet core 132 encircled by a coil 134. One end of said coil is connected to the conductor 54 and the other end is connected by a conductor 136 to two switch arms 138 and 140. These are arranged in parallel and are operated by a time limit device which will be described. Switch 138 is normally closed and switch 140 is normally open and for identification these will be referred to respectively as the "principal" and "supplemental" time limit switches. The switch arm 138 is adapted to engage a stationary contact 142 and switch arm 140 is adapted to engage a stationary contact 144, as shown in detail in Fig. 2. The switch arm 138 is biased toward open position by means of a spring 145, and the switch arm 140 is biased toward closed position by means of a spring 146. A stop 148 limits the movement of arm 138

One end of the coil 70 is connected by a conductor 71 to one of the supply conductors 72. The other end is connected by a conductor 74 to a stationary contact 76 adapted to be engaged by a switch arm 77. A conductor 78 connects switch 77 to a supply conductor 54. Thus when switch 77 is closed, the coil 70 will be energized as follows: from the conductor 54 to conductor 78, to switch 77, to contact 76, to conductor 74, thence through the coil 70, and conductor 71 to the supply conductor 72 forming the opposite side of the line. Switch 77 is biased toward open position by a spring 80 which holds it against a stop 82. The switch forms the armature of an electromagnet having a core 84 surrounded by a coil 85. When the coil is energized, the core will be magnetized and draw the switch arm into engagement with the contact 76. One end of the coil is connected by a conductor 86 to the conductor 78, and the other end is connected by a conductor 88 to a switch arm 90 which is adapted to cooperate with a stationary contact 91 electrically connected by a conductor 92 to a switch 94 which for identification may be termed "the trigger switch," or "trigger actuated switch." It has a spring finger 96 adapted to engage a stationary contact 97 which is connected by a conductor 98 to a conductor 100 which is connected to the supply conductor 72. Thus it will be evident that when switches 90 and 94 are closed, coil 85 will be energized as follows: from the supply conductor 54 to conductor 78, to conductor 86, to coil 85, thence through conductor 88, to switch 90, to contact 91, to conductor 92, to switch 94, to spring finger 96, to contact 97, to conductor 98, to conductor 100, to supply conductor 72. For identification, switch 90 may be termed "the main switch" and switch 77 "the main relay switch." The main switch 90 is biased toward closed position by a spring 102 and switch 94 is biased toward open position by a spring 106. Thus if the main switch 90 is open, coil 85 will be deenergized thus deenergizing coil 70 and permitting the branding head to occupy raised position. The same will be true if trigger switch 94 is open. This latter switch is closed only when the board is in branding position, the result being that unless the board is in branding position, the trigger switch will be open and the branding head will be in raised position. Consequently, the trigger switch may be said to be "board

under the action of spring 145. Contact 142 is connected by a conductor 150 to the supply conductor 72 and contact 144 is connected by a conductor 152 to said conductor 150. It will be evident that if either one of the switch arms 138, 140 is closed, the coil 134 will be energized and the stop 39 will tend to occupy raised position. There is, however, a period during which both of these switches will be open, and it is during this period that the stop descends to permit the just branded board to be released and start its journey toward the delivery table. This period occurs while the rollers of the time limit device are rolling from the right end to the left end of their rocking tracks as will now be described.

A rock shaft 154 has rigidly fastened to it two tracks 156 and 158, this shaft being shown in perspective and more or less diagrammatically in Figs. 1 and 2. The tracks are supported approximately at the middle so that they may be tilted slightly to one side or the other from horizontal. They move in unison with the walking beam 61, being mechanically connected to it by means of a link 160. By preference the tracks consist of two parallel bars spaced apart sufficiently to receive between them the center flanges 162 of the rollers 163 and 164. Thus the rollers are prevented from becoming derailed as they roll. The normal position of the tracks is shown in full lines in Fig. 1, and the temporary position is shown in Fig. 2. Switch arm 138 is provided with a button 166 so placed that when the track 156 is tilted down toward the left, the roller 163 will strike said button and hold the switch closed. When the track is tilted in the opposite direction as shown in Fig. 2, the roller will roll away from the button and release the switch and permit it to open. A stop 168 is fastened to the right end of the track to prevent the roller from rolling too far. By preference, this stop is adjustable lengthwise of the track to afford means for regulating the period of the time elapsing between the tilting of the track (due to the rise of the branding die) and the closing of the switch 138 (which causes the raising of the stop 39); for it will be evident that the nearer the stop 168 is placed to the right end of the track, the longer it will take the roller to roll from it to the switch after the right end of the track has been raised.

The switch arm 140 is provided with a button 170 adapted to be engaged by the left end of track 158. The parts are so designed that when the left end of the track descends, it will open the switch 140. The main switch 90 is provided with a button 172 adapted to be engaged by the roller 164 when the latter is at the right end of its track 158, as shown in Fig. 2. When the tracks are in normal position, tilted toward

the left as in Fig. 1, roller 164 will rest against a stop 174 secured to the left end of the track: but when the position of the track is reversed, the roller will commence to roll toward the right and after a certain interval has elapsed will engage the button 172 and open switch 90, thus causing the coil 118 to be deenergized and the stop 39 to descend. Stop 174 is adjustable lengthwise of track 158 and thus affords means for increasing or decreasing the interval which will elapse between the time that the track is tilted toward the right (due to the descent of the branding die) and the time when the stop 39 will be lowered and the just branded board released. It will be evident, therefore, that the tracks, rollers, and associated parts constitute a time limit device, the periods whereof are determined by the time required for the rollers to roll from one station to the other on their respective tracks; also that these periods may be increased by increasing the distances of the stops 168, 174 from the rock shaft 154, and vice versa.

A main service switch 176 is provided for connecting and disconnecting the machine to and from the main service or supply lines. When this switch is open, all electric connections in the machine will be cut off. The motor 14, which has been previously mentioned and is employed to rotate the shaft 12, is here shown as an alternating current motor supplied by three conductors 177, 178, and 179. These are connected respectively to the conductors 57, 54, and 72.

To describe in detail a complete cycle of operations of the machine: Let it be assumed that the main service switch 176 is open, and that there are no boards upon the feed table. Under these conditions all the electric parts of the machine are dead, the electromagnetic coils are all deenergized, including the coil 70 which thus permits the plunger 68 to remain down and hold the branding die and connected parts raised and the tracks 156 and 158 tilted toward the left as shown in Fig. 1. This will be regarded as the normal position of the apparatus. Preparatory to operating, the operator closes the service switch 176 and rotates the drum controller 50 to acting position so as to bring the branding die 40 to the required temperature. The motor is then started and this drives the feed rollers 5. The boards in the form of timber, lumber, or other products to be branded, having first been assorted as to width and thickness within the limits of the adjustment of the machine but not necessarily of uniform lengths, are brought to the machine on industrial cars, buggies, or other means of conveyance. They are placed by the operator upon the feed rollers, preferably one by one, and these rollers feed the pieces forward, the helical ridges

or flutes 20 simultaneously shifting them toward the guide rail 21 which has been previously adjusted to proper position. The holding coil 118, being normally energized, occupies raised position, as shown in Fig. 3. As the advancing board reaches the trigger 110, it moves it and the switch 96 to closed position, as shown in Fig. 1. As the main switch 90 is normally closed, this closure of switch 96 puts the coil 85 in circuit and closes the main relay switch 77. This puts the branding coil 70 in circuit which causes the plunger 68 to rise and move the walking beam 61 to the dotted line position, shown in Fig. 1, thus lowering the branding die 40 onto the piece of lumber. As the die is hot, it will rapidly burn the brand or trademark into the lumber. The movement of the walking beam will reverse the position of the tracks 156 and 158 as shown in dotted lines in Fig. 1. The rise of the left end of the tracks will immediately cause the switch 140 to close, thus maintaining the circuit through the coil 134 and keeping the holding coil 118 energized. The rollers are comparatively heavy and it takes an appreciable amount of time for gravity to overcome their inertia, but they commence their travel toward the right and finally, after the lapse of a predetermined interval, the roller 164 engages the main switch 90 and moves it to open position as shown in Fig. 2. This opens the circuit through the relay coil 85, permitting switch 77 to open and deenergize the branding coil 70. As the plunger 68 is heavier than the branding die and parts fastened to it, the die now rises. It will be evident that the period during which the die is in contact with the piece of lumber will be determined, practically speaking, by the time required by the roller 164 to travel from the stop 174 to the button 172 on switch 90. As the stop 174 is adjustable it is capable of varying the distance which the roller will have to travel to open switch 90. This affords means for regulating the period during which the branding die is in contact with the work. This is of great practical importance.

The branding action of the die has now been completed and the die raised. The raising of the die by the walking beam tilts the tracks 156, 158 toward the left, although the rollers still occupy the position at the right as shown in Fig. 2. The reversal of the tracks instantly opens switch 140 and as the roller 163 is at the right end of its travel at this moment, the switch 138 will also be open and hence coil 134 is open circuited and deenergized. Consequently, the switch 126 opens and puts the holding coil 118 on open circuit, which permits the plunger 116 and stop 39 to drop down onto the stop 120. The lowering of stop 39 removes all obstruction from the path of the

board which has just been branded and as the feed rollers are constantly in motion, the board immediately recommences its forward travel toward the delivery table. The period of deenergization of the coil 118 is brief for as soon as the roller 163 has traveled to the left end of its track, it engages the button 166 and closes the switch 138. This reestablishes the circuit through the coil 134 and hence through the holding coil 118 and urges the stop 39 upward. Under ordinary conditions the board which has just been branded will not have traveled very far and hence the stop cannot rise to its normal acting position; but the board soon reaches the delivery rollers 33 and as the upper surface of these delivery rollers is above the level of the branding table, the rear end of the board rises to the level of the delivery rollers as soon as the center of gravity of the board has passed the first delivery roller. This permits the stop 39 to rise before the board has passed beyond it, from which it will be evident that the stop will be up again in plenty of time to arrest the oncoming board and hold it long enough to be branded. This completes the cycle of operations. As the delivery rollers are of larger diameter than the feed rollers their peripheral speed is greater and this makes sure that the board which has been branded will be moved off promptly. The oncoming boards cannot arrive at the branding die prematurely because the guide rail 21 and shear plate 27, cooperating with the helical ridges on the feed rollers, cause the oncoming boards to abut the rear of the board which is being branded. As the delivery rolls are fluted in the opposite direction, they cause the branded boards to be shifted toward the near edge of the delivery table whence they are placed onto a suitable vehicle to be moved away.

From the foregoing, it will be seen that the machine is automatic in every particular and that it is practically proof against misoperation. The branding die cannot descend when no board is present upon the branding table for the board must be in branding position in order to hold the switch 96 closed. If such switch is not closed, the branding coil 70 will be on open circuit and hence gravity will cause the die to remain raised. Differently stated, the die is board-controlled and hence unless the board is in proper position to be branded the die will remain raised.

There is no danger that a board can pass through the machine without being branded for the stop 39 is normally raised and the holding coil 118 is deenergized only for the short period of time required for the roller 163 to roll from the stop 168 to the button 166. This period is under the control of the operator for it may be made as short as

desired by adjusting the stop 168 toward the left.

In describing the apparatus I have used the words "right" and "left" for illustrative purposes only and to facilitate an understanding of the machine as exemplified by the diagram; but it will be understood that the terms are employed in their relative instead of absolute sense. It will be also understood that the diagram is in many respects illustrative only, for example, it is not essential that the plunger 68 constitute both a counterweight and the movable core of an electromagnetic coil.

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

1. A branding machine having a movable die, means for supporting and advancing the pieces of work, a stop normally biased, yieldingly, to occupy a position in the path of the work pieces for arresting them while being branded, and means operating in timed relation with the die for momentarily retracting the stop, whereby the stop is urged to return again to acting position before the just branded piece has completely traveled past it.

2. A branding machine having a movable die, means for advancing the pieces of work *seriatim*, a stop normally biased, yieldingly, to occupy a position in the path of the work pieces for arresting them while being branded, means operating in timed relation with the die for momentarily retracting the stop to thereby release the just branded piece and then reurge the stop toward active position before the just branded piece has traveled completely past the stop, and means for shifting the just branded piece out of its direct line of travel prior to completion of its travel past the stop, whereby the stop is released and permitted to regain acting position prior to the arrival of the oncoming piece.

3. A branding machine having a movable die, a branding table, means for advancing the pieces of work *seriatim* along the table, a stop normally tending to rise above the level of the table for arresting the pieces of work while they are being branded, means operating in timed relation with the die for momentarily lowering the stop to release the just branded piece, the means for advancing the work being adapted to elevate the just branded piece prior to the completion of the passage thereof past said stop.

4. A branding machine having a movable die, feed rollers adapted to advance the work pieces one in line with the other, a stop biased to rise above the level of the feed rolls for arresting the pieces of work while they are being branded, delivery rolls for delivering the pieces after they have been

branded, the upper surface of the delivery rolls being higher than the upper surface of the feed rolls to thereby elevate the piece of work after it has become supported by the delivery rolls, and means operating in timed relation with the die for momentarily causing the stop to descend upon the retraction of the die from the work.

5. A branding machine having a movable die, a branding table, means adapted to advance the pieces of work along the table, a stop biased to rise above the level of the table for arresting the pieces of work while they are being branded, delivery means above the level of the table for removing the pieces of work after they have been branded, and means operating in timed relation with the die for causing the stop to be retracted during a predetermined interval, the delivery means being timed to cause the piece of work to complete its travel past the stop in a period longer than the period of retraction of the stop.

6. A branding machine having a movable die, means for supporting and advancing the pieces of work *seriatim*, a stop adapted to move into and out of the path of the work for arresting it while it is being branded and subsequently releasing it, correlating means between the die and the stop including a time limit device whereby the stop is yieldingly urged toward acting position prior to the complete passage of the work past the stop, and means for shifting the work aside from its direct line of travel prior to the completion of its travel past the stop, whereby the stop is permitted to again reach acting position in advance of the arrival of the oncoming piece of work.

7. A branding machine having a movable die, a branding table, feed rollers in advance of the branding table, means for guiding the pieces of work *seriatim* on the feed rollers, a stop biased to move upward into the line of travel of the work pieces for arresting them during the branding operation, delivery rolls slightly above the level of the table for receiving the work pieces after they have been released by the stop and elevating them above the level of the table for permitting the stop to rise prior to the completion of the passage of the just branded piece past the stop, and means for temporarily suspending the bias of the stop, said means being controlled by the die and including a time limit device, the period of operation whereof is shorter than the period required by the said rollers to move the just branded piece completely beyond the stop.

8. A branding machine having means for supporting and advancing the pieces of work, a stop adapted to move into the path of the advancing work pieces for arresting them during the branding operation, an electromagnetic coil for controlling said

stop, means controlled by the die for establishing one electrical condition in said coil for causing the stop to move to non-acting position, and a time limit device also controlled by said die for establishing a different electrical condition in the coil, whereby the stop and the die operate in timed relation.

9. A branding machine having means for supporting and advancing the pieces of work, a stop adapted to move into the path of the advancing work pieces for arresting them during the branding operation, an electromagnetic coil for holding the stop in acting position, the stop when the coil is de-energized tending to move to non-acting position, means controlled by the die for de-energizing said coil, and a time limit device also controlled by said die for re-energizing said coil whereby the stop and the die operate in timed relation.

10. A branding machine having impositive means for feeding the work forward to branding position, a branding die, die actuating means, and work controlled means for temporarily rendering feeding means ineffective and simultaneously rendering the die actuating means effective.

11. A branding machine having a continuously operating work carrier for advancing the work and work controlled means for temporarily rendering said work carrier ineffective to enable the work to stand still during the branding operation.

12. A branding machine having a reciprocating die, feed rollers for advancing the work to branding position, and subsequently removing it, means for rotating said rollers continuously, a stop for arresting the work during the branding operation notwithstanding the continuous rotation of the feed rollers, and means controlled by said stop for intermittently withdrawing it from acting position to thereby permit the feed rollers to remove the work after the same has been branded.

13. A branding machine having a movable die biased toward non-acting position, electromagnetic means for moving said die to acting position, and means controlled by the work pieces for rendering said electromagnetic means active, whereby the die is forced positively toward the work under electromagnetic action.

14. A branding machine having a movable die biased toward non-acting position, electromagnetic means for positively moving said die to acting position, and a time limit device controlled by the work pieces for rendering said electromagnetic means non-active and consequently permitting the die to return to non-acting position under its natural bias.

15. A branding machine having a movable die, a support for the work pieces while

being branded, an electromagnetic coil for causing the die to move toward and from the work pieces while on their support, a switch adapted to control the electrical condition in said coil, and a trigger adapted to control said switch, said trigger being adapted to be engaged by the piece of work when the latter is in branding position to thereby establish in the coil an electrical condition such as to cause the die to descend onto the work.

16. A branding machine having a movable die biased toward non-acting position, electromagnetic means for moving said die to acting position, against its bias, means controlled by the work pieces for rendering said electromagnetic means active, and a time limit device controlled by the die for terminating the period of activity of said electromagnetic means whereby after the lapse of the period of operation of said time limit device, said die is caused to return to non-acting position.

17. A branding machine having a movable die biased toward non-acting position, electromagnetic means for moving said die to acting position, a time limit device and two switches adapted to cooperate with each other to control said electromagnetic means, one of said switches being adapted to be operated by the work pieces for rendering said electromagnetic means active to thereby move the die to acting position and the other of said switches being controlled by said time limit device to render said electromagnetic means non-active and thereby permit the die to yield to its bias and move to non-acting position, the period of operation of said time limit device being initiated by said die in moving to acting position.

18. A branding machine having a movable die, electromagnetic means for controlling it, a time limit device controlled by said die, and two switches in series in the circuit of said electromagnetic means, said switches being normally in position to cause the electromagnetic means to hold the die non-active, one of said switches being adapted to be reversed by the work pieces when they are moved to branding position, thus causing the die to be moved to acting position, and the second of said switches being adapted to be reversed by the time limit device at the end of its period of operation, thus causing the die to be moved to non-acting position, the period of operation of said time limit device being adapted to be initiated by said die in moving to acting position.

19. A branding machine having a movable die, electromagnetic means for controlling it, two switches adapted to jointly control said electromagnetic means, said switches being normally in position to cause

said electromagnetic means to hold the die non-active, one of said switches being adapted to be reversed by the work pieces when they are moved to branding position, thus causing the die to be moved to acting position, a time limit device mechanically connected to the die and held nonactive upon said second switch when the die is in nonacting position and adapted to be set and released by the die in moving to acting position, and adapted to reverse the second switch at the end of the period of operation of said time limit device, whereby the die remains in acting position for a period approximately equal to the period of operation of said time limit device.

20. A branding machine having a movable die, electromagnetic means for controlling it, two switches in series in the circuit of said electromagnetic means, said switches being normally in position to cause said electromagnetic means to hold the die non-active, one of said switches being adapted to be reversed by the work pieces when they are moved to branding position thus causing the die to be moved to acting position, a time limit device including a rocking track mechanically connected to the die and provided with a roller adapted to roll along said track for ultimately reversing the second switch, the die when in nonacting position being adapted to hold the track in position to hold the roller at a distance from the second switch, and the die being adapted in moving to acting position to move the track to the position to initiate the rolling action of said roller toward said second switch, to reverse it and thus cause the die to return to nonacting position.

21. A branding machine having a vertically movable die adapted to descend onto the work, a walking beam for raising and lowering the die, electromagnetic means for operating said walking beam, said electromagnetic means being adapted to normally cause the die to remain raised, a switch adapted to control said electromagnetic means and adapted to be controlled by the work pieces, whereby when a piece of work is in branding position the switch will cause the electromagnetic means to lower the die onto the work, and a time limit device connected to the die and adapted to reverse the electrical condition in said electromagnetic means upon the expiration of the period of operation of the time limit device, said die in descending being adapted to initiate the period of operation of the time limit device.

22. A branding machine having a vertically movable die, a branding table for supporting the pieces of work, means for feeding the work pieces along the table, a stop for temporarily arresting the work pieces to enable them to be branded, means for

urging the stop to acting position, and a time limit device for controlling the last mentioned means, said time limit device being connected to and controlled by the die, and the time limit device being so timed that its period of operation is less than the period required by the feeding mechanism to advance a work piece one full length.

23. A branding machine having a movable die, a table for supporting the pieces of work while being branded, means for feeding the work pieces upon the table, a stop for holding the work pieces while they are being branded, an electromagnetic coil for controlling the position of the stop, said coil having two controlling switches in its circuit adapted to jointly control the electrical conditions in said coil to thereby control the position of the stop, and a time limit device controlled by the die for operating said switches, said switches normally occupying a position to hold the stop in acting position and the time limit device being adapted when the die moves to acting position, to instantly reverse the position of said switches thereby permitting one of them to keep the stop in acting position and the time limit device, when the die moves to non-acting position, being adapted to instantly restore one of said switches to normal condition and to restore the second of said switches to normal condition only after a lapse of the period of operation of said time limit device.

24. A branding machine having a movable die, a table for supporting the pieces of work while being branded, means for feeding the work pieces upon the table, a stop for holding the work pieces while they are being branded, an electromagnetic coil for controlling the position of the stop, said coil having two controlling switches in its circuit adapted to jointly control the electrical conditions in said coil to thereby control the position of the stop, and a time limit device controlled by the die for operating said switches, said switches normally occupying a position to hold the stop in acting position and the time limit device being adapted, when the die moves to acting position, to instantly reverse the position of said switches thereby permitting one of them to keep the stop in acting position and the time limit device, when the die moves to non-acting position, being adapted to instantly restore one of said switches to normal condition and to restore the second of said switches to normal condition only after a lapse of the period of operation of said time limit device, the time limit device including a rockable track and a roller on said track, said roller being adapted to control one of said switches and the period of operation of the time limit device being deter-

mined by the time required for the roller to roll the length of the track in returning to normal position due to the rise of the die.

25. A branding machine having a movable die, means for moving the die toward and from the work, regulating means for regulating the period during which the die is in contact with the work, and mechanism controlled by the work for initiating the action of the regulating means.

26. A branding machine having a movable die, an electromagnet for controlling the position of the die, and a time limit device for controlling the period of energization of the electromagnet for determining the amount of time during which the die is in contact with the work.

27. A branding machine having a movable die, an electromagnet for controlling the position of the die, the circuit of the electromagnet including a winding and a circuit breaker; and a time limit device adapted to be released by the die when the latter engages the work, said time limit device being adapted, when its period of operation has elapsed, to alter the electrical condition in said winding to thereby cause the die to leave the work.

28. A branding machine having a movable die, an electromagnet for controlling the position of the die, the circuit of the electromagnet including a winding and a

circuit breaker, a tiltable track controlled by the die, and a roller on said track adapted to roll to a position to reverse said circuit breaker, said track being connected to said die to be actuated thereby, the die in descending onto the work being adapted to tilt the track in a direction to cause the roller to roll to a position to reverse said switch.

29. A branding machine having a movable die, an electromagnet for controlling the position of the die, the circuit of the electromagnet including a winding and a circuit breaker, a tiltable track controlled by the die, a roller on said track adapted to roll to a position to reverse said circuit breaker, said track being connected to said die to be actuated thereby, the die in descending onto the work being adapted to tilt the track in a direction to cause the roller to roll to a position to reverse said switch, the rolling period of the roller along the track thereby determining the period during which the die shall be in contact with the work, and an adjustable stop for determining the starting position of the roller on the track and therefore the distance which the roller will have to roll before reversing the switch.

In witness whereof, I have hereunto subscribed my name.

ALBERT H. ONSTAD.