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2,833,540

STACKING DEVICE FOR PRINTING AND THE LIKE MACHINES

Filed July 1, 1954

4 Sheets-Sheet 1

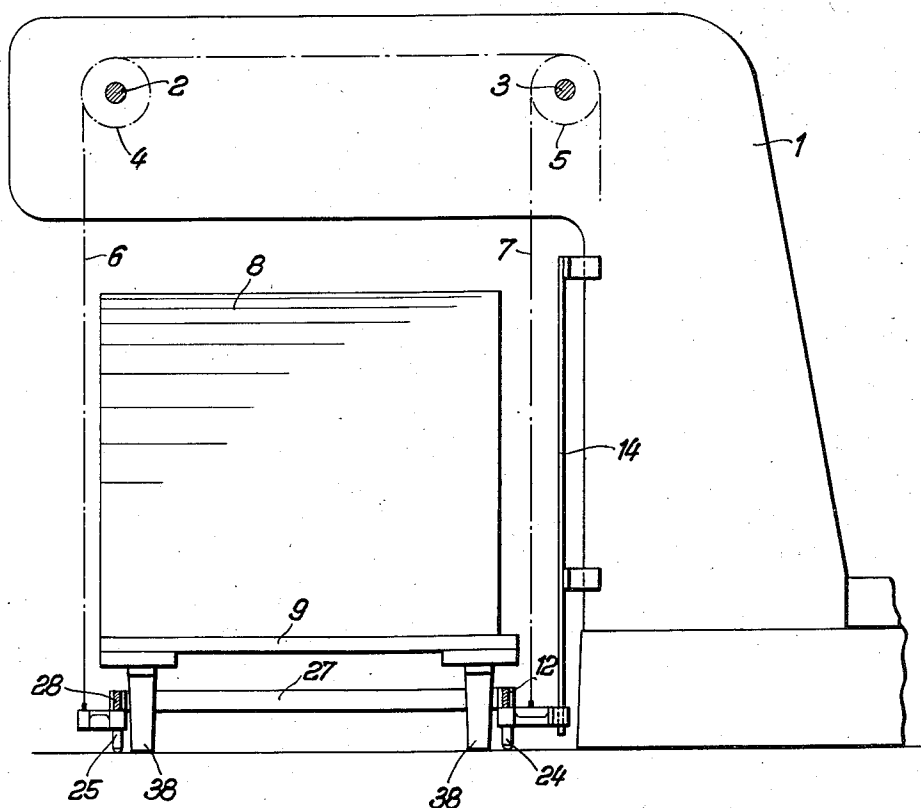


Fig. 1

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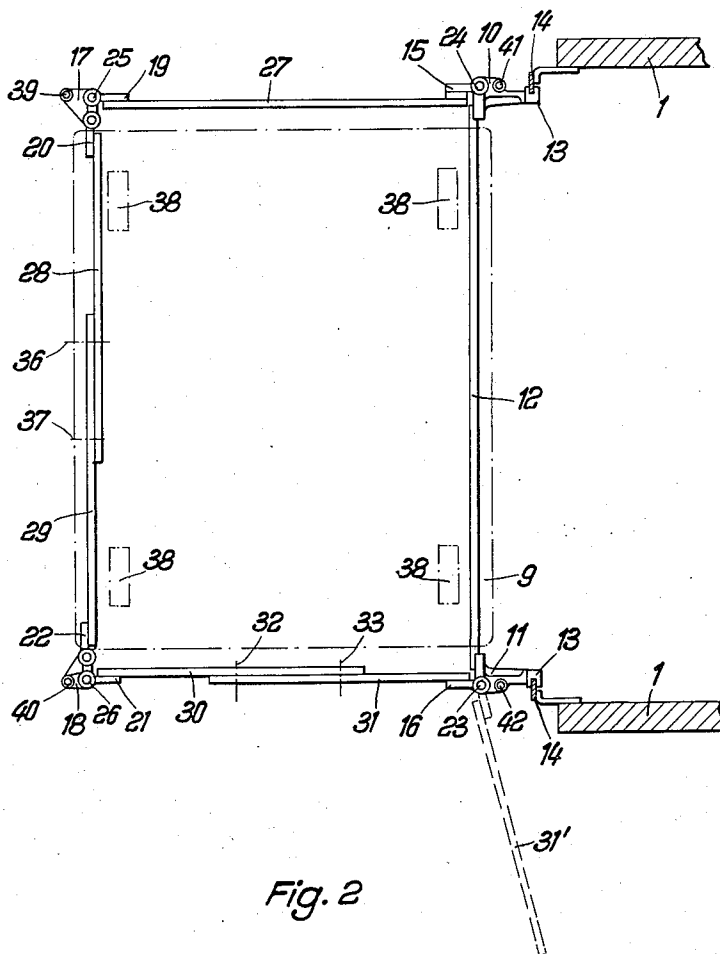
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

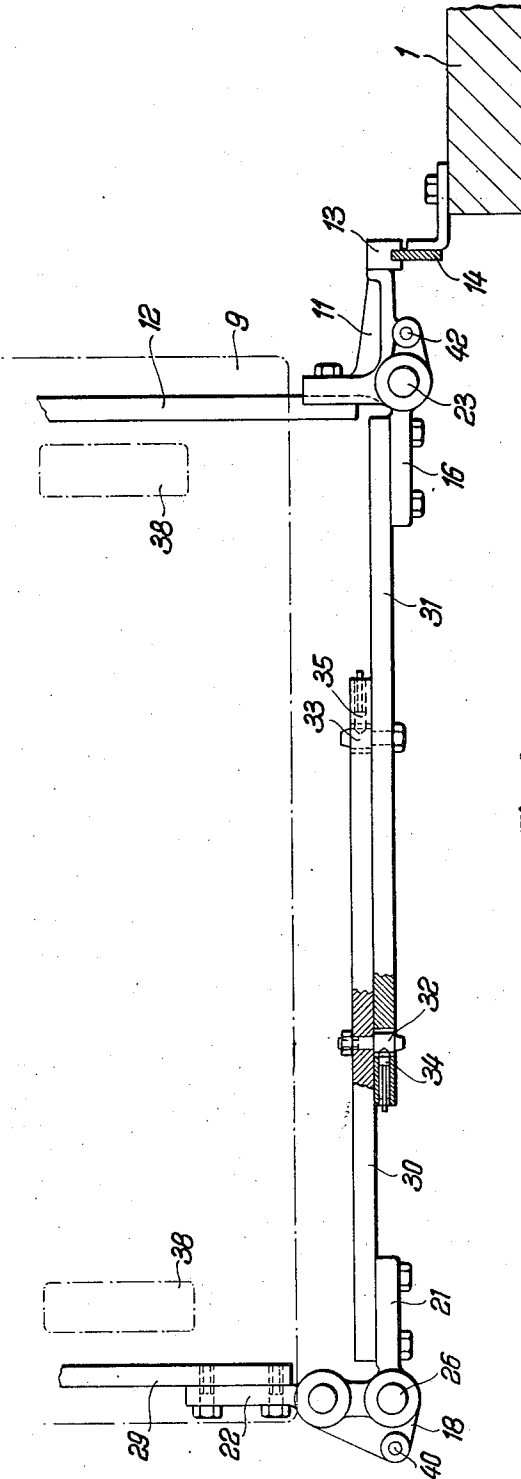


Fig. 3

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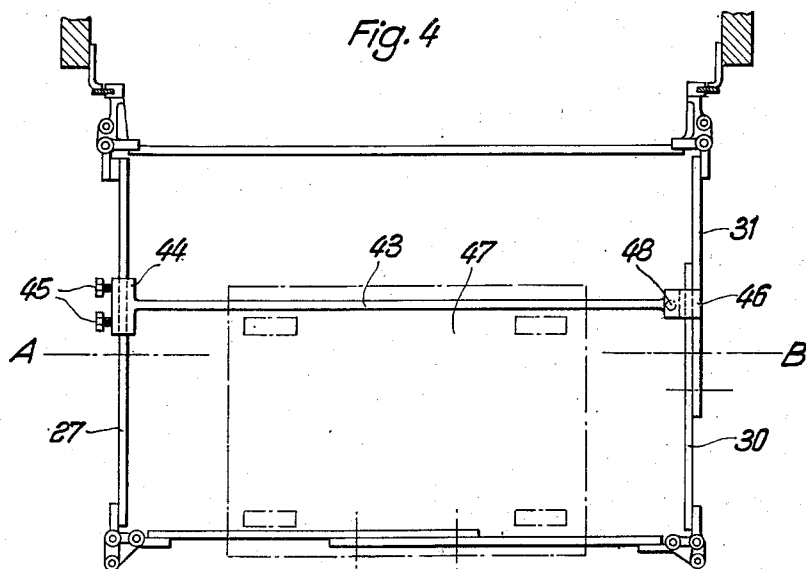
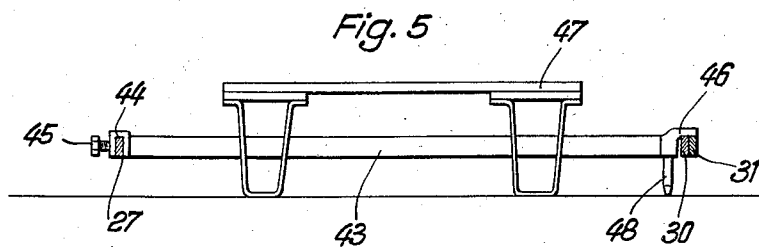
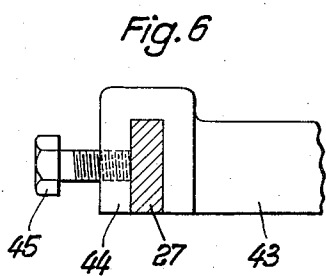
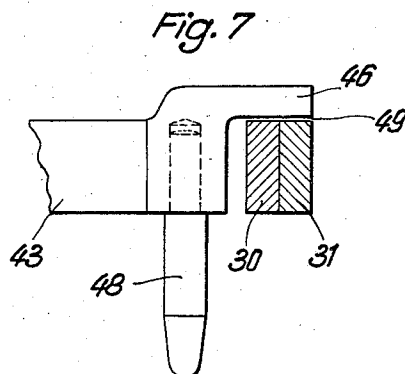
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4 Sheets-Sheet 4



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STACKING DEVICE FOR PRINTING AND THE LIKE MACHINES

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5 Claims. (Cl. 271—62)

This invention relates to stacking devices for use in printing machines and the like, such as are working on sheets, and it more particularly relates to the pile tables and to the means for moving these tables in conformity with the moving or the delivery of the sheets into and out of the machine. Its main object is to provide improved means for moving the pile tables and for exchanging them at the requisite times, that is when the pile thereon has been exhausted in a sheet feeding device, or when it has become so large, in the case of a stacking device, that it has to be exchanged for that reason.

In printing machines of the said kind it is common practice to use overhanging carriers or gibs from which the pile tables are suspended and in which they are raised and lowered in working progression by means of special hoisting devices. In machines which are working on small sheets no difficulty is, as a rule, encountered in raising, lowering, and exchanging the tables. These small tables are simply supported on wooden slats or bars, and when they are to be exchanged, the slats or bars are easily removed so that the table can be wheeled away and a new one wheeled in.

In the machines for working on large sheets, this procedure cannot be adopted. The tables, when loaded, are too heavy and it is not possible to support such heavy tables from a gib on two bars or slats along their sides as in the case of the smaller machines. With the larger machines, therefore, one has to proceed in a different way as for instance by making the tables relatively light and prevent their bending by strengthening beams which, however, are difficult to remove when the pile table is to be wheeled away from underneath the overhanging gib arm.

With these known structures the following disadvantage also makes itself seriously felt: For hoisting purposes chains or cables are almost generally used, which are attached to the four corners of the table and which carry the aforesaid beams either directly or by means of connecting rails or the like. When the pile table is to be exchanged, either the cables or the connecting rails, or both, must be removed to be out of the way of the pile table. This is exceedingly troublesome and time-consuming, and it prolongs the idling times of the machine very considerably.

It is, therefore, another object of the invention to provide means for supporting and carrying also very heavy pile tables without encountering any of the aforesaid disadvantages. The invention, in this respect, provides for a frame which consists of a plurality of separate members which are so joined to one another as to present a closed frame when the device is at work. Two of the said members are rigid, while the other two are turnable about hinges at the corners of the said frame and in the plane of the latter so that they can be opened out of the way of the in or outgoing pile table.

A further object of the invention rests in the provision of a frame of the said kind in which the turnable members of the frame are pivotally connected to the rigid members of the same. In this manner, when the way is

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to be cleared for the pile table to move in or out, these movable members need only be swung open or closed in a plane approximately parallel to the pile table. When returned to their working position they are joined up again with their neighbouring members or locked in their closed position by any means such as screws, eccentrics, wedges or the like.

In connection with a still further object of the invention the individual members of the frame or, at least, two opposing members are made interchangeable with each other. This affords full freedom in rendering those members turnable which, in accordance with the respective accommodation of the machine would be best suited for the exchange of the pile table.

In the foregoing example the invention has been referred to as being particularly applicable to the heavy pile tables of large sheet printing machines. Yet it frequently happens that small sheets have to be printed on machines which have been built for printing on large sheets, and it is, therefore, a still further object of the invention to enable also small pile tables to be used in the large supporting frames. For this purpose and in order to provide a safe support also for small tables, one or two auxiliary members are movably arranged in the aforesaid frame, through which the weight of the pile and the table will be transmitted to the members of the frame. The auxiliary members may be positioned parallel or at right angles to the direction of sheet feeding as required. They are preferably detachably connected to one of the rigid members with one of their ends, while with their other end they are placed loosely onto the opposite movable member in such a manner, that in the lowest position of the frame the loosely applied end of the auxiliary member or members becomes raised to a position slightly above the same. This can be done in a convenient manner by providing a downwardly extending bolt to the loose end of the auxiliary stay, which is slightly longer than the distance from the floor to the underside of the frame, when the latter is in its lowest position. In this way the auxiliary member stops slightly above the frame and the small clearance which thereby is formed between the said end of the member and the upper edge of the frame enable the latter to be opened and moved out of the way of the pile table, which can thus be moved out easily and exchanged against another one.

The accompanying drawings diagrammatically illustrate two embodiments of the invention by way of example. In these drawings:

Fig. 1 represents a part-sectional side elevation of the new feeding device for large pile tables.

Fig. 2 shows a feeding device of the kind illustrated in Fig. 1 for the stacking device of a printing machine in plan view.

Fig. 3 illustrates a part of Fig. 2 on an enlarged scale.

Fig. 4 represents in plan view a feeding device similar to Fig. 2 but arranged with an auxiliary member for the reception of small pile tables.

Fig. 5 is a section on line A—B of Fig. 4.

Fig. 6 shows the way of fixing one end of an auxiliary member to a rigid frame member on an enlarged scale.

Fig. 7 illustrates the cooperation of the free end of the auxiliary member with the supporting frame.

In Fig. 1 are shown the walls 1 of a stacking device for a sheet printing machine in the overhanging gib of which the shafts 2 and 3 are journaled on which sprockets 4 and 5 are provided to be rotated by a stack hoisting device of any convenient kind and which, not forming part of the invention, is not shown in the drawing. Over the said sprockets the chains 6 and 7 are moved up or down as required. These chains serve for the feeding of the pile 8 of sheets onto or from the pile table 9. So

far, the arrangement just described is well known in the art. The transmission of the weight of the pile and of the pile table onto the chains 6 and 7 now is effected in accordance with the invention by means of a frame which is composed as follows:

The brackets 10 and 11 at the rearward corners of the substantially rectangular frame are bolted fast to the two ends of the rear member 12 of the frame and are guided by means of slide members 13 on vertical rails 14 which are fixed to the side walls 1 of the hoisting gib. Pivoted to the brackets 10 and 11 are the hinge plates 15 and 16 so as to be turnable in a horizontal plane. The front brackets 17 and 18 are provided with two pivots each, to which the hinge plates 19, 20 and 21, 22 respectively are joined so as to be turnable in the same manner as the hinge plates 15 and 16 just referred to. The pivots 23, 24 and 25, 26 are downwardly extended so that they can serve as feet by which the frame can stand on the floor as shown in Fig. 1. The brackets 10 and 17 also are rigidly connected to one another as by means of the side member 27 of the frame. Contrasting herewith, the mutual connection between the brackets 17 and 18 as well as between the brackets 18 and 11 by the partial frame members 28, 29 and 30, 31 respectively is such as to be easily detachable.

In the present example it is assumed that the pile table is to be removed sideways out of the machine. In this case, as shown by the position of the frame in Fig. 1 where the latter rests with feet 24, 25 on the floor, the two frame members 30 and 31 must be opened out about their hinges 26 and 23, as indicated by the position of the part 31 in the dotted lines 31' in Fig. 2. This opening of the members 30, 31 frees the way for a pile table to be wheeled out and an empty table to be moved in. Thereupon the two part-members 30 and 31 are returned into their close positions as shown in full lines in Fig. 2, in which they may be interlocked with one another as by means of the bolts 32 and 33. Spring pins 34, 35 which are positioned in bores at the end of the members 30 and 31 may be used to lock the bolts 32 and 33 in position.

In the example under consideration, in which the pile table is removed sideways out of the feeding device, there would be no necessity to open also the frame members 28, 29 when the pile table is to be exchanged. Consequently, no bolts such as 32, 33 need be provided and the parts may be screwed up fast to one another. However, should there be a change in the working conditions of the machine which would call for removing the pile table from the front of the stacking device, the fast screws 36, 37 need only be exchanged against the removable bolts 32 and 33.

The arrangement, further, is such that the frame structure, as consisting of the parts 30 to 35, can be exchanged against the one-piece member 27. This enables the machine to be installed in any position and the frame subsequently suited to whatever side the pile table is to be moved.

Preferably the frame is so constructed that the upper edges of its members are positioned all in a common plane. When both the pile table and the frame are in their lowermost positions with their feet resting on the floor, then the upper edge of the frame lies a small distance below the underside of the table because of its feet 24, 25 being shorter than the feet 38 of the pile table. The hoisting chains 6, 7, which are arranged in pairs, are fastened to the corners of the frame in sockets 39, 40 and 41, 42 respectively.

Sometimes, in printing works, it happens that small sheets must be printed on machines which are normally used for large sheets. In such cases the large pile table, such as 9 in Fig. 1, would be too heavy and the invention, therefore, provides the modified form of the frame which is shown in Figs. 4 to 7, which allows of employing also small pile tables on a large size frame without difficulty.

As particularly shown in Fig. 4 an auxiliary rail 43 is arranged to span the frame between the members 27 and 30, 31 respectively intermediate its front and rear members. The left hand end of the member 43 in Fig. 4 is U-shaped at 44 so that it can be shifted along the rigid member and clamped thereto as by means of the screws 45.

The other end of the auxiliary member 43 is of angular formation and rests with an arm 46 on the members 30 and 31 when the frame is suspended above the floor. However, when the frame assumes its lowest position, the free end of the auxiliary member rests with a bolt 48 on the floor, whereby the arm 46 is lifted slightly off the frame members 30, 31 leaving a clearance 49 between itself and the upper surface of these members. This enables the members 30, 31 to be opened out and the pile table to be removed in the same way as in the example illustrated in Figs. 1 and 2.

What I claim is:

1. In a stacking device for sheet printing and the like machines having a hoisting structure, a pile table, a pile table supporting frame and rope means for raising and lowering said frame and pile table in the said hoisting structure, a rigid member in the said frame adjacent the said hoisting structure, a second rigid member in the said frame at right angles to said first rigid member, a hinged member opposite said first rigid member capable of being turned horizontally outward, a second hinged member opposite said second rigid member also capable of being turned horizontally outward, and means for connecting said rope means to the said frame outside the corners thereof and sufficiently far apart to permit a clear passage of said pile table inside the said rope means after one of the said hinged members has been turned outwardly.

2. In a stacking device for sheet printing and the like machines having a hoisting structure, a pile table, a frame for supporting said pile table and rope means for raising and lowering the same in said hoisting structure, a rigid length member in said frame adjacent the said hoisting structure, a horizontally turnable length member opposite the said rigid length member, a rigid side member connecting said length members at one side of the frame, a horizontally turnable side member connecting said length members at the other side of the frame, an auxiliary length member connecting the said side members intermediate the said length members, and means for detachably fixing said auxiliary member to at least one of said side members.

3. In a stacking device for sheet printing and the like machines having a hoisting structure, a pile table, a frame for supporting said pile table and rope means for raising and lowering the same in said hoisting structure, a rigid length member in said frame adjacent the said hoisting structure, a horizontally turnable length member opposite the said rigid length member, a rigid side member connecting said length members at one side of the frame, a horizontally turnable side member connecting said length members at the other side of the frame, an auxiliary length member connecting the said side members intermediate the said length members, means at one end of said auxiliary length member for detachably securing it to one of the said side members, and a stay bolt at the other end of said auxiliary member of a length slightly greater than the distance of the lower edge of the pile table supporting frame from the ground when the latter is in its lowest position.

4. In a stacking device for sheet printing machines having a pile table supporting frame as set forth in claim 1, each of the said turnable frame members consisting of two overlapping wings swingable in mutually opposite directions and having means for interconnecting the said wings when in their closed position.

5. In a stacking device for sheet printing machines having a pile table, a frame for supporting said pile table,

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and a hoisting device for raising and lowering the said frame and pile table, said supporting frame comprising a rigid length member and a rigid side member fixed to each other at approximately right angles, a hinged length member and a hinged side member opposite and attached 5 to the said fixed members and disposed at approximately right angles to each other, said hinged length and side members each consisting of two wings capable of being opened out in a horizontal plane, a bracket at each corner 10 of the said frame extending outwardly therefrom, hinges carried by the said brackets to which said hinged mem-

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bers are pivotally attached, and means for keeping the said wings closed when the said frame is in use.

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