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1,596,416

G. W. ERICKSON

PRINTING MACHINE

Filed Nov. 6, 1923

2 Sheets-Sheet 1

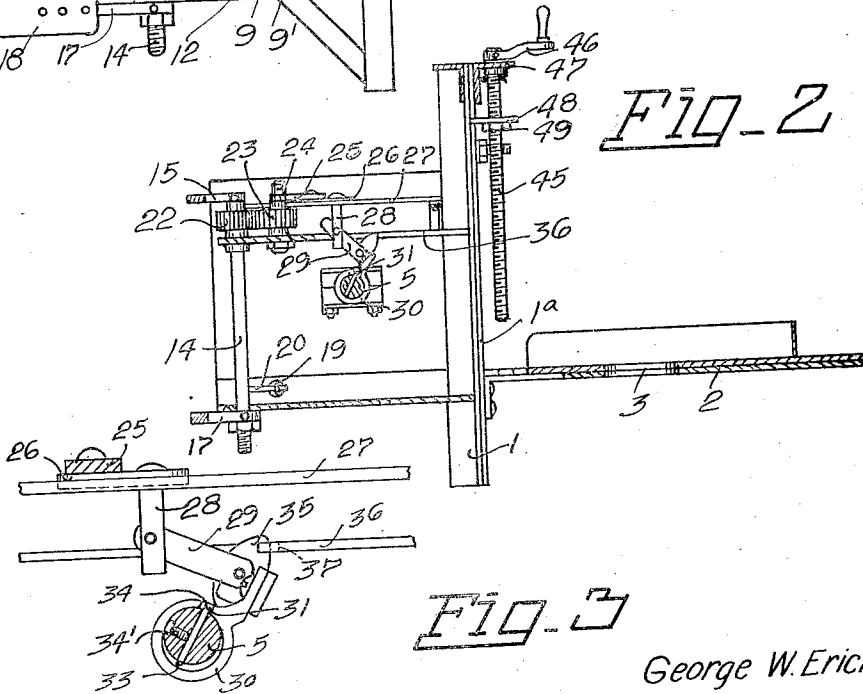
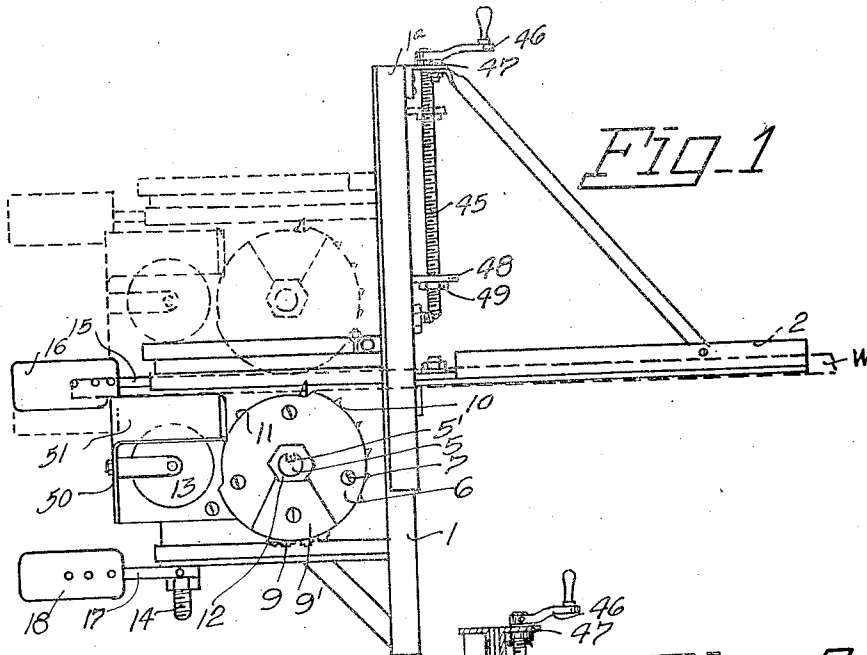


Fig. 3

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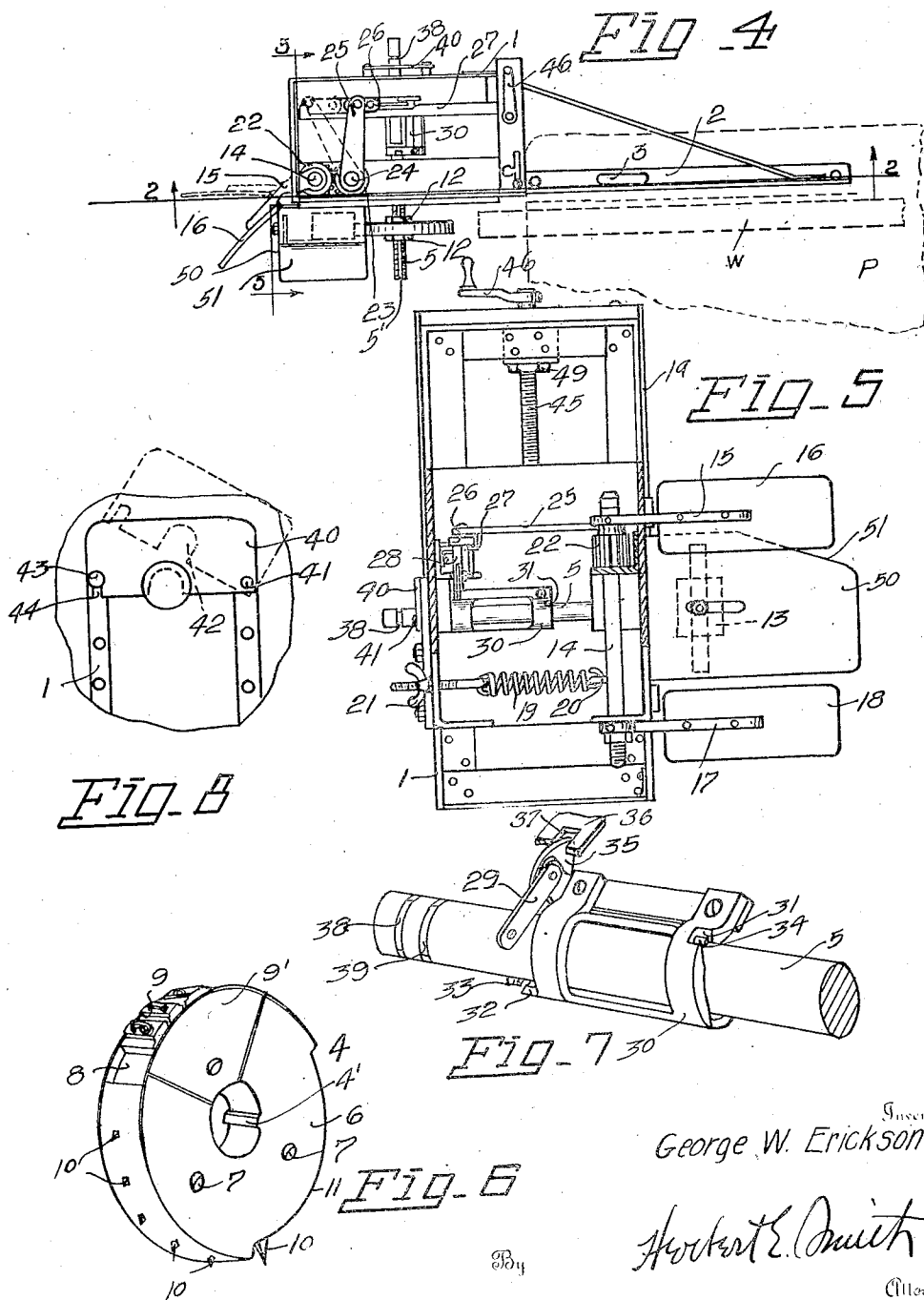
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PRINTING MACHINE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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PRINTING MACHINE.

Application filed November 6, 1923. Serial No. 673,096.

My present invention relates to improvements in printing machines which, while capable of use in marking various articles or materials, is especially applicable as a printing attachment for use in combination with planing, molding, or other lumber dressing machines wherein the lumber or work is fed longitudinally through the dressing machine. In its utilization in connection with the machines of this type the attachment is used at the rear or discharge end of the machine and an attaching frame is rigidly secured to the lumber machine. An adjustable frame, in which are supported the operating parts of the printing machine, is carried by the attaching frame, and the adjustable frame is vertically movable to adapt the printing device for use on either the upper or lower faces of the work and for use with different forms and shapes of material.

The invention consists essentially in a printing attachment actuated by contact from the longitudinally moving lumber or work for the purpose of marking, branding, or printing suitable identification marks on the lumber for subsequent use in the warehouse or market. The attachment is of that type of printing machines utilizing a rotary printing wheel for contact with the surface of a moving board, plank or other piece of lumber and provided with an interrupted surface. The invention consists in certain combinations and arrangements of parts whereby a selected operation of the printing wheel may be secured for printing either on the upper surface or the lower surface of the lumber, and in the operating means and actuating means of the printing machine as will be hereinafter more fully pointed out and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged in accordance with the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is a view in side elevation of the attachment or printing machine, showing in full lines the machine in position for printing upon the lower surface of a piece

of lumber, and in dotted lines showing the machine elevated to position for printing on the upper surface of a piece of lumber. 55

Figure 2 is a vertical sectional view of the printing machine at line 2—2 of Fig. 4.

Figure 3 is an enlarged detail sectional view of part of the actuating mechanism, showing the printing-wheel shaft in section and a clutch device related thereto. 60

Figure 4 is a top plan view of the printing machine in its relation to a portion of the rear or discharge end of the lumber planing machine, the planing machine and a piece of lumber being indicated by dotted lines. 65

Figure 5 is a vertical sectional view of the machine at line 5—5 of Figure 4 transversely to the longitudinal axis of the planing machine. 70

Figure 6 is an enlarged perspective view of the printing or type wheel.

Figure 7 is a detail perspective view of a portion of the printing-wheel shaft and clutch device thereon. 75

Figure 8 is an enlarged detail view in elevation showing the locking plate for holding the longitudinally adjustable printing-wheel shaft in selected position depending upon the relative position of the printing wheel when printing upon the upper or lower surface of the work. 80

In dotted lines in Figure 4 I have indicated a portion of a molding or planing machine by the letter P, and the work or lumber is designated in dotted lines by the letter W. The printing attachment is secured at the rear of the molding or planing machine, and as hereinafter referred to the printing machine is adapted to mark with suitable symbols, the lower or under face of the lumber or work. As the lumber emerges from the dressing machine it is marked by the printing attachment and passes through the latter, the rear end of the longitudinally moving board, plank, or other piece of lumber being "kicked" or shoved laterally to make room for the following piece of material, and in this manner the successive pieces of lumber are similarly marked by the printing attachment. 85 90 95 100

The operating parts of the printing machine are carried in a frame 1 which is ver-

tically adjustable in the fixed frame 1^a, the latter being attached at the rear end of the planing or molding machine W by means of the portion 2 which is slotted as at 3 for use of the attaching bolts or other suitable devices.

The printing wheel is designated as a whole by the numeral 4 and is carried by the shaft 5, the latter being longitudinally grooved at 5' and the former having a hub key 4' for engagement therewith to permit lateral adjustment of the wheel on the shaft. The shaft is journaled in bearings in the frame 1 and is slidable therein when necessary to adjust the printing machine for selected use above or below the lumber to be marked.

The wheel is made up of side plates 6 that are joined by screws 7 and a socket 8 is provided in the periphery of the wheel for the removable type or printing devices 9, a removable segmental plate 9' being utilized to clamp the type in printing position.

On the exterior periphery of the wheel for a predetermined distance a series of spaced spikes or spurs 10 are provided over which the piece of lumber is adapted to ride and revolve the wheel, after these spurs, which are normally held out of the path of the lumber, are brought into the line of movement of the lumber. The type project from the periphery of the wheel and the lumber passes over the wheel in contact with the type to receive an impression therefrom. At 11 the diameter of the wheel is reduced to provide an interruption in its surface and when in normal position this interrupted surface is adjacent to the path of the lumber, either above or below the lumber.

The printing-wheel shaft 5 is threaded for a portion of its length and the wheel may be locked on the shaft in adjusted position by means of lock nuts 12, one at each side of the wheel hub. The printing couple comprises the printing wheel 4 and an inking roller or wheel 13 operatively supported in the frame 1 adjacent to the printing wheel for insuring the necessary supply of ink or coating material.

To bring the printing wheel from normally inoperative position to operative position I utilize a vertically disposed actuating shaft 14 journaled in suitable bearings in the frame 1. This shaft is provided with an upper horizontal arm 15 and its abutment plate 16 and a complementary lower arm 17 and its abutment plate 18, the arms and plates projecting laterally from the shaft to which they are fixed. These abutment plates are designed for selective use, the plate 16 to be used when the mark is applied to the under surface of the lumber, and the plate 18 to be used when the mark is applied to the upper surface of the lumber, as indicated in Figure 1. In full lines in said

figure the wheel 4 is in position to be turned by the lumber for printing upon its under side, and the lumber is shown as engaging the abutment 16 which is positioned in the path of movement of the lumber in order that the abutment plate 16 and its arm 15 may be swung in a horizontal plane for the purpose of oscillating the shaft 5. As illustrated the arm 15 has been oscillated by contact from the lumber as indicated by dotted lines in Figure 1 and the printing wheel has been turned or revolved to operative position by this actuating movement. A continued movement of the lumber in engagement with the spikes 10 causes the printing wheel to revolve and impress its markings on the under face of the lumber.

The actuating shaft 14 and the abutment plates are returned to normal position after each actuation, by means of a spring 19 coupled to the shaft at 20, and anchored by means of an adjusting device 21 in the frame 1, said device 21 being designed to adjust the tension of the spring when desired. After the forwardly moving piece of lumber moves or passes from contact with the abutment 16, the latter is swung back into the path of movement of a succeeding piece of lumber by the action of the spring 19.

At the upper end of the shaft 14 an actuating gear 22 is carried which meshes with an operating gear 23 on the stud shaft 24, and this stud shaft carries a crank arm 25 disposed to swing in a horizontal plane on the side of the shaft 14 opposite to the abutment plates and arms, as indicated in dotted lines Fig. 4. At the outer end of the crank or lever arm 25 is pivoted a slide link 26 which moves longitudinally of the planing machine and printing machine and is guided by a rigid frame 27. The slide link carries a post 28 depending from it (as in Fig. 3) and a pivoted link 29 connects this post with a clutch sleeve 30 which is of greater interior diameter than the diameter of the shaft and loosely encases the latter as seen in Fig. 7. This clutch sleeve is adapted to transmit motion to the shaft for the purpose of turning the latter either clock-wise or anti-clockwise whereby the printing wheel is initially rotated to operative position to receive the co-operation of the work. The printing wheel is operable either above or below the work or lumber to be printed. When the wheel is to print upon the under side of the lumber the shaft 5 is positively turned anti-clockwise for an initial partial rotation of the printing wheel to operative position, by movement actuated from the abutment 16. When the wheel is to print upon the upper face of the lumber the shaft 5 is automatically turned clockwise for an initial partial rotation of the printing wheel to operative position, by the action of

the spring 19 as it returns the abutment 18 to the path of movement of a strip or piece of lumber.

The shaft 5 is shifted longitudinally in its bearings when the printing wheel is changed to position either above or below the lumber, and the printing wheel itself is also changed by reversing its position on the shaft.

At its ends the clutch sleeve 30 is provided with notches 31 and 32, which are adapted to co-act selectively (depending upon which direction the shaft 5 is to be revolved) for an initial movement of the printing wheel to operative position with the respective pins 33 and 34. These pins are spaced apart and pass transversely through the shaft in which they are secured by set screws 34'. One end of each pin protrudes from the shaft and each pin at its protruding end is beveled for co-action with the sleeve on its idle strokes.

In Figure 7 the clutch sleeve is connected with shaft 5 for a working stroke of the sleeve by means of the notch 31 and pin 34 in order that the necessary movement may be transmitted to the printing wheel on shaft 5 to bring the wheel to operative position in full lines Fig. 1.

When the wheel is to be located above the lumber, the shaft is shifted longitudinally to render inoperative notch 31 and pin 34 and to render operative notch 32 and pin 33. For a working stroke of the clutch sleeve the walls of notches 31 and 32 operatively engage a pin 34 or 33, but as the inner diameter of the sleeve is greater than the diameter of its shaft 5, on idle strokes of the sleeve the walls of the notches ride over the beveled protruding ends of the pins and thus prevent joint movement of the sleeve and shaft.

It will be understood that the printing wheel must be removed from its shaft and reversed i. e. turned half way around in a vertical plane in Fig. 1, and then replaced on the shaft, when changing the position of the wheel to print either on the upper or lower face of the lumber.

The clutch sleeve is guided in its rotary movement on both its working and idle strokes, by means of an elliptical shaped latch 35 rigidly fixed thereto, which slides against the edge of a guide bar 36. This guide bar is disposed horizontally and fixed to one of the walls of the machine frame and is fashioned with a keeper notch 37 to hold the clutch sleeve in operative position and prevent longitudinal movement of the sleeve on the shaft 5.

One end of the shaft 5 projects beyond its bearing, exterior of the machine frame, and this end is provided with a pair of spaced exterior, annular grooves 38 and 39 with which a latch plate 40 is designed for selec-

tive engagement. This plate is pivoted on the frame 1 at 41 and is provided with a curved notch 42 which fits in the annular groove as 39 as seen in Fig. 8. By means of a head 43 on the frame 1 and a slot 44 near the free end of the lock plate 40 the latter is held in locked position to permit rotary movement of the shaft but to prevent longitudinal movement thereof.

For the purpose of shifting the printing mechanism from below the lumber to operative position above the lumber, the frame 1 is vertically adjustable and carries with it the printing mechanism. This shifting movement is accomplished by means of a screw bar 45 and its crank handle 46. The fixed attaching frame 1^a is made up of angle bars and the vertically adjustable frame is guided and held stable in this fixed frame. The screw bar is journaled at 47 in the fixed frame and passes through a flange 48 on the adjustable frame, and a nut 49 is located on the bar beneath the flange 48, in order that as the screw bar is turned clockwise the adjustable frame may be elevated to the position of dotted lines in Figure 1.

The printing wheel is removed from its shaft, turned to bring its inner face to the outside, and then replaced on the shaft.

The inking roller 13 is journaled beneath the table or housing 50 which is secured to the frame 1 and provided with a sloping and laterally declining top surface 51 over which the lumber slides after having been printed.

From the above description taken in connection with the drawings it will be apparent that the end of the piece of lumber as it encounters the abutment plate 16 forces said abutment and its arm to swing laterally and turn the shaft 14 against tension of the spring 19. The actuating shaft through its connections transmits motion to the clutch sleeve 30 which in turn actuates the printing wheel shaft 5, and said wheel is thus positively rotated to bring it to the full line position in Figure 1. The rotary printing movement of the wheel is then accomplished by the lumber as it rides over the spiked portion of the wheel, turning the latter to bring the type in contact with the under face of the lumber to impress thereon the symbols of the type. Following the type portion of the wheel operative engagement of the lumber with the wheel ceases as the interrupted portion 11 reaches position adjacent to the lumber. After the entire length of the piece of lumber has passed the wheel and is freed from the molding or planing machine the abutment plate, through the spring 19 is instrumental in shoving or pushing the lumber over the table 50 and its sloping surface 51, with the result that the printed lumber slides out of alinement and gives space for the following

piece of lumber to be printed or marked as it emerges from the molding or planing machine.

The removable type 9 may readily be changed as required for different and various markings for the material, and the type may be of rubber or other suitable material as desired.

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

1. The combination in a printing attachment for lumber dressing machines of a rotary marking device having an idle position, means actuated by the moving lumber for bringing said marking device from idle position to operative position, means on the periphery of the marking device for co-action with the moving lumber for operating the marking device, and means for retracting the actuating means.

2. The combination in a printing machine with an attaching frame, of an adjustable printing frame and means for moving said frame to operative position above or below the work, a reversible rotary marking device carried in the printing frame, selective means on the printing frame for co-operation with the work for rotating said marking device to initial operative position, and means on the marking device for co-action with the work for rotating the marking device.

3. The combination in a printing machine with an operating shaft and a rotary marking device thereon, of an actuating shaft, and an abutment member thereon in the path of movement of the work, operative connections between said actuating shaft and the operating shaft for rotating the

marking device to operative position with relation to the work, and frictional means on the marking device for co-action with the work for operating the marking device.

4. The combination with a printing-wheel shaft and printing wheel having an interruption thereon, of an actuating shaft and an abutment arm thereon in the path of movement of the work, an operatively connected spring for holding said actuating shaft in normal position, a clutch device on the printing-wheel shaft, operative connections between said actuating shaft and clutch device for bringing the printing wheel to operative position, and friction means on the wheel for co-action with the work for operating the printing wheel.

5. The combination in a printing machine with a shiftable printing-wheel shaft and printing wheel thereon, a clutch device on the shaft and selective means for engaging the device and shaft, an actuating shaft and means co-acting with the work for moving the actuating shaft, operative connections between the actuating shaft and clutch device for bringing the printing wheel to operative position, and means actuating by the work for operating the printing wheel.

6. In a printing machine the combination with a longitudinally shiftable printing-wheel shaft and a reversible printing wheel thereon, of a loose clutch device on the shaft, spaced clutch members on the shaft for selective engagement with said device, operative means connected with the clutch device for bringing the printing wheel to operative position, and means for operating the wheel.

In testimony whereof I affix my signature.
GEORGE W. ERICKSON.