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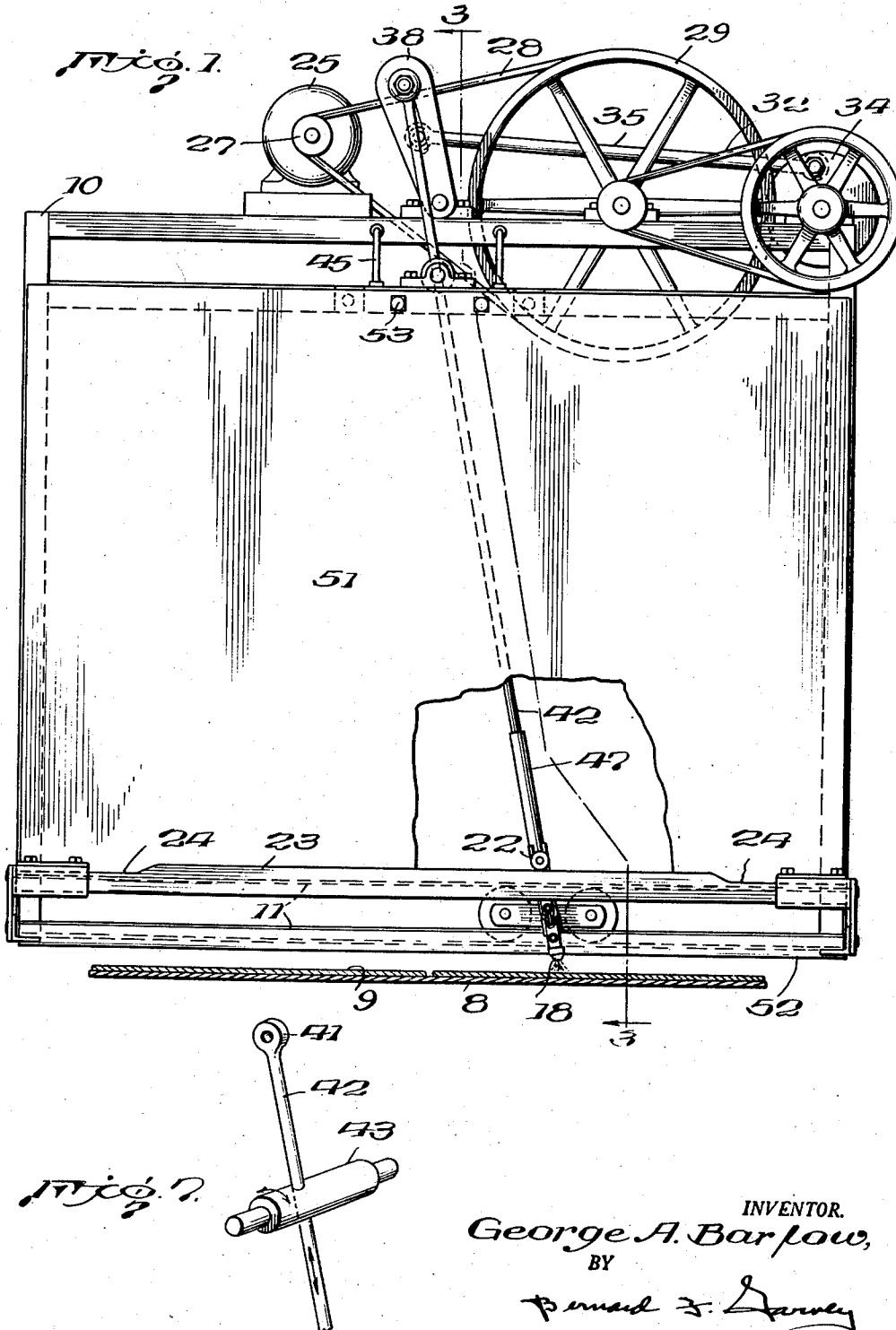
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2,369,424

AUTOMATIC SPRAY MACHINE

Filed May 3, 1943

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

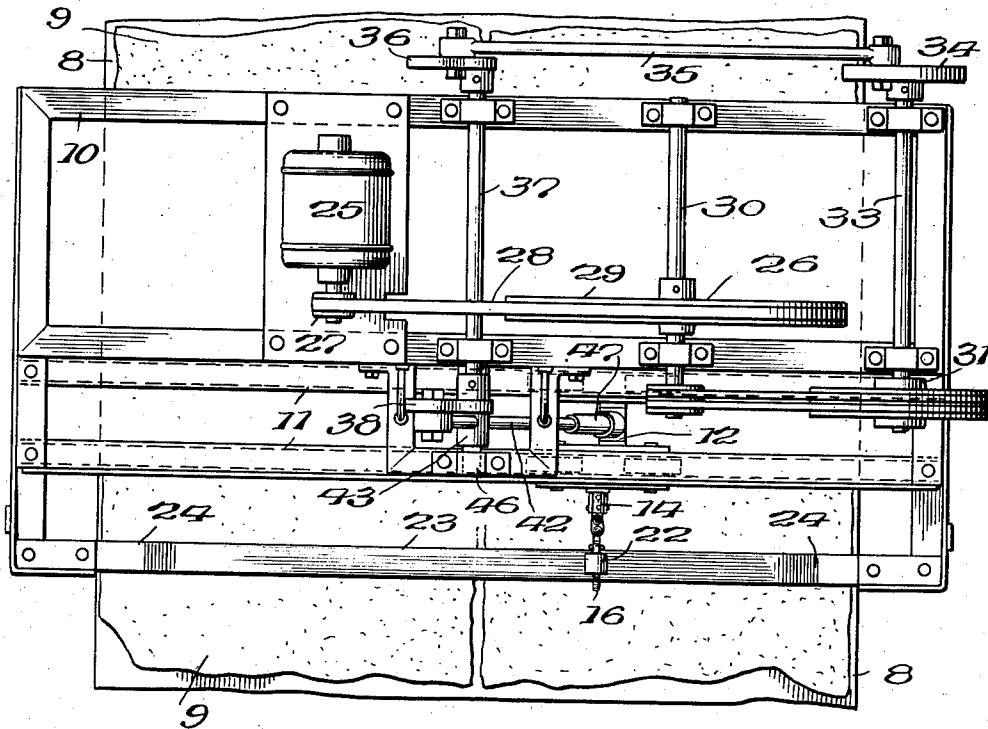


Fig. 2.

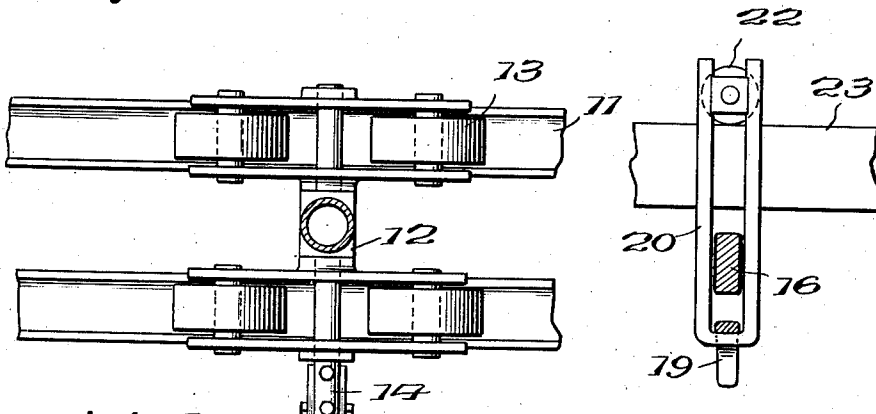
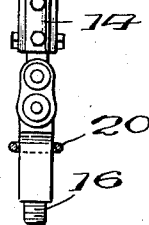


Fig. 5.

Fig. 6.



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AUTOMATIC SPRAY MACHINE

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2 Claims. (Cl. 91—45)

The present invention comprises an automatic spray machine, especially adapted for use in spraying hides, to replace manually operated spray guns and the like, now commonly used in tanneries.

Objects of this invention are to provide an automatic machine which completely removes the necessity for human intervention except to stop and start the machines; to provide a machine in which the lateral extent of the spray is coextensive with the sides of the conveyor which carries the hides to be sprayed, eliminating waste or spray material; to provide a spray in which the discharge nozzle is at all times in close proximity to the hides insuring uniform application of spray material to the hides; and to include in the machine baffle means to shield the machine from the spray material, eliminating periodical removal of the encrustation, by mechanical and chemical agencies, which is now necessary, the baffle likewise protecting the operator from contact by the spray material.

Under actual working conditions my machine, coacting with a standard conveyor, practically eliminates unsprayed or partly sprayed hides. Before the advent of the present invention, it was not uncommon for fifty percent (50%) of the hides to be returned for refinishing. With this invention, due principally to the uniform distribution of the spray material, hides of uniform grade result. In addition, spraying of the hides is greatly expedited to the extent that under favorable conditions two operators can turn out more than twice the work done by three operators, using the hand spray method. With the machine of this invention a saving of about one-third ($\frac{1}{3}$) of the spray material is effected and the operators work under much healthier conditions.

Other objects of the invention will be apparent from the following description of the present preferred form of the invention taken in connection with the accompanying drawings wherein:

Figure 1 is a front elevational view of a machine constructed in accordance with the present invention, illustrating its application as applied to a hide carrying conveyor, part of the machine being broken away to disclose details;

Figure 2 is a top plan view of the same;

Figure 3 is a vertical sectional view taken on line 3—3 of Figure 1, looking in the direction of the arrows, showing to advantage the manner of mounting the spray gun carriage;

Figure 4 is a detail fragmentary sectional view of the carriage, operating plunger and cylinder;

Figure 5 is a detail fragmentary sectional view taken on the line 5—5 of Figure 3 looking in the direction of the arrows, illustrating the manner of mounting the spray gun carriage on the lower tracks of the machine;

Figure 6 is a detail fragmentary sectional view taken on the line 6—6 of Figure 3, looking in the direction of the arrows and showing to advantage the spray gun trigger trip mechanism; and

Figure 7 is a detail fragmentary perspective view of the plunger and rocker arm.

For the purpose of illustrating the application of this invention, I have in the drawings shown a conveyor 8 of conventional design. The conveyor is of the endless type commonly used in tanneries for transporting hides, as illustrated at 9, the hides being manually coated in the finishing operation, with a suitable spray material preparatory to conveying the hides to the heating ovens in a manner well known in the art.

The machine of the present invention is adapted to be positioned transversely across the conveyor 8, adjacent one end of the latter, especially as shown in Figure 2 of the drawings. My machine consists of a frame 10 which may be of any desired shape and constructed from any suitable material, sufficient to withstand the stress of the operating parts of the machine hereinafter referred to. The frame is presently shown to be of skeleton construction formed from angle irons. The bottom of the frame, at one side thereof, is equipped with tracks 11, each track consisting of an upper and lower run fixedly secured to the ends of the frame as shown in Figure 2. The tracks are adapted for the reception of a carriage generally designated 12, the carriage including rollers 13 which complement and are movably engaged with the tracks 11. The carriage also includes a supporting arm 14 to which is detachably connected a spray gun 15 of substantially standard construction. The gun includes the usual air inlet 16, spray inlet 17 and spray outlet or dispensing nozzle 18. The gun valve is operated in a manner known in the art, by a trip 19 which is operable to open the valve and permit the spray material to be ejected through the dispensing nozzle 18.

The present invention includes novel means for operating the gun, which means is automatic in its operation. This means consists of a link 20 one end of which is engaged with the trip 19 and the opposite end engaged with a shaft 21 which extends axially from a trip roller 22. The trip roller is mounted to ride on a runner 23, the latter forming a part of the frame 10. The upper face of the runner is offset at the terminals of the latter, as indicated at 24, to effect automatic closing of the spray gun valve, as the roller reaches the opposite ends of the runner. By this arrangement the spray is shut off before the side extremities of the conveyor have been reached.

The carriage 12 is reciprocated by suitable motive means carried by the frame 10, including a

motor 25. The motor control mechanism generally designated 26 includes a motor pulley 27, v belt 28 and a large fly wheel pulley 29, the latter being engaged with a shaft 30 carried by the top of the frame and shown to advantage in Figures 1 and 2. The shaft 30 is engaged with speed reducing mechanism 31 including pulley wheels of different ratio engaged by belts 32. A shaft 33 extends across the top of the frame in parallel relation to the shaft 30 and carries on one of its terminals, outside the frame, a driving crank 34 which latter is operatively connected through a rod 35 with an eccentric crank 36 mounted on one end of a driven shaft 37. The shaft 37 is in parallel relation to the shafts 30 and 33 and extends forwardly beyond the front of the frame into engagement with one end of a rocker arm 38. The rocker arm is provided with a slot 39 in which a pin 40 is adjustably mounted, the pin being engaged with the upper end 41 of a plunger 42. The plunger extends downwardly in front of the frame, as shown to advantage in Figures 1 and 2, being mounted for movement in a rocker shaft 43 carried by a supplemental frame 44 which projects outwardly from the front of the frame 10 and is suitably supported thereon by braces 45. The opposite ends of the rocker arm are formed to provide pintles which are mounted for movement in trunnions 46. The lower terminal of the plunger 42 is reciprocally mounted in a cylinder 47, the cylinder issuing from a nipple 48 formed on the carriage 12 and extending upwardly from the latter, as illustrated to advantage in Figure 4. The bore of the cylinder corresponds with an opening in the carriage which latter communicates through a bushing 49 with a valved vent casing 50 to relieve the air resistance on the plunger on the extreme downward stroke of the latter. I have found that this construction eliminates undue strain and wear on the rocker arm 38 and its associate mechanism. When the motor 25 is brought into operation, the carriage 12 is reciprocated in its tracks 11 to traverse the conveyor 8. The throw of the plunger may be adjusted in an obvious manner and the speed of the motor controlled through the instrumentality of the mechanism just described.

Heretofore in this art the hides were first placed on the conveyor by the operator and sprayed with an air gun. This method resulted in the spray material coming in contact with the operator, the conveyor and associated mechanism. The material solidifies and after each day's operation is removed by scraping and chemical agents. In order to eliminate the possibility of the spray material contacting the machine of the present invention, or the operator, I employ suitable baffle means consisting of a vertical plate 51 and a horizontal plate 52. The plate 51 extends completely across the front of the machine and is detachably engaged to the supplemental frame 44, as indicated at 53. The lower end of the plate 51 may be anchored in any suitable manner on the upper run of the outer track 11 as illustrated in Figure 3. The horizontal plate 52 has its forward end bent upwardly at right angles in front of the lower run of the outer or forward track 11. The plate 52 may be secured to the bottom of the frame in any desired manner. This leaves, on the front of the machine, only the space between the forward runs of the track through which the carriage arm 14 extends.

In use of this invention, my spray machine is mounted to extend across the hide carrying con-

veyor and may be suitably anchored. The operator stands at the rear of the machine and deposits the hides, to be finished, on the conveyor 8. The hides move on the conveyor beneath the machine and after having passed the front of the machine, are impinged by the spray material dispensed from the nozzle 18 of the spray gun. Upon reference to Figures 1 and 4 of the drawings, it will be noted that the outlet end of the nozzle 18 is in very close proximity to the hides, preventing waste of the spray material and insuring uniform application of said material, as the spray gun is reciprocated across the conveyor. The dispensing nozzle remains at all times in the same horizontal plane and the volume of sprayed material is constant, until the spray gun nears the lateral extremities of the conveyor. At these points the gun is automatically cut off to correspondingly prevent the spray material from being dispensed, until the cycle of operation of the carriage has been completed and the return movement begun. The cut off is effected by operation of the trigger 19. When the roller 22 moves into the depressed zone 24 at each end of the runner, the link 20 gravitates, permitting the trigger 19 to move downwardly, in which position it remains, until the return movement of the carriage actuates the roller 22 to a point beyond the depressed zone of the runner. I have in this way been able to eliminate waste of the spray material.

Although I have herein shown and described a preferred embodiment of this invention, it is of course to be understood that various changes may be made therein, within the scope of the claims hereto appended.

What is claimed is:

1. A mechanism for finishing hides comprising a support for the hides, a spray machine mounted over said support and including a frame, a track way carried by the lower end of the frame and a reciprocatory carriage movable along said track way, oscillating means carried by the upper portion of the frame and connected to said carriage for imparting reciprocatory movement thereto, a nozzle carried by said carriage and spaced laterally therefrom, a front baffle plate secured to the frame and extending into the space between the carriage and nozzle and a bottom baffle plate extending below the track ways and spaced from the lower end of the front baffle, said space between the baffles permitting the nozzle on the carriage to move along the track ways.

2. A mechanism for finishing hides comprising a support for the hides, a spray machine mounted over said support and including a frame, a track way carried by the lower end of the frame and a carriage movable along said track way, means for moving said carriage along the track way, a supporting arm on said carriage and projecting laterally outwardly therefrom, a nozzle fixed to said arm in spaced relation to said carriage, a vertical front baffle plate secured to the frame and extending into the space between the carriage and nozzle and a bottom horizontal baffle extending below the track ways and having its forward end spaced from the lower end of the front baffle to provide a slot through which the nozzle supporting arm extends, said slot between the baffles permitting movement of the nozzle along the track ways.