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3 Sheets—Sheet 1.

R. H. CURRY.

CAN CLEANING AND LACQUERING MACHINE.

No. 305,154. Patented Sept. 16, 1884.

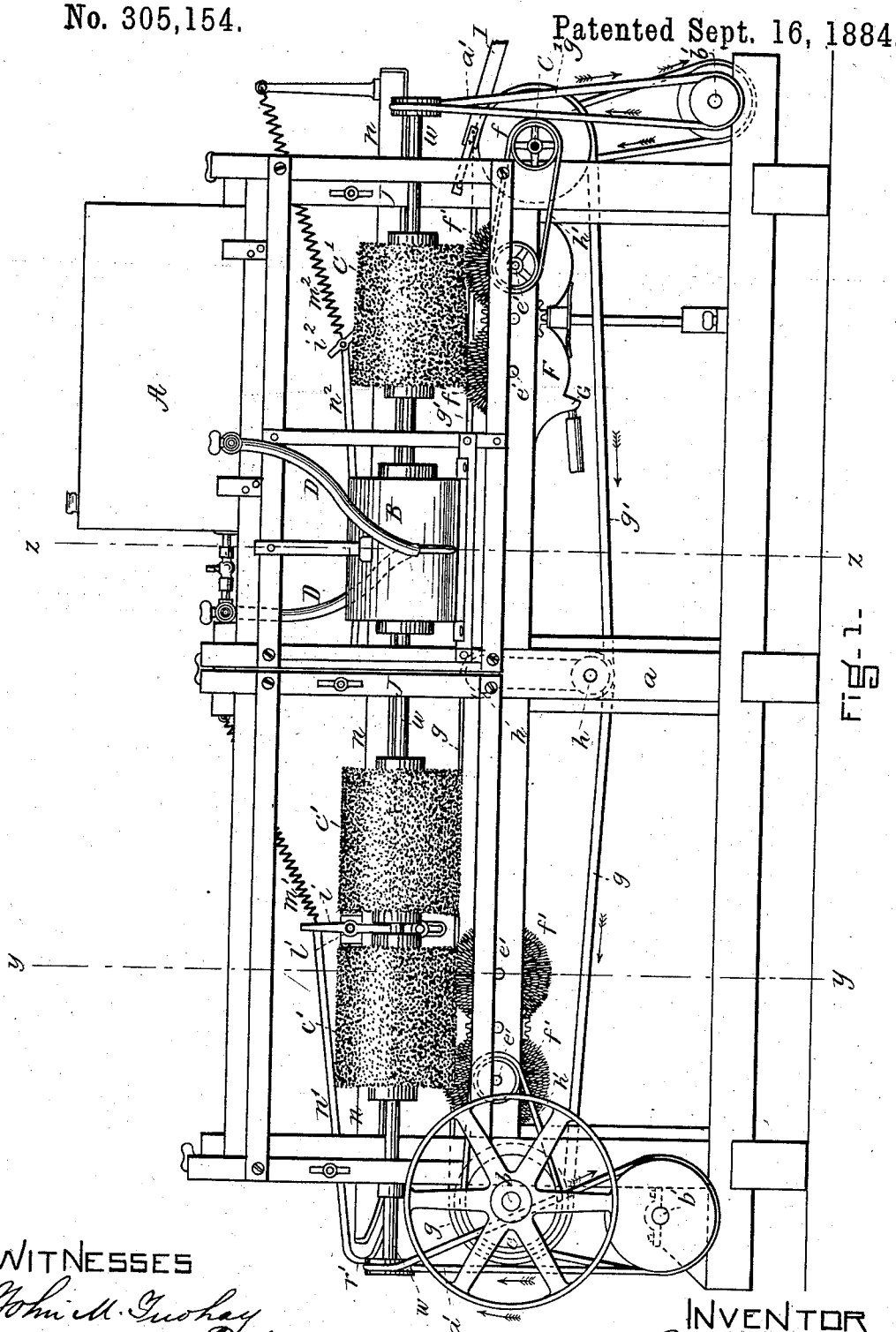

Fig. 1.

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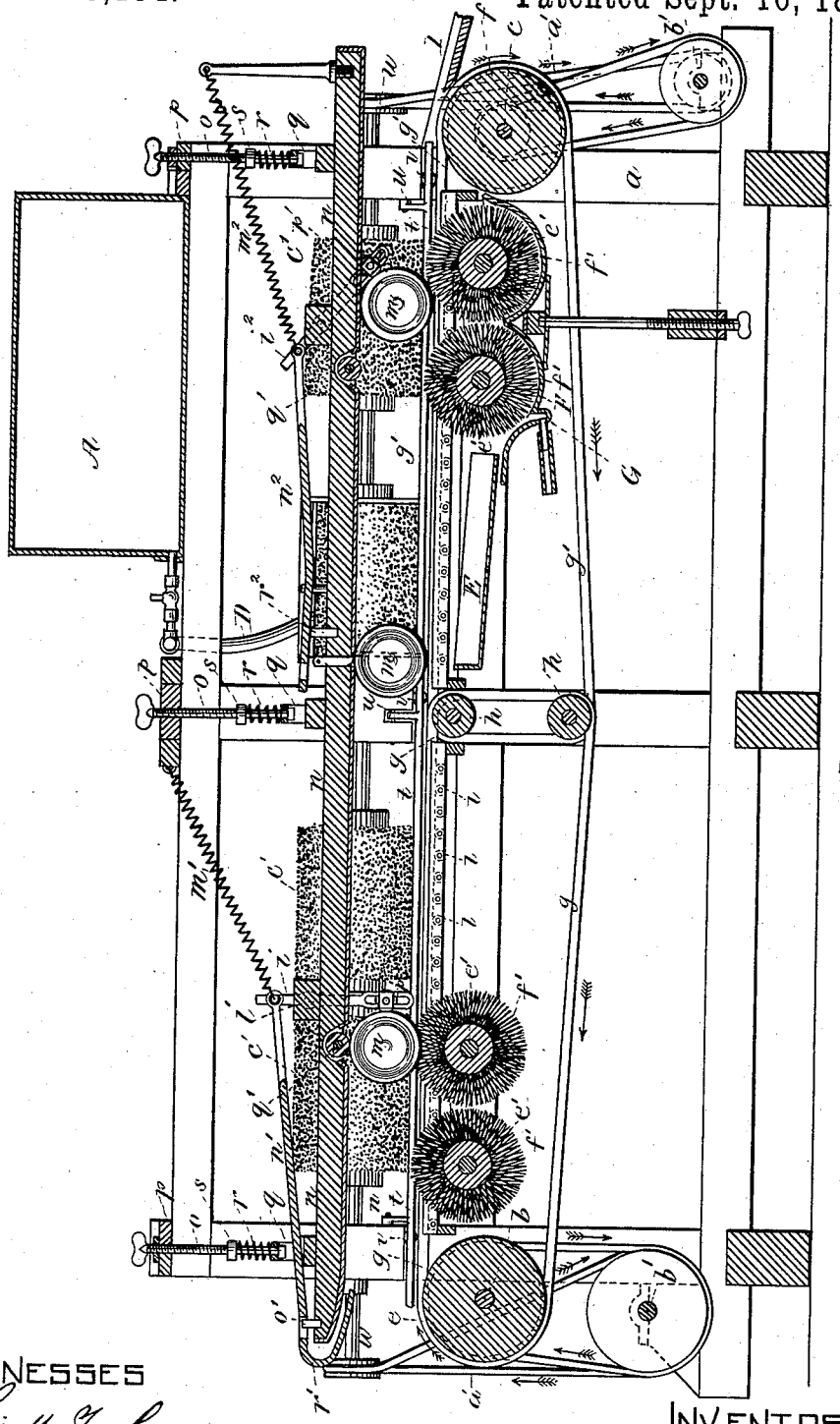

Fig. 2.

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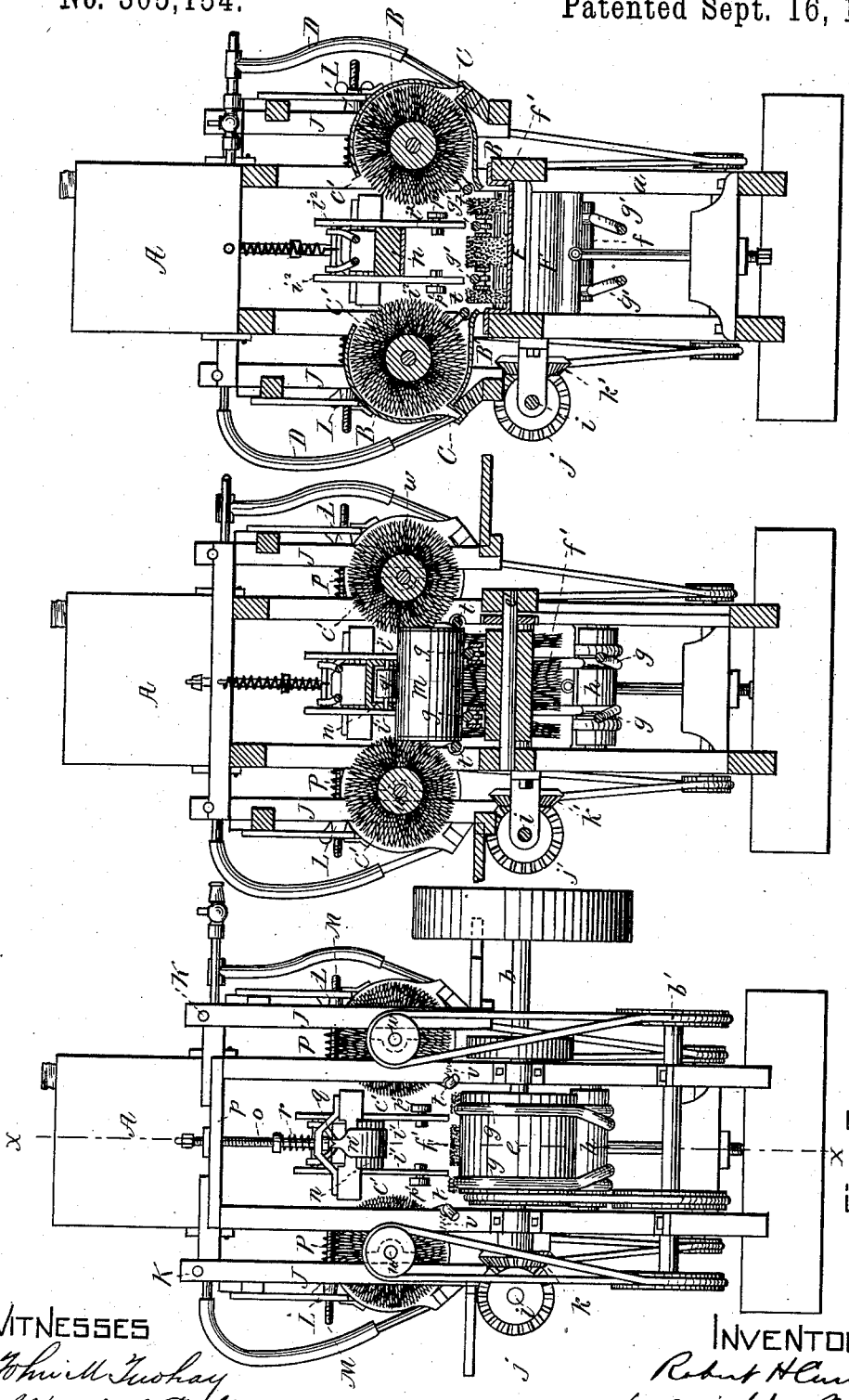

Fig. 5.

Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

ROBERT H. CURRY, OF DENNISPORT, ASSIGNOR TO HIMSELF, AND ARTHUR H. BAILEY, OF WATERTOWN, MASSACHUSETTS.

CAN CLEANING AND LACQUERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 305,154, dated September 16, 1884.

Application filed November 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. CURRY, of Dennisport, in the county of Barnstable and State of Massachusetts, have invented certain Improvements in Can Cleaning and Lacquering Machines, of which the following is a specification.

This invention has for its object to provide a machine adapted to clean and lacquer or varnish sheet-metal cans after they have been filled with food to be preserved, the object of cleaning and lacquering the cans being to put them in a neat and salable condition.

The invention consists as a whole in an organized machine composed of a driven supporting belt or belts adapted to support and move forward a series of cans, a pressure-bar adapted to bear on the cans while they are being moved, and thereby cause them to rotate, rotary brushes adapted to act on the ends and bodies of the cans supported and moved by the belt, devices for arresting the progressive but not the rotary motion of the cans while they are being acted on by the brushes, and means for supplying a part of the brushes with lacquer or varnish, which is applied by the brushes to the cans.

The invention also consists in certain details of construction and sub-combinations of parts, all of which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a can-brushing machine embodying my invention. Fig. 2 represents a longitudinal vertical central section taken on line *x x*, Fig. 3. Fig. 3 represents an end elevation. Fig. 4 represents a transverse vertical section on line *y y*, Fig. 1; and Fig. 5 represents a similar section on line *z z*, Fig. 1.

The same letters of reference indicate the same parts in all the figures.

a represents a frame, supporting at its opposite ends transverse arbors *b c*, provided, respectively, with pulleys *e f*. Carrying-belts *g g g' g'* run, respectively, from the pulleys *e f* over pulleys *h h* at the center of the frame. The belts *g'* are, in effect, continuations of the belts *g*, this arrangement being considered more desirable than a pair of single belts extending the entire length of the machine, although it is obvious that such single belts may be used, if preferred. The belts are driven in the directions indicated by the arrows by any suitable power applied to the arbor *b*, and transmitted from thence to the arbor *c* by a shaft, *i*, Figs. 3, 4, and 5, extending horizontally from one of said arbors to the other, and provided with bevel-pinions *j j'*, meshing with similar pinions, *k k'*, on the ends of the arbors *b c*. The upper portions of the belts *g g'* run horizontally on the supporting-pulleys and on intermediate anti-friction rollers, *l*, Fig. 2, arranged between said pulleys, and are adapted to support and carry forward a number of cylindrical cans, *m*, of the kind ordinarily used for packing meats and other articles of food, the peripheries of the cans being laid on the belts, so that each can is capable of rolling or rotating as on a horizontal axis.

n represents a pressure-bar supported over the carrying portions of the belts *g g'* and parallel therewith. Said bar is adapted to bear on the cans supported by said belts and cause them to rotate, the bar having no movement in the direction of movement of the belts. The belts are preferably made of vulcanized rubber, and the bar is surfaced with felt or other yielding material, so that the cans will not be scratched or indented by contact with the belts and bar. The bar is supported by threaded rods *o*, which are vertically adjustable in cross-bars *p*, forming parts of the frame *a*, and pass through yokes *q*, attached to the bar *n*, said yokes resting on heads on the lower ends of said rods; hence while the rods *o* are positively held by their engagement with the cross-bars *p* in any position to which they may be adjusted the yokes *q* can rise and fall on said rods. Springs *r* are interposed between the yokes *q* and collars *s* on the rods *o*. Said springs enable the bar *n* to yield upwardly and bear with a yielding pressure on the cans. The rods *o* enable the normal height of the bar *n* to be varied, so as to adapt the bar to different sizes of cans.

t t represent horizontal rods, which are located above and parallel with the carrying portions of the belts *g g'*, and are provided with arms *u u*, which are pivoted to the frame of the machine. The rods *t* are adapted to bear against the ends of the cans *m*, and are pressed against said ends by springs *v*, inter-

posed between the rods and the frame-work. The cans are thus kept in place laterally of the belts *g g'*. The outer ends of the rods *t t* are bent outwardly, as shown in Fig. 3, so that the cans may be easily inserted between the rods.

w w represent horizontal brush-arbors extending lengthwise of the frame *a*, at opposite sides thereof, and rotated by belts *a' a'*, running from pulleys on counter-shafts *b' b'*, the latter being rotated by belts running from pulleys on the arbors *b c*. The brush-arbors *w w* are provided with any desired number of brushes *c' c'*, which are adapted to operate on the ends or heads of cans supported by the belts *g g'*, as shown in Fig. 4. Below the belts *g g'* are transverse arbors *e' e'*, each having a brush, *f'*, projecting upwardly between and at opposite sides of the belts *g g*, and adapted to act on the cylindrical portions or bodies of the cans *m*. These brushes are rotated by a suitable connection with the arbors *b c*. In the present instance the arbors *e'* have pulleys connected by belts *h'* with pulleys on the arbors *b c*, (see Fig. 1,) and the arbors *e'* are arranged in pairs, each arbor being provided with a pinion, which engages with an intermediate pinion between the arbors of each pair. A can placed upon the outer carrying portions of the belts *g g* will be carried forward by the latter, and at the same time rotated by contact with the pressure-bar. When the can reaches a point where it is acted on simultaneously by a brush, *f'*, and two brushes, *c' c'*, as shown in Figs. 2 and 4, it is arrested by a pair of levers, *i*, pivoted at *l'* to the bar *n*, normally held in a vertical position by a spring, *m'*, and locked in said position by a latch, *n'*, which is pivoted to a cross-rod connecting said levers, and has a slot engaging a stud, *o'*, on the bar *n*, as shown in Fig. 2. The levers *i' i'* thus held detain the can *m*, which bears against anti-friction rollers *p'*, supported by the levers *i'*, and a similar roller, *q'*, supported by the bar *n*. The can is therefore rotated by the belts without being moved forward thereby, and remains in rolling contact with the brushes *c' c' f'* as long as the operator may desire, the rollers *p' q'* enabling the can to rotate freely.

The catch *n'* projects toward the end of the machine at which the cans are inserted, and has a downward projection, *r'*, extending below the under surface of the bar *n*. When the operator inserts another can between the belts *g g* and bar *n*, said can, coming in contact with the projection *r'*, raises the latch *n'* from the stud *o'*, thereby releasing the levers *i'*, which are thus caused to yield and turn on their pivots, allowing the arrested can to be moved forward continuously by the belts *g g'* until it reaches a second pair of levers, *i²*, near the rear end of the machine, said levers being adapted to arrest the cans while they are being acted on by the brushes *c' c'* and *f'*, which are supplied with lacquer, as hereinafter described. The levers *i²* are provided with a spring, *m²*, and latch *n²*, operating like the spring *m'* and latch *n'*, and the latch *n²* has a downward projection, *r²*, whereby said latch is raised by a moving can. Said projection *r²* is not attached directly to the latch *n²*, but is a separate piece adapted to slide in an orifice through the bar *n*. After a can is released by the levers *i'*, it moves continuously forward to the levers *i²*, and on its way strikes the projection *r²*, thereby causing the levers *i²* to arrest the can previously detained by them. Each pair of levers is automatically restored to its upright position and locked by the action of the spring *m'* or *m²* after the released can has passed, so that the succeeding can will be properly arrested.

A represents a reservoir containing lacquer or other fluid for coating the cans *m*. One or more pairs of the brushes *c' c'*, near the rear end of the machine, is provided with hoods B B, which have troughs C C, (see Fig. 5,) into which the lacquer flows from the reservoir A through pipes D D. From the troughs C C the lacquer flows thinly over the inclined inner surfaces of the hoods below the troughs, and is partially taken up by the brushes *c' c'*, which come in contact with said surfaces and apply the lacquer to the ends of the can arrested by the levers *i²*. The lacquer not taken up by the brushes *c'* flows from the hoods B B to a spout, E, which conducts it to a hood, F, under one of the brushes, *f'*. Said hood has a trough, G, which receives the lacquer, and causes it to flow over the inner surface of the hood, from whence it is taken up by the brush *f'*, and applied by the latter to the body of the can.

From the foregoing it will be seen that cans are first brushed or cleansed and then lacquered by the machine as a whole, and that the progress of the cans through the machine and the length of time each can is subjected to the action of the brushes is determined by the rapidity with which they are supplied to the machine by the attendant, each can in its forward movement releasing the preceding can. After a can is inserted between the carrying-belts and pressure-bar at the front end of the machine, it requires no further attention until it emerges from the machine, the entire action being automatic, excepting the supplying of the cans to the machine.

I do not limit myself to any particular number of brushes *c'* or *f'*, nor to the employment of cleaning and lacquering brushes in one machine, for, if desired, the machine may be used only for cleaning or only for lacquering. The brushes may be supplied with water or other liquid for cleansing the cans. As the cans emerge from the machine, they roll down a chute or inclined track, I. The arbors *w w* of the end brushes, *c'*, are journaled in frames J J, which are pivoted to the frame *a* at K K, and are adapted to be swung on said pivots to adjust the brushes laterally and adapt them to cans of different lengths. The frames J are held in any position to which they may be adjusted

by nuts L on threaded bolts M, projecting outwardly from the frame *a* through orifices in the frames J, and springs P, interposed between the frame *a* and the frames J, said springs pressing the frames J outwardly against the nuts L.

I claim—

1. In a can-brushing machine, the can feeding and rotating devices consisting of one or more driven belts adapted to support and move a series of cans, and a pressure block or bar substantially parallel with the carrying portions of said belts, and adapted to bear on said cans and cause them to rotate while being moved by the belts, combined with rotary brushes adapted to act on the heads and bodies of said cans, as set forth.

2. In a can-brushing machine, the combination of the can feeding and rotating devices, the rotary brushes adapted to act on the ends and bodies of the cans, and means for arresting the progressive movement of the cans, whereby said cans are caused to rotate in contact with the brushes without moving forward, as set forth.

3. In a can-brushing machine, the combination of the can feeding and rotating devices, the rotary brushes adapted to act on the ends and body of the can, the arresting devices or levers adapted to prevent the progressive movement of each can at a given point, and locking devices operating automatically to hold or lock said levers and cause them to arrest a can, and adapted to be operated by the progressive movement of a succeeding can to release said levers and permit the arrested can to be moved forward by the feeding devices, as set forth.

4. In a can-brushing machine, the carrying-belts and their driving-pulleys and supports, combined with the pressure block or bar supported over the carrying portions of the belts, and means for giving said block or bar a yielding pressure on the cans supported by the belts, as set forth.

5. In a can-brushing machine, the carrying-belts and their driving-pulleys and supports, combined with the pressure block or bar, and means for vertically adjusting said bar, and for holding the same in any position to which it may be adjusted, as set forth.

6. In a can-brushing machine, the combination, with the carrying-belts, of the guide-rails extending beside the carrying portions of the belts, and adapted to bear with a yielding pressure against the ends of the cans carried by said belts, as set forth.

7. In a can-brushing machine, the combination of the carrying-belts, the pressure block or bar over said belts, the rotary body-brushes journaled in fixed bearings under the carrying portions of the belts, and projecting upwardly above the latter, the end brushes journaled in laterally-adjustable bearings, and means for holding said bearings in any position to which they may be adjusted, as set forth.

8. In a can-brushing machine, the combination of the carrying-belts, the rotary body and end brushes, the pressure-bar, the arresting-levers pivoted to said bar, the springs adapted to normally hold said levers in a vertical position, the latches and studs adapted to lock the levers in said position, and the projections extending downwardly below the under surface of the bar, and adapted to be raised by a can inserted between the belts and bar, and to unlock the levers and cause them to release the can last arrested, as set forth.

9. In a can-brushing machine, the combination, with the carrying-belts and the pressure-bar, of the levers *i'*, having rollers *p'*, and the brushes *c'*, supported by the pressure-bar, and projecting below the under surface of the same, said rollers *p'* being adapted to bear simultaneously against a can arrested by the levers *i'*, and enable said can to be rotated without friction, as set forth.

10. In a can-brushing machine, the combination of the carrying-belts and pressure-block for feeding and rotating the cans, the rotary brushes adapted to act on the ends and body of a can held between said belts and bar, a reservoir for lacquer or other fluid located over said brushes, and conduits adapted to conduct the fluid from the reservoir and present it to the brushes, as set forth.

11. In a can-brushing machine, the combination of the carrying-belts and pressure-block for feeding and rotating the cans, the brushes *c'*, adapted to act on the ends of cans supported by said belts, the brushes *f'*, adapted to act on the bodies of said cans, the reservoir for lacquer or other fluid, and the hoods B, partially covering the brushes *c' c'*, and provided with troughs C C, adapted to receive fluid from said reservoir and discharge the same thinly upon portions of the hood, so that it can be taken up by the brushes, as set forth.

12. In a can-brushing machine, the combination of the carrying-belts and pressure-block for feeding and rotating the cans, the brushes *c' c'*, adapted to act on the ends of the cans, means, substantially as described, for supplying lacquer or other fluid to said brushes, the brushes *f'*, adapted to act on the bodies of the cans, and located below the brushes *c'*, and means for conducting fluid to said brushes *f'*, as set forth.

13. In a can-brushing machine, the combination of the end brushes, *c' c'*, having hoods B B, adapted to receive lacquer and spread the same upon said brushes, the body-brushes *f'*, located below the brushes *c'*, and the hood F, adapted to receive surplus lacquer from the hoods B B and present the same to the body-brushes, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of October, 1883.

ROBERT H. CURRY.

Witnesses:
M. C. MORGAN,
SAMUEL S. BAKER.