

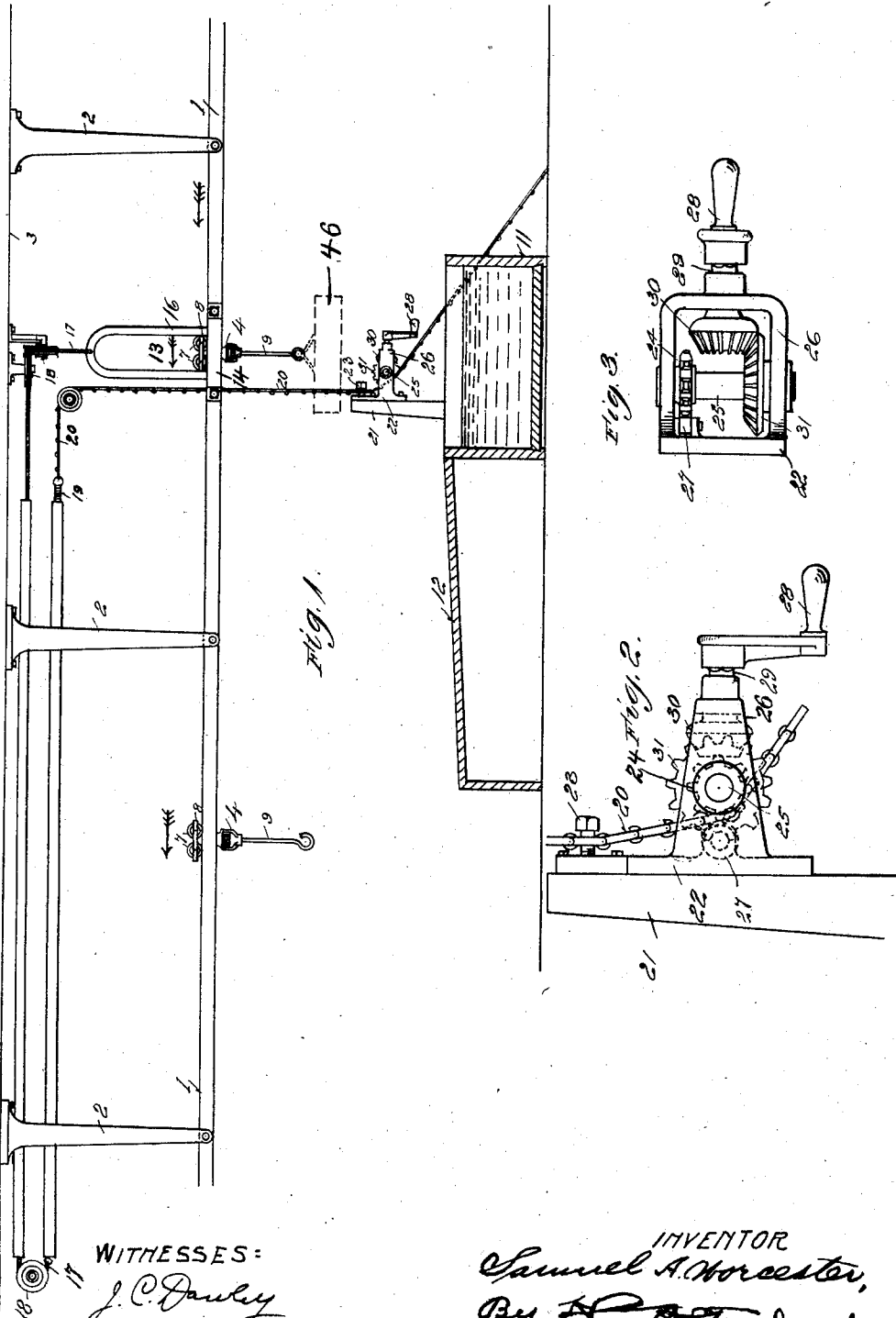
No. 738,270.

PATENTED SEPT. 8, 1903.

S. A. WORCESTER.
PAINTING APPARATUS.
APPLICATION FILED NOV. 30, 1900.

NO. MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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G. H. Schaefer

INVENTOR

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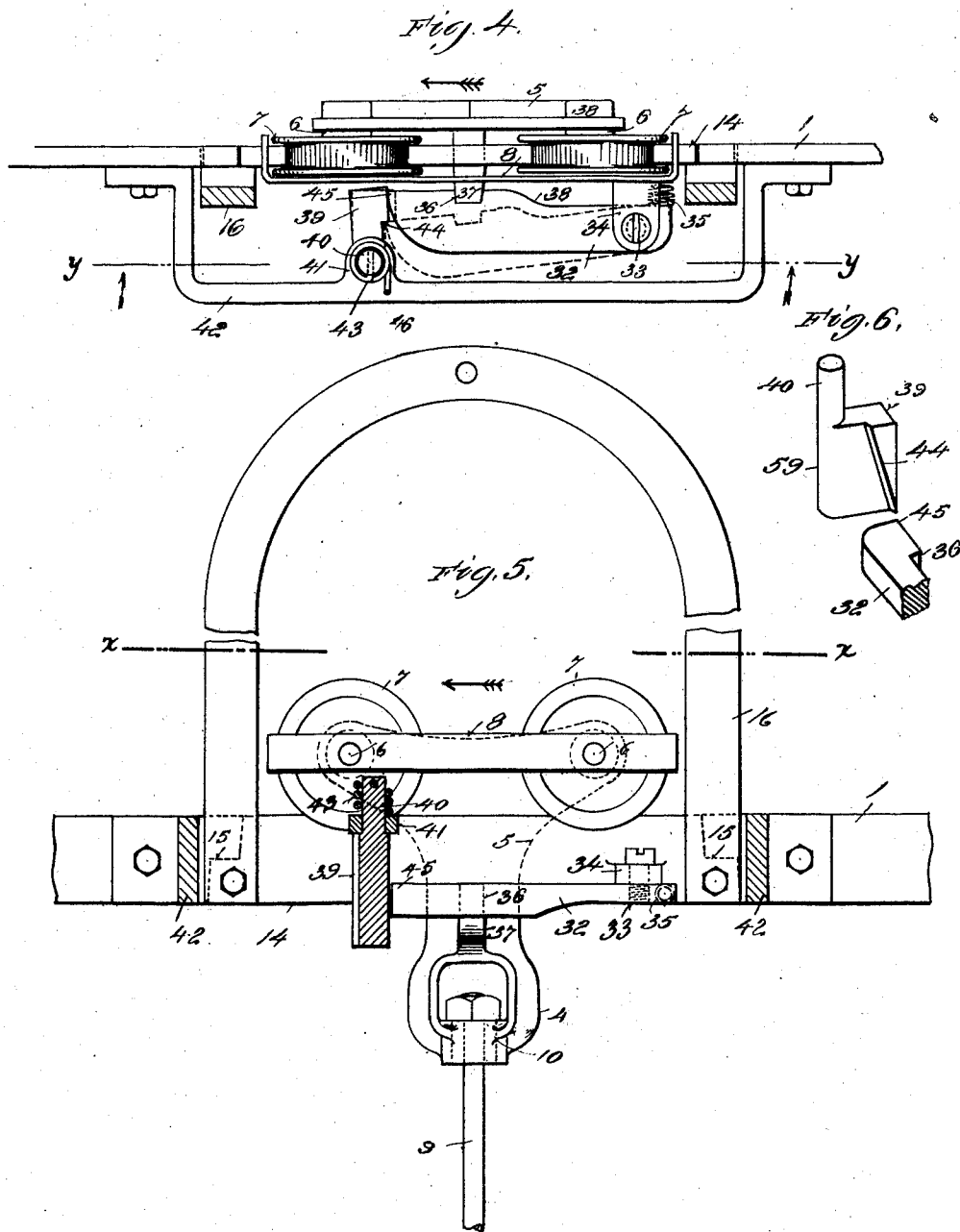
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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PAINTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 738,270, dated September 8, 1903.

Application filed November 30, 1900. Serial No. 38,160. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL A. WORCESTER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Painting Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to painting apparatus, and has for its object to provide an apparatus whereby a coat of paint or the like may be readily and quickly applied to articles at a minimum of expense. Heretofore it has
15 been proposed to facilitate this operation by providing a dipping-tank in which the articles may be coated with paint by dipping, there being employed in connection with said tank a track having carriers traveling there-
20 on to support the articles and convey them to and from the dipping-tank, a portion of said track above the tank being vertically movable and constituting an elevator for lowering the articles into the tank and raising
25 them therefrom. This raising and lowering has heretofore been accomplished by means of a "pneumatic hoist" or air-pressure cylinder and piston which is slow in action, not readily regulated to articles of different weights, and
30 expensive to install, maintain, and operate.

It is the object of my invention to overcome the objection attendant upon the use of pneumatic apparatus for this purpose, and to these ends my invention consists in certain novel
35 features, which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is an elevation, partly in vertical section, of an
40 apparatus embodying my invention. Fig. 2 is an enlarged detail elevation of the tensioning mechanism. Fig. 3 is a plan view of the same. Fig. 4 is an enlarged detail plan view of the elevator mechanism, taken on the line
45 *x x* of Fig. 5. Fig. 5 is an elevation of the same, on an enlarged scale, partly in section, on the line *y y* of Fig. 4 and looking in the direction of the arrows; and Fig. 6 is a detail perspective view showing the end of the latch
50 and the tripping-dog adjacent thereto.

The apparatus comprises an elevated way or trolley-track 1, suspended by hangers 2 from the ceiling 3 or other support and adapted to receive the carriers 4, which travel thereon and which carry the work to the dipping-tank. These carriers may be of any suitable construction, and in the present instance I have shown each carrier as composed of a body portion 5, having studs 6, on which the trolley-wheels 7 are mounted, said wheels being retained in place by a guard-plate 8. From the body of the carrier depends a rod or other suitable suspension device 9, connected therewith by a swivel-joint 10, and to the lower end of this rod the articles to be
65 painted are connected in any suitable manner, either directly or by being placed within a suitable basket or receptacle adapted to receive a number of articles, as indicated at 46.

At a suitable point underneath the track or way 1 is located a dipping-tank 11, containing the paint or other material with which it is desired to coat the articles, and adjacent to this tank is located an inclined dipping-table 12, over which the articles may be
75 drained after having been withdrawn from the dipping-tank.

In connection with the overhead way and carriers and the dipping-tank I employ an elevator 13, by means of which the carriers and the articles to be dipped may be lowered directly from the track, so that the articles may be immersed in the dipping-tank without disconnecting them from the carriers.

The section of the track 1 indicated at 14 is cut away, as indicated by dotted lines in Fig. 5 of the drawings, the meeting surfaces being preferably inclined, as shown, and being offset, as indicated at 15, to form stop-shoulders to insure the continuity of the track when the separable section 14 is raised to its highest position. This separable or cut-away portion 15 is supported by means of an upwardly-extending yoke 16, connected by a cord, rope, or other flexible connection 17, passing over pulleys 18 with a suitable counterpoise. This counterpoise may be of any suitable description; but I prefer to employ a coiled spring 19, with one end of which the cord or rope 17 is connected, while its other
100

end is connected, by means of a sprocket-chain 20, with a suitable tensioning device. This tensioning device, which is shown in detail in Figs. 2 and 3 of the drawings, comprises a suitable standard or support 21, on which is mounted a base-plate 22, drilled at its upper end to receive a locking-pin 23, which is adapted to pass through any one of the links of the sprocket-chain 20, and thereby secure the chain after adjustment. A pull may be exerted on the chain in order to tension the same, when the pin 23 is removed by means of a sprocket-wheel 24, mounted on a shaft 25 in a bracket 26, extending outward from the base-plate 22. This sprocket-wheel operates against a wheel 27 or any other suitable abutment, between which and the sprocket-wheel the sprocket-chain 20 passes, said abutment preventing the links from slipping off of the teeth of the sprocket-wheel. The sprocket-wheel 24 may be rotated by means of a crank 28, mounted on a shaft 29, having its bearing in the bracket 26 and provided with a bevel-pinion 30, which meshes with a corresponding bevel-gear 31 on the shaft 25. It will be observed that by means of the mechanism described the tension of the spring 19 may be readily regulated as desired and that tension may be maintained as long as desired by securing the sprocket-chain 20 by means of the locking-bolt 23. The load of the elevator may be thus counterpoised in such a way as to correspond with the variations of the load.

The separable section of track 14 is of a length sufficient to accommodate a single carrier 4, and in order to secure the carrier in position upon the movable track-section I provide an automatic latch 32, pivoted at 33 to a lug 34, extending laterally outward from the section 14. This latch has its free end forced normally toward the track-section by means of a spring 35 and is provided near said free end with a notch 36 in its inner edge, which is adapted to engage a projection 37, extending laterally outward from the carrier-body 5, as indicated in full lines in Fig. 4. In advance of this notch the latch is provided with an incline 38, so that as the carrier passes from the fixed portion of the main track onto the movable section 14 the projection 37 first strikes this incline and forces back the latch 32 until the projection comes opposite the notch 36, whereupon the spring forces the latch inward and the carrier is locked to the movable section 14. The load of the elevator is thereupon grasped by an attendant, who pulls said elevator and its load downward, this operation being readily effected by the fact that the counterpoise is so adjusted that but little effort is required to depress the parts. This downward movement serves to immerse the articles in the dipping-tank, where they become coated with paint and whence they may be readily removed to the dripping-table 12. The eleva-

tor and carrier being released from their load will automatically ascend under the strain of the counterpoise. It will be understood, of course, that during these movements the carrier is firmly latched to the movable section of track which forms a portion of the elevator, so that no displacement thereof upon said track-section is possible.

In order to provide for the automatic release of the carrier as the elevator reaches the limit of its upward movement, I employ a tripping-dog 39, which is pivoted by means of a stud 40 in a lug 41, carried by a horizontal yoke or bracket 42, connecting the ends of the fixed portions of the track. A spring 43, coiled around the stud 40, tends to force the dog 39 normally toward the latch 32 and into the path of the projection 38. The dog 39 is provided on that face thereof adjacent to the end of the latch 32 with a beveled or inclined surface 44, as shown in Fig. 6, which when the elevator is depressed lies in the path of the extremity 45 of the latch 32. As the elevator approaches the upward limit of its motion the extremity or toe 45 of the latch 32 engages the cam-incline 44 of the dog 39, and the latch is thereby forced back into the position shown in dotted lines in Fig. 4, thereby disengaging it from the projection 37 on the carrier 4. The carrier is therefore free to move upon the track, and as it passes onward in its original direction of travel the projection 37 comes into contact with the dog 39 and disengages the same from the latch 32, thereby permitting said latch to return to its original or normal position, ready to engage and latch the next carrier which is to be received by the elevator.

It will be seen that by the employment of the apparatus which I have devised heavy articles or articles of large size as well as heavy weight may be readily coated with paint by the dipping process at a minimum expense of time and labor, and consequently with a considerable economy in the cost of production of the finished articles. The counterpoise is less expensive than the pneumatic hoist and is self-contained, requiring no air-compressing plant to render it operative. It is, moreover, adjustable to the varying weights of different articles which may be treated by the apparatus and may be readily operated by an unskilled attendant, who simply depresses and raises the load by hand to effect the dipping.

I do not wish to be understood as limiting myself to the precise details of construction hereinbefore described and shown in the accompanying drawings, as it is obvious that these details may be modified without departing from the principle of my invention. I make no claim to the following subject-matter, as I am not the first inventor of the same.

"In a painting apparatus, the combination with a dipping-tank, an overhead track

or way, and carriers traveling thereon and adapted to have the articles to be painted suspended therefrom, of an elevator comprising a separable section of the track or way adapted to receive a carrier when in alinement with the remainder of the track, and support said carrier during the vertical travel of the elevator.

"In a painting apparatus, the combination with a dipping-tank and an overhead track or way having carriers traveling thereon and adapted to have the articles to be painted suspended therefrom, of an elevator comprising a separable portion of the track or way and provided with an automatic latch mechanism for locking the carrier in position therein.

"In a painting apparatus, the combination with a dipping-tank, an overhead track or way and carriers traveling thereon and adapted to have suspended from them the articles to be painted, of an elevator comprising a separable section of the track or way adapted to receive a carrier, automatic latching mechanism for locking the carrier in position on said section during the vertical movement of the elevator, and automatic tripping mechanism for releasing said latch at the end of the return movement of the elevator."

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

1. A painting apparatus comprising a dipping-tank, an overhead track or way, independent carriers traveling thereon and provided with means for suspending below said track and carriers the articles to be painted, an elevator comprising a vertically-movable section of said track or way, and a counterpoise for said elevator and its load, whereby the same is adapted to be manually operated, said counterpoise consisting of a spring, and mechanism for positively adjusting the tension of said spring to cause it to conform to the weight of the articles operated on, substantially as described.

2. In an apparatus of the character described, the combination, with a dipping-tank, an overhead track or way, and a carrier traveling thereon and supporting the articles to be painted, of an elevator, comprising a separable section of the track, adapted to receive a carrier, a spring-actuated latch carried by said elevator and adapted to automatically and positively engage the carrier to lock the same in place thereon during the vertical travel of the elevator, and a tripping-dog pivoted to a fixed part and arranged to disengage said latch at the end of the return movement of the elevator, said dog being arranged in the path of the carrier and being tripped by the carrier as it leaves the elevator to re-

lease the latch and restore the same to its normal position, substantially as described.

3. In a painting apparatus of the character described, the combination, with the main track having a vertically-movable section, and means for raising and lowering the same, of a spring-controlled latch mounted on said movable section and provided with a locking-notch, a spring-controlled tripping-dog pivotally mounted on a fixed portion of the apparatus and adapted to engage and free the latch at the end of its upward motion, and a carrier provided with a projection adapted to engage the notch of the latch upon the advent of the carrier, and to engage the tripping-dog upon the departure of the carrier to free the latch, substantially as described.

4. In an apparatus of the character described, the combination, with the main track having a vertically-movable section, and means for raising and lowering the same, of a spring-controlled latch mounted on said movable section, a pivoted tripping-dog carried by a fixed portion of the apparatus and adapted to engage and free the latch at the end of its upward motion, and a carrier provided with a projection adapted to be engaged by the latch upon the advent of the carrier, and adapted to engage the tripping-dog upon the departure of the carrier to free the latch, substantially as described.

5. In a painting apparatus of the character described, the combination, with a dipping-tank, an overhead way, carriers traveling thereon, and an elevator comprising a vertically-movable section of the way, of an adjustable counterpoise mechanism comprising a spring connected with the elevator, a sprocket-chain connected with the spring, a locking-pin adapted to engage the sprocket-chain, a sprocket-wheel and abutment between which the sprocket-chain passes, and mechanism for rotating such sprocket-wheel to tighten or loosen the spring, substantially as described.

6. In an apparatus of the character described, the combination, with a dipping-tank, an overhead way, carriers traveling thereon, and an elevator comprising a vertically-movable section of the way, of an adjustable counterpoise mechanism comprising a spring connected with the elevator, a sprocket-chain connected with the spring, a sprocket-wheel and abutment between which the sprocket-chain passes, means for rotating said sprocket-wheel to lighten or loosen the spring, and means for locking said adjusting devices after adjustment, substantially as described.

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

SAMUEL A. WORCESTER.

Witnesses:

WILLIAM O'LAUGHLIN,
F. W. SCHAEFER.