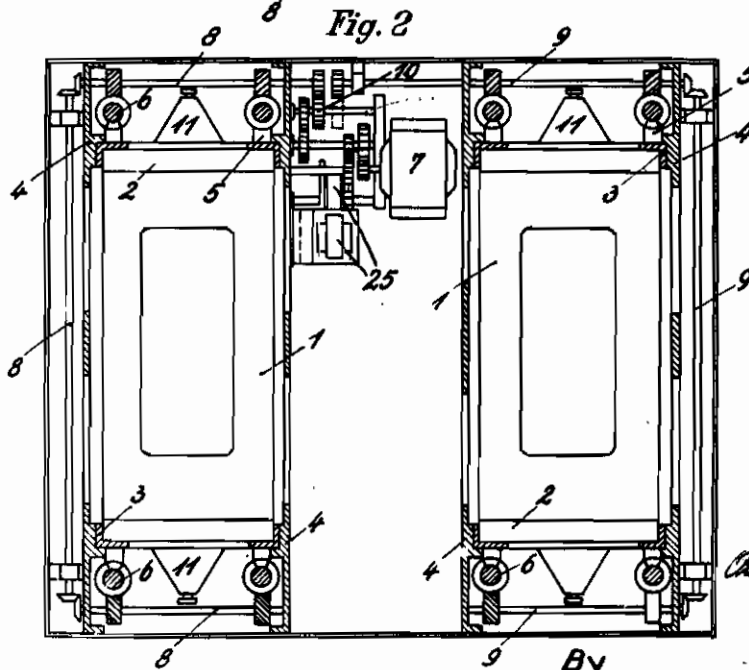
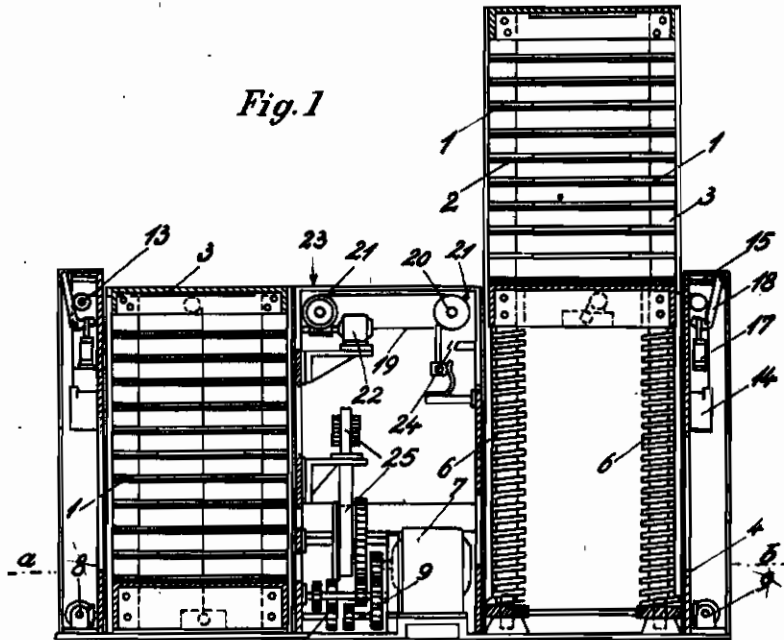


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APPARATUS FOR STORING AND CONVEYING CARD  
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CONTAINERS OR THE LIKE  
Filed March 20, 1939

Serial No.  
263,038

4 Sheets-Sheet 1



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Fig. 3

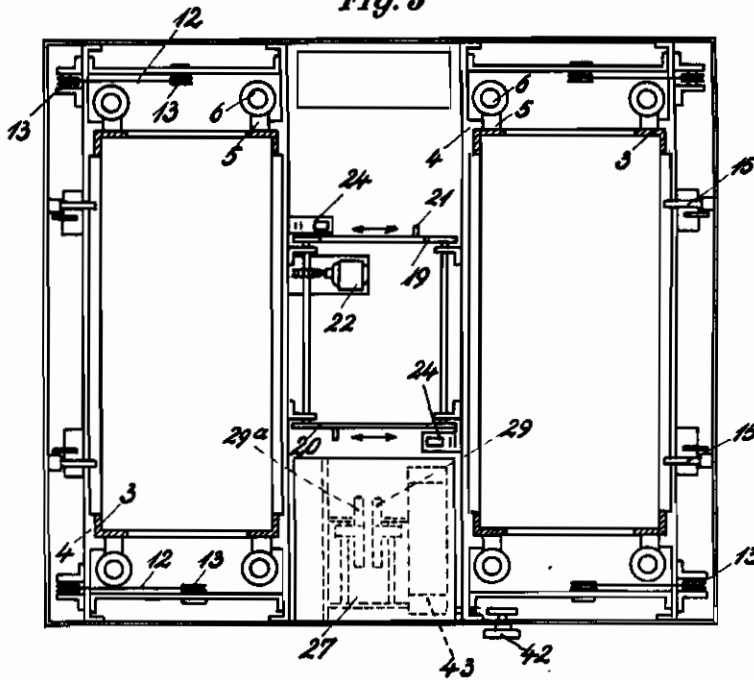
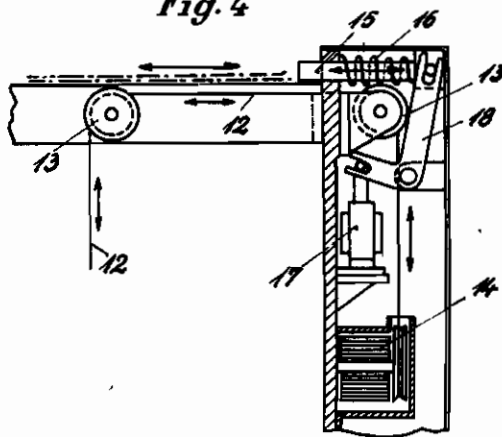


Fig. 4



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Fig. 5

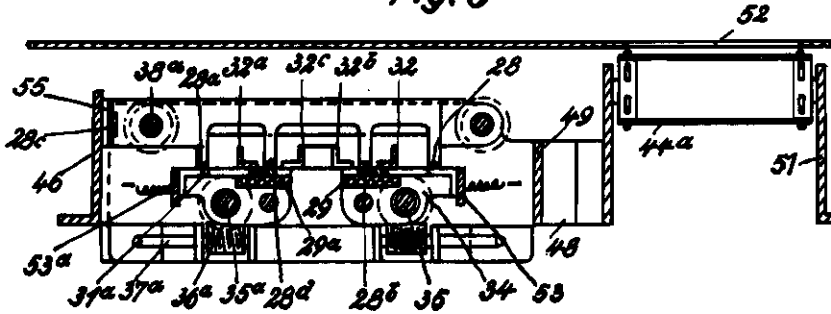
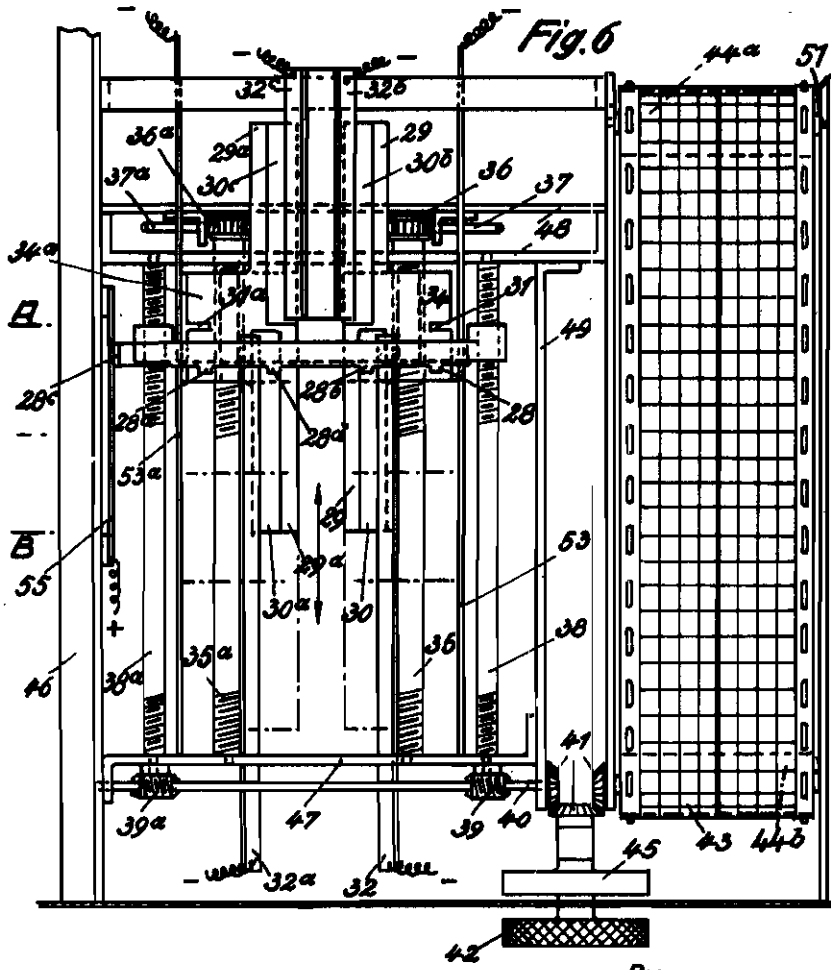


Fig. 6



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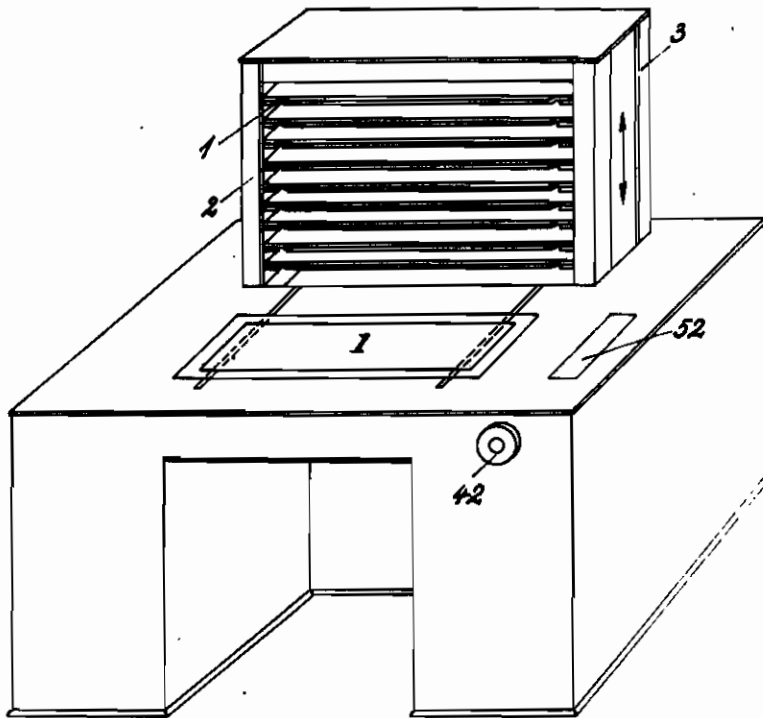
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Fig. 7



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# ALIEN PROPERTY CUSTODIAN

## APPARATUS FOR STORING AND CONVEYING CARD INDEXES OR OTHER SUITABLE ARTICLES IN CONTAINERS OR THE LIKE

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vested in the Alien Property Custodian

Application filed March 20, 1939

This invention relates to a modification of the apparatus described in the specification of my application for patent in the U. S. A. No. 151,059 in which a different combination of the same mechanical means is employed and which enable the object to be attained in a simple manner. While in the apparatus described in the specification of the patent application Ser. No. 151,059 the superposed containers are moved successively in circulation along a rectangular path so that all containers which are above the selected container must be shifted laterally, the loose containers are, according to the present invention, raised by a conveying mechanism in a box common for all containers above the top of a table to a height, according to the adjustment of a selecting device, so that the desired container can be removed from the pile of containers and brought to the working place by another conveying mechanism. The selected container brought to the height of the desk top may be pulled out of its compartment by hand if the working place is sufficiently near the container box. But, according to the invention, a conveying device may be provided which allows the working place to be at any desired distance from the pile of containers and several working places to be connected with the same pile of containers. Conveying apparatus are known in which container boxes are raised and lowered as in an elevator. The known constructions are not perfect and fail to fully fulfill their object.

The selection in these known apparatus is effected with the aid of the eyes and a corresponding concentration on the selecting operation. This results in a continually recurring distraction from the actual work to be done, for example the entry of a booking. The invention hereinafter described has for its object to completely relieve the operator from the selecting work and entrusts this to the machine. Thus, selecting and setting devices (which are described in my above mentioned application) cooperate with switching devices which reverse the poles of the driving motor in the direction of the shortest path for the container to reach the working level, and suitable conveying mechanisms for conveying the desired container to the place of work cooperate with a vertically operating conveying mechanism to produce a novel complete total effect. Without such mechanisms it is necessary in the known apparatus for the operator to use his hands and eyes, resulting necessarily in a restriction of the speed. Apart from the unsatisfactory degree of efficiency, the continually

recurring diversion from the actual work by searching for the desired container is also an important point. The invention which will be hereinafter described relieves the operator not only from the tiring repeated diversion, but at the same time enables him to use this time for carrying out his actual work to which he can give his whole attention.

The known apparatus are not suitable to be placed in the middle of a room as desks, because they require a real elevator shaft above the pile of containers. This objection is overcome by the solution of the problem hereinafter described, according to which the container boxes are gripped at the bottom or sides without parts of the mechanism being arranged above the place of work or project above the container boxes.

Two embodiments of the invention are illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a longitudinal section through a desk with two container boxes of which that on the right is in raised position,

Fig. 2 is a horizontal section of Fig. 1,

Fig. 3 is a top plan view, the desk top being removed,

Fig. 4 shows a container ejector in vertical section,

Fig. 5 shows in cross-section the pole reversing device and selecting and setting device,

Fig. 6 is a top plan view of Fig. 5,

Fig. 7 is a perspective view of a modified form of construction.

The containers 1 with the piles of card index cards are accommodated in a common vertically shiftable container box 3 or the like. The containers are arranged closely spaced one above the other and carried by supporting and guiding bars 2 on the side walls of the container box 3. The container box is moved up and down by screw spindles 6 meshing with racks 5 on the container box. Some of the screw spindles have right hand threads while the others have left hand threads. The box 3 is guided not only by the screw spindles 6 but also by guide members 4 at the corners of the box. The screw spindles 6 are driven by a motor 7 through the intermediary of a toothed wheel gearing 8 or 9, Figs. 1 and 2. An electro-magnetic clutch 10 is provided for alternately actuating container boxes at opposite sides of the desk, which clutch drives now the gearing 8 and then the gearing 9.

For taking up part of the weight of the container boxes two helical springs 14 (Fig. 4) are provided for each box and connected to an at-

tachment member 11 (Fig. 2) by ropes 12 (Fig. 3) guided by rope pulleys 13.

The container box 3, when in motion, is brought to a standstill by a magnet brake 25 as soon as the container 1 selected by means of a setting device 27 hereinafter described, has reached the level of the desk top 23 (working place). The magnet brake 25 not only stops the conveying mechanism but also switches off the motor 7 and switches on an electro-magnetically operated spring-loaded ram 17, 18 (Fig. 4) and a motor 22 which drives another conveying mechanism consisting of chains 19, sprocket wheels 20 and catches 21 (Fig. 3).

The catches 21 engage in corresponding projections of the container 1 and convey the selected container out of the box 3 on to the place of work. When the container reaches the prescribed extreme position on the place of work, a contact 24 is actuated by the catch and this conveying mechanism is also brought to a standstill. For conveying the selected container back into its box a press button contact (not shown on the drawings) is provided which causes the conveying mechanism to convey the container in the opposite direction and slide it into its box 3.

As above mentioned the selection of a certain container 1 from those in the container box 3 is effected by the adjustment of a setting device 27 which cooperates with a selecting device 31 and with a magnet brake 25. An example of such a setting device is illustrated in Figs. 5 and 6 and this device comprises an endless setting band 43 guided by rollers 44a and 44b of which the front roller 44b can be driven by a knurled knob 42 with a flywheel 45 and bevel wheels 41. The setting band 43 has on its right hand half markings indicating the containers in the right container box and on the left hand half similar markings indicating the containers in the left container box the markings being in the same sequence as the containers are arranged in the boxes. If the operator turns the knurled knob 42, the individual markings appear successively under a window 52 and consequently the band can be set to the marking indicating the container required. Corresponding to this setting movement of the setting band spindles 38 and 38a are at the same time driven by the turning of the knurled knob 42, through the intermediary of the bevel wheels 41 which drive a shaft 40 connected to the spindles 38, 38a by worm gears 33, 39a. These two spindles 38, 38a carry a common bar 28 whose ends are constructed as nuts by which the lever 28 is moved to and fro by the spindles 38, 38a. The bar 28 has on its left end a contact 28c which slides along a contact bar 55 connected to the positive pole of a source of current. Two slides 29, 29a of insulating material are arranged under the bar 28 and adapted to be moved to and fro by two separately operated spindles 35 and 35a engaging nuts 34, 34a on the slides, in accordance with the actual movement of one of the container boxes. For this purpose the spindles 35, 35a are connected each to one of the toothed wheel gears 8 and 9 by worm gears 38 and 36a and flexible shafts 37 and 37a respectively. The left slide is connected for example to the left conveying mechanism of the left pile of containers and carries out all movements of this pile but on a smaller scale, whereas the right slide is connected to the right conveying mechanism. The slides 29 and 29a have contacts 31 and 31a respectively which slide along contact

bars 53 and 53a respectively and can thus be brought into connection with the negative pole of the source of current. The bar 28 has near its ends contact projections 28e and 28a which can be brought into contact with the contacts 31 and 31a. The bar 28 can be moved to and fro by the setting device only along a predetermined path A—B. The setting points for all the containers are arranged successively on this path. The bar 28 is brought into predetermined position by the setting of the band which corresponds to the actual working on the band 43. Every movement of a container box results in a movement of one of the slides and consequently of one of the contacts 31 and 31a towards the selection bar 28. When the selected container 1 has been brought to the level of the desk by the movement of the container box 3, its associated slide contact 31 or 31a has travelled up to the actual position of the selector bar 28. This is due to the fact that the total adjustment path A—B for the adjustment of all containers 1 in a box 3 is of the same length as the total path along which the slide 29 or 29a moves, when its associated container box moves from its lowest into its highest position. When the container set in the selecting and setting device is at the height of the desk top the contact 28e or 28a on bar 28 and the contact of the corresponding slide 31 or 31a make contact. By this contact making the magnet brake 25 is actuated so that the selected container is brought to a standstill at the level of the table top, the motor 7 is switched off and the auxiliary motor 22 switched on.

It is pointed out that as long as the setting device is being adjusted the current is switched off and is only switched on by the actuating of one of two press buttons or switches after the adjustment has been made and contact is made between the bar 28 and one of the slide contacts 31, 31a. One press button is provided for the right container box and one for the left container box. When one of these buttons is pressed the corresponding magnetic coupling with one or other of the counter shafts 8, 9 takes place.

The slides have, however, another duty to perform. As the motor must move a container box up or down as may be required, it is necessary to effect a pole reversal to change the direction of rotation of the motor when required. This pole reversal takes place automatically by means of the slides 29, 29a which for this purpose have contact strips 30, 30a and 30b, 30c respectively. The contact strips are of similar size and insulated from one another in the longitudinal direction by separation, so that each slide has an upper contact strip 30b, 30c and a lower contact strip 30, 30a respectively. At the movement of a container box 3, the upper contact strip 30b or 30c moves down with the slide 29 or 29a and, when the container box 3 reaches its highest position, assumes the position originally occupied by the lower contact strip 30 or 30a. This is the lowest position which the upper contact strip can assume. The upper and lower contact strips of each slide are in permanent contact with a stationary conductor bar. Two upper conductor bars 32b, 32c are provided for the two upper contact strips and these bars are connected in such circuits that the motor 22 at the closing of a circuit rotates in that direction which effects a downward movement of the raised container box. If the container box is in its lowest position in the desk, the corresponding slide 29, 29a is in its

highest position so that the upper contact strips 30b and 30c are outside the selecting path A—B of the selector bar 28. In this position none of the containers can move downwards but all can move only upwards (Fig. 6). This is effected by the lower contact strips and the corresponding lower stationary conductor bars 32, 32a. When the container box 3 is in its highest position the corresponding slides are in their lowest position, and consequently the lower contact strips are below and outside the selecting path A—B of the selector bar 28. No contact making can take place which could cause the motor to effect a further upward movement of the container box. The same applies for the intermediate positions.

The contact making is effected by the contact projections 28b and 28d on the selector bar. These projections slide on the contact strips 30, 30a and 30b, 30c respectively. According to literature a contact making only takes place on one of the lower contact strips 30, 30a or on one of the upper contact strips 30b, 30c, the positive current is conducted from bar 55 through the selector bar 28 to the one or other of the terminals of the motor by the bars 32, 32a or 32b, 32c, that is the motor in this manner changes its direction of rotation. The direction in which the motor rotates is determined by the actual position which the slides 29 or 29a assume by the conveying mechanism corresponding to the position of a container box, and by the adjustment by means of the selector bar 28 to the container actually required.

The switching device, by means of which the pole reversal actually required or the direction in which the motor is to rotate, is determined, serves only for switching the motor into the circuit for the direction of rotation actually required. The current after the switching on, for example by means of a relay, no longer flows through the switching device but through one of the main circuits. The switching device moves, so to speak, in the opposite direction to the pile of containers; if this moves upwards, the slide moves downwards. Owing to this counter movement the contact connection with the lower contact bars is interrupted and the contact connection established with the upper current bars for all containers which have been raised above the level of the desk top, so as to enable at any time a return to the level of the desk top by reversal of movement. When the circuit of the driving motor has been closed, the movement of the

motor is independent of the continued movement of the switch path until a standstill is reached.

The selecting and setting device and the pole reversing device are mounted in a frame 46, 47, 48, 49, 50, 51.

It is also pointed out that at the ends of the spindles 6 pressure contacts (not shown) are arranged which switch off the driving motor as soon as the container boxes assume their uppermost or lowermost positions. A similar interrupter contact is arranged directly in front of the point where the containers are pushed out of and into the boxes so that, if a container is not pushed sufficiently far into its box, operation of the motor is prevented by the pressure exerted on this contact point. To securely hold the containers in the container boxes suitable engaging snaps are provided. It is also advantageous to arrange the conveying mechanism for the lateral displacement under the desk top and to establish connection with the containers by narrow slots through which catches 21 move or engage in suitable projections on the containers. To enable the containers to be pushed reliably into a box without damaging the cards, it is advisable to provide a cover on the side when the containers are pushed into the box.

Finally it is pointed out, that this conveying mechanism and also the conveying mechanism described in the specification of the main patent application is suitable for combining with other machines such as typewriters, calculating, book- ing, sorting, multiplying, tabulating, perforating and printing machines and the like. In this instance only simple connecting conveying mechanisms, such as conveyor bands, pressure cylinders, rollers, grippers, carriers, pushing devices, lifting mechanisms, piling devices and the like are required according to the character of the different combinations.

Fig. 7 shows in perspective view a somewhat modified form of construction, in which the elements above described are also used. The container box is arranged opposite the place of work instead of laterally thereof. It consequently allows, in the case of card indexes, an arrangement of the cards so that they can be turned over like the leaves of a book. It is evident that, besides this arrangement, container boxes may also be arranged in the side portions of the desk and actuated by a common selecting and setting mechanism and switching device.

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