

July 3, 1962

S. V. BOWLBY
MACHINE FOR STORING AND EXCHANGING USED
WIPING CLOTHS FOR FRESH WIPING CLOTHS

3,042,172

Filed Oct. 28, 1958

2 Sheets-Sheet 1

Fig. 1.

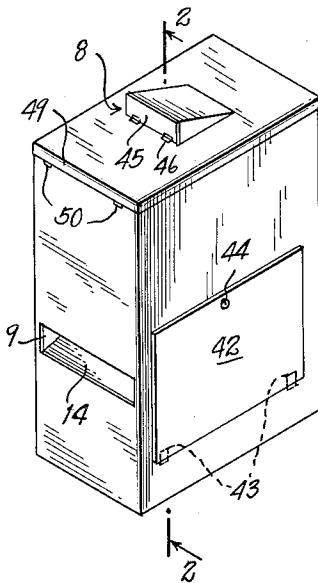


Fig. 2.

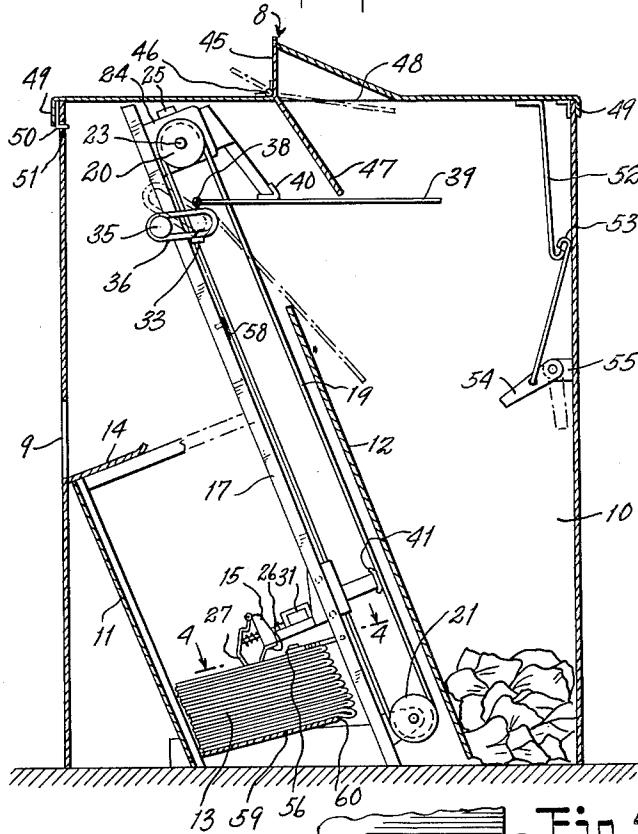


Fig. 3.

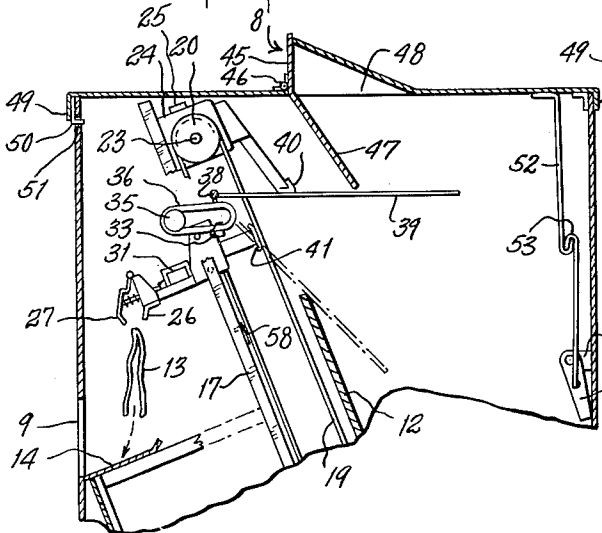
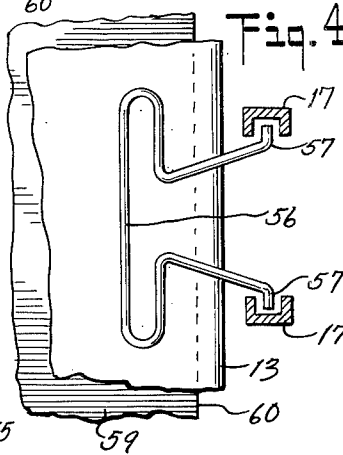


Fig. 4.



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Fig. 5.

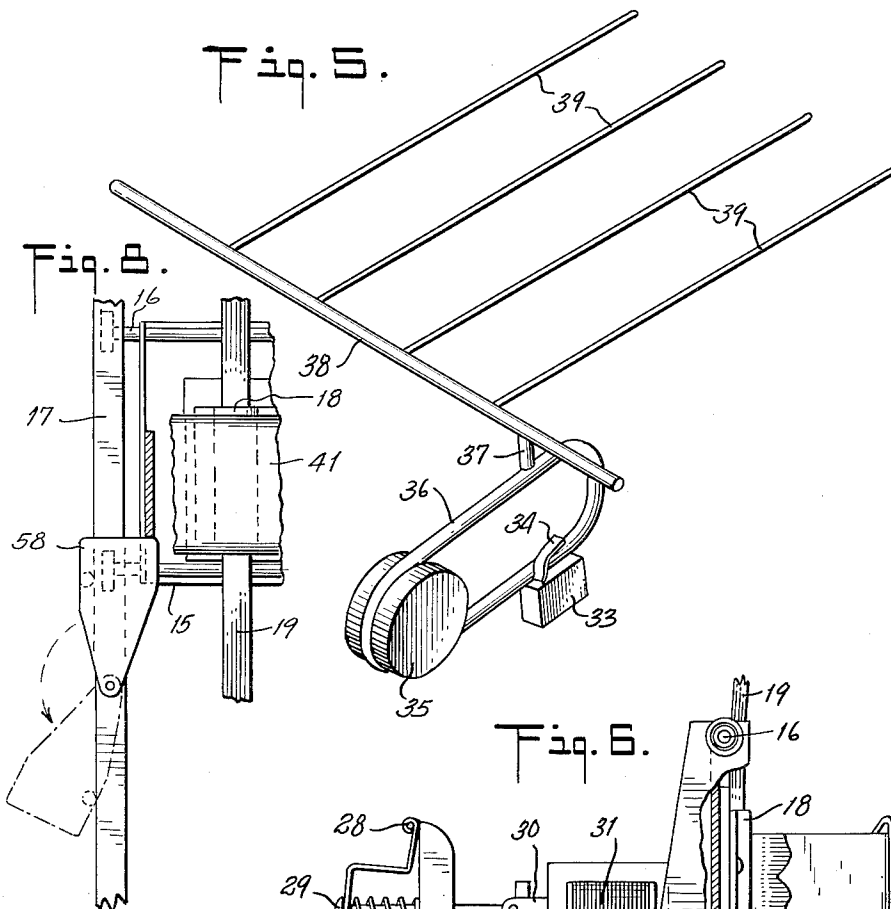


Fig. 6.

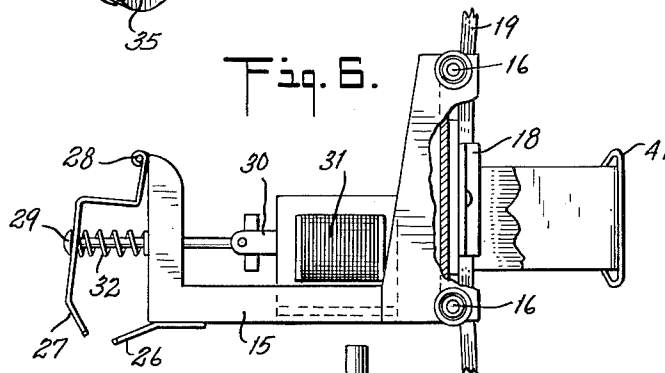
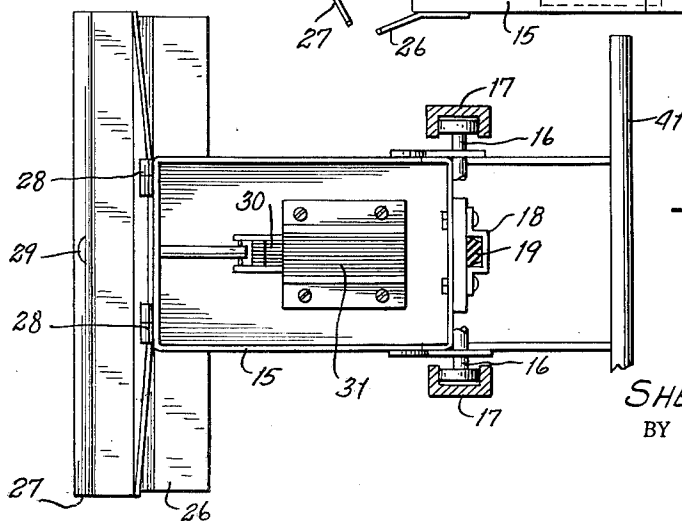


Fig. 7.



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MACHINE FOR STORING AND EXCHANGING USED WIPING CLOTHS FOR FRESH WIPING CLOTHS

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2 Claims. (Cl. 194—4)

The invention herein disclosed relates to storing and dispensing machines and is concerned particularly with the handling of commercial type wiping cloths such as used in machine shops and manufacturing establishments.

Objects of the invention are to provide safe, convenient storage for both the fresh, unused cloths and the used or soiled cloths and to make delivery of the fresh cloths contingent on return of the used cloths to a receptacle provided particularly for such cloths.

Accordingly the invention comprises, in a general way, cabinet structure for holding both fresh and used wiping cloths in properly separated relation and mechanism which on deposit of a used wiping cloth in the machine will operate to automatically effect delivery of a fresh wiping cloth ready for use.

Further special objects of the invention are to provide such a machine in a practical low cost construction suitable for the purposes intended.

The novel features of construction, combinations and relations of parts through which the purposes of the invention are accomplished are set forth in the following specification and are illustrated in the accompanying drawings.

The drawings mentioned are illustrative of a present practical embodiment of the invention but structure may be modified and changed as regards the immediate illustration, all within the true intent and scope of the invention as hereinafter defined and claimed.

FIG. 1 in the drawings is a perspective view of one of the storing and exchanging machines.

FIG. 2 is an enlarged vertical sectional view of the same on substantially the plane of line 2—2 of FIG. 1 showing parts in normal position in full lines and broken lines indicating gripped position resulting from deposit of used wiping cloth.

FIG. 3 is a broken sectional view of the upper portion of the machine showing the carrier at the top of its movement with the gripper opened to drop the lifted cloth onto a delivery shelf.

FIG. 4 is a broken plan and part sectional view of the holder for keeping the stack of fresh cloths in proper order.

FIG. 5 is a perspective view of the controller which is overbalanced by the inserted soiled cloth to start a free running roller into action to close circuits for a motor which drives the carrier and for a solenoid which closes the cloth gripper on the carrier.

FIGS. 6 and 7 are broken side and top plan views respectively of the carrier with the gripper shown in the open position.

FIG. 8 is a broken detail view of a latch construction for holding the carrier up in elevated position out of the way while a fresh stack of cloths is being inserted in the machine.

In FIG. 1 the machine is shown as having a cabinet type of enclosure 7 provided at the top with a conveniently accessible entrance 8 for soiled wiping cloths and below that, in the front, a delivery output 9 for the fresh cloths.

The soiled and fresh cloths are stored separately, the former in a bin or receptacle portion 10, FIG. 2, at the back of the cabinet below the inlet 8 and the fresh cloths in a holder structure 11 at the front of the machine below the delivery outlet.

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The two compartments are shown separated by an upwardly and forwardly inclined dividing wall 12.

The holder 11 for the stack of fresh cloths indicated at 13 is shown similarly forwardly and upwardly inclined so that a cloth lifted from the top of the stack may fall, when dropped, FIG. 3, onto an inclined delivery shelf 14 in the outlet opening 9.

The carrier for picking the cloths off the top of the stack and dropping them on the delivery shelf is shown in FIGS. 6 and 7 as comprising a small carriage, bracket or frame 15 having projecting pins 16 at the back with roller bearings 23, riding in guide channels 17 and secured by a clamp 18 to a belt 19 running over upper and lower pulleys 20, 21, driven by motor 24.

This motor is shown as of the reduction gear, one-way drive clutch type, having incorporated in it at 25 reduction gearing and a clutch which will drive the belt 19 for the carrier only in the upward lifting direction.

The gripper for picking up the top cloth is shown as made up of hingedly connected serrated jaws 26, 27, the first rigidly secured to the carrier frame and the second pivoted thereto at 28, FIG. 5.

The movable jaw is shown connected by a pull link 29 with the core 30 of a solenoid 31 mounted on the bracket, with a spring 32 encircling the link for holding the jaw normally in the open position shown in FIG. 5.

The solenoid for closing the gripper and the motor for lifting the carrier may be energized at the same time and hence be controlled from the same switch indicated at 33. This may be a small normally open microswitch such as illustrated in FIG. 5 having an operating lever 34 by which the switch may be closed.

Operation of the control switch is effected in the illustration by a free turning grooved roller 35 confined in a parallel sided loop 36 with the switch mounted on the lower run of this loop with the lever 34 in position to be engaged and operated by the roller.

In FIG. 5 the roller confining switch supporting loop 36 is shown suspended intermediate its ends at 37 on a rock shaft 38 so that said roller may act as a counterweight to hold said shaft balanced either horizontally or downwardly inclined.

The rock shaft 38 is shown in FIGS. 2 and 3 as journaled in the casing above the carrier guides 17 and as having cloth supporting fingers or arms 39 projecting therefrom beneath the waste cloth inlet into position over the receiving bin 10.

The forward or downward tilting movement of the trip shaft 38 is shown in FIGS. 2 and 3 as limited by engagement of the cloth supporting fingers 39 with the top of the separating wall 12. In this position the roller will be at the forward or inner end of the guide loop 36 holding the motor and solenoid switch 33 in circuit closed position.

The upward tilting movement of the switch operator may be determined by engagement of the arms 39 with a stop 40.

In the normal position of parts the carrier 16 will be at the bottom as shown in FIG. 2 with the gripper open, resting on the top cloth of the supply stack 13. At this time the control shaft 38 will be in the generally horizontal position shown in FIG. 2 with the fingers 39 projecting into position for engagement by a soiled cloth inserted in the opening 8 in the top of the cabinet, held so by the roller 35 at the outer end of the loop 36, overbalancing the shaft in this position.

When a soiled cloth is dropped into the receiving opening 8 the operator will be tripped to the dotted line position shown in FIG. 2 causing roller 35 to roll forwardly and close switch 33 to energize both the motor and the gripper solenoid.

When this occurs the solenoid 31 will close the gripper

on the wiping cloth on top of the supply stack 13 and the motor through the reduction gearing and clutch will start the carrier belt up the forwardly inclined tracks 17 lifting the top cloth into position above the delivery tray 14, FIG. 3.

As the carrier approaches the top position a bar 41 at the back of the carrier frame will strike the then lowered operator fingers 39, lifting them and thus rocking control shaft 38 back into the horizontal position shown in FIG. 3. Roller 35 then rolls downward and outward to the position shown in FIG. 5 causing switch 33 to open the solenoid and motor circuits enabling the gripper to release and drop the cloth onto the delivery tray and permitting the motor to stop and the carrier, under the release action of the one-way clutch, to drop down until the gripper again rests on the top cloth of the supply stack, thus restoring parts ready for the next delivery action.

The invention provides orderly storage of fresh unused wiping cloths and safe storage for soiled or used cloths. Fresh cloths are kept quickly available but only by returning of the used cloths, providing a practical system for keeping track of both used and fresh cloths and facilitating collection, washing and reuse of cloths in a closed cycle of operations, eliminating waste, inducing neatness and promoting safety, particularly as eliminating or reducing fire hazards.

The invention provides a practical system of exchanging used for fresh articles. The structure is simple and not likely to get out of order and the only servicing usually required is to remove the collection of soiled cloths and to add fresh supply of the unused cloths. This may be accomplished by provision of a door 42, FIG. 1, in the side of the cabinet, affording access to both the collection bin 10 and the stack holder 11.

This door may be of the removable type having hooks 43 engageable over the lower edge of the door opening and held in place at the top by a key operated tumbler lock 44.

The entrance for the soiled cloths may be normally kept closed by an upright door 45 hinged on top of the cabinet at 46 and counterbalanced in the upright closed position by an angled door extension 47 arranged to close the access opening 48 in the top of the cabinet when the trap door 45 is pulled open to admit the cloths. This lower extension, as shown in FIG. 2, forms an inclined guide to direct the entering cloths onto the control wires 39.

For accessibility the entire top of the cabinet may be made removable as by providing it with a boundary flange 49 fitting down over the upper edge of the cabinet walls and having inwardly directed lugs 50 at one side engaging in openings 51 in the cabinet and a dependent hook 52 at the opposite side engageable by an upstanding hook 53 carried by hand lever 54 pivoted on the wall of the casing at 55 to operate as an over-center toggle. This toggle lever 54 is located so as to be within easy reach of an operator when the access door 42 is opened. Consequently, while normally closed and locked full access may be had for loading fresh cloths and removing soiled cloths or for unlocking the top and permitting removal of the same by simply unlocking and removing the side door 42.

To prevent the fresh cloths from getting out of order a follower may be provided, shown in the form of a wire loop 56 positioned to rest lightly on the top of the stack and guided in that relation by having out turned terminals 57, FIG. 4, loosely engaged in the channels 17 which guide the carriage. This follower or hold-down is easily removed or lifted whenever a fresh stack is to be inserted in the machine.

For convenience in loading operations the carrier may be lifted by hand and be temporarily supported in elevated position by a latch lever 58, FIG. 8, pivoted on the back of one of the upright channel guides 17, normally

standing to one side of the carriage travel and adapted to be shifted into upright position after the same has been pushed up into elevated position at the top of the stack guide.

Thus in servicing the machine, after removing the access door 42, an operator may push the carrier up to the top of its movement and latch it in position there by turning up the lever 58 and then have both hands free for removal of soiled cloths from the bin 10 and placement of a fresh stack of cloths in the guide or holder 11.

Commercial wiping cloths are usually furnished in a folded condition, as illustrated in FIG. 2. To avoid the buildup of these folds accentuating the height of the stack at one side, the holder may have a supporting shelf 59 at the bottom terminating short of the full width of the cloths at one edge at 60, FIG. 2, allowing the cloths to droop somewhat at that edge. This less than full width support of the stack and the hold-down 56 serve to keep the cloths in a substantially flat condition at the top enabling the gripper to unfailingly pick up the top cloth.

Proper gripping of the top cloth also is assured by the dropping of the gripper from the top of its stroke down onto the top of the stack in the opened condition shown in FIG. 3. By such dropping action the toothed jaws are given an initial hold on the material so that in closing they will fully engage and hold the cloth.

Details of the geared motor with one-way drive clutch are not illustrated since this may be one of several designs now on the market which when energized will drive the pulley at reduced speed in one direction, to raise the carrier and when de-energized will release and permit the pulley to rotate in the opposite direction, to drop the carrier onto the top of the stack.

In the machine illustrated the delivery shelf extends inwardly over the top of the stack but the upward and outward incline of the guide tracks and stack holder enables the gripper to clear the inner edge of the shelf on both upward and downward travel and in its upward movement to lift the cloth up past the inner edge of the shelf and then after reaching a position directly over the shelf to drop the cloth onto the shelf as indicated in FIG. 3.

What is claimed is:

1. In a machine of the character disclosed the combination of a carrier for discharging a fresh cloth from the top of a stack of fresh wiping cloths, means for operating said carrier, a controller for said means and a used cloth displaceable barrier comprising a rock shaft having a lever arm engageable by an inserted used cloth, a trackway carried by said rock shaft extending transversely to opposite sides of said shaft, a roller operating in said trackway for overbalancing said rock shaft in reverse directions and said controller including a switch mounted on said trackway and positioned for operation by said roller.

2. A machine for dispensing wiping cloths comprising a holder for a stack of cloths, a gripper having companion normally open relatively movable jaws for gripping engagement with the topmost cloth of said stack, a carriage on which said gripper is mounted, upright guides confining said carriage to upward and downward movement in respect to the stack of cloths in said holder, a motor, mechanical connections from said motor to said carriage for elevating and then lowering said carriage to drop said gripper onto the wiping cloth on top of the stack, a solenoid on said carriage connected to effect closing and opening of said gripper jaws, switch means for energizing said motor and solenoid, an operator for said switch mechanism arranged for actuation by engagement of a soiled cloth therewith and disposed to thereupon operate said switch mechanism to energize said solenoid to effect closing of the gripper on the topmost cloth and energization of the motor to effect the elevating of the gripper carriage and a member on said

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