No. 728,998. PATENTED MAY 26, 1903.

F. SEJNOHA & T. PERKINS.

CAN PAINTING MACHINE.

APPLICATION FILED APR. 16, 1900.

NO MODEL. 3 SHEETS—SHEET 1.

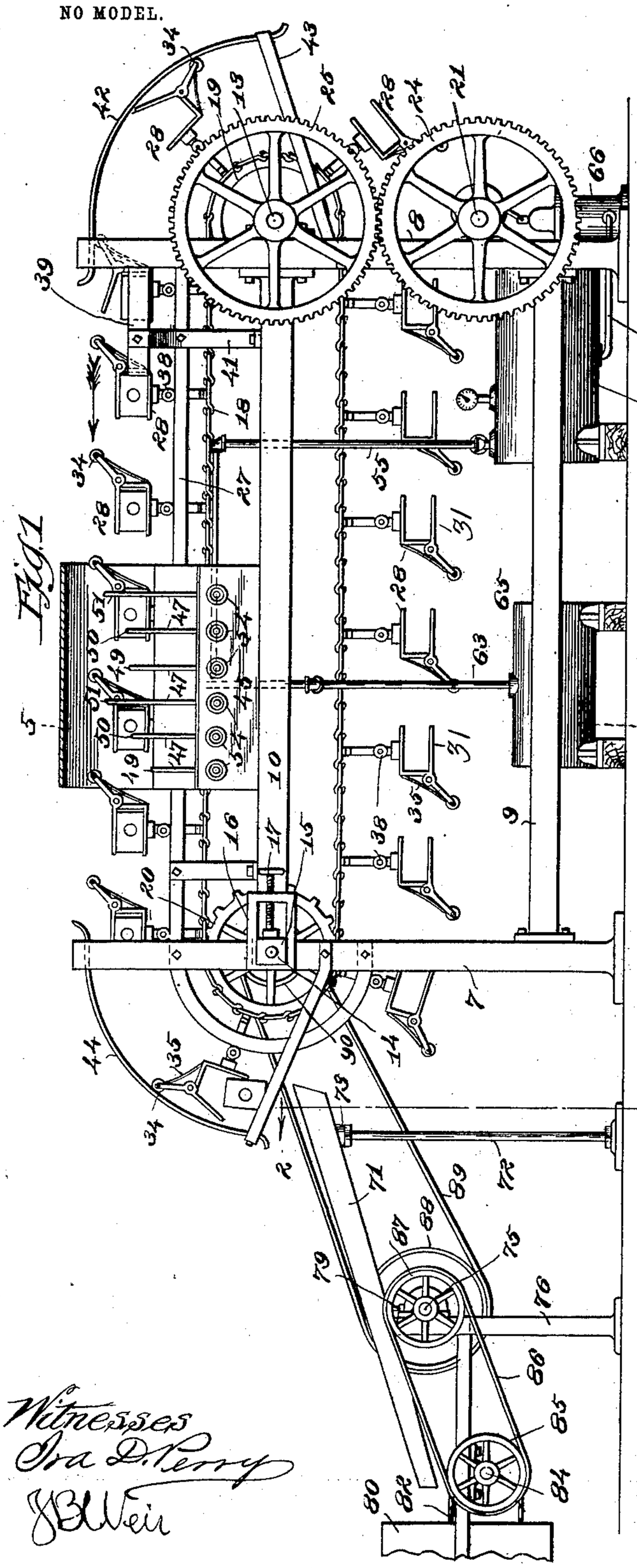

FIG. 1.

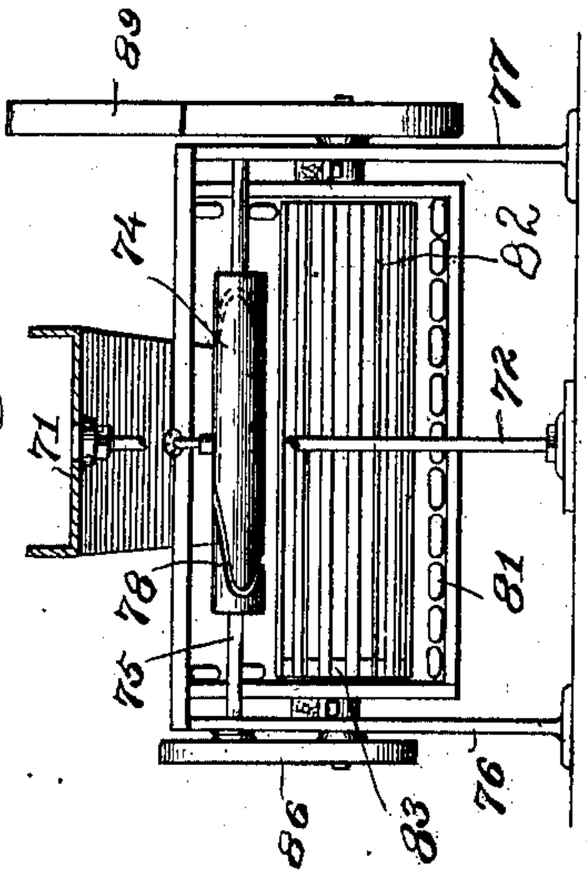

FIG. 2.

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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3.

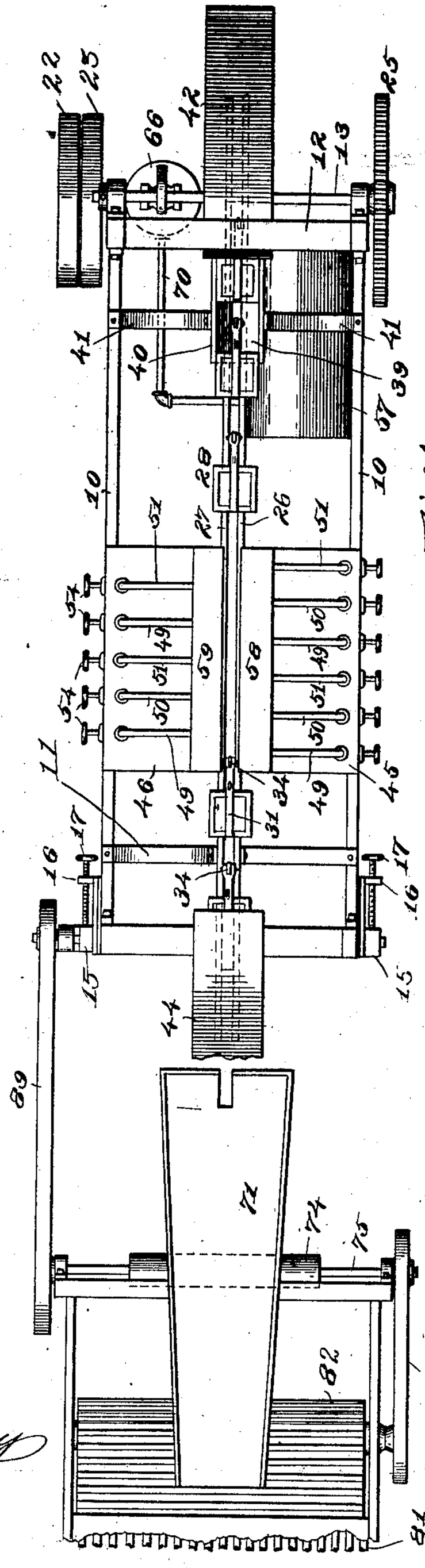
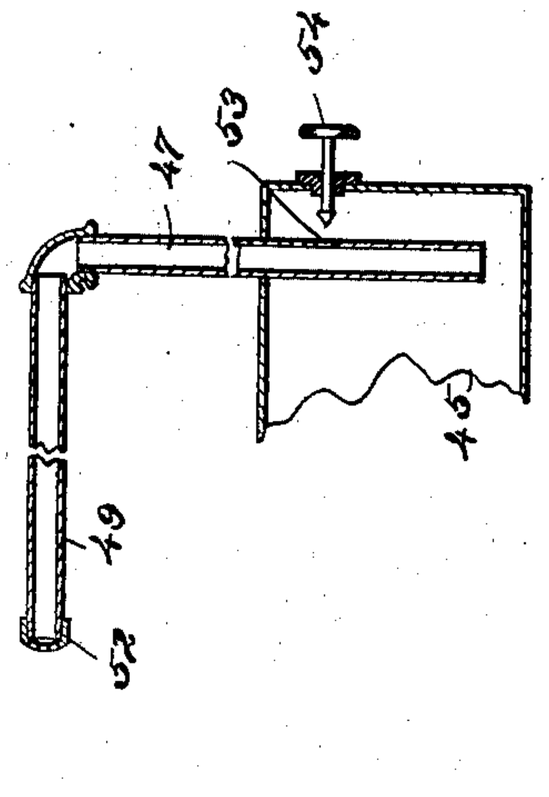


Fig. 4.



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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 6.

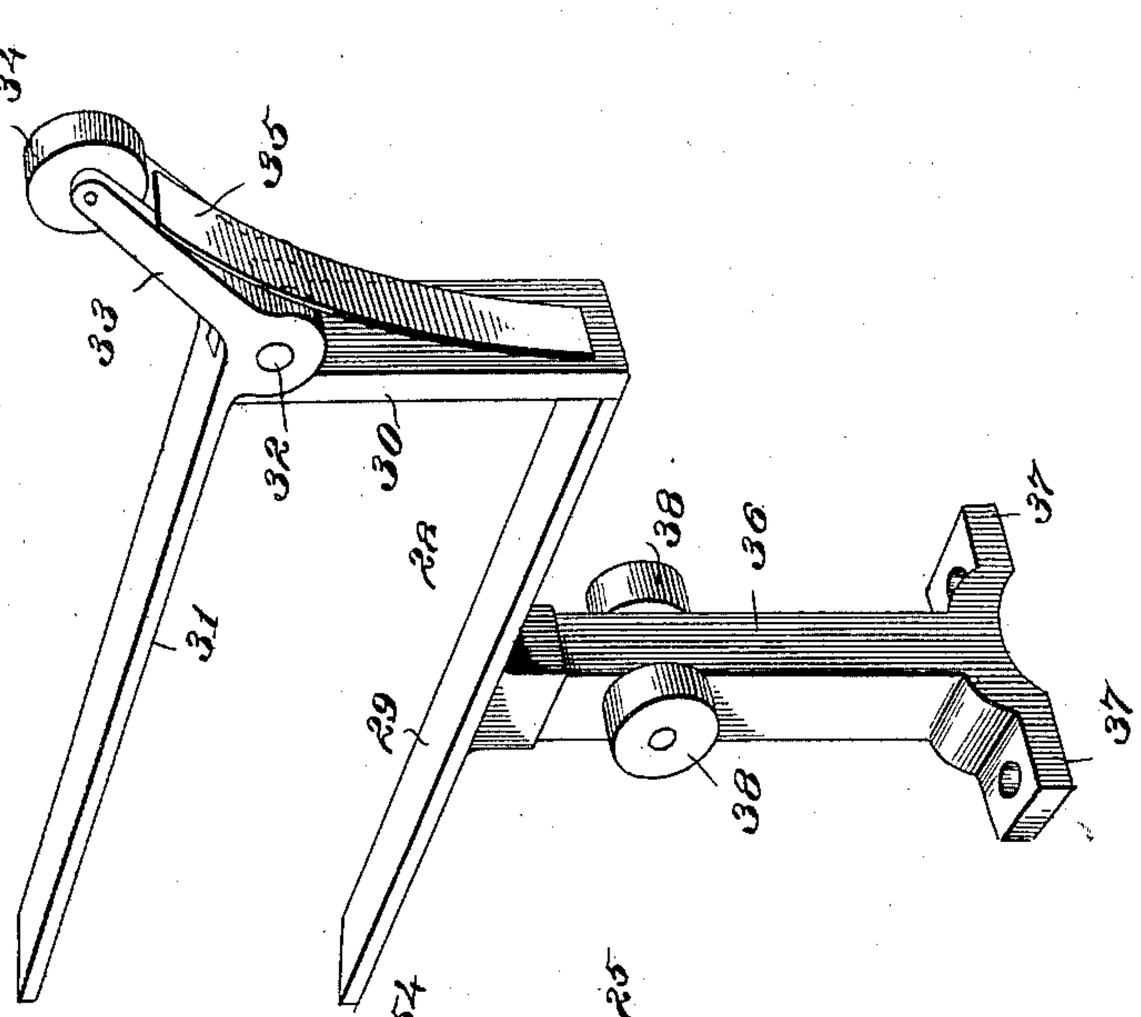
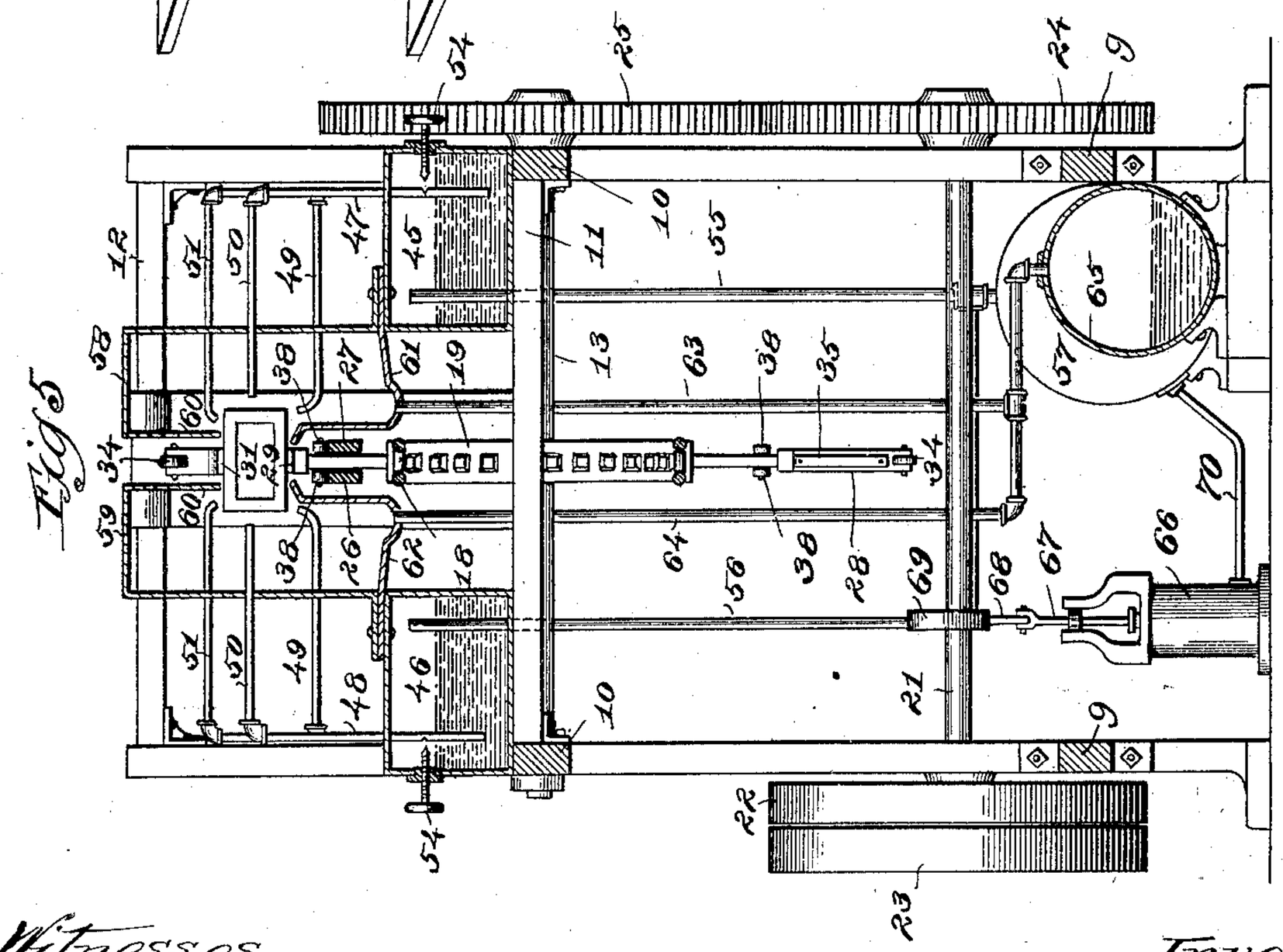


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK SEJNOHA AND THOMAS PERKINS, OF CHICAGO, ILLINOIS, ASSIGNORS TO THEMSELVES AND CHARLES H. EMERY, OF CHICAGO, ILLINOIS.

CAN-PAINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 728,998, dated May 26, 1903.

Application filed April 16, 1900. Serial No. 13,076. (No model.)

To all whom it may concern:

Be it known that we, FRANK SEJNOHA and THOMAS PERKINS, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Can-Painting Machines, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to machines for painting cans and similar articles, and has for its object to provide an improved machine which will be well adapted for efficiently and expeditiously painting such articles.

To this end it consists in providing a carrier adapted to receive, conduct, and discharge cans and in suitable painting mechanism by which paint is properly applied to the cans as they are conducted by the carrier.

It further consists in mechanism by which the cans are automatically taken by the carrier and discharged therefrom.

It further consists in improved means for conducting the cans to drying mechanism and for drying cans after they have been painted.

It consists also in means for automatically operating the painting mechanism by the operation of the carrier and in certain details of construction, which will be hereinafter pointed out.

That which we regard as new will be set forth in the claims.

Referring to the drawings, Figure 1 is a side elevation of our improved can-painting machine. Fig. 2 is a vertical cross-section on line 2 2 of Fig. 1. Fig. 3 is a plan view. Fig. 4 is a sectional view illustrating the paint-reservoir and spraying-pipe. Fig. 5 is a cross-section on line 5 5 of Fig. 1, and Fig. 6 is a perspective view illustrating one of the can-holding frames.

In the drawings, 7 8 indicate standards which with longitudinal bars 9 10 and transverse bars 11 12 constitute the frame of the machine.

13 14 indicate transverse shafts supported in suitable bearings by the bars 8 and 7, respectively, preferably substantially in line with the longitudinal bars 10. The bearings of one of the shafts, as 14, are made adjustable, as shown in Fig. 1, wherein said shaft is mounted in bearings 15, adjustable in frames 16 by means of adjusting-screws 17.

18 indicates a carrier consisting of an endless belt running on sprocket-wheels 19 20, mounted on the shafts 13 14, respectively. By adjusting the position of the shaft 14 the tension on the carrier may be regulated. The carrier 18 is driven from a main drive-shaft 21, supported by the standard 8, as shown in Fig. 1, and provided with fast and loose pulleys 22 23, as shown in Fig. 5. The shaft 21 carries a gear 24, which meshes with a similar gear 25, mounted on the shaft 13, as shown in Figs. 1 and 5. The shaft 21 may be driven from any suitable source of power and may be stopped and started at pleasure by shifting the drive-belt from one to the other of the pulleys 22 23.

26 27 indicate guide-rails arranged parallel with each other and extending longitudinally of the frame of the machine at substantially the center thereof, said rails being spaced a short distance apart, as shown in Fig. 5. They are also arranged a short distance above the upper surface of the carrier 18. The ends of the rails are bent substantially semicircular in contour, as shown at the rear end in Fig. 1, the other being concealed by the wheel 25. The carrier 18 is provided with a number of can-holders 28, which are best shown in Fig. 6. Said can-holders are of suitable shape to hold the cans to be painted. Where square cans are used, the holding portion of each can-holder is angular, consisting of a horizontal bar 29 and a vertical bar 30, arranged perpendicularly thereto. Opposite the horizontal bar 29 is provided a rocking bar 31, which is pivoted to the vertical bar 30, as shown at 32 in Fig. 6, and is provided with an inclined arm 33, projecting outwardly, as shown. Said arm carries a roller 34 at its rear end.

35 indicates a spring secured to the bar 30 and bearing against the arm 33 in such manner as to hold the bar 31 normally in a horizontal position parallel with the bar 29, forming a rectangular frame in which the can may be held. The upper end of the bar 30 lies under the bar 31 and forms a stop to limit the downward movement thereof, so that the bar 31 cannot move downward beyond a position

substantially parallel with the bar 29. Where round or other shaped cans are to be painted, the frame 28 is shaped accordingly; but its construction and operation is substantially the same as that above described.

The can-carrying frame is supported on a standard 36, secured at its upper end to the under side of the bar 29 and at its lower end to the carrier 18. For this purpose it is provided with laterally-projecting ears 37, adapted to be secured to the carrier either by rivets or screws. The standard 36 is of suitable width to pass freely between the rails 26 27, as shown in Fig. 5, and it is provided with rollers 38 at opposite sides, said rollers being so placed as to run on the upper surfaces of the rails 26 27, as shown. By this construction the can-carrying frame is held steadily in position and its movement is rendered smooth, so that the cans are properly presented to the painting mechanism and held in position while being painted.

The carrier carries the cans in the direction indicated by the arrow in Fig. 1, what may be termed the "inlet" end of the machine being at the right and the outlet end at the left.

39 40 indicate stationary can-supports consisting of angle-irons mounted on standards 41, which are secured to the frame of the machine near the inlet end thereof, as shown in Figs. 1 and 3. Said supports 39 40 are oppositely arranged at opposite sides of the path of the cans carried by the holders 28, as shown in Figs. 1 and 3, so that the cans may be placed on the supports 39 40 by the attendant in position to be taken by the can-carrying frames as they pass such supports.

42 indicates a cam-plate which is supported by a supporting-bar 43 and by the cross-bar 12, as shown in Figs. 1 and 3, said cam-plate being so placed as to engage the rollers 34 of the can-carrying frames and rock the bars 31 away from the bars 29, as shown in Fig. 1. The lower end of the cam-plate 42 is curved slightly to facilitate the action thereof. A similar cam-plate 44 is provided at the discharge end of the machine for releasing the cans after they have been painted to permit of their discharge from the can-carrying frames, as illustrated in Fig. 1.

45 46 indicate paint-reservoirs supported by the bars 10 between the ends of the frame of the machine. 47 48 indicate pipes communicating with the paint-reservoirs 45 46, respectively, said pipes having discharge-tubes 49 50 51, as shown in Fig. 5. The tubes 49 50 51 extend from their respective pipes 47 48 toward the center of the machine, terminating at opposite sides of the carrier, as shown. The tubes 49 have their inner ends turned upward, so as to direct the paint discharged from them against the under sides of the can at the ends thereof. The intermediate tubes 50 discharge paint against the ends of the cans, while the uppermost tubes 51 have their ends turned downward to paint the ends of the upper surfaces of the cans. Each of said tubes 49 50 51 is provided with a finely-perforated tip 52, as shown in Fig. 4, so that the paint may be discharged from it in a finely-divided condition. As shown in Figs. 4 and 5, each of the pipes 47 48 is provided with an inlet-passage 53 above the level of the paint in the reservoir, to which it is connected, and a valve 54 is provided, adjustable in the side of the reservoir, for opening and closing said passage. 55 56 indicate air-pipes, which lead from a compressed-air reservoir 57 to the upper portion of the paint-reservoirs 45 46, respectively. By this construction compressed air is supplied to said reservoirs above the paint and when the passages 53 are open may pass through the pipes 47 48 to the tubes 49 50 51 and be discharged through said tubes. By this construction each of the tubes 49 50 51 becomes an atomizer, so that the paint discharged is sprayed in a finely-divided condition upon the cans. The air-pressure in the paint-reservoirs above the paint further promotes the discharge of the paint. By adjusting the valves 54 the discharge of the paint may be accurately controlled.

58 59 indicate shields which extend over the inner ends of the tubes 49 50 51, as shown in Fig. 5, extending from the upper surfaces of the reservoirs 45 46, respectively, to points above the cans. Said shields 58 59 are each provided with a downwardly-extending lip 60, which lips lie in vertical planes which pass through the cans a short distance from their ends, and the lower edges of which lips terminate just above the cans, as shown. Said lips therefore prevent the application of paint to the cans except at and near their ends. 61 62 indicate similar shields, which protect the lower end portions of the cans. The shields 61 62 further serve to collect surplus paint and conduct it to return-pipes 63 64, which at their upper ends are connected with said shields and at their lower ends discharge into a paint-tank 65, as shown in Figs. 1 and 5.

In order to maintain a constant supply of compressed air, an air-pump 66 is provided, the piston-rod 67 of which is connected by a pitman 68 with an eccentric 69, mounted on the drive-shaft 21, so that by the rotation of said shaft the piston of the air-pump is operated. The compressed air thereby obtained is discharged through a pipe 70 to the air-reservoir 57, as shown in Fig. 5.

The cans discharged from the painting-machine are received upon an inclined bench 71, arranged opposite the discharge end of the machine, as shown in Fig. 1. The upper end of said bench is supported upon a standard 72 in such manner as to permit of its being swung laterally. To this end the bench 71 is provided with a pivot-bearing 73, which receives the upper end of the standard 72, as shown in Fig. 1. The lower end of the bench 71 is supported on a cylinder 74, which is considerably wider than the lower end of said

bench, as shown in Fig. 2. The cylinder 74 is mounted on a shaft 75, supported in suitable bearings carried by standards 76 77. The cylinder 74 is provided with an endless cam-groove 78 on its surface, which receives a pin 79, projecting from the under side of the bench 71, the arrangement being such that as the cylinder 74 rotates the pin 79 will traverse the groove 78, and consequently be moved from one end to the other of said cylinder, thereby giving the lower end of the bench 71 a constant reciprocating movement.

80 indicates a steam-jacket having steam-coils 81 and an endless belt or carrier 82, mounted on suitable pulleys 83, carried by shafts 84, arranged at the ends of the steam-jacket. Only one of said shafts is shown, the other being similarly arranged. The shaft 84 carries a pulley 85, which is connected by a belt 86 with a pulley 87, mounted on the shaft 75, as shown in Fig. 1. The shaft 75 also carries a pulley 88, which is connected by a belt 89 with a pulley 90, mounted on the shaft 14, as shown in Fig. 1. By this construction the rotation of the shaft 14 also rotates the shafts 75 and 84, thereby causing the reciprocation of the bench 71 and the operation of the endless carrier 82.

The operation of the machine is as follows: A supply of compressed air being stored in the reservoir 57 the valves 54 are opened, permitting the air in the paint-reservoirs 45 46 to be discharged through the tubes 49 50 51. When the machine is ready for operation, cans are placed on the stationary supports 39 40 at the inlet end of the machine and are then taken by the can-holding frames 28, as illustrated in Fig. 1. They are then moved past the paint-tubes by the carrier and are sprayed with paint. Any surplus paint dripping from the cans is carried to the reservoir 65 through the pipes 63 64. After the cans pass the painting apparatus the upper bars 31 of the can-holding frames are raised to release the cans by the cam-plate 44, and the cans are discharged upon the bench 71, passing downward upon said bench to the carrier 82 of the drying apparatus, upon which they are distributed from side to side by the lateral movement of the bench, caused by the rotation of the cam-cylinder 74. The cans are then carried by the carrier 82 through the drier and discharged in any suitable way at the opposite end thereof. The drier may be made of any desired length, so that the cans are exposed to its heat long enough to dry them. Any suitable style of drier may be employed, such as that illustrated in the drawings or other approved forms, the specific construction of the drier forming no part of our invention.

It should be understood that our invention is not limited to the specific details of the apparatus described except in so far as such details are specifically claimed.

That which we claim as our invention, and desire to secure by Letters Patent, is—

1. In a can-painting machine, the combination of a traveling carrier, and paint-applying mechanism arranged adjacent to and at opposite sides of said carrier for applying paint to the articles carried thereby, substantially as described.

2. In a painting-machine, the combination of a carrier, and paint-spraying devices arranged adjacent to and at opposite sides of said carrier for spraying paint upon the articles carried thereby, substantially as described.

3. A can-painting machine comprising a carrier arranged to conduct cans with end portions thereof exposed, and a spraying device arranged to spray paint on end portions of the cans as they are moved along by the carrier, substantially as described.

4. A can-painting machine comprising a carrier having means for conducting cans with end portions thereof exposed, and a plurality of paint-spraying devices arranged laterally at one side of the carrier and adapted to spray paint on end portions of the cans as they are moved along by the carrier, substantially as described.

5. A can-painting machine comprising a carrier adapted to carry cans with their end portions exposed, and paint-spraying devices arranged adjacent to and at opposite sides of said carrier, for spraying paint upon the ends of the cans carried thereby, substantially as described.

6. A can-painting machine comprising a traveling carrier, can-supporting devices carried thereby, adapted to receive and support the cans with end portions thereof exposed, and means arranged adjacent to the carrier for painting the ends of the cans, substantially as described.

7. A can-painting machine comprising a traveling carrier, can-supporting devices carried thereby, adapted to receive and support the cans with their end portions exposed, and paint-applying means arranged adjacent to and at opposite sides of the carrier, for painting the ends of the cans, substantially as described.

8. A can-painting machine comprising a traveling carrier, can-supporting devices carried thereby, adapted to receive and support the cans with end portions thereof exposed, and paint-spraying devices arranged adjacent to the carrier, for painting the ends of the cans, substantially as described.

9. A can-painting machine comprising a traveling carrier, can-supporting devices carried thereby, adapted to receive and support the cans with their end portions exposed, and paint-spraying devices arranged adjacent to and at opposite sides of the carrier, for painting the ends of the cans, substantially as described.

10. A can-painting machine comprising a traveling carrier, means for moving said carrier, devices supported by said carrier, adapted to engage the body portions of the cans and support them with their ends exposed, and

means for applying paint to the cans as they are carried by said carrier, substantially as described.

11. A can-painting machine comprising a traveling carrier, means for moving said carrier, devices supported by said carrier, adapted to engage the body portions of the cans and support them with their ends exposed, means for applying paint to the cans as they are carried by said carrier, and means for discharging the cans after they have been painted, substantially as described.

12. In a painting-machine, the combination of a carrier adapted to conduct the articles to be painted, compressed-air-operated painting devices for applying paint to said articles, an air-pump for supplying compressed air, means for driving the carrier, and means connecting the carrier-driving mechanism with the air-pump, for maintaining the air-supply, substantially as described.

13. In a painting-machine, the combination of a carrier adapted to conduct the articles to be painted, paint-spraying devices for applying paint to said articles, an air-pump for supplying compressed air to operate said spraying devices, means for driving the carrier, and means connecting the carrier-driving mechanism with the air-pump, for maintaining the air-supply, substantially as described.

14. In a painting-machine, the combination of a carrier adapted to conduct the articles to be painted, painting means arranged adjacent to the carrier, a laterally-movable bench adapted to receive the painted articles from said carrier, and drying mechanism adapted to receive the articles from said bench, substantially as described.

15. A can-painting machine comprising a carrier, means for conducting cans with end portions thereof exposed, paint-spraying means adapted to apply paint to end portions of the cans, and means protecting the intermediate portions of the bodies of the cans from the paint, substantially as described.

16. A can-painting machine comprising means for supporting the can with an end exposed, spraying means for applying paint to the end portion of the can, and means for protecting the intermediate portion of the body of the can from paint, substantially as described.

17. A can-painting machine comprising a carrier having means for carrying cans with the end portions thereof exposed, paint-spraying means at opposite sides of the carrier, for applying paint to the end portions of the cans, and means protecting the intermediate portions of the bodies of the cans from the paint, substantially as described.

18. A can-painting machine comprising means for supporting the can with an end portion exposed, means for applying paint to the end portion of the can and to the body portion thereof adjacent to the end, and means for protecting the intermediate portion of the body of the can from paint, substantially as described.

19. A can-painting machine comprising means for supporting the can with an end portion exposed, spraying means for applying paint to the end portion of the can and to the body portion thereof near the end, and means for protecting the intermediate portion of the body of the can from paint, substantially as described.

20. In a can-painting machine, the combination of a carrier, a paint-reservoir, can-holding devices carried by said carrier, paint-tubes communicating with said reservoir, said tubes having spraying-nozzles adapted to discharge paint upon the end portions of the cans as they are carried along by said carrier, means for forcing paint from said reservoir through said tubes, and means for protecting the intermediate portions of the cans from paint, substantially as described.

21. In a can-painting machine, the combination of a carrier, a paint-reservoir, can-holding devices carried by said carrier and adapted to support the cans with an end portion exposed, paint-tubes communicating with said reservoir and having spraying-nozzles, said tubes being adapted to discharge paint upon the ends of said cans and upon the body portions thereof adjacent to the ends, means for forcing the paint through said tubes, and means for protecting the intermediate portions of the cans from paint, substantially as described.

22. In a can-painting machine, the combination of a carrier, paint-tubes at opposite sides of said carrier adapted to discharge paint on the end portions of the cans as they are carried by the carrier, means for supplying paint to said tubes, and shields extending between the paint-tubes and the intermediate portions of the cans for shielding said intermediate portions of the cans from paint, substantially as described.

23. In a painting-machine, the combination of a carrier adapted to support the articles to be painted, painting means arranged adjacent to the carrier, a laterally-movable bench adapted to receive the painted articles from said carrier, and means for giving the lower end of said bench a reciprocating movement, substantially as described.

24. In a painting-machine, the combination of a carrier adapted to support the articles to be painted, painting means arranged adjacent to the carrier, a laterally-movable bench adapted to receive the painted articles from said carrier, a cylinder 74 provided with an endless cam-groove on its outer surface, a pin projecting from the under side of said bench into said groove, whereby as the cylinder rotates the lower end of the bench will be given a reciprocating movement, and means for rotating said cylinder, substantially as described.

25. A can-painting machine comprising a

carrier, a reservoir arranged at each side of the carrier, means carried by said carrier for supporting a can with its end portions exposed, a series of discharge-tubes for each of said reservoirs, a valve for each of said tubes, and means for supplying compressed air to said reservoirs, for simultaneously discharging the paint from said reservoirs through said tubes against the cans, substantially as described.

26. A can-painting machine comprising means adapted to support the can, and a plurality of paint-spraying devices arranged at different levels, for applying paint to different portions of the can, substantially as described.

27. A can-painting machine comprising means adapted to support the can, a plurality of paint-spraying devices arranged at different levels, for applying paint to different portions of the can, and a protecting device protecting the intermediate portion of the body of the can from paint, substantially as described.

28. In a can-painting machine, the combination of a carrier, a stationary support at the inlet end of said carrier, can-supporting devices carried by said carrier and adapted to receive the cans from said stationary support, said can-holding frames having rocking bars adapted to engage and disengage the cans, cams at both ends of the carrier for operating said rocking bars, and painting devices between the ends of said carrier, substantially as described.

29. In a can-painting machine, the combination of a carrier, paint-reservoirs at opposite sides thereof, can-holding devices carried by said carrier and movable between said reservoirs, paint-tubes communicating with said reservoirs and adapted to discharge paint upon the end portions of the cans, and means for forcing paint into said tubes, substantially as described.

30. In a can-painting machine, the combination of a carrier, paint-reservoirs at opposite sides thereof, can-holding devices carried by said carrier and movable between said reservoirs, paint-tubes communicating with said reservoirs and adapted to discharge paint upon the end portions of the cans, and compressed-air mechanism for forcing paint into said tubes, substantially as described.

31. In a painting-machine, a carrier, a reservoir arranged at each side of the carrier, a series of discharge-tubes for each of said reservoirs, a valve for each of said tubes, and means for simultaneously discharging the material from said reservoirs through said tubes.

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