

Mar. 3, 1925.

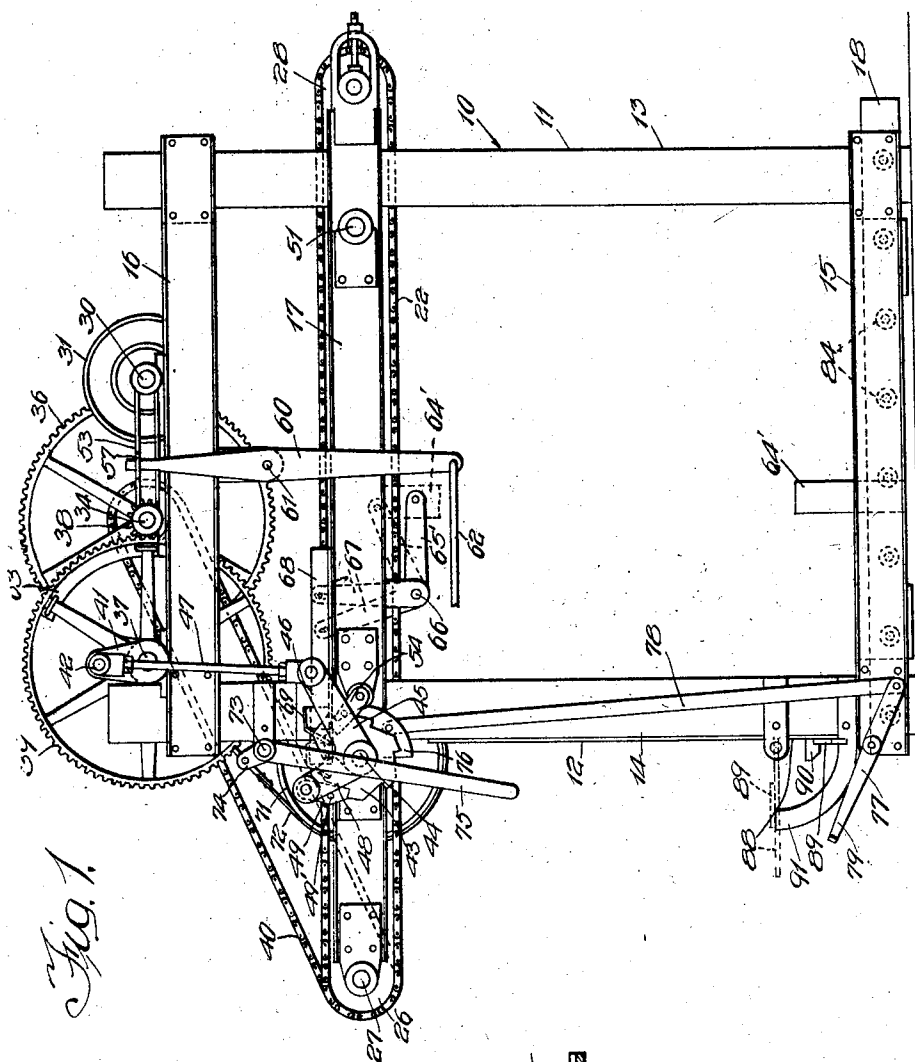
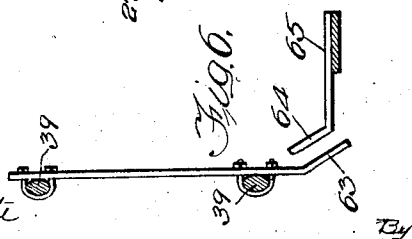
1,528,067

E. T. McKAIG

MATERIAL DELIVERY MACHINE

Filed April 14, 1924

4 Sheets-Sheet 1



Witnesses:

W. L. Kilroy

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Inventor:
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MATERIAL DELIVERY MACHINE

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4 Sheets-Sheet 2

Fig. 2.

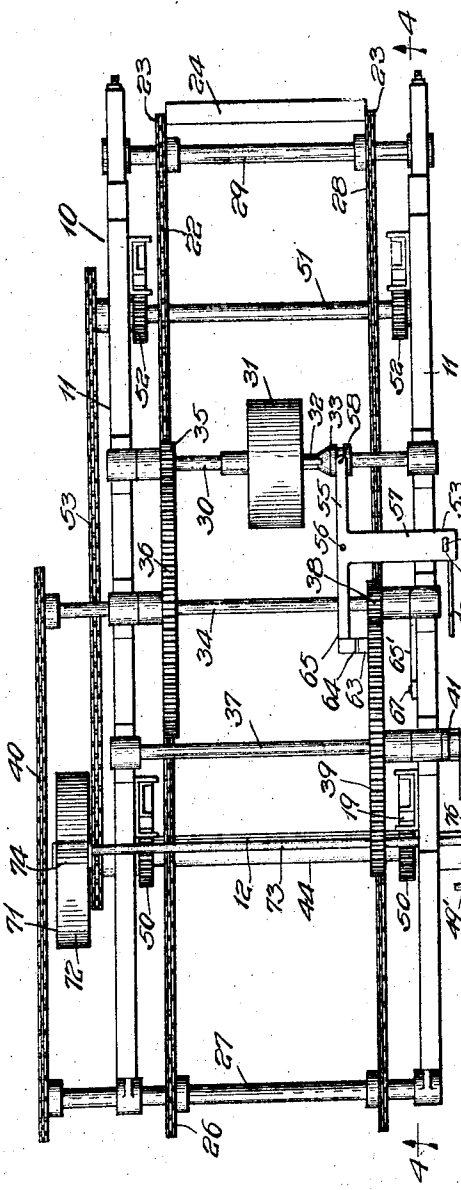


Fig. 8.

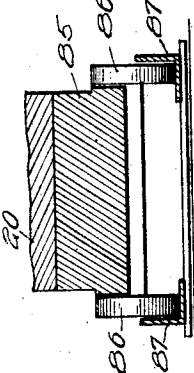
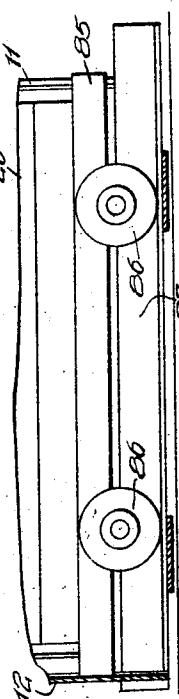


Fig. 7.



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4 Sheets-Sheet 3

Fig. 3.

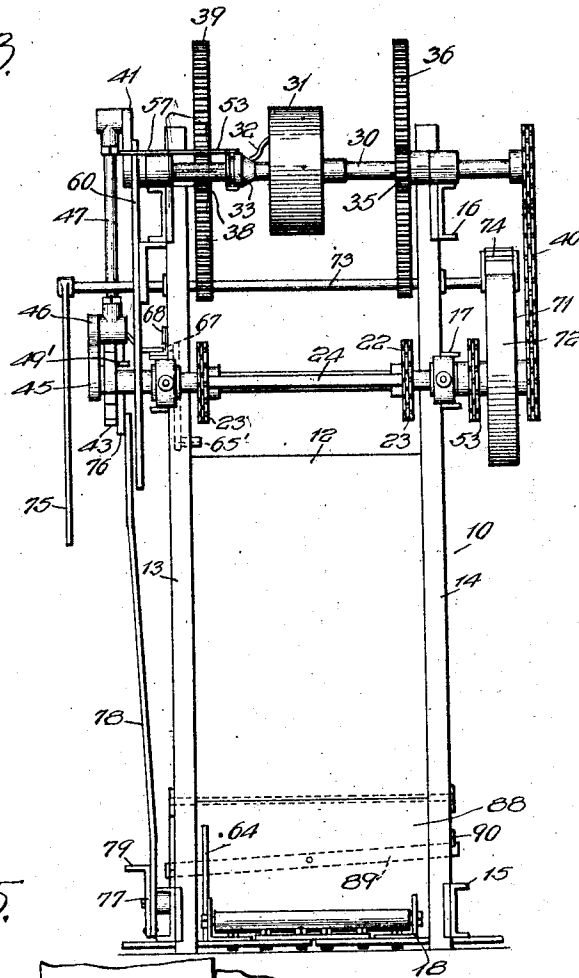
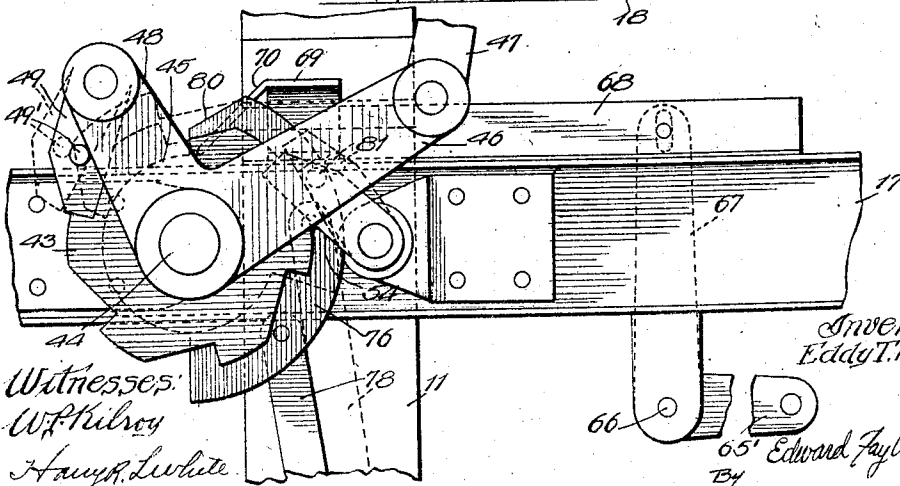


Fig. 5.



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Mar. 3, 1925.

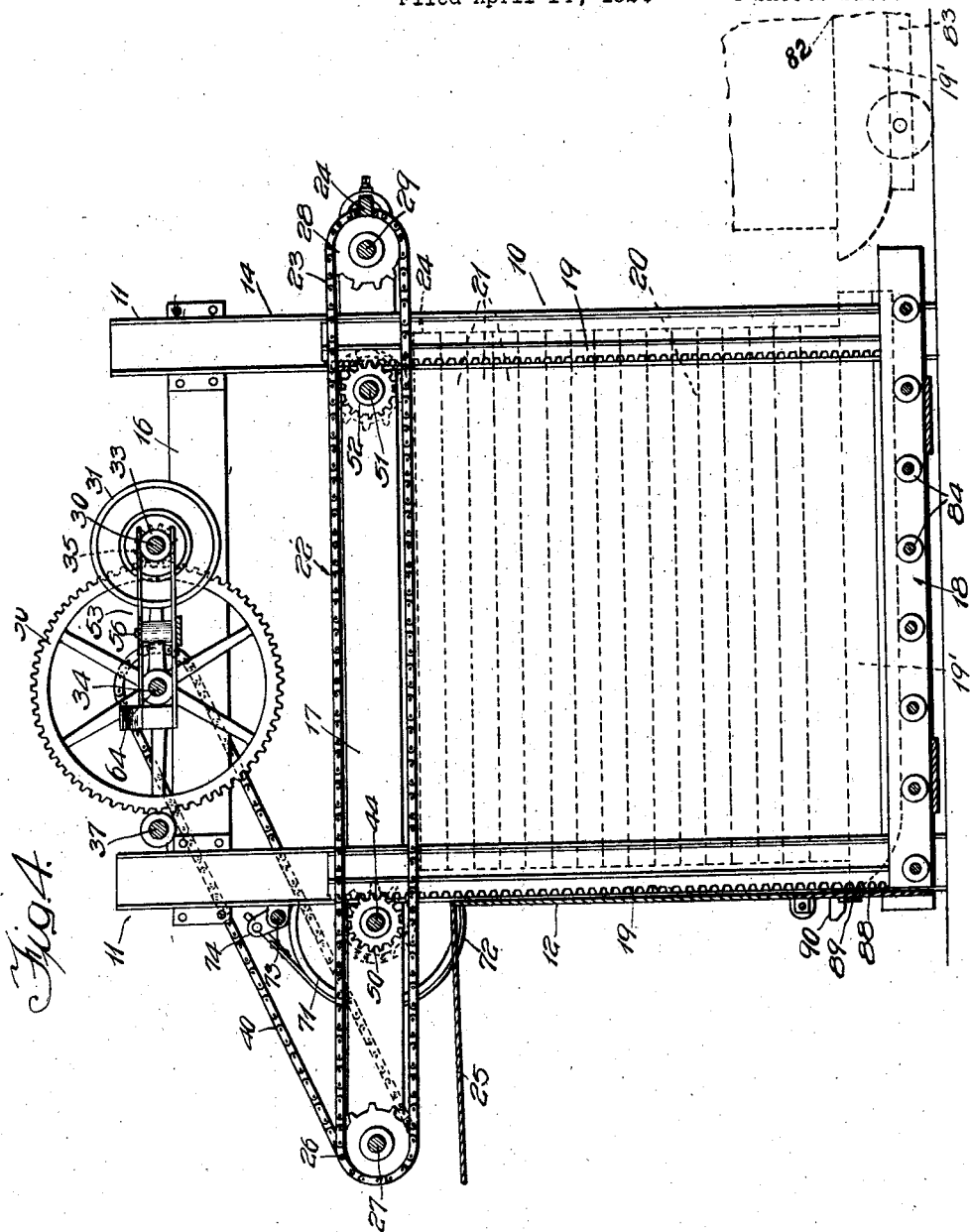
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MATERIAL DELIVERY MACHINE

Filed April 14, 1924

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE.

EDDY T. McKAIG, OF CHICAGO, ILLINOIS, ASSIGNOR TO ANTON TRINI, OF CHICAGO, ILLINOIS.

MATERIAL-DELIVERY MACHINE.

Application filed April 14, 1924. Serial No. 706,546.

To all whom it may concern:

Be it known that I, EDDY T. McKAIG, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Material-Delivery Machine, of which the following is a specification.

My invention relates to improvements in material delivery machines and has special reference to machines for handling soap slabs in the process of making bars of soap.

It is common practice, in the manufacture of soap, to run the boiled soap liquid into an open topped tank to cool and harden. It is also common practice to arrange removable side walls on a base or truck to form the tank and, when the soap has hardened sufficiently, to remove the side walls and leave the mass of soap supported on the base or truck and otherwise exposed. This mass is then first cut into horizontal slabs by forcing it through a suitable arrangement of horizontally arranged wires, then the slabs are removed to be individually cut into strips and further the strips are cut into bars of desired dimensions. A particular object of my present invention is to provide an easily controlled power operated machine by which the man killing labor of removing the slabs from the mass and feeding them to the strip cutting machine shall be eliminated and the work accomplished better. It will, of course, be understood that many of the features of my invention have a wider scope of application than that particularly illustrated and described herein.

I prefer to arrange the machine so that for each complete cycle thereof one slab shall be drawn or pushed off of the top of the mass and then the machine will automatically stop until again put into motion by the operator.

I provide a simple elevator which, after the top slab has been removed, raises the remaining part of the mass the height of the thickness of a slab ready for the removal of the next slab.

My invention will be more readily understood by reference to the accompanying

drawings forming part of this specification and in which:—

Figure 1, is a side elevation of the machine;

Figure 2, is a top plan view;

Figure 3, is a rear elevation;

Figure 4, is a vertical longitudinal sectional view on the line 4—4 of Figure 2;

Figure 5 is an enlarged fragmentary side view of the elevator operating mechanism;

Figure 6, is a detail sectional view on the line 6—6 of Figure 1, particularly illustrating the throw off or stop device;

Figure 7, is a fragmentary view of the elevator showing a slightly modified form of construction for accommodating a truck; and

Figure 8, is a fragmentary vertical cross-section on the line 8—8 of Figure 7.

In said drawings, 10 represents a suitable framework comprising side frames 11 connected together by a plate 12 at the forward end and other suitable transversely extending brace members. Each side frame has two end uprights 13 and 14, a lower horizontal member 15, a top horizontal member 16 and an intermediate horizontal member 17. The end vertical members 13 and 14 form posts or guides for the elevator platform 18, which comprises a suitable base provided with a toothed rack 19 rising from each of its four corners. These rack members guide the platform in its up and down movement, and by means of suitable gearing serve to lift the platform and its load and maintain it at the desired height.

The platform 18 is adapted to receive a base or platform 19 carrying a large rectangular mass of soap 20. In the use of this present machine this mass of soap has previously been divided into slabs 21. These slabs are of uniform height or thickness and the machine is adapted during one complete cycle to remove and deliver the top slab and then to raise the platform the height of the thickness of one slab to bring the next slab up to a position to be removed. Just above the top slab of soap, as the same appears when the block of soap is first placed

in the machine, is arranged a drag conveyor 22, comprising an endless conveyor chain 23 provided at one point with a transversely extending abutment 24. This abutment, as shown in dotted lines, is adapted when the conveyor is put into motion to engage the rear end of the top slab and drag this slab off of the pile endwise and deliver it upon a suitable inclined slide way 25 down which the slab slides for delivery from this machine for the next operation on the slab in the process of making soap bars. The conveyor chain 23 is trained around suitable wheels 26 on a transverse drive shaft 27, and wheels 28 on a transverse adjustable idle shaft 29.

Upon the top of the machine mounted in suitable bearings on the frame members 16 is a power shaft 30 which carries a belt pulley 31 adapted to be clutched to the shaft 30 by means of a clutch lever 32 operated by a coned clutch operating collar 33 of usual construction.

The shaft 30 drives a second shaft 34 through the small pinion 35 on the shaft 30 and the large gear 36 on the shaft 34. The shaft 34 is again geared to a third shaft 37 by the small pinion 38 on the shaft 34 and the large gear 39 on the shaft 37. The conveyor is driven through the medium of a drive chain 40 which connects the second shaft 34 with the conveyor drive shaft 26. The ratios of the several pairs of gears is such that for each revolution of the third shaft 37 the conveyor makes one complete cycle. In other words, for each single revolution of the third shaft 37 the drag abutment 24 of the conveyor moves forward, thus dragging off the top slab and then moves back to its position of rest, as shown in full lines in the drawings. Means are provided for stopping the machine after each single revolution of the third shaft 37.

For operating the elevator to lift the platform there is provided a crank arm 41 fixed on one end of the third shaft 37, having a crank pin 42 and which stands at the top of its movement when the machine is at rest with the abutment 24 in its rear position. The crank 41 is instrumental in raising the platform during the return movement of the abutment along the upper part of the conveyor. For this purpose I provide a ratchet wheel 43 keyed on one end of a transverse shaft 44 which is mounted in suitable bearings on the frame members 17. On this shaft I also mount a bell crank 45, one arm 46 of which is connected to the crank pin 42 by a connecting rod 47, and the other arm 48 of which carries a dog 49 adapted to engage the teeth of the ratchet wheel 43. The lever 45 is swung back and forth once for each revolution of the third shaft 37, and the arrangement is such that the ratchet wheel 43 is turned the equivalent

of one tooth for each revolution of the shaft 37. On the shaft 44 I secure toothed pinions 50 which mesh with the two forward lifting racks 19, and on a similar shaft 51 at the opposite end of the machine I secure similar pinions 52 which engage the rear lifting racks. I operatively connect these two shafts by a drive chain 53. The proportions of the operating parts is such that when the ratchet wheel 43 is turned the amount of one tooth the platform is raised the amount of the thickness of one slab.

During the forward movement of the abutment 24, when it is dragging off a slab, the crank arm 41 is moving to its lower position and dragging the dog 49 back to engage the next tooth on the ratchet wheel ready so that during the next half of the cycle, or when the abutment is moving back to its original position, the ratchet wheel 43 will be rotated and the platform raised. For holding the ratchet wheel 43 against retrograde movement, until released, I provide a stop dog 54 pivoted to the frame of the machine and adapted to engage the teeth of the ratchet wheel.

The machine is put into operation by means of the coned collar 33, and for controlling this collar I provide a horizontally swinging lever 55 pivoted at 56, one arm 57 of which extends out horizontally. By swinging the outer end of the arm 57 to the right the lever 55 is swung inwardly, and being connected by suitable pins 58 to the collar 33, throws said collar inwardly and clutches the pulley 31 to the shaft 30. The outer end of the arm 57 is provided with a hole 59 for receiving the upper end of a vertically extending swinging lever 60 pivotally mounted between its ends at 61 to swing in a vertical plane. The lower end of this lever 60 is connected to an operating rod or cable 62 which extends out to the delivery end of the machine. An operator watching the delivery of the slabs has control of the delivery mechanism and by pulling upon the control member 62 can effect the delivery of a slab. To stop the machine upon the delivery of each slab I provide a throw-off stop 63 secured to the arms of the wheel 39 and which is on the one revolution shaft. This stop is bent at an incline, as best shown in Figure 6, and is adapted to strike a similarly formed lateral projection 64' on a forwardly extending portion 65 of the lever 55 and swing the lever 55 to withdraw the coned member 33, and accordingly the operator is obliged to give a pull on the member 62 each time he wants a slab delivered.

The operation which has been described is the normal continuous operating of the machine until the slabs have all been removed from the pile. To prevent the fur-

ther lifting of the platform after the last slab has been removed, an automatic stop 64 is provided. This consists of a projection upstanding from one side of the platform which is adapted as the platform approaches its highest position to engage a horizontal arm 65 of a bell crank pivoted to the frame at 66. The other arm 67 of the bell crank projects upwardly and is operatively connected to a horizontally slidable member 68. This member 68 carries a stop plate 69 on its forward end, having a forwardly inclined part 70 adapted when the member is moved forward to engage a horizontally projecting pin 49' on the dog 49, as the dog is drawn back, and prevents the dog engaging with the ratchet wheel. When the platform has reached its top position and the soap slabs have all been removed, the next operation is to lower the platform to its lowest position for the purpose of removing the base member and placing another quantity of soap on the platform.

The platform is lowered by gravity, but means are provided to prevent it dropping too fast. This means consists of a brake pulley 71 keyed to the lifting shaft 44 and engaged by a brake band 72. A horizontal shaft 73 is provided on which is secured a short brake arm 74 for lightening the brake band in the usual way, and there is provided a long arm 75 also keyed to the shaft for the manual operation of the brake. When it is desired to let the platform down both the holding dog 54 and the lifting dog 49 must be swung clear of the ratchet wheel 43. For this purpose there is provided a segmental disk 76 mounted on the shaft 44 to swing freely around. This disk is connected at one point to a foot lever 77 by a link 78, and the parts are so arranged that when the free end 79 of the lever 77 is pushed down the segmental disk will be rotated anticlockwise on the shaft 44. The disk has an inclined forward edge 80 adapted to engage beneath the pin 49' on the dog 49. The inclined forward edge 80, when the disk is rotated first, engages a similar projection 81 on the holding dog and swings this dog around out of engagement with the ratchet wheel. In lowering the platform, the brake is first applied by the lever 75, then the two dogs are lifted to free the ratchet wheel, then the brake is eased off just enough to let the platform drop as fast as desired.

Commonly the block of soap 20 is formed on a flat base 82 which is adapted to be moved around the factory on a low wheeled truck 83. The truck with the base and block of soap thereon is brought to the rear end of the machine, as indicated, shown in Figure 4, and then the base 82 with the block of soap 20 thereon is pushed onto the platform of the machine. The platform is provided

with a floor consisting of a plurality of anti-friction rollers 84 to facilitate this placement of the block of soap in the machines.

In other factories the extra base is dispensed with and the block of soap is formed directly on a low truck 85. The truck base is provided with low truck wheels 86, and the platform of the machine instead of having anti-friction rollers is provided with two angle-iron tracks 87 for the truck wheels. In either case the forward end of base is stopped by the front wall 12 of the frame, and this engagement resists the push of the abutment in removing the slabs. For the purpose of readily removing the base after the soap has been removed and the platform has been lowered, there is provided a hinged section 88 at the lower part of the wall 12 which is high enough so that when it is swung up into horizontal position, as shown in dotted lines, Figure 1, the base or the truck, as may be, can be pushed out the forward end of the machine as the next base or truck enters the rear end of the machine. For convenience in locking this hinged section or gate 88 in each of its two positions, there is provided on the gate a pivoted latch 89 adapted to engage beneath a hooked latch member 90 on the frame to hold the gate closed, and also adapted to engage the outer end of a curved projection 91 to hold the gate open.

By means of my machine one man or boy can readily deliver a hundred tons of the soap slabs in a day and not work hard at that, whereas in the old manual method the workmen could not stand the work but a few years and at that only the strongest could do the work at all.

As many modifications of the invention will readily suggest themselves to one skilled in the art, I do not limit or confine my invention to the specific details of construction herein shown and described, such being merely typical of my invention.

I claim:

1. In a machine of the kind described, a conveyor belt device arranged above an elevator platform adapted to carry a block of soap previously divided into a plurality of substantially uniform horizontal slabs, the conveyor provided with an abutment for engaging the rear end of the top slab and normally having a quiescent position adjacent to said rear end, means for causing the conveyor to make one complete cycle and stop, and means for causing the platform to lift a distance equal to the depth of one slab during the return portion of the movement of said abutment.

2. In a mechanism of the kind described, an elevator platform, toothed racks for lifting the platform, pinions on shafts engaging said racks, a ratchet wheel on one of said shafts, a movable dog for engaging said

wheel for raising the platform, a stationary dog for engaging the wheel for sustaining the platform, means for yieldingly holding the shaft against rotation to lower the platform, and manually operable means for releasing both said dogs for lowering the platform.

3. In a mechanism of the kind described, a framework having an elevator platform normally in the lower part thereof for receiving a load of material to be delivered, a

smooth forward wall for the framework against which the load contacts as it rises in the mechanism, said wall having a gate at its lower end for permitting the removal of a material supporting base when a second lot of material is placed in the mechanism from the opposite end.

In testimony whereof, I have hereunto set my hand, this 8th day of April, 1924.

EDDY T. MCKAIG.