Sept. 9, 1930. W. F. SCHOTT 1,775,538

DRAWER OPERATING MECHANISM

Filed April 11, 1927 4 Sheets-Sheet 1

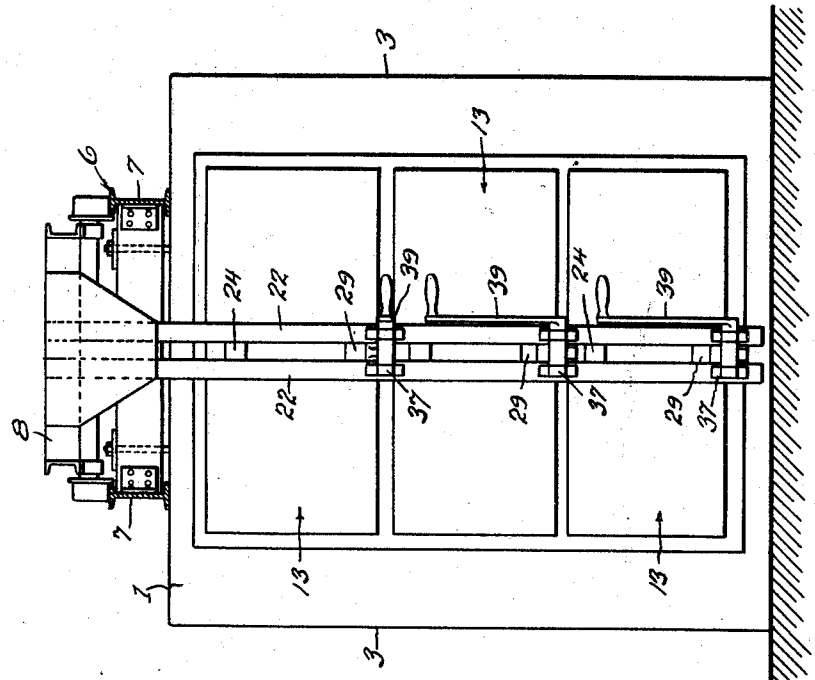


Fig. 2

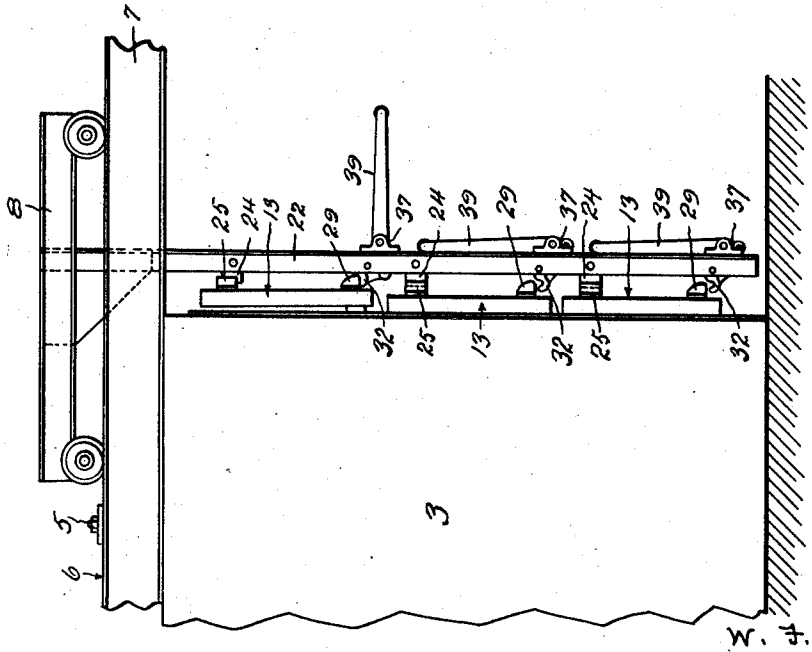


Fig. 1

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Sept. 9, 1930. W. F. SCHOTT 1,775,538

DRAWER OPERATING MECHANISM

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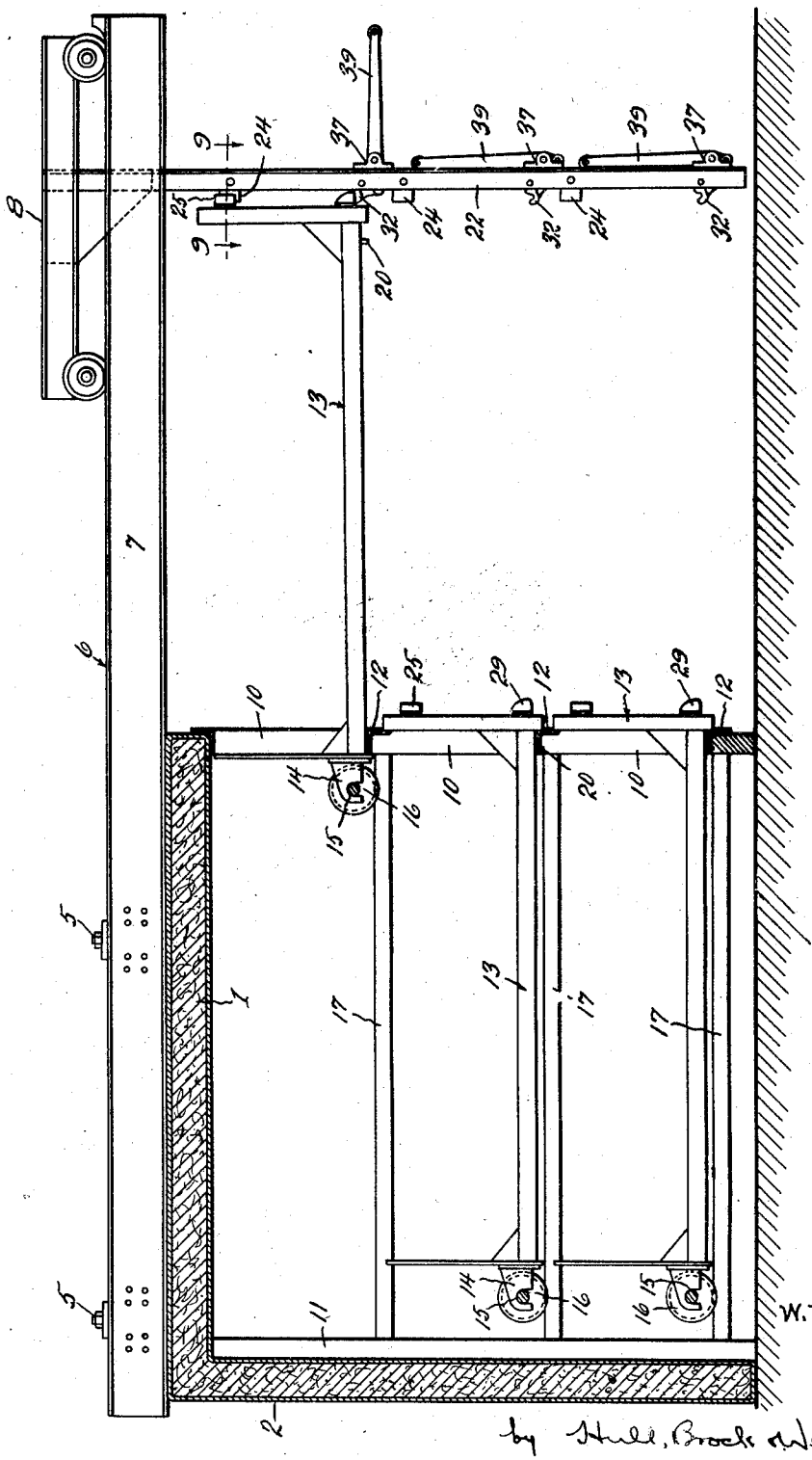


Fig. 3

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DRAWER OPERATING MECHANISM

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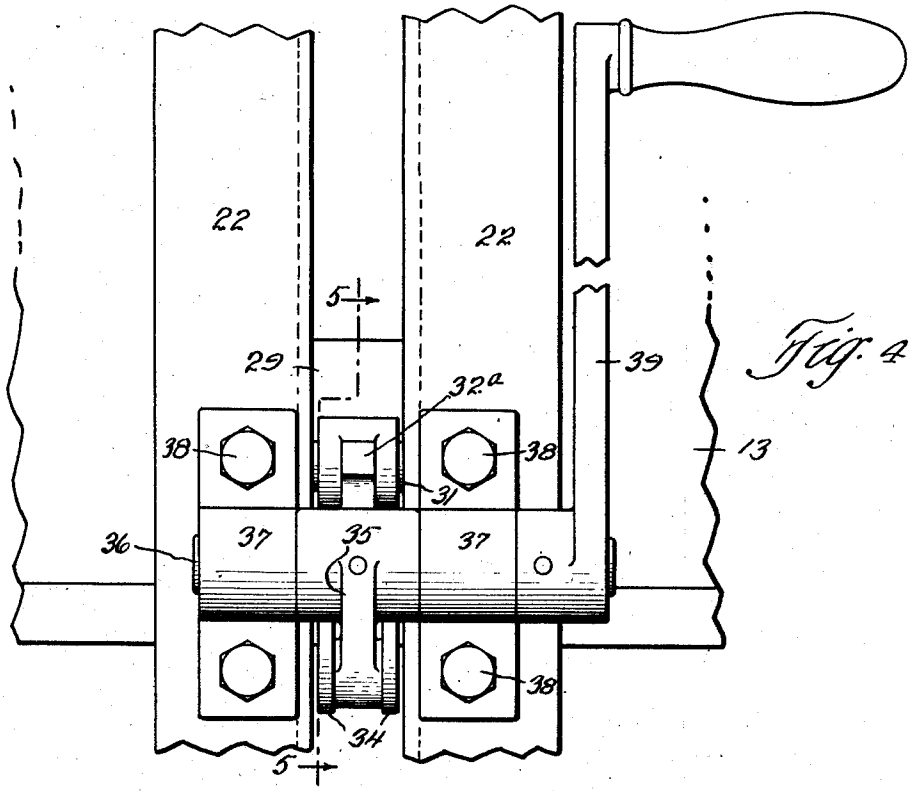


Fig. 4

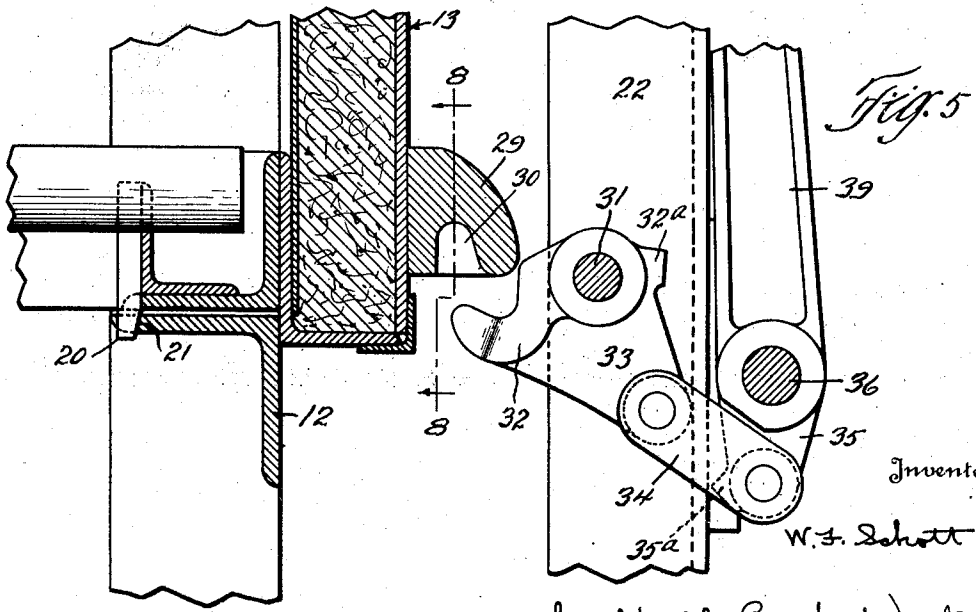


Fig. 5

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Sept. 9, 1930. W. F. SCHOTT 1,775,538

DRAWER OPERATING MECHANISM

Filed April 11, 1927 4 Sheets-Sheet 4

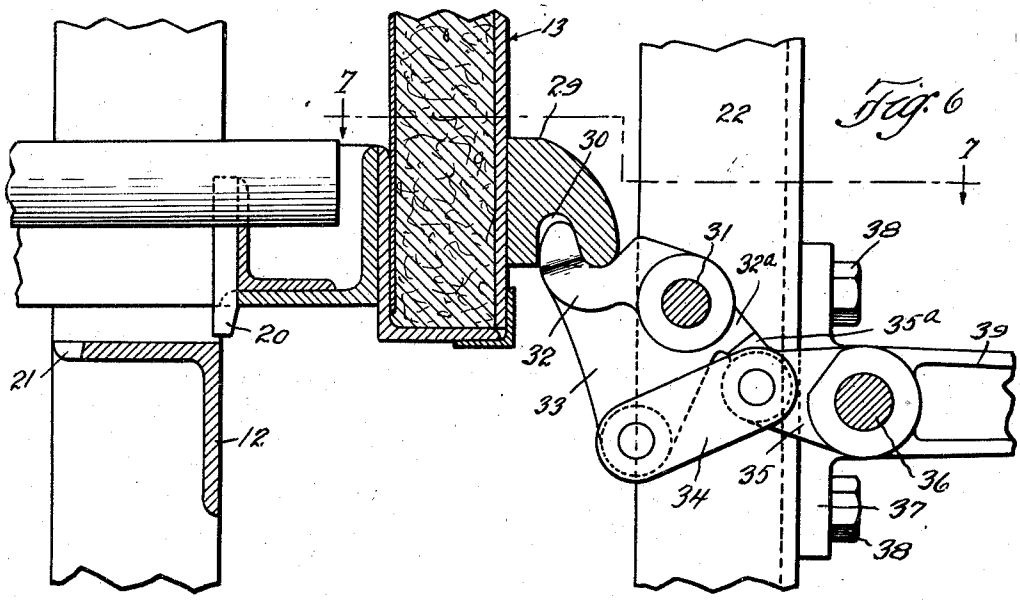


Fig. 6

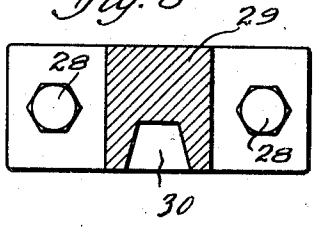


Fig. 8

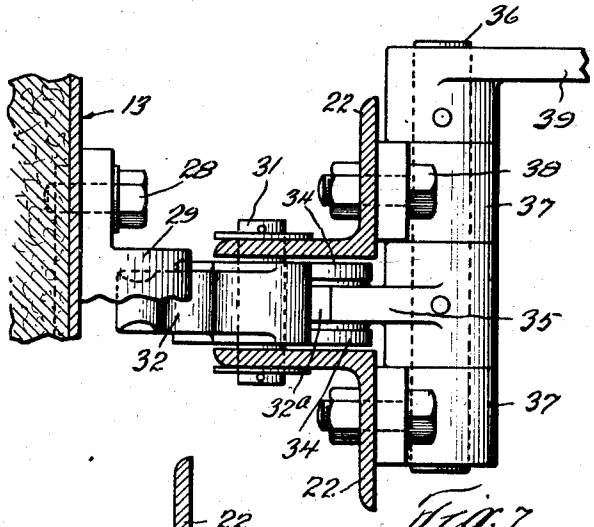


Fig. 7

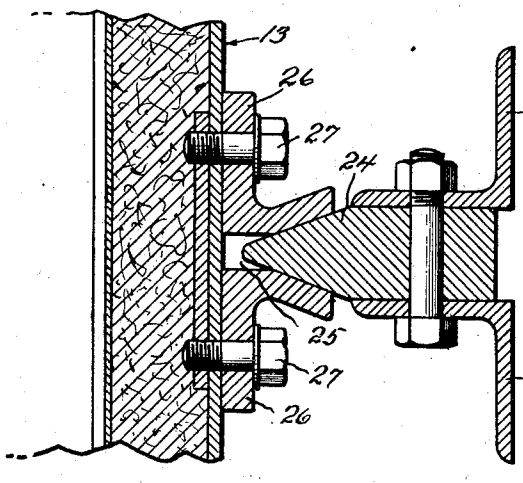


Fig. 9

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Patented Sept. 9, 1930 1,775,538

UNITED STATES PATENT OFFICE

WALLACE F. SCHOTT, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE FOUNDRY EQUIPMENT COMPANY, A CORPORATION OF OHIO

DRAWER-OPERATING MECHANISM

Application filed April 11, 1927. Serial No. 182,594.

This invention relates to improvements in drawer operating mechanisms of the class extensively used in connection with core ovens for opening and closing the drawers thereof.

Because of its peculiar adaptability to this purpose I have elected to disclose it herein in such connection, but this association of the invention is to be taken as illustrative only, as my improved mechanism is susceptible to a wide range of use and is applicable to any case involving drawers, trays, slides or the like requiring mechanism of the class in question to aid in their operation; and where the term "drawer" is used it is to be understood as embracing all equivalents.

Among the objects of the invention are to provide a highly efficient, substantial and durable mechanism of the aforesaid class that is relatively simple of construction, that is particularly convenient of use, and by means of which the drawers may be lifted at their forward ends from the lower sides of the frames surrounding the drawer openings and suspended from rollers so as to render their movements especially easy, the mechanism being of such nature as to firmly hold the drawers against tilting.

Further and more limited objects are to provide mechanism by means of which any one or more of a plurality of drawers may be selected and operated; to provide an arrangement whereby the drawer lifting and pulling mechanism automatically maintains its effective condition against accidental dislodgement after being placed therein by a single movement, and which is capable of being rendered ineffective by a like reverse movement; and to provide means for positively retaining the drawers in closed position, which means is released upon operation of the lifting and pulling mechanism.

The foregoing objects, with others hereinafter appearing, are attained in the embodiment of the invention illustrated in the accompanying drawings wherein Fig. 1 is a fragmentary side elevation of an oven equipped with my improved drawer operating mechanism; Fig. 2 is a front elevation of the same, the rails which support the trolley being shown in section; Fig. 3 is a longitudinal section through the oven structure and shows the drawers and drawer operating mechanism in side elevation; Fig. 4 is an enlarged front elevation of the lifting and pulling mechanism for one of the drawers; Fig. 5 is a section on the line 5—5 of Fig. 4 and shows the mechanism in operative relation to a drawer and in ineffective condition; Fig. 6 is a view, similar to Fig. 5, showing the mechanism in effective condition and the drawer as having been partially withdrawn from the oven; Fig. 7 is a sectional plan of the mechanism, the plane of section being indicated by the line 7—7 of Fig. 6; Fig. 8 is a section on the correspondingly numbered line of Fig. 5; and Fig. 9 is a section on the line 9—9 of Fig. 3.

The oven may be of any approved construction and is shown as comprised of a top wall 1, rear wall 2, and side walls 3. Mounted on top of the oven and suitably connected thereto by anchorage means 5 is a track 6 involving rails 7 that project beyond the front of the oven a material distance, and adapted to travel along this track is a trolley 8.

Occupying the oven is a frame structure that comprises uprights 10 and 11 and cross members 12, the latter defining the lower sides of the openings through which the drawers 13 reciprocate. Brackets 14 extend from the rear of the drawers and have downwardly opening notches which embrace axles 15 equipped with rollers 16 that travel upon rails 17 supported by and between the front and rear uprights 10 and 11 it being understood that a set of uprights and rails are situated adjacent the inner side of each side wall 3. As shown in Fig. 3, and in greater detail in Figs. 5 and 6, each drawer is provided with a lug 20 adjacent its forward end which co-operates with the corresponding cross member 12 for positively retaining the drawer in closed position, the cross member being preferably provided with a notch 21 for the reception of the lug. It will also be noted that the forward faces of the lugs 20 are inclined downwardly and rearwardly, and by reason of this the fronts of the draw-

ers are drawn in firmly against the front wall of the oven to effect a tight joint about the drawer fronts, the lugs acting as cams under the weight of the drawer to accomplish this end.

Rigidly connected to and depending from the trolley 8 are angle bars 22 that are spaced a suitable distance from each other in a lateral direction. These bars, with the trolley, constitute a carrier which is movable along the before-mentioned track 6 in the direction of movement of the drawers 13; and secured to and projecting rearwardly from the carrier a short distance below the horizontal plane of the upper edge of each of the drawers 13 is a positioning member 24. These positioning members are preferably in the nature of wedges which are arranged to enter sockets 25 on the drawer fronts, said sockets, in the present instance, being effected by angle members 26 that are secured to the drawer fronts by screws 27 (Fig. 9). Similarly attached, as by screws 28, to the drawer fronts adjacent their lower edges are drawer pulls 29 having recesses 30 on their under sides. I shall now describe the mechanisms that are supported by the angle bars 22 for cooperation with the drawer pulls 29.

There is an independent lifting and pulling mechanism for each drawer, and inasmuch as they are identical, a description of one will suffice for all. Pivoted upon a pin 31 that is supported by and between the angle bars 22 at about the plane of the lower edge of each of the drawers, is a hook 32 whose nose is designed to fit within the recess 30 of the corresponding drawer pull 29. The hook 32 is in the nature of a bell crank, the same having a branch 33 whose lower end is connected, by links 34, to the free end of an arm 35 that is shown as pinned to a shaft 36 journaled in brackets 37 that are fastened, by screws 38, to the front faces of the angle bars 22. Also pinned to one end of the shaft 36 is the hub of a crank 39 by means of which the shaft may be rocked in its bearings. The arm 35 and the links 34 constitute, in effect, a toggle joint connection between the shaft and the hook 32; and when the crank 39 is thrown downwardly from the position in which it is shown in Figs. 4 and 5, to that in which it is shown in Fig. 6, the toggle joint is thrown beyond center, so to speak, in which position the parts are stopped by the engagement of abutments 35^a and 32^a of the arm 35 and the hook 32, respectively. If the hook 32 is in entering relation to the socket of the drawer pull 29 when the foregoing operation is performed, the hook will engage the drawer pull and lift the forward end of the drawer thereby to retract the lug 20 from the notch 21 of the corresponding cross member 12 so as to release the drawer, and now by pulling forwardly on the crank 39 the entire carrier, with the drawer, may be advanced until the lower edge of the back of the drawer engages the cross member 12 in which condition the upper drawer and carrier are shown in Fig. 3. The drawer pulling operation is rendered especially easy by the fact that the weight of the drawer is suspended from the wheels of the trolley 8 and the rollers 16 that sustain the weight of the rear end of the drawer; and inasmuch as the drawer lifting and pulling mechanism retains its position against accidental dislodgment by reason of the fact that the toggle joint involved therein is thrown beyond center, the operator has only to pull the carrier and drawer forwardly through the instrumentality of the crank 39.

From the time the drawer is engaged by the lifting and pulling mechanism it is held against tilting by the positioning member 24 which occupies the socket 25, and by the hook 32 whose nose is confined within the recess 30 of the drawer pull 29.

It is clear from the foregoing description that my invention provides mechanism that is especially convenient of use and by means of which any one or more drawers of a series may be opened and closed with ease, it being understood that when it is desired to simultaneously open certain drawers of the series, they are coupled to the carrier by simply throwing down the cranks 39 of the mechanisms corresponding to the selected drawers and then by pulling forwardly on one of the cranks all drawers connected to the carrier will be moved to open position.

Having thus described my invention, what I claim is:—

1. In combination with a structure, a drawer reciprocably sustained thereby, a carrier movable in the direction of movement of the drawer, a drawer pull on the drawer, a hook pivoted to the carrier for cooperation with the drawer pull, said hook involving an arm, a rock shaft supported by the carrier, an arm on the rock shaft, a link connecting the free end of the arm with the arm of the hook and constituting with the second mentioned arm a toggle joint, the hook and second mentioned arm involving cooperating abutments which serve to maintain the parts in given relation when the toggle joint is moved beyond center, and means for oscillating the rock shaft.

2. In combination with a structure, a drawer reciprocably sustained thereby, a carrier movable in the direction of movement of the drawer, a drawer pull on the drawer, a hook pivoted to the carrier for cooperation with the drawer pull, an arm pivoted to the carrier adjacent said hook, a link connection between the free end of the arm and the hook and constituting with the arm a toggle joint, abutments on the hook and arm which engage when said toggle joint is thrown beyond center, and means for swinging the arm.

3. In combination with a structure, a drawer reciprocably sustained thereby, a carrier movable in the direction of movement of the drawer, said carrier involving two vertical bars in laterally spaced relation to each other, a drawer pull on the drawer in the vertical plane of the space between said bars, a hook pivotally supported by and between the bars for cooperation with the drawer pull, a rock shaft supported by the carrier transversely of said bars in the vicinity of said hook, an arm secured to said rock shaft in the vertical plane of the hook, a link connection between the free end of the arm and a part of the hook and constituting with said arm a toggle joint, the hook and said arm having abutments that engage when the toggle joint is thrown beyond center, and means for oscillating the rock shaft.

4. In combination with a structure, a plurality of drawers reciprocably sustained therein, a carrier movable in the direction of movement of the said drawers, and independently operating mechanism for coupling each drawer to the carrier, and for supporting the same as it is withdrawn from said structure, each of said mechanisms including a hook member pivoted to the carrier for engaging a part of the drawer, a handle member pivoted to said carrier at a point adjacent the hook member but slightly removed therefrom, and means on said handle member engaging said hook member for moving said hook member into its drawer engaging position as said handle member is swung on its pivot and for locking the same in such position.

In testimony whereof, I hereunto affix my signature.

WALLACE F. SCHOTT.