

W. R. RAE.  
 DEMONSTRATING MACHINE.  
 APPLICATION FILED JAN. 3, 1911.

1,029,223.

Patented June 11, 1912.

3 SHEETS-SHEET 1.

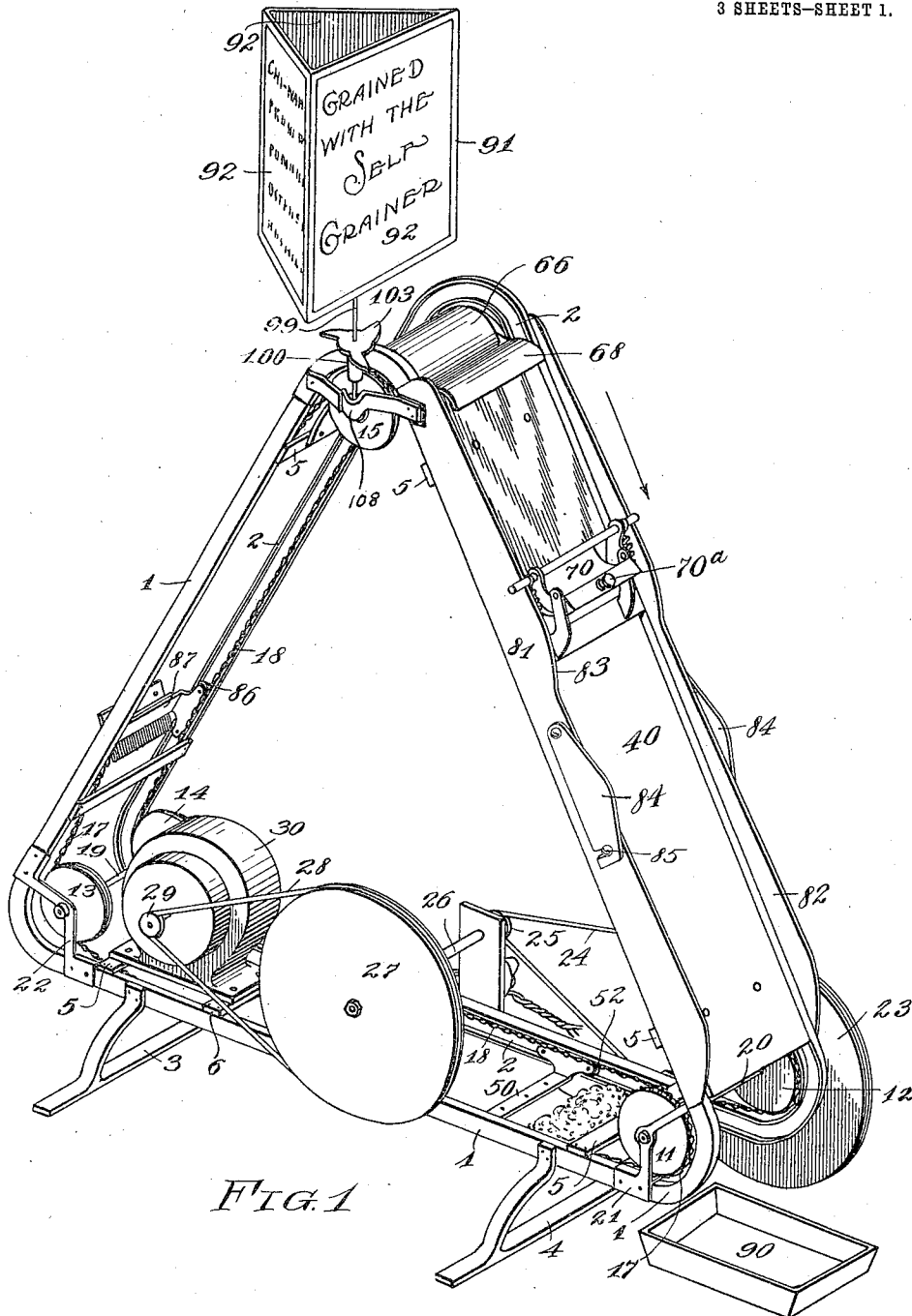


FIG. 1

Witnesses:  
 Brennan West.  
 Oliver M. Kappler.

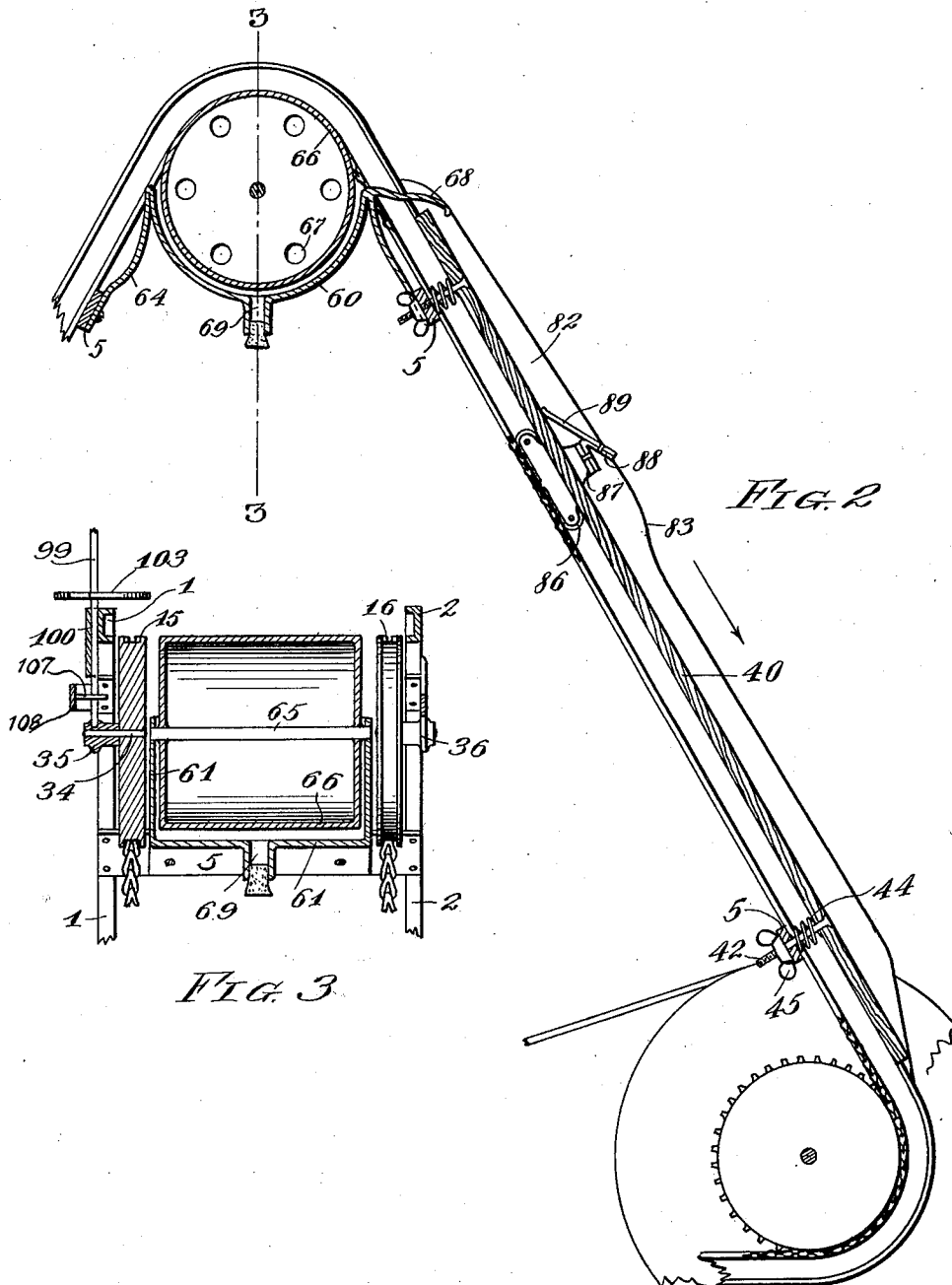
Inventor,  
 W. R. Rae,  
 By Albert H. Bates,  
 Attorney

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3 SHEETS-SHEET 2.



Witnesses:

Brennan B. West.  
 Oliver M. Kappeler.

Inventor,

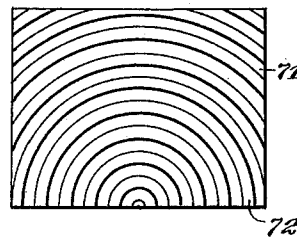
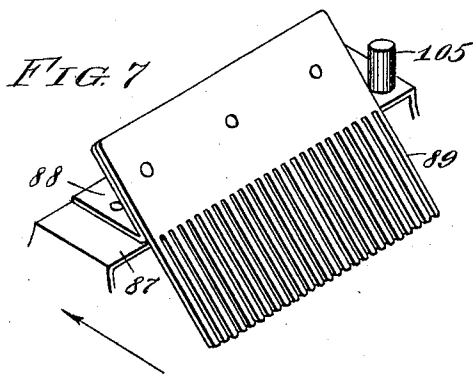
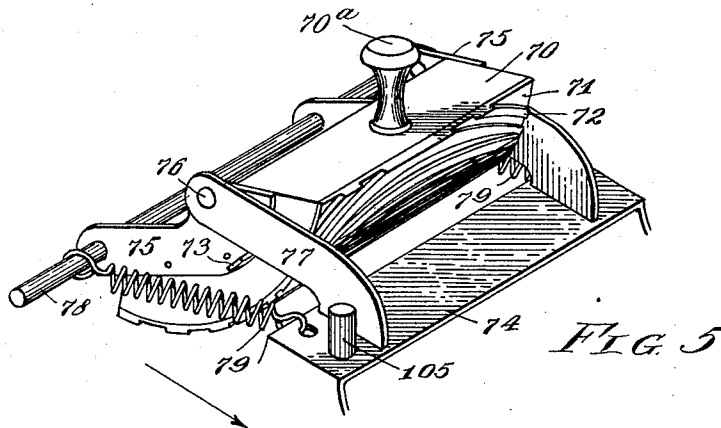
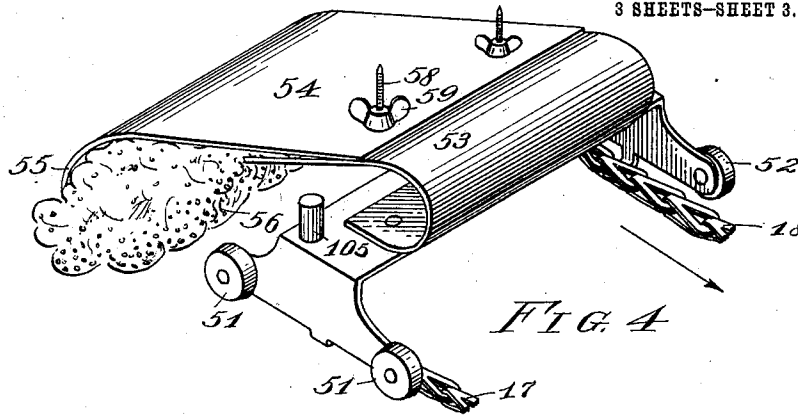
Walter R. Rae,  
 By Albert H. Fahn,  
 Attorney

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3 SHEETS—SHEET 3.



Witnesses:  
 Bonnamant West.  
 Oliver M. Kappler.

Inventor:  
 Walter R. Rae,  
 By Albert H. Davis,  
 Attorney

# UNITED STATES PATENT OFFICE.

WALTER R. RAE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE OHIO VARNISH COMPANY,  
OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## DEMONSTRATING-MACHINE.

1,029,223.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed January 3, 1911. Serial No. 600,546.

*To all whom it may concern:*

Be it known that I, WALTER R. RAE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Demonstrating-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to a machine adapted for a store window display, or similar purposes, and designed to illustrate the effect of successive operations on an article.

In the particular form shown, it is designed to illustrate the application and manipulation of graining material to a suitable panel. In accomplishing this I have provided means for holding the panel and means for successively applying thereto graining material and then for properly manipulating the material to produce the grain and then for removing the grain and replacing it with fresh material for the next cycle of operations. This is effected by various tools caused to travel in a continuous circuit and pass successively in contact with the panel. Combined with the tools, their driving mechanism and the mechanism for holding the panel, is suitable mechanism for giving a rocking movement to the graining tool proper, mechanism for continuously supplying the fresh graining material, and mechanism for displaying a changeable instruction or advertisement relevant to the graining operation.

The invention, accordingly, may be best summarized as consisting of the combinations of coöperative elements herein illustrated and described and definitely set out in the claims.

In the drawings, Figure 1 is a perspective view of my demonstrating machine complete; Fig. 2 is a sectional side elevation of a portion of the same; Fig. 3 is a vertical transverse section along the line indicated by line 3—3 of Fig. 2; Fig. 4 is a perspective view of the device for applying the graining compound in the first instance; Fig. 5 is a perspective view of the graining tool which gives the first manipulation to the graining compound; Fig. 6 is a development of the curved face of that tool; Fig. 7 is a perspective view of the graining comb,

which gives the second graining operation to the compound.

The frame of my machine, as shown in Figs. 1, 2 and 3 consists of two parallel channel-shaped members, each extending in a triangular course with rounded corners and held in vertical planes with their flanges projecting toward each other. The channel-shaped members are designated 1 and 2 respectively. These are supported at the bottom by a pair of brackets 3 and 4 and braced at various points by cross bars 5.

Within the frame near each rounded corner is a pair of wheels 11 and 12, 13 and 14, and 15 and 16, one wheel of each pair being adjacent to the frame member 1 and the other wheels being adjacent to the frame member 2. Around the two sets of three wheels each thus provided extend, in a substantially triangular course, two endless sprocket chains, designated 17 and 18. At least one pair of wheels 11 and 12 is made with sprocket teeth whereby, by being rotated, it may positively drive the chains. I have shown sprocket teeth on the wheels 11 and 12 at the lower right hand corner. These wheels are rigid on an axle 20 mounted in brackets 21 carried by the respective sides of the frame. This axle is driven by suitable means, that shown being a sheave 23 on the axle which is belted down by a belt 24 to a pulley 25 on the shaft 26 which carries a sheave 27 which is again belted down by a belt 28 to a pulley 29 on the armature shaft of a motor 30. This motor is shown as secured to one of the cross brace bars 5 and an additional bar 6. The wheels 13 and 14 may be conveniently mounted on an axle 19 carried in brackets 22 secured to the frame. The wheels 15 and 16 are preferably mounted on short studs, as 34 (Fig. 3) carried by cross members 35 and 36 which are secured to the two channels 1 and 2 near their uppermost portions. The construction described enables the motor to continuously drive the two sprocket chains in unison. The various devices which act on the panel to be grained are carried by these chains, as will be presently described.

40, in Figs. 1 and 2, designates the panel which is to be grained. It extends up and down that edge of the triangular frame down which the chains travel. The panel

40 is preferably a strip of wood and it is held in place by bolts 42 which extend near each end through brace bars 5 at that portion of the frame. Surrounding these bolts and between the brace bars and panel are springs 44. Screwing onto the bolts on the inner side of the brace bars are thumb nuts 45. By this means the panel is yieldingly held in position and may be adjusted in or out, as desired, to give the proper pressure of the graining tools traveling over it, as hereinafter described.

The panel 40, in demonstrating distemper graining, has on it a usual painted ground coat. The operation of this machine applies to the panel a distemper graining compound, then grains such compound with a rocking graining tool and then with a blending comb, and then the cycle is repeated, fresh graining material being supplied which obliterates the previous grain. Accordingly, the first device to be logically described is that for applying the graining material to the panel. This device includes a traveling carriage having a sponge and is illustrated in Figs. 1 and 4. In these views, 50 represents the carriage which has four rollers in two pairs, 51 and 52. The rollers 51 lie in the recess of the channel 1 while the rollers 52 are in the channel 2. To the cross portion of this carriage is secured a wide, approximately U-shaped, spring plate 53, and mounted on this spring plate and overhanging its free end is a second spring plate 54 which has its free end curved, as shown at 55 (Fig. 4). These two spring plates act as a clamp to hold a sponge 56, a portion of this sponge being engaged between the plates, but the most of the sponge resting on the surface of the plate 54 and having an exposed portion which, in its travel, may engage the panel 40. These two plates 53 and 54 are clamped together adjustably by bolts 58 and thumb nuts 59. This enables the sponge to be taken out and replaced whenever desired and to be held with the desired tightness.

Mounted within the upper curve of the triangular frame is a substantially semicylindrical trough 60 which has semicircular ends 61. This trough is shown as being mounted on the cross bars 5 by reason of wings 64 extending downwardly from its upper edge and secured to the cross bars. Mounted in the ends 61, at the center of curvature, is an axle 65 on which is secured a drum 66 having its surface stand some distance from the inner surface of the trough 60 and having holes 67 in its ends. The graining material is placed in the trough 60 and passes through the lower holes 67 of the drum into the lower portion thereof.

As the sponge 56 travels about its course it passes over and in contact with the upper portion of the drum 66, the lower portion

of which is immersed in the graining material. Accordingly, the sponge takes off the graining material from the drum in the successive trips of the sponge, and in traveling down the panel 40 applies the graining material thereto in an approximately even coat, illustrative of the manner of applying the graining compound with an ordinary paint brush. The upper end of the panel is protected by a shield 68 extending from the trough so that the material is not wiped off at the extreme edge of the board. The trough is provided at its lower portion with a draining opening 69, by which it may be emptied and cleaned, this opening being normally closed by a suitable plug.

After the graining material has been applied to the board by the sponge traveling down the panel, the next operation is for the graining tool to travel over the board and rock thereon. This tool is illustrated in Figs. 1, 5 and 6 and consists of a suitable head 70 having on its under surface a rubber graining pad 71 with suitable ribs 72 which may be concentric, as shown in Fig. 6. This tool is pivotally mounted in a carriage 74 which has rollers (not shown) similar to the rollers 51 and 52 and is anchored to the two sprocket chains 17 and 18. As shown, I have secured to the two ends of the head 70, plates 75 which are pivoted at 76 to brackets 77 rigidly projecting from the carriage cross plate 74. Near their free ends, the arms 75 carry a rod 78. Connecting this rod and the carriage frame are tension springs 79 which tend to draw the rod toward the frame. The plates 75 are provided with ears 73 which, by engaging the under side of the brackets 77, form stops limiting the movement of the tool in that direction. As this tool 70 is drawn downwardly over the panel 40, the projecting end portions of the rod 78 rest on a pair of side plates 81 and 82 secured to the channels 1 and 2, respectively, on the opposite edges of the panel. The exposed edge of these side plates is made more or less irregular in the form of a stationary cam or wedge which acts on the rod 78 to rock the graining tool 70 while it is being drawn along. This cam action may be gradually increasing and abruptly decreasing, as illustrated at the upper portion of the side plates, 83 designating the decreasing cam face. This will allow the roller to rock gradually in one direction and return more suddenly. The action given to the tool by these cams,—namely, causing it to rock while it is being drawn along the panel,—is similar to the action it has in the manual operation of graining wherein a tool similar to that shown at 70 is grasped by the operator's hand and drawn over a surface and at the same time rocked thereon.

The specific tool shown at 70 is not claimed herein by itself, it being the inven-

tion of Mr. Lamb and covered in his Patent No. 983,627. As such tools are provided with a knob-like handle on their upper portion, I have shown such handle at 70<sup>a</sup>. In the hand use of such tool, the operator's fingers straddle this knob and the thumb and little finger engage the respective ends of the tool, the other fingers resting on the curved upper surface in front of the knob. The movement given by my machine to the tool is very similar to the movement of a tool so held and manually operated.

I may regulate the amount of rocking of the graining tool by adjusting the cam edge. This may be accomplished by additional opposite plates, as 84, pivoted to the sides 81 and 82 and held in active position by suitable detents, as the outward projections 85 on the side plates. A little springing of these additional plates allows them to pass downward over the projections to idle position.

After the graining tool has passed over the board, it is desirable to pass a blending comb over it and the structure for accomplishing this is shown in Figs. 1, 2 and 7. In these views, 87 designates the comb carriage which has rollers 86 lying within the two channels similar to those already described and is anchored to the two sprocket chains. On the cross bar of the carriage 87 is a bracket plate 88 on which is rigidly mounted the comb 89, projecting diagonally. After the graining tool has cleared the lower end of the panel, the comb engages the panel and is drawn down it, in the position it would have when used by hand, as illustrated in Fig. 2, thus completing the operation. Following this completion of operation, the sponge again acts, wiping out the grain and applying fresh graining material and the cycle is thus repeated. Any graining material which drips off the lower end of the panel may be caught in a suitable receptacle, as illustrated at 90 in Fig. 1.

It may be desirable to display an advertisement of graining directions or similar matter corresponding to the operation being at that time performed on the panel, and for this purpose I may provide the prism-like rotatable holder 91, illustrated in Fig. 1. As shown, this structure consists of three frames carried by an upright rod 99 and adapted to hold panels of such explanatory matter designated 92.

As illustrated in the drawing, the rod 99 bears at its foot in the cross member 35 (see Fig. 3) and above that in a block 100 on the outside of the channel member 1 at its topmost portion. Above the upper bearing, this rod has rigidly secured to it a star wheel 103. Each of the three traveling carriages 50, 74 and 87 is provided with a pin 105, and this pin, as the carriage travels along the topmost portion of the frame,

strikes against the inner face of the star wheel and rotates the display device a third of a circumference, thereby turning it to display a fresh face toward the side where the panel 40 is located.

To hold the display device against accidental displacement, and to prevent its spinning, I may provide the shaft 99 with a triangular block 107 located between the two bearings 35 and 100, and against this block may bear a detent spring 108 secured to the frame 1.

It will be seen from the above description that my machine is adapted to display, in a very effective manner, the results which may be accomplished by certain materials and tools and to give a visual demonstration of the operation required to obtain the results manually. In Fig. 1 of the drawings, the portion of the panel 40 above the tool is shown in its grained form, and the portion below the tool as it exists after the application of the material but before the graining roller has traveled over it.

While the machine has been illustrated and described with reference to graining, it will be understood that its use is not limited thereto, as it may be employed, with corresponding adaptations, for illustrating or demonstrating the action of various materials or operations.

Having thus described my invention, what I claim is:—

1. In a demonstrating machine, the combination of means for automatically performing repeating cycles including the application of material, the manipulation of such material, and the obliteration of the effect produced by such manipulation.

2. In a machine of the class described, the combination with means for holding a sample to be treated, and means for automatically applying graining material thereto, automatically manipulating such material to produce an effect illustrative of graining and automatically obliterating such effect.

3. In a machine of the class described, the combination with means for holding a sample to be treated, and means for automatically applying graining material thereto, automatically manipulating such material to produce an effect illustrative of graining and automatically obliterating such effect, means for continuously repeating such three-operation cycle.

4. The combination, with means for holding a panel, and mechanism for automatically drawing a graining tool across such panel and rocking it during such movement.

5. The combination, with means for holding a panel, of means for automatically applying graining material thereto, means for automatically moving a graining tool across such material after it is applied, to give it a grained effect.

6. The combination, with means for holding a panel, of means for automatically applying graining material thereto, means for automatically moving a graining tool across such material and rocking it during such movement.

7. The combination of a panel, a graining tool, mechanism for drawing the tool across the panel, and means for yieldingly forcing the panel toward the tool.

8. The combination of a panel, springs and adjustable bolts and nuts for holding it yieldingly in adjusted position, a graining tool, and means for moving it along the panel.

9. The combination of a panel, springs and adjustable bolts and nuts for holding it yieldingly in adjusted position, a graining tool, means for moving it along the panel and rocking it during such movement, and means for applying graining material to the panel in advance of the tool.

10. The combination of a panel, means for moving a graining tool over it, and adjustable means for giving the tool a variable rocking.

11. The combination of a panel, a graining tool, means for moving it along the panel, and a cam with an adjustable edge for rocking said tool variable amounts during such movements.

12. In a machine of the character described, the combination, with means for holding a panel to be treated, of means for applying material thereto, a graining tool, an automatically movable carriage on which the same is pivotally mounted, means for moving said carriage to draw the tool over the panel, and a stationary cam adapted to act on the tool to rock it during such movement.

13. The combination, with means for holding a panel, of means for automatically applying graining material thereto, means for automatically moving a graining tool across such material and rocking it during such movement, and means for automatically moving a graining comb across the material following the rocking graining tool.

14. In a demonstrating machine, the combination of means for holding a panel, a reservoir for material, and means traveling in a continuous circuit for applying such material to the panel and for then manipulating it on the panel.

15. The combination of means for holding a panel, a reservoir for material, means traveling in a continuous circuit for applying such material, then manipulating the same, then applying fresh material, thereby obliterating the effect of the manipulation, then manipulating the fresh material, and so on continuously.

16. In a machine of the character described, the combination of means for holding a panel, a reservoir for material, an absorbent member adapted to be supplied thereby, means for moving it in contact with the panel, a manipulating member, and means for thereafter moving it in contact with the panel.

17. The combination, with means for holding a panel, of a reservoir for material, an absorbent member and a graining tool, both carried by an endless flexible member, means for continuously driving such flexible member to cause the absorbent member and the graining tool to engage the panel, and means for periodically supplying the absorbent member from the reservoir.

18. In a machine of the character described, the combination of means for holding a panel, a reservoir for material, a rotary drum dipping in said reservoir, an absorbent member, means for moving it in contact with the drum and the panel, a manipulating member, and means for moving it in contact with the panel.

19. The combination, with means for holding a panel, of a reservoir for graining material, a drum dipping in said reservoir, an absorbent member, a graining tool and a graining comb, means for causing the absorbent member and the tool and comb to travel continuously in a circuit successively engaging the panel, the absorbent member also engaging the drum previous to its engagement with the panel.

20. The combination, with a continuous trackway, of a graining tool, means for causing it to travel around said trackway, a panel on which the graining tool successively acts during such travel, and means for rocking the graining tool during its engagement with the panel.

21. The combination of a pair of parallel continuous trackways, carriages mounted therein, one carriage having an absorbent material and another carriage a graining tool, a pair of continuously driven sprocket chains for causing said carriages to travel about the trackway, a panel with which the absorbent material and the graining tool co-act, and a reservoir for graining material adapted to supply such material to the absorbent member.

22. In a demonstrating machine, the combination of an endless trackway, a series of carriages mounted therein, endless sprocket chains, a motor and gearing connected with the sprocket chains, tools mounted on said carriages, a panel with which such tools co-act, one of such tools being mounted in a rocking manner on its carriage, and means for rocking said tool while the sprocket chains are drawing it along said panel.

23. In a machine of the character de-

scribed, the combination, with means for  
holding a panel to be treated, of means for  
applying material thereto, a graining tool,  
an automatically movable carriage on which  
5 the same is pivotally mounted, a pair of  
sprocket chains anchored to said carriage to  
draw the tool over the panel, a motor and  
sprocket gearing for driving said chains,

and a cam adapted to act on the tool to rock  
it during such movement.

In testimony whereof, I hereunto affix my  
signature in the presence of two witnesses.

WALTER R. RAE.

Witnesses:

ALBERT H. BATES,  
J. B. HULL.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."