

**April 6, 1937.**

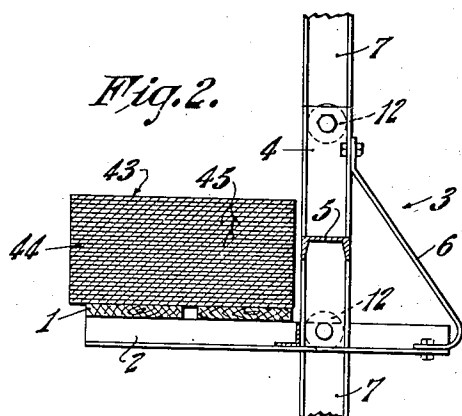
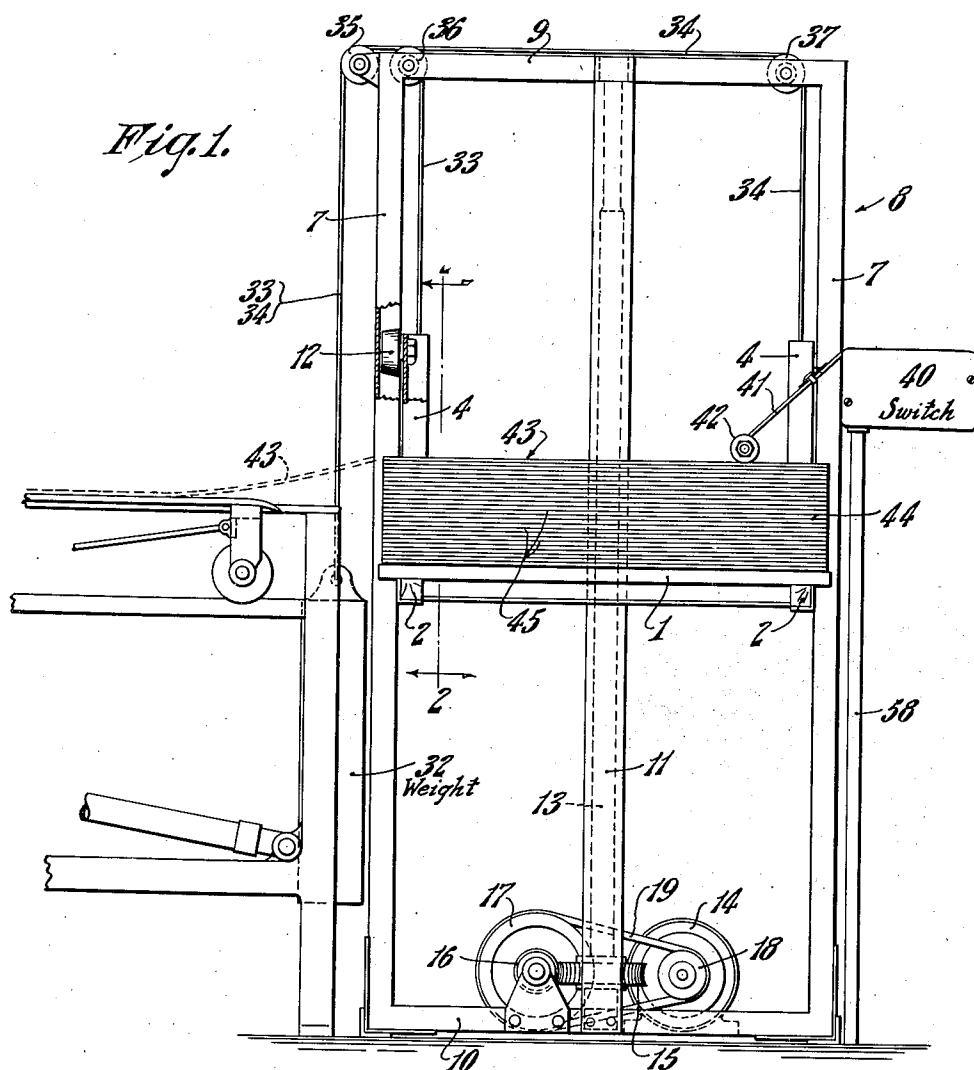
W. G. REYNOLDS ET AL

**2,076,186**

## ELEVATING TABLE

Filed Jan. 8, 1935

3 Sheets-Sheet 1



INVENTORS,  
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April 6, 1937.

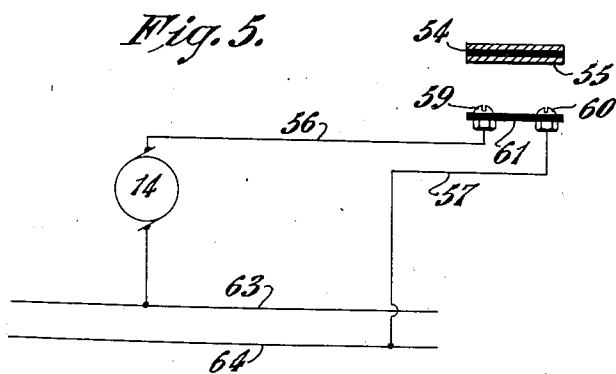
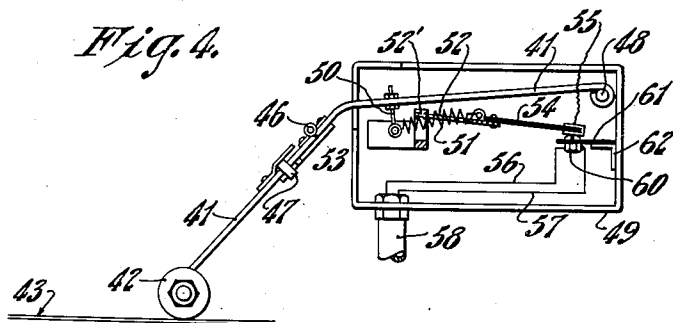
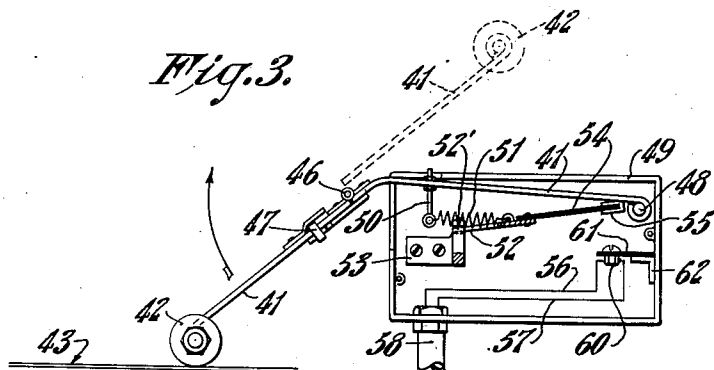
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ELEVATING TABLE

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3 Sheets-Sheet 2



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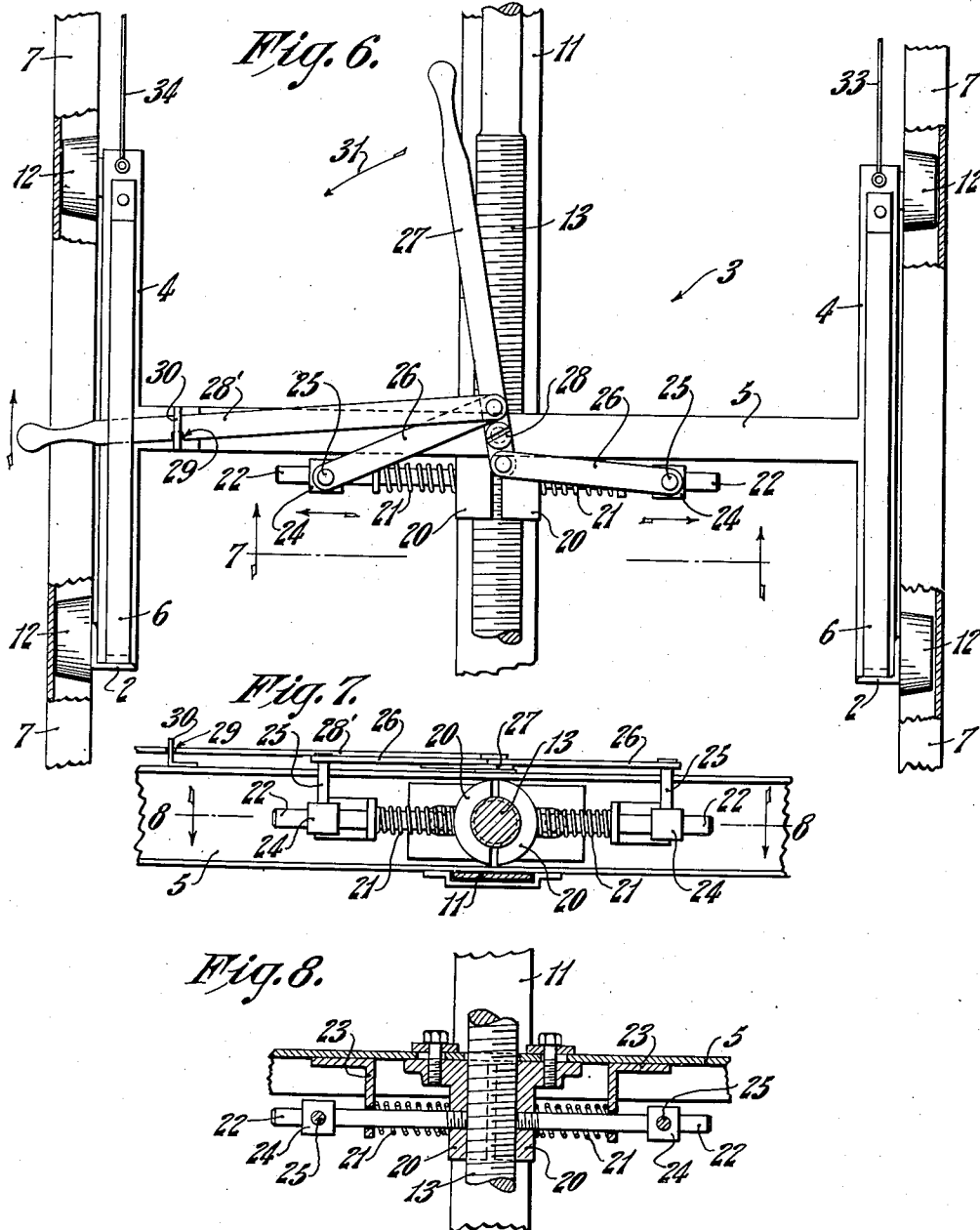
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ELEVATING TABLE

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3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE

2,076,186

## ELEVATING TABLE

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bach, Holyoke, Mass., assignors to The Reynolds  
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poration of Massachusetts

Application January 8, 1935, Serial No. 841

7 Claims. (Cl. 271—62)

Our invention relates to improvements in elevating tables.

An object of our invention is to provide a table for receiving a pile, or stack of articles, such as sheets of paper, books, pads, or other flat articles, which will, as the articles are removed from the top of the pile, automatically raise, in order to maintain the top of the pile at a level best suited to convenience and ease of operation.

A further object of our invention is to provide, in such a mechanism, means for releasing the automatic raising means, whereby the table may be manually lowered to a position for receiving a load or pile of articles from a skid, truck, or other conveyance.

These, and other objects and advantages of our invention, will be more completely disclosed and described in the specification, the accompanying drawings, and the appended claims.

Whereas, our invention has been designed primarily for use in co-operation with the book-stitching and binding machine, for which Letters Patent of the United States of America were granted to Wellington George Reynolds, #1,937,979, on December 5, 1933,—we do not confine ourselves to this combination, as it will be readily understood, by those skilled in the art, that this elevating table may be used efficiently in many different arts, and in widely divergent fields, wherever it is necessary, or expedient, to feed individual flat articles to any mechanism, or machine, from a pile, or store, of such articles, near at hand.

Broadly, our invention comprises a table, or shelf, for receiving a pile of flat articles, a frame for supporting the shelf, a second frame in which the first frame is slidably supported, a screw, operative connecting means between the shelf frame and the screw, a motor, operative connecting means between the motor and the screw, a motor control switch, means for opening and closing the switch by contact with an article on the shelf, and means for disengaging the operative connecting means between the shelf frame and the screw for lowering the shelf, to receive a fresh supply of articles thereon.

A preferred embodiment of our invention is illustrated in the accompanying drawings, in which:—

Fig. 1 is a front, elevational view of the elevating table.

Fig. 2 is a partial, sectional view on the line 2—2 of Fig. 1.

Fig. 3 is an elevational view of the motor con-

trol switch, with cover removed, showing the switch in open circuit position.

Fig. 4 is a view similar to Fig. 3, showing the switch in closed position.

Fig. 5 is a wiring diagram, including motor and switch.

Fig. 6 is a partial, rear view of the shelf frame.

Fig. 7 is an underside, plan view, taken on the line 7—7 of Fig. 6, and

Fig. 8 is a sectional view, taken on the line 8—8 of Fig. 7.

Referring now to the drawings in detail, in which like numerals refer to like parts throughout:—

A shelf 1, is supported by means of the arms 2, which form a part of a shelf-supporting frame 3, having vertical, side members 4, a connecting cross bar member 5 of channel iron and brace members 6. The frame 3 is slidably secured in vertical, channel-shaped, side members 7 of a frame 8, comprising the members 7, connecting cross members 9 and 10 at top and bottom of the members 7, respectively, and a central brace member 11, by rollers 12, secured at top and bottom of the side members 4, which are located in the channel-shaped side members 7. A vertical screw 13, rotatably supported between the members 9 and 10 of the frame 8, is operatively connected to a motor 14 by a worm gear 15, worm 16, pulleys 17 and 18, and belt 19.

An interiorly threaded two-part, or split sleeve member 20, slidably secured on the connecting bar 5 of the shelf frame 3, is held normally in engagement with the screw 13 by compression springs 21 mounted on rods 22, between the sleeve 20 and brackets, 23, secured on the crossbar member 5. The rods 22 are threadedly secured in the sleeve 20 and are slidably supported in the brackets, 23, and have secured thereon blocks 24, having studs 25, to which are pivotally secured link members 26. The link members 26 are pivotally connected to a lever 27 on opposite sides of a lever pivot stud 28 on the crossbar member 5. A lock lever 28', pivotally secured on the lever 27 and formed with a notch 29, is normally held in locking position, to prevent disengagement of the split sleeve 20 with the screw 13, by engagement of the notch 29 in a bracket, or clip member 30, on the member 5. When it is desired to operate, or move, the shelf frame 3 and shelf 1 manually, the lock lever 28' is lifted out of engagement with the clip 30 and the lever 27 moved in the direction of the arrow 31 in Fig. 6, thereby moving the rods 22 and the halves of the split sleeve 20 apart and disengaging the split sleeve 20 from the screw 13. A

weight 32 (see Fig. 1), connected to the vertical side members 4 of the movable frame 3, by cables 33 and 34 passing over pulleys 35, 36, and 37, rotatably secured on the cross member 9 of the frame 3, counterbalances the weight of the frame 3 and materially assists manual operation of the shelf 1.

The motor 14 is controlled by a switch 40, having an arm 41 to which is rotatably secured a roll 42, that normally bears, or rests, on the top sheet 43 of a pile, or stack 44, of sheets, or pads 45, on the shelf 1. The arm 41 is hinged at 46, and provided with a locking clamp 47 which normally prevents the arm 41 from swinging on the hinge 46, but by releasing the clamp 47, the roll 42 may be swung upwardly and back out of operating position, as indicated by dotted lines in Fig. 3. The arm 41 is pivotally secured on a stud 48 in the switch box 49, and has adjustably secured thereon an eye bolt 50, to which is secured an end of a contractile spring 51. The opposite end of the spring 51 is secured to a plate 52, which is pivotally supported at 52', in a bracket 53 in the box 49. A bar, or plate of insulation 54, secured on the plate 52, supports a metallic contact bridge 55 at its outer extremity. Wires 56 and 57, entering the box 49, through a conduit 58, are connected to terminals 59 and 60, secured on a plate 61 of insulation, which is supported on a bracket 62 in the box 49. When the bridge 55 is in contact with the terminals 59 and 60, as indicated in Fig. 4, the circuit is from line wire 63 to motor 14, to wire 56, to terminal 59, through bridge 55, to terminal 60, to wire 57, to line wire 64. In operation, if the top sheet 43 is below the desired height, the arm 41 will drop, closing the switch, as shown in Fig. 4, and the motor 14 will operate to revolve the screw 13 and raise the shelf 1 and stack 44. As the top sheet 43 approaches the desired height, it will contact the roll 42 and raise the arm 41, until the toggle spring 51 snaps the bridge 55 out of engagement with the terminals 59 and 60, as indicated in Fig. 3, thus opening the circuit and stopping the motor 14. As sheets are removed from the top of the stack 44, as indicated by dotted lines in Fig. 1, the roll 42 will be lowered the thickness of the removed sheet, or sheets, at each operation, and after a few units have been removed from the stack 44, the roll 42 will be lowered sufficiently to close the switch and again raise the shelf 1. Thus, the top of the stack 44 is maintained at a level at all times, having a very short range, equal to the combined thickness of a few of the units in the stack.

When the stack on the shelf 1 is exhausted, the shelf is reloaded, by releasing the sleeve 20 on the screw 13 and lowering the frame 3, until the shelf 1 is at a proper level to receive a new stack from a skid, or other vehicle, drawn up to the shelf. As soon as the sleeve 20 is again engaged by the screw 13, the shelf 1, with its new stack is raised, until the top sheet reaches the operating level, at which point the roll 42 opens the switch and stops the motor.

It should be stated that the spring 51 provides an eccentric stress, to move the plate 52 and the plate of insulation 54, which is pivoted at 52'. In Fig. 3, the spring 51 is above the pivot 52'; in Fig. 4, it is below the pivot 52'.

What we claim is:—

1. In an apparatus for the purpose described, a movably mounted shelf, screw means passing through the shelf for elevating the shelf, when operated, means for operating the screw, a split nut normally engaging the screw means and se-

cured to the said shelf, means for retaining the split nut on the screw, and manual lever and link means for disconnecting the two halves of the split nut from the screw means for permitting the shelf to be lowered, as described, and means for retaining the lever means locked when the split nut engages the screw.

2. In an elevating apparatus, a frame, a vertically movable platform guided in said frame, a screw journaled in said frame and passing through said platform, an internally threaded split sleeve the halves of which are each independently and slidably secured on said platform and normally engaged on said screw for moving said platform when said screw is revolved, lever and link means for moving the halves of said split sleeve away from the axis of said screw for disengaging the sleeve from the screw, and independent spring means for normally moving the halves of the split nut.

3. In an elevating apparatus, a frame, a vertically movable platform guided in said frame, a screw journaled in said frame and passing through said platform, an internally threaded split sleeve the halves of which are independently and slidably secured on said platform and normally engaged on said screw for moving said platform when said screw is revolved, shafts secured in each of the halves of said split sleeve and extending in opposite directions, means on said shafts for normally holding the halves of said split sleeve in engagement with said screw, lever and link means connected to said shafts for moving the halves of said split sleeve in opposite direction to disengage the sleeve from the screw, and locking means connected to said lever and link means for holding them in sleeve-engaging position.

4. In an apparatus for the purpose described, a frame member, a movable frame therein, a shelf on the movable frame, a screw shaft journaled in the frame member, and passing through the movable frame, bracket members secured to the movable frame, a split nut engaging the screw shaft, a rod secured to each of the parts of the split nut and slidably mounted in the bracket members, a spring on each rod and located between the parts of the split nut and the bracket members, for normally moving the parts of the split nut into engagement with the screw shaft, a lever pivotally connected to the movable frame, links connected to the lever and to the rods which are secured to the parts of the split nut for moving the said nut away from the screw shaft, and means for retaining the lever in its inoperative position.

5. In an apparatus for the purpose described, a movably mounted shelf, screw means for elevating the shelf, means for operating the screw, split sleeves normally engaging the screw means and secured to the said shelf, means for retaining the split sleeves on the screw, manual lever and link means for spreading the split sleeves to disconnect the same from the screw means for permitting the shelf to be lowered, said split sleeve retaining means comprising a second lever connected to the manual lever and a latch device engageable by the second lever, as described, and weight means connected to the shelf for assisting in counterbalancing the shelf.

6. In combination in an elevating mechanism, a shelf member, a frame in which the shelf member is slidably mounted, said frame being provided with a base portion and a cross head, weight means for counterbalancing the shelf member, a

rotatable screw located in the said frame and having a bearing in said base and cross head and passing through said shelf, a split nut on the shelf engaging the screw for moving the shelf  
5 when the screw is operated, lever and link means for spreading the split nut to disengage the screw, a second lever connected to said lever, a device engaged by the second lever for locking the split nut on the screw, motor means for operating the  
10 screw, means located in the path of the shelf for stopping the motor when the shelf reaches a predetermined horizontal level, said means comprising an arm located in the path of the shelf, a pivoted snap switch in the motor circuit, and  
15 operative connecting means eccentrically located between the pivot point of the snap switch and the arm.

7. In an elevating apparatus, a frame, a vertically movable platform guided in said frame, a cross bar forming a part of the frame, a screw journaled in said frame and passing through said cross bar and platform, an internally threaded  
5 split sleeve the halves of which are independently and slidably secured on said cross bar and normally engaged on said screw for moving said cross bar when said screw is revolved, lever and link means pivotally connected to the cross bar  
10 for moving the halves of said split sleeve away from the axis of said screw for disengaging the sleeve from the screw, and means connected to said lever for locking the halves of said sleeve in  
15 engaging relation with said screw.

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