J. G. McDONOUGH.

LUMBER AND TIMBER GRADING MACHINE.

APPLICATION FILED NOV. 20, 1916.

1,351,777. Patented Sept. 7, 1920.

3 SHEETS—SHEET 1.

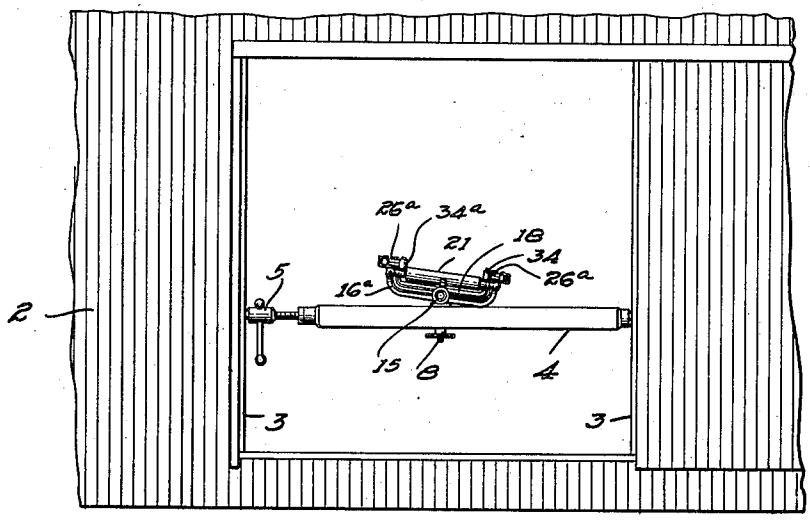


FIG. 1.

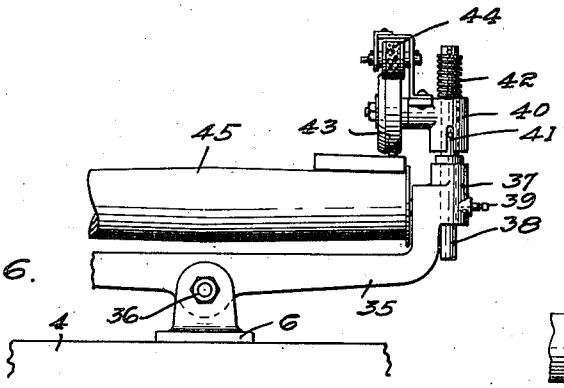


FIG. 6.

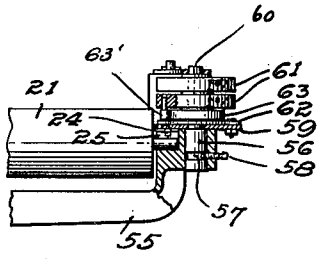


FIG. 9.

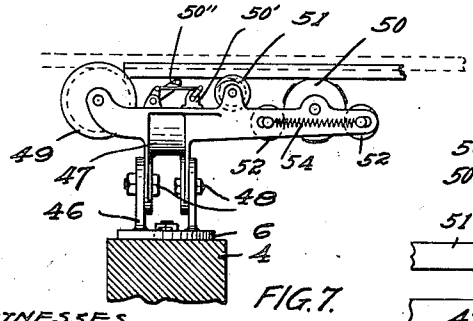


FIG. 7.

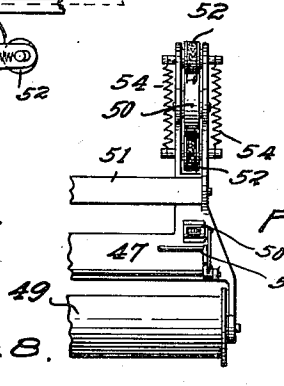


FIG. 8.

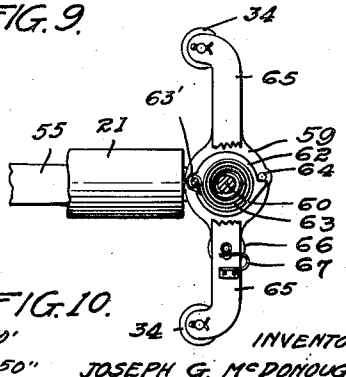


FIG. 10.

WITNESSES

M. R. McInnis

E. A. Paul

INVENTOR

JOSEPH G. McDONOUGH

BY Paul & Paul

ATTORNEYS

J. G. McDONOUGH.

LUMBER AND TIMBER GRADING MACHINE.

APPLICATION FILED NOV. 20, 1916.

1,351,777. Patented Sept. 7, 1920.

3 SHEETS—SHEET 2.

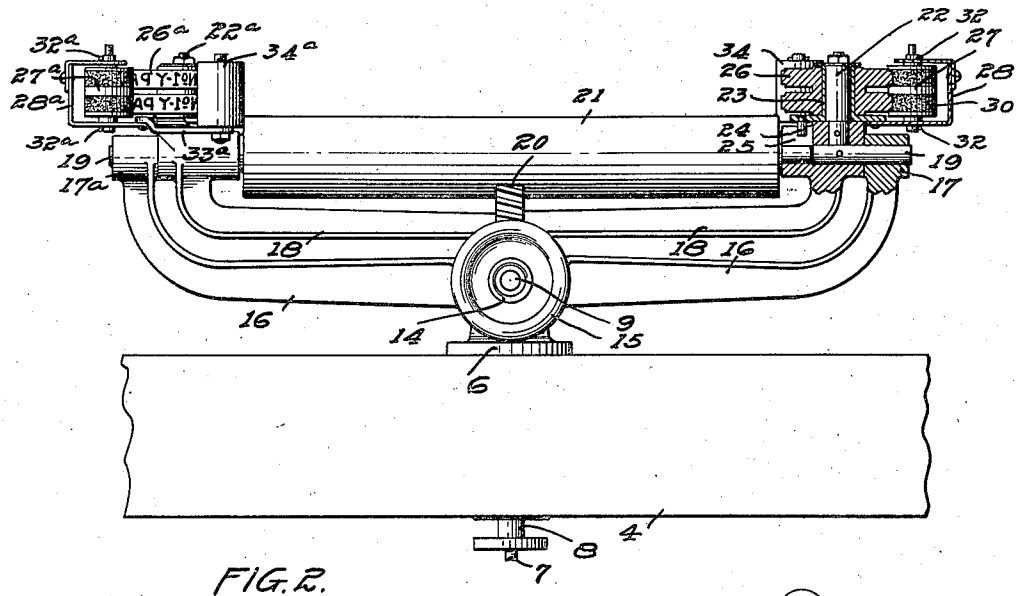


FIG. 2.

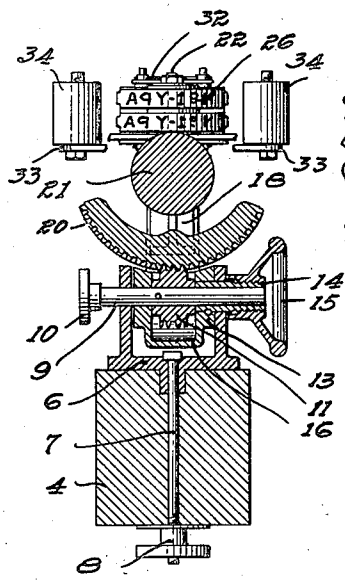


FIG. 4.

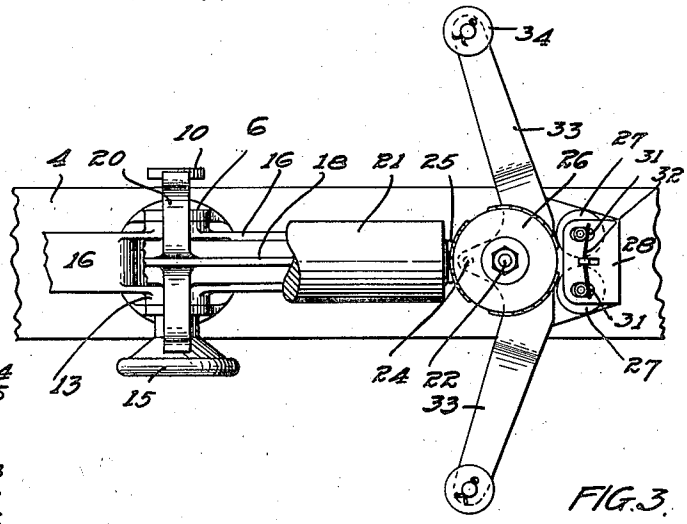


FIG. 3.

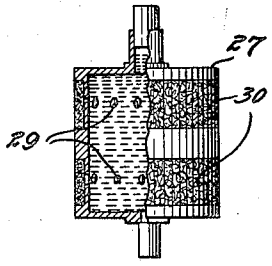


FIG. 5.

WITNESSES

M. R. McDonough

E. A. Paul

INVENTOR

JOSEPH G. McDONOUGH

BY Paul & Paul

ATTORNEYS

J. G. McDONOUGH.

LUMBER AND TIMBER GRADING MACHINE.

APPLICATION FILED NOV. 20, 1916.

1,351,777. Patented Sept. 7, 1920.

3 SHEETS—SHEET 3.

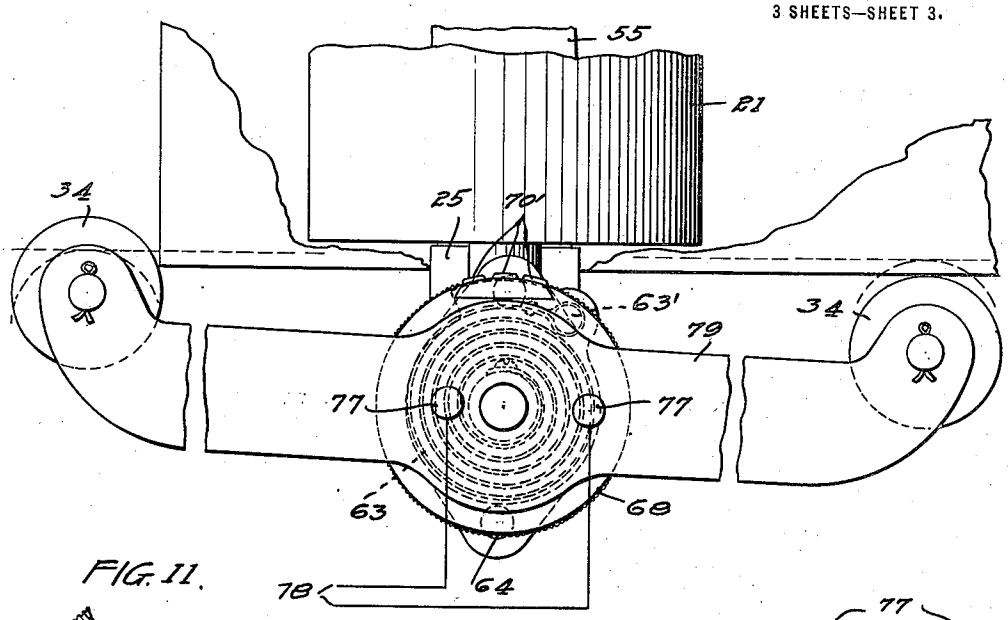


FIG. 11.

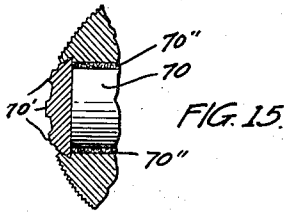


FIG. 15.

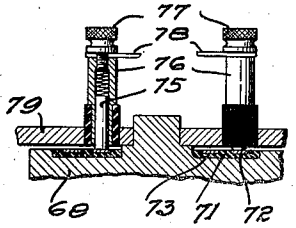


FIG. 13.

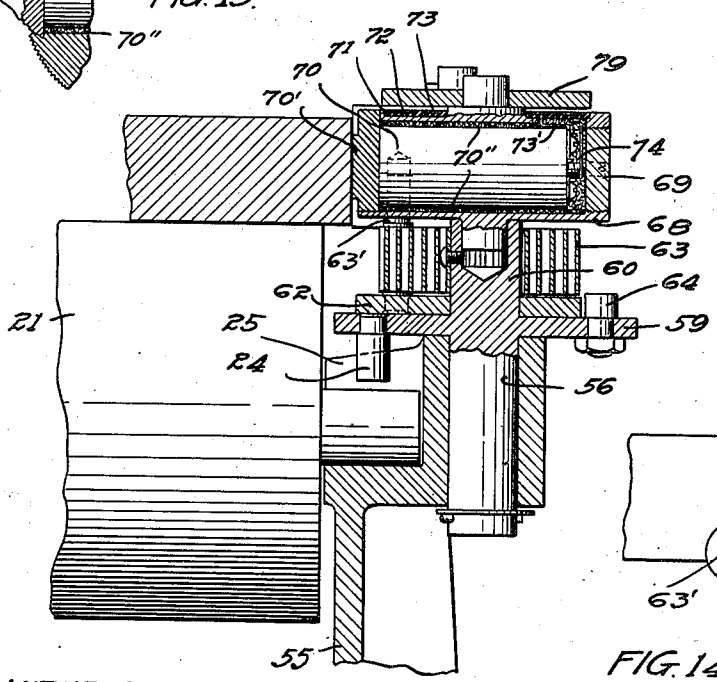


FIG. 12.

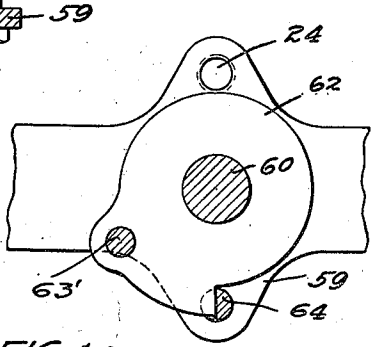


FIG. 14.

WITNESSES

M. R. McInnis

E. A. Paul

INVENTOR

JOSEPH G. McDONOUGH

BY Paul & Paul

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOSEPH G. McDONOUGH, OF EAU CLAIRE, WISCONSIN.

LUMBER AND TIMBER GRADING MACHINE.

1,351,777. Specification of Letters Patent. Patented Sept. 7, 1920.

Application filed November 20, 1916. Serial No. 132,470.

To all whom it may concern:

Be it known that I, JOSEPH G. McDONOUGH, a citizen of the United States, resident of Eau Claire, county of Eau Claire, State of Wisconsin, have invented certain new and useful Improvements in Lumber and Timber Grading Machines, of which the following is a specification.

In the operation of a saw mill, it is not practicable to apply a grade mark to the lumber or timber at the mill as the grade cannot be properly determined until the lumber or timber is dried and ready for shipment. In handling the lumber to and from the yard it is sorted in similar sizes and grades as closely as the grade of green lumber can be determined, but as it changes more or less in grade during the different processes of manufacturing and drying, it has been found to be impracticable to properly determine its grade until after the lumber or timber is re-manufactured or loaded for shipment. Lumber from the yard is often shipped rough and lumber for shipment is often taken from bins, racks or piles in a shed. It is often kiln-dried and shipped direct from the kilns and is not near a manufacturing plant where it could be properly marked by power driven means, and it is particularly advantageous to a manufacturer to protect his grades or brands and is also a protection to the user, and as the lumber is collected from various parts of a plant and is shipped in many different forms of packages, loose bundles or grades, I have found a portable grading apparatus of great advantage, particularly as it will require no additional labor in operating it. The same loading, distributing and piling crews can, without extra effort or expense to the manufacturer, indelibly mark and grade lumber and timber of all kinds and dimensions while it is being handled in loading or unloading in loads or piles, or in cars, racks, bins, edgers, planers, matchers, sorting tables, dry kilns, dollies, or wherever or in whatever way manufactured lumber or timber may be handled preparatory to or during the operation of marketing it.

To this end my invention consists in providing a marking or branding device by means of which lumber or timber handled manually in or out of a yard or in any other place or manner can be easily and quickly marked or branded for identification purposes and the substitution of an inferior grade for a better one positively prevented.

In the accompanying drawings forming part of this specification,

Figure 1 is a side view of a portion of a box car illustrating my invention applied thereto,

Fig. 2 is a detail view showing the preferred manner of mounting the printing or branding dies and inking the faces thereof,

Fig. 3 is a plan view of one end of the device,

Fig. 4 is a vertical sectional view, showing the means for tilting or adjusting the dies to adapt them for the different positions or angles where the device may be in use,

Fig. 5 is a view, partially in section, of an inking roll,

Fig. 6 is a view of a modified construction for marking the horizontal surface of the lumber or timber,

Figs. 7 and 8 are detail views of another modification in the manner of mounting the printing wheel,

Figs. 9 and 10 illustrate a modified construction in which the printing wheel is mounted to revolve a predetermined distance against the tension of a spring which returns it when released to its normal position,

Fig. 11 is a plan view of a modified construction, in which a means is employed for heating the face of the die to brand or burn a mark or impression in the surface of the lumber or timber,

Fig. 12 is a vertical sectional view of the same, showing the manner of mounting and operating the die and the position of the die heating cartridge therein,

Fig. 13 is a detail sectional view, showing the manner of making the electrical connections,

Fig. 14 is a detail view, showing the stop for limiting the movement of the die when released,

Fig. 15 is a detail sectional view, showing one end of the heating unit and the removable die face contacting therewith.

In the drawing, 2 represents the wall of a box car, having door posts 3. 4 is a sup-

port adapted to bear on the door post at one side of the door opening and having adjusting means 5 at its opposite end for engaging the other door post and securing the support firmly between them. This adjusting means adapts the device for door openings of different width and may be adjusted up and down in the door for the desired elevation. Upon this support 4 is a base 6 mounted to rotate thereon by means of a bolt 7 having a threaded lower end to receive a clamping nut 8.

A pin 9 is mounted in the base 6 and provided at one end with a finger grip 10 and carries a pinion 11. A hub 13 has bearings for the pin 9 and a sleeve 14 is secured to said hub concentric with the pin 9 and has an exteriorly threaded outer end on which a clamping wheel 15 is mounted. By the movement of this wheel the hub 13 is clamped securely in the base or may be rotated therein by means of the grip 10 when the wheel is loosened to shift the position of the marking die. The hub 13 has arms 16 projecting preferably on each side thereof and provided with bearings 17 and a yoke 18 is arranged above the arms 16 and is supported by pins 19 secured at one end in the ends of the yoke 18 and supported at their opposite ends in the bearings 17. The arms 16 (of which two are preferably shown, though one only may be employed), and the yoke 18 may thus rock in a vertical plane on the pin 9 as an axis. A worm 20 is mounted on the yoke 18 centrally with respect thereto and meshes with the pinion 11 and when the pin 9 is revolved, its movement will be transmitted to the gear 20 to rock it and the yoke 18 and tilt the ends of said yoke inwardly or outwardly, as may be desired. An anti-friction roller 21 has bearings in the ends of the yoke concentric with the pins 19. At each end of the yoke 18 the printing or branding dies are mounted. I will describe but one of them, indicating the other by the same reference numerals with the addition of the exponent "a".

Beginning with the one on the right in Fig. 2, 22 is a pin and 23 a sleeve thereon having a pin 24 which depends between the lugs 25 on the end of the yoke for limiting the rotation of the said sleeve. The pin may be removed to allow rotation in a greater degree, if desired. This sleeve forms a hub for the identifying branding or printing wheel 26, which preferably is provided with two peripheral rows of figures or characters to adapt it for printing the vertical face of lumber or timber of different dimensions. These peripheral characters extend entirely around the wheel and repeat the identifying brand or mark on the face of the lumber as long as it remains in contact therewith.

For the purpose of inking these die wheels rolls 27 are preferably provided, mounted in a support 28 that is carried by the sleeve 23, said rolls being preferably hollow and having perforations 29 therein through which the ink is discharged into felt rings or bands 30 seated in the peripheries of the rolls. The support 28 preferably has slots 31 therein to receive the bearings of these rolls and a spring 32 holds the rolls toward the printing die with a yielding pressure, so that, as the die is revolved, its peripheral marks will be automatically inked.

The sleeve 23 is preferably provided with arms 33 projecting on each side thereof in a substantially horizontal plane and provided with anti-friction rollers 34 whose surfaces extend inwardly toward the anti-friction roller 21 beyond the periphery of the identifying wheel, so that the piece of lumber or timber in contact with both of these rollers would be out of contact with the printing die. When a piece of lumber is placed on the end of the roller 21 its forward end will slide into engagement with the marking die, revolving the same and printing the marks or impressions on a face of the lumber for a predetermined distance from the end thereof or until the forward end of the lumber contacts with the inner anti-friction roller and thereupon the end of the piece of lumber will be moved away from the printing die and will stay out of contact with it until the other end of the lumber has passed the outer anti-friction roller and may then slide into contact with the die. Each end of the lumber will therefore be marked for a predetermined distance toward the center and a grade mark having once been placed on a piece of lumber, it will be impossible to change it without cutting off each end of the piece and this obviously any manufacturer or dealer would not be likely to do. By removing the rolls 34 the user of the device may mark or brand the lumber its full length.

The device can be adjusted so that the roll 21 will be substantially horizontal and the piece of lumber to be marked or graded pushed against the die or it may be tilted slightly so that the lumber will slide automatically against the die and the support for the marker allows it to be swung on its axis at any desired angle for delivering lumber or timber to either end of a car or receiving it therefrom, or the device may be used on a lumber pile or in a warehouse or in loading or unloading wagons or other vehicles. In fact, it may be used in any place wherever it may be desired to mark or grade lumber or timber during the operation of handling it. By having a die at each end of the roll 21 I am able to mark or brand either or both faces of the lumber, as may be desired.

In Fig. 6 I have shown a modified con-

struction which consists in providing a yoke 35 swiveled at 36 and having a bearing 37 for an upright rod 38 that is secured by a set screw 39. A hub 40 is mounted to slide vertically on said rod and is held against rotation thereon by a pin and slot device 41. A spring 42 yieldingly resists upward movement of the hub on said rod. A marking or branding wheel 43 is journaled in a vertical plane on the hub 40 and has a marking periphery that is adapted to bear on a horizontal surface of the lumber or timber and make a complete revolution thereon, marking the lumber from end to end or as long as it remains in contact with the wheel. The vertical movement of the hub 40 against the spring 42 allows the wheel to accommodate itself to lumber of different thickness. An inking roll 44 is mounted on the hub 40 in position to bear on the periphery of the wheel and properly ink the same. I have shown in this modification an anti-friction roller 45 which is slightly tapered from the center toward each end, causing the lumber to work toward the marking wheel. The principle involved in this modification is substantially the same as previously described, except that the die works in a vertical instead of a horizontal plane.

In Figs. 7 and 8 I have shown another modification in which a base 46 supports a frame 47 on pivots 48, one end of said frame supporting the anti-friction roller 49 on which the lumber or timber is placed and the other end of the frame being forked and having bearings for the printing or marking wheel 50 which also operates in a vertical plane. A roller 51 receives the lumber as it drops from the roller 49 and prevents damage to the printing wheel. Inking rolls 52 are mounted in the frame 47 in slots 53 therein and are yieldingly held toward one another and the periphery of the wheel 50 by springs 54. The operation of the die 50 is much the same as the one previously described with reference to Fig. 6 except that it brands the under surface of the lumber or timber instead of the upper surface.

I have shown a counter 50′ actuated through the movement of an arm 50″ in the path of the lumber for counting the successive pieces as they pass over the grading die. This counter device, with slight modification, may also be adapted for use with the other styles of grading devices herein shown.

In Figs. 9 and 10 a yoke 55 is shown, having bearings for the roller corresponding to the one shown in Fig. 2 and provided with a vertical socket for a stud 56 having an annular groove 57 for a screw 58 which permits revolution of the stud but holds it against longitudinal movement. A plate 59 is mounted in said stud and is provided with an upwardly projecting extension 60 on which a printing wheel 61 is loosely mounted. A plate 62 is loosely mounted on the stud 60 and a spring 63 is connected at one end to a pin 63′ that is mounted on the plate 62 and projects upwardly into a socket in the die wheel to put the spring under tension when the wheel is revolved. Revolution of the die wheel in one direction will put the spring under tension to return the wheel to its normal position when the piece of lumber passes out of contact therewith. A stop 64 is preferably provided in the plate 59 to contact with the plate 62 and limit the backward movement thereof when the spring is released, and revolution of the plate 59 and its studs is prevented by the pin 24 and arms 25 corresponding substantially to those shown in Fig. 2. Arms 65 project outwardly from the plate 59 and an inking roll 66 is carried by one of said arms and yieldingly held toward the face of the marking wheel by a spring 67. Rollers corresponding to those in Fig. 3 are mounted in the ends of the arms 65 for contacting with the face of the lumber and preventing the middle portion thereof from engaging the die wheel when the lumber is in engagement with both of the rollers.

In Figs. 11 and 12 the manner of mounting the die wheel is shown corresponding substantially to that described with reference to Figs. 9 and 10, the parts being indicated by the same reference numerals except that the die wheel 68 is smaller and made hollow and provided with a screw cap 69 for access to the interior of the die wheel for the insertion or removal of a heating unit such as a cartridge 70 which is adapted to fit into the chamber in the wheel and contact with the inner surface of the printing die 70′ thereon for the purpose of heating the characters thereon sufficiently to brand or burn identifying marks or impressions in the face of the lumber or timber. This cartridge is preferably inclosed in a non-heat conducting shell 70″ of suitable material, such as asbestos, and heated by suitable means, preferably an electric current which can always be utilized around a lumber plant or yard, where a device of this kind might be used. The current is carried through the cartridge preferably by providing an insulating ring 71 in the top of the cartridge, having conducting rings 72 and 73 seated therein. From these conducting rings conductors 73′ and 74 lead to the poles of the cartridge to complete the circuit between the conducting rings. The die wheel may be provided with any suitable number of these heating units or cartridges. The current is delivered to the conducting rings preferably by spring pressed contact pins 75 mounted to bear re-

spectively on the conducting rings and carried by posts 76 having binding nuts 77 for conductor wires 78 leading from a source of electrical energy: The binder posts are mounted in a yoke 79. The characters on the die wheel project a sufficient distance to insure their contact with the face of the lumber and the legible branding or burning of these characters in the lumber face.

As shown in Fig. 15, I prefer to make the die 70′ removable and position it so that its rear surface will contact with the metallic cartridge or other suitable heating unit 70 inserted in the head. Whenever desired, the die 70′ may be removed and another substituted therefor without the necessity of disturbing the other connections of the grader.

I do not wish to be confined to the use of this device in connection with a car for loading or unloading purposes, as it may be employed wherever it is desired to brand or mark lumber while it is being handled, and the device being portable, it can be easily carried from place to place and the lumber indelibly marked or branded during the operation of handling without additional labor or expense.

The device may be equipped with die wheels having different marking or branding characters thereon. For instance, the wheel at one end of the roll may have characters for marking or branding one kind of lumber, while the wheel at the other end of the roll may be adapted for an entirely different grade. The engagement of the lumber with these different dies may be accomplished by the tilting of the yoke, or, instead of tilting the yoke, the anti-friction roll mounted therein may have tapered ends which will cause the lumber or timber to work from the center toward the die with which it is desired to engage the lumber.

I have shown this invention mounted on a horizontal support that is clamped between the side posts of the door of a box car, but it will be understood from the foregoing specification that I do not in any way confine myself to such use, as the device may be employed in a variety of other ways where the support such as shown in Fig. 1 may be modified, or where the circumstances of the use permits, omitted altogether, and in various ways the details of construction herein shown and described may be modified and still be within the scope of my invention.

I claim as my invention:

1. A device of the class described comprising a support having a surface to receive the lumber or timber to be marked and mounted to rock on a transverse axis under weight of the lumber, and means for identifying a surface of the lumber or timber on said support.

2. A device of the class described comprising a support mounted to rock on a longitudinal axis and having a surface to receive the pieces of lumber or timber of varying dimensions to be marked, and means for identifying the surface of the lumber or timber on said support.

3. A device of the class described comprising an anti-friction surface having a surface whereon the flat faces of the lumber or timber is placed, said support being mounted to rock under weight of the lumber and means for identifying a surface of the lumber or timber.

4. The combination, with a support over which lumber or timber is manually moved, of means for identifying a surface of the lumber or timber during such movement, and means preventing the middle portion of such lumber or timber from contacting with such identifying means.

5. The combination, with a support over which lumber or timber is manually moved, of means for identifying a surface of the lumber or timber during such movement, and means projecting upon opposite sides of said identifying means for contact with the lumber to permit the ends thereof to engage said identifving means but holding the middle portion of the lumber out of engagement with said identifying means.

6. The combination, with a support over which the lumber or timber is manually moved, of means for identifying a surface of the lumber or timber so moved, arms projecting from opposite sides of said identifying means and having means for contacting with the lumber for preventing the middle portion thereof from contacting with said identifying means.

7. The combination, with a support over which the lumber or timber is manually moved, of means for identifying a surface of the lumber or timber during such movement, arms projecting upon opposite sides of said identifying means, said arms having means for contacting with the lumber for permitting the end portions thereof to engage with said identifying means when in contact with but one of said arms, but held out of engagement with said identifying means when in contact with both of said arms.

8. The combination, with a yoke having a surface over which lumber or timber is manually moved, of means mounted at the ends of said yoke for contacting with a surface of the lumber or timber to identify the same during such movement, said yoke being mounted to accommodate itself and the identifying means to the angle of the lumber or timber moving over said surface.

9. The combination, with a tilting yoke having a surface over which lumber or timber is manually moved, and mounted to tilt under the weight of the lumber, of an identi-

fying die mounted on one end of said yoke and positioned to contact with a surface of the lumber or timber for identifying the same.

10. The combination, with a support mounted to rock on a horizontal axis under the weight of the lumber thereon and over which the lumber or timber is moved, of means carried by said support for identifying the surface of the lumber or timber during such movement.

11. The combination, with a support over which the lumber or timber is manually moved, of means for identifying a surface of the lumber during such movement, anti-friction rollers mounted on each side of said identifying means for normally preventing contact of the middle portion of the lumber with said identifying means but permitting engagement of the end portions therewith, said rolls being removable to allow contact of the lumber throughout its full length with said identifying means.

12. The combination, with a tilting yoke having a surface over which lumber or timber is manually moved, of identifying dies mounted upon opposite ends of said yoke and positioned to contact with a surface of the lumber or timber for identifying the same.

13. The combination, with a centrally pivoted yoke having a surface over which lumber or timber is manually moved, of identifying dies mounted upon opposite ends of said yoke for contacting with surfaces of the lumber or timber for identifying the same.

14. The combination, with a pivoted yoke, of an anti-friction roller mounted therein, identifying dies mounted in said yoke at each end of said roller for contacting with and placing marks or characters on the surface of the lumber or timber moving over said roller.

15. The combination, with a pivoted support adapted to tilt under the weight of the lumber over which the lumber or timber is manually moved, of a die wheel mounted to revolve on a vertical axis and having peripheral figures or characters for identifying a surface of the lumber or timber moving over said support.

16. The combination, with a pivoted support over which lumber or timber is manually moved, of a die wheel mounted to revolve on a vertical axis and having a plurality of peripherally arranged groups of figures or characters; those of one group being above the characters of the other group for placing identifying figures or characters on the surfaces of lumber of different thickness moved past said die.

17. The combination, with a pivoted support over which lumber or timber is manually moved, of means for marking a surface of the lumber or timber during such movement, and means for returning said identifying means to its normal position after the marking operation.

18. The combination, with a pivoted support over which lumber or timber is manually moved, of an identifying die wheel positioned to impress marks or characters upon the surface of the lumber moving over said support, and a spring mounted to resist movement of said die wheel when engaged by the lumber.

19. The combination, with a support having a comparatively broad surface adapted to receive pieces of lumber or timber of varying dimensions, such lumber or timber having freedom of lateral movement on said support, of a marking die having peripheral characters provided at one end of said support to engage a longitudinal surface of the lumber or timber contacting therewith for placing identifying marks or characters on said surface.

20. The combination, with a support having means for mounting it between two upright walls and provided with a surface over which lumber or timber is moved, said support being mounted to tilt under the weight of the lumber, and an identifying device carried by said support for contact with a surface of the lumber during its movement over said support.

21. The combination, with a pivoted support over which lumber or timber is moved, said support being mounted to tilt under the weight of the lumber or timber, of a die wheel having a removable die face positioned to contact with a surface of the lumber, a heating unit fitting within said wheel and contacting with said face, an insulating jacket inclosing said heating unit and electric conductors connected with said unit, said die face being removable independently of said wheel and heating unit.

22. The combination, with a support having an antifriction surface over which the lumber or timber is moved, of means carried by said support adjacent said antifriction surface for placing identifying marks on the surface of the lumber or timber, and means for tilting said support on its longitudinal axis.

23. The combination, with a support having an antifriction surface over which lumber or timber is moved, of means carried by said support for placing identifying marks on the surface of the lumber, said support being mounted to tilt on a transverse axis under the weight of the lumber thereon.

24. A device of the class described comprising a portable supporting means adapted for mounting in a door opening, a lumber support or guide carried by said means and having a surface over which the lumber or timber is moved, and means for placing

an identifying mark or character on the surface of the lumber.

25. A device of the class described comprising a bar having means for mounting it between upright walls, a base rotatably mounted on said bar, a lumber or timber support carried by said base to rotate therewith and provided with an anti-friction surface over which the lumber or timber is moved, and a lumber identifying means carried by said support for marking the surface of the lumber moving thereover.

26. A device of the class described comprising a bar having means for mounting it between suitable uprights, of a lumber support carried by said bar and having an anti-friction surface over which lumber or timber may be moved, and identifying means carried by said support for placing marks on the surface of the lumber moving over said support.

27. A device of the class described comprising a portable supporting means adapted for mounting in a door opening or between suitable uprights, a lumber support or guide carried by said means and having an anti-friction surface over which the lumber or timber is moved, and means for placing an identifying mark or character on the surface of the lumber upon said support.

28. An apparatus for identifying lumber or timber comprising means adapted for mounting in a door opening or between upright supports, a tilting lumber or timber guide carried by said means and identifying devices above said guide on each side of the lumber moving thereover for applying marks or characters to the surface thereof.

29. A device of the class described comprising a portable lumber or timber supporting means having a surface on which the lumber may lie flat and move laterally on said supporting means, means at one side of said support for placing an identifying mark on a longitudinal surface of the lumber and the surface of said support directing the pieces of lumber or timber into contact with said identifying means during the longitudinal movement of the lumber or timber over said support.

In witness whereof, I have hereunto set my hand this 14″ day of November, 1916.

JOSEPH G. McDONOUGH.