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BY A. P. C.

O. A. BECKER
APPARATUS FOR STORING AND CONVEYING CARD
INDEX CARDS AND OTHER ARTICLES
ACCOMMODATED IN CONTAINERS
Filed May 12, 1939

Serial No.
273,370

3 Sheets-Sheet 1

Fig. 1

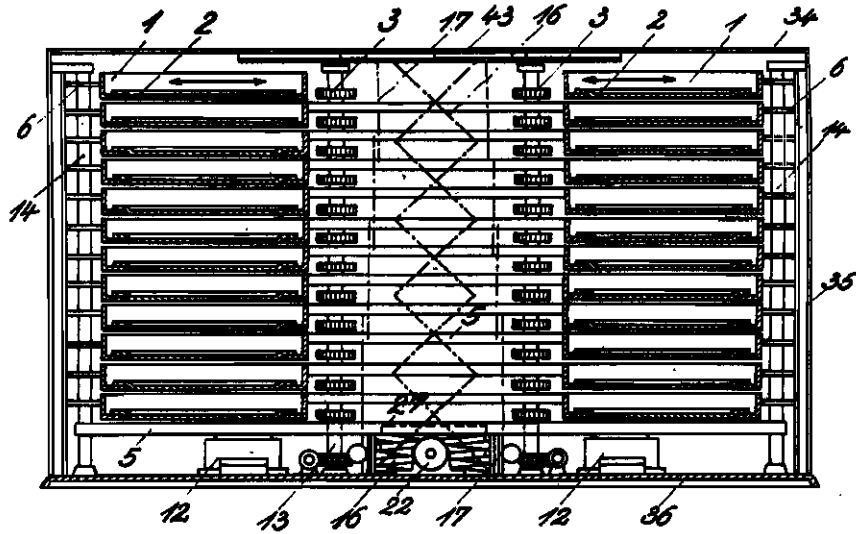
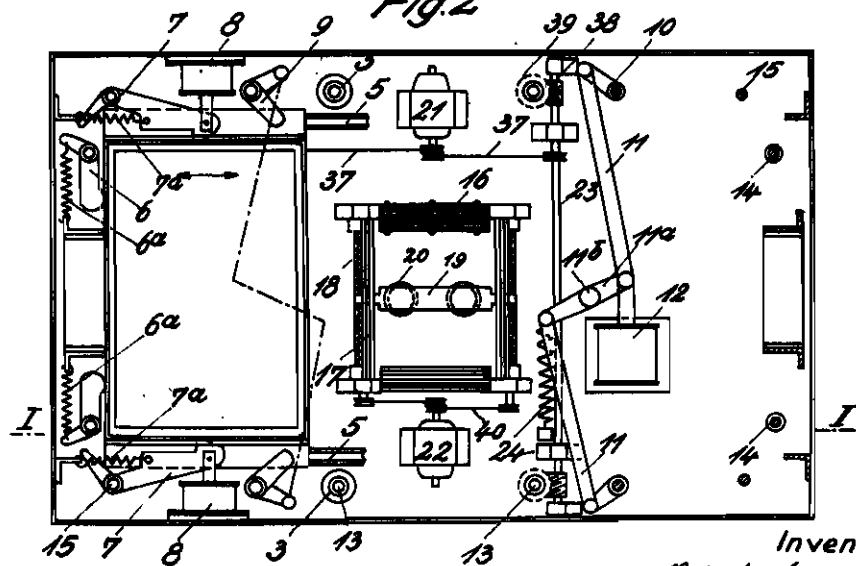


Fig. 2



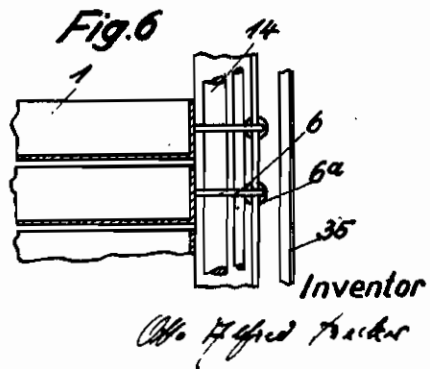
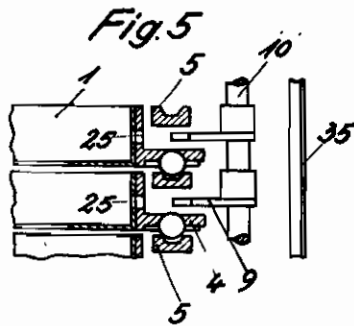
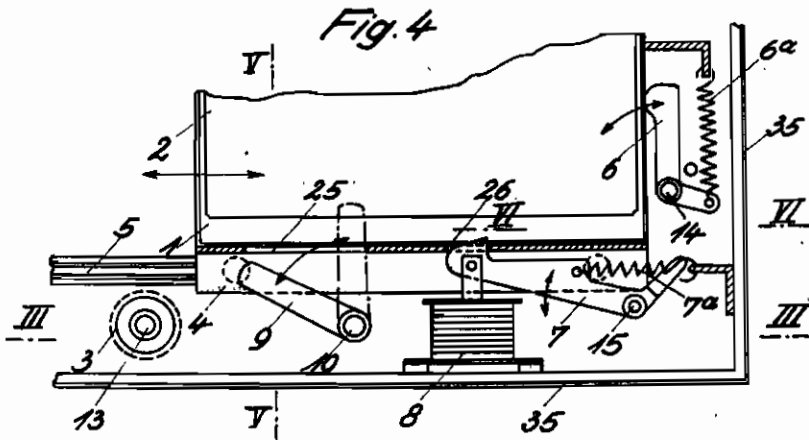
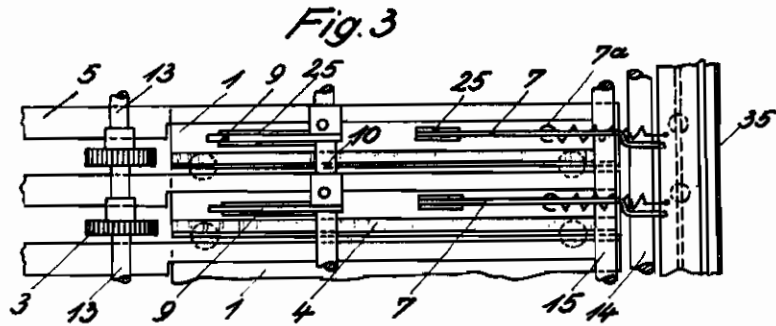
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Inventor

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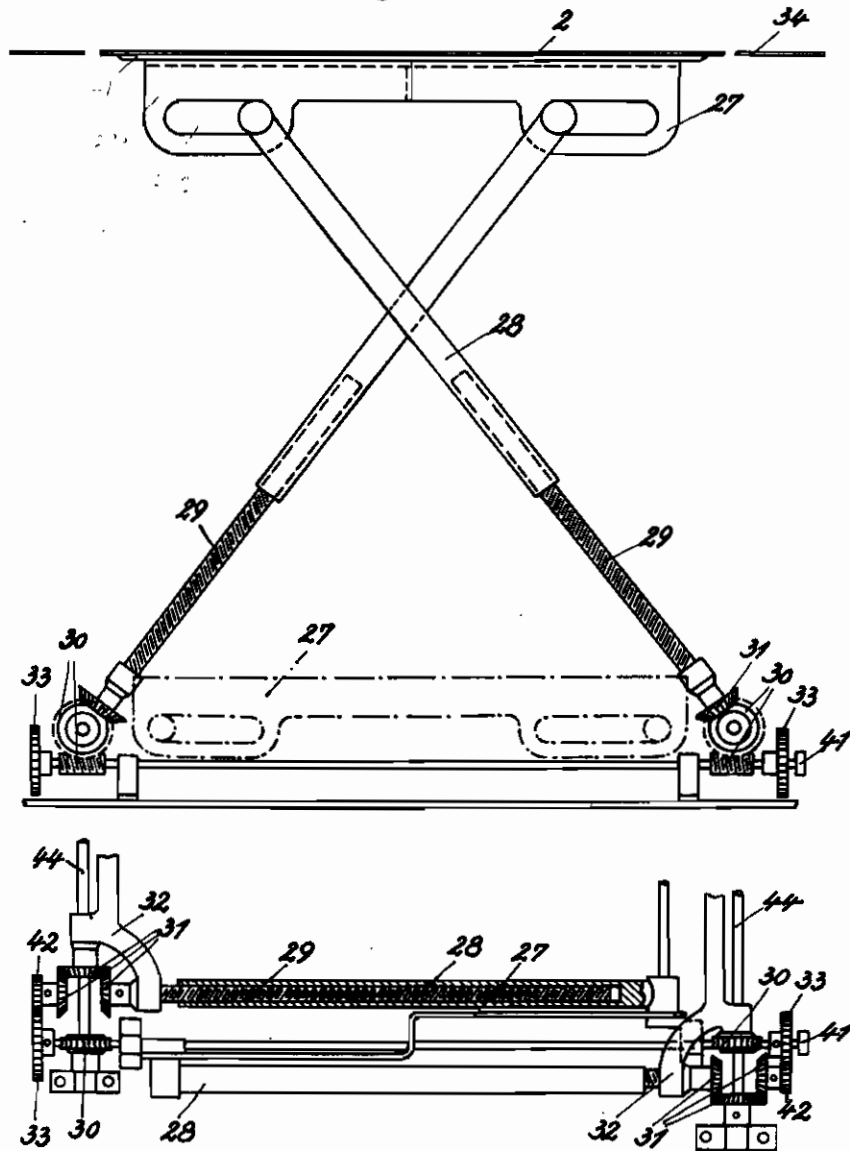
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Fig. 7



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ALIEN PROPERTY CUSTODIAN

APPARATUS FOR STORING AND CONVEYING CARD INDEX CARDS AND OTHER ARTICLES ACCOMMODATED IN CONTAINERS

Otto Alfred Becker, Saarbruecken, Germany;
vested in the Alien Property Custodian

Application filed May 12, 1939

This invention relates to an apparatus for storing and conveying card index cards and other suitable articles accommodated in containers or the like, any one of which, after selection by means of a setting device, may be automatically removed from the other containers and then moved upwards into a working field by means of a conveying mechanism, only the selected container being moved whereas all the other containers remain in their position of rest.

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

Fig. 1 is a vertical section on line I—I of Fig. 2 through the apparatus for storing and conveying the card index cards accommodated in containers, which apparatus is arranged in a table,

Fig. 2 is a top plan view of Fig. 1 with the table top removed and containers removed from the right side to show the parts located below these containers,

Fig. 3 is a portion of a vertical section on line III—III of Fig. 4 and shows the engagement and conveying mechanisms on the sides of the containers,

Fig. 4 is a part plan view of the laterally arranged mechanisms illustrated in Fig. 3,

Fig. 5 shows in part vertical section on line V—V of Fig. 4, the arrangement of the containers on the guide bars and also the sliding-in mechanism,

Fig. 6 shows in part vertical section on line VI—VI of Fig. 4, a portion of the arrangement of the containers with container ejector,

Fig. 7 shows in elevation a raising and lowering conveying mechanism of modified construction,

Fig. 8 is a part plan view of Fig. 7.

Fig. 1 shows a table, consisting of a base plate 36, end walls 35 and a table top 34, and accommodating on the right and left container frames 1 arranged close together one above the other in horizontal position on guide bars 5 and containing card index supporting plates 2. The guide bars 5 enable each container 1 to be shifted laterally into the free middle space of the table.

Each container is held in its extreme position by an electro-magnetically actuated engaging device. This engaging device consists of a catch 7 (Fig. 4) oscillatably mounted on an axle 15 and pulled by a spring 7a into engagement in a slot 26 in the container when the latter is in its extreme position. The catch is connected to an electro-magnet 8.

If the electro-magnet 8 is excited, the pawl will be disengaged from the slot 26. An ejector 6

oscillatably about an axle 14, exerts under the action of a spring 6a a continual pressure on the container resting in its extreme position and pushes the container on the guide bars 5 so far out of the pile of containers that a conveying mechanism 3/13 driven by an electric motor 21 grips the container and completely removes it from the pile. The conveying mechanism consists of a shaft 13 with pinion 3 keyed thereon and rotated by the motor 21 through the intermediary of driving belts 37, a shaft 23, a worm 38 and worm wheel 39. The side walls of the container carry racks 4 (Fig. 4) in which pinions 3 engage as soon as a container is shifted by an ejector 6 out of the pile of containers.

Pressure rolls and corresponding pressure surfaces (not shown) may be provided instead of the pinions 3 and racks 4.

When the container has been pushed entirely out of the pile of containers, it strikes against a contact bar (not shown) by which the circuit of the motor 21 is interrupted so that this motor and the conveying mechanism 3/13 come to a standstill.

By the movement of the contact bar a second circuit is closed at the same time as the first circuit is interrupted, this second circuit drives a second motor 22. This motor 22 drives, through the intermediary of driving belts 40, two spindles 18 each provided with right and left handed threads. The ends of lazy tongs 17 are moved towards the middle of the spindles 18 by means of nuts. Thus, the lazy tongs 17 both on the left and on the right are caused to extend, that is to move upwards. These two pairs of lazy tongs 17 are connected to laterally arranged lazy tongs 18 so that these latter are compelled to carry out the same movements as the lazy tongs 17. Thus, the lazy tongs 16 and 17 form together a rectangular structure which carries a conveyor plate 27. During the upward movement of the conveyor plate 27 the carrier plate 2, removable from the displaced container 1, is raised and brought into a window 43 (Fig. 1) in the working field of the table top 34, this window 43 being automatically opened during the ascent of the lazy tongs. At this moment a trip contact (not shown) is actuated by nuts moving on the screw spindles 18 and interrupts the circuit of the motor 22 with the result that the screw spindles 18 and lazy tongs 16 and 17 come to a standstill. To attain an angle portion of the depressed lazy tongs to facilitate the ascent a bridge 19 is provided which lifts the lazy tongs through the intermediary of pressure springs 20 arranged under

the points of intersection. The lazy tongs are so constructed that the individual levers of the tongs, during the contraction of the tongs, do not lie superposed but juxtaposed so as not to lose more space in the vertical direction than is necessary.

If the container is to be returned to its place in the pile of containers, the operator actuates an electric contact which closes the circuit of the motor 22 in such a manner that this motor rotates in the opposite direction to that in which it rotated before, and returns the lazy tongs with the conveyor plate 27 into their position of rest, the card index supporting plate 2, during its descending movement, being again taken up by the frame 1. In the position of rest the conveyor mechanism 16—20, or the motor 22, is automatically switched off and at the same time the motor 21 is switched on in the opposite direction with the result that the container frame 1 with the supporting plate 2 is conveyed into the pile of containers until the conveying mechanism 3/13 serving for the lateral displacement disengages. In this position the container switches off the motor 21 and closes the circuit of the electro-magnet 12 by means of a contact bar. A lever system is connected to the electro-magnet 12 and movable about a fixed axle 11b by which a push-in lever 9 is caused to engage in a slot 25 in the container and thus shifts this container into its extreme position (Figs. 2, 4, 5). As soon as this position has been reached, the catch 7 engages the slot 26 and holds the container firmly in this position. At the same time the ejector 8 is tensioned by being forced back

(Figs. 2, 4, 6). Electro-magnets 8 are coordinated one to each container 1 and can each be actuated from the working field by a press button not shown.

Figs. 7 and 8 show an alternative form of construction of a raising and lowering conveying mechanism. In this instance the conveyor plate

27 is raised by stand-like levers 28—29 which are extended by screwing apart and at the same time swung upwardly. These levers are actuated by the motor 22 through the intermediary of a pinion 41 and connecting shaft 45. Each of the levers 28, 29 is raised and lowered by a worm gear 30 by the arm 32 oscillatable about a connecting shaft 44. Bevel wheels 31 are driven through the intermediary of transmission wheels 33 and 42 and impart a rotary movement to the lever section 29 causing this lever to unscrew from the lever section 28, the speed ratio between the up and down swinging movement of the lever and the lengthening or shortening of the lever caused by the unscrewing or screwing movement being synchronized by the ratio of transmission of the wheels 33 and 42. The connecting shafts 44 transmit the driving force of the motor to a similar second pair of levers.

Another modified form of construction of a conveying mechanism is obtained, when screw spindles are used which are provided with alternating sections with and without screw threads. The sections without screw threads are in the same horizontal plane as the containers and thus allow the individual containers, when they are in a certain position, to be laterally displaced into engagement with the screw spindles. This modified form of construction is not illustrated, as screw spindles as such, are sufficiently well known.

The lateral displacement of the containers may be effected in such a manner that they are arranged at an angle of inclination and thus slide laterally out of engagement by gravity.

These apparatus are suitable for the combination with typewriters, calculating, bookkeeping, sorting, multiplying, tabulating, perforating, printing and similar machines because they can automatically feed the desired group of cards, after selection, to these machines with the aid of additional conveying mechanisms.

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