

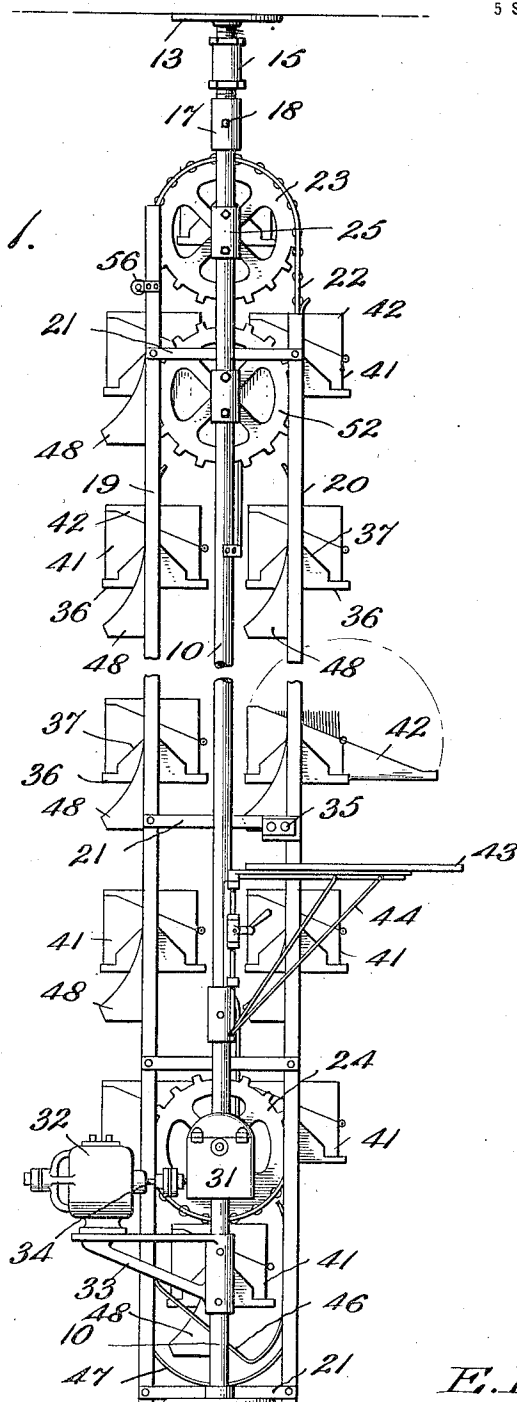
1,348,490.

E. R. GILL.  
STORING AND DELIVERING APPARATUS.  
APPLICATION FILED JULY 22, 1916.

Patented Aug. 3, 1920.

5 SHEETS—SHEET 1.

Fig. 1.



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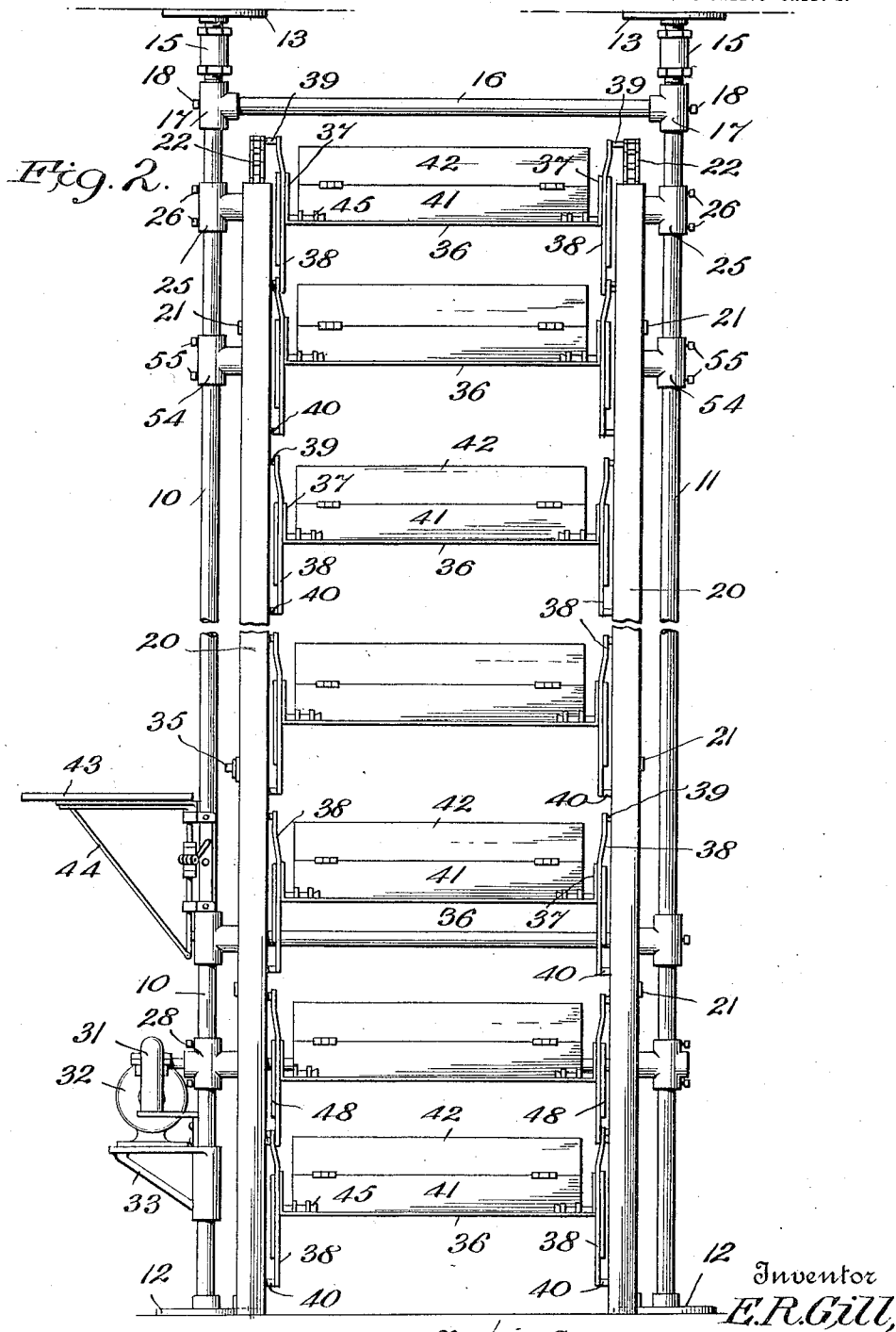
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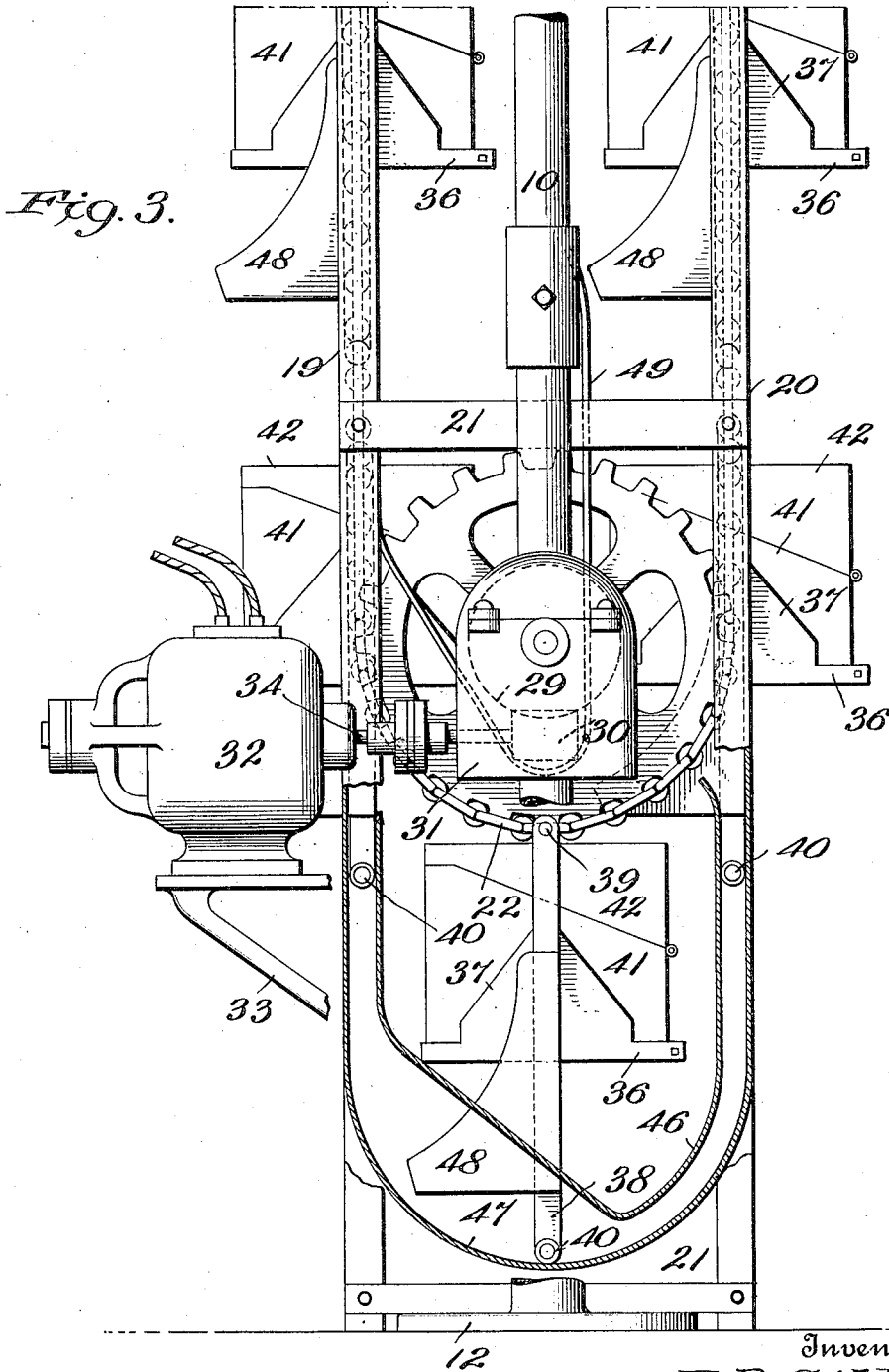
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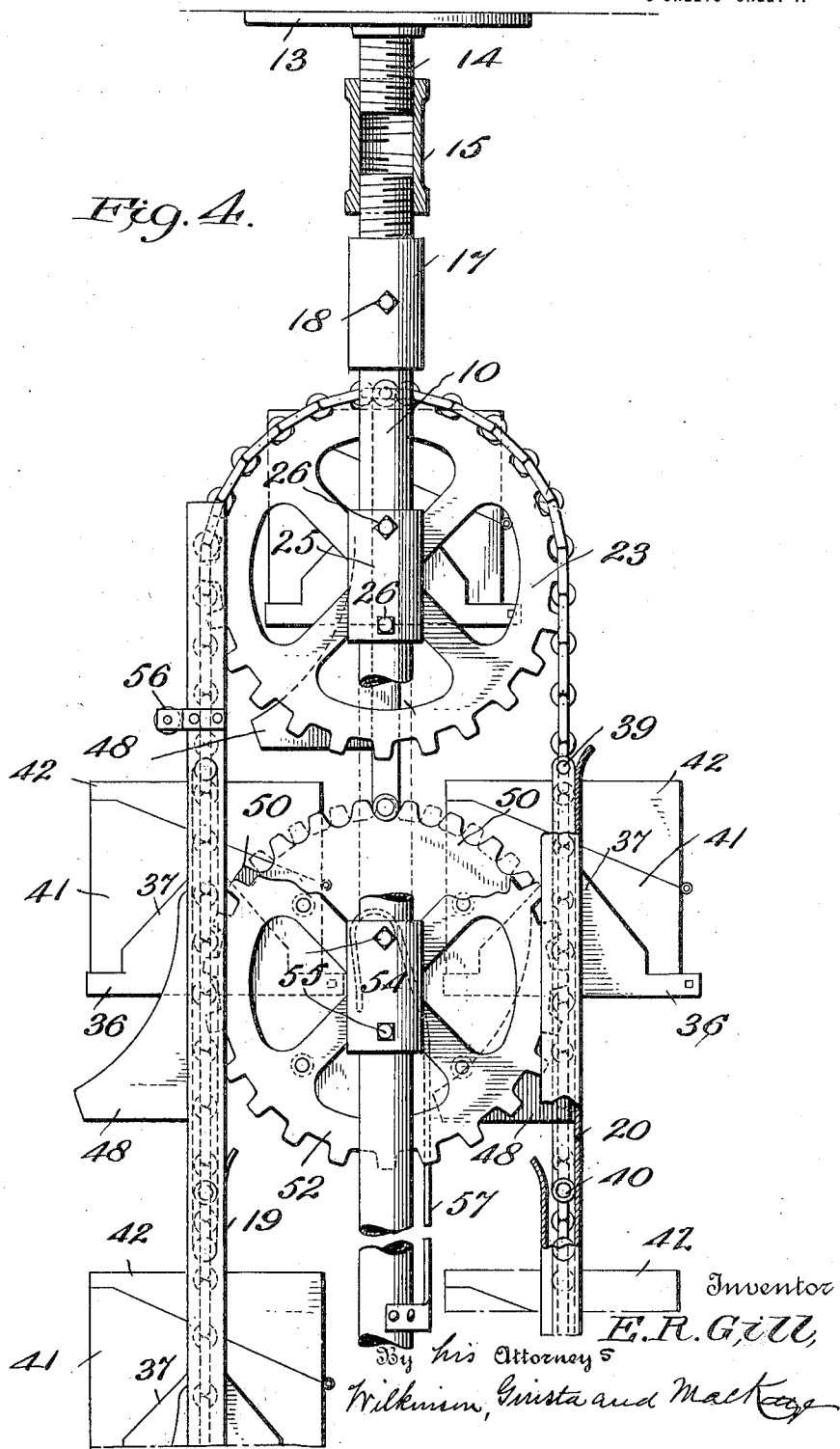


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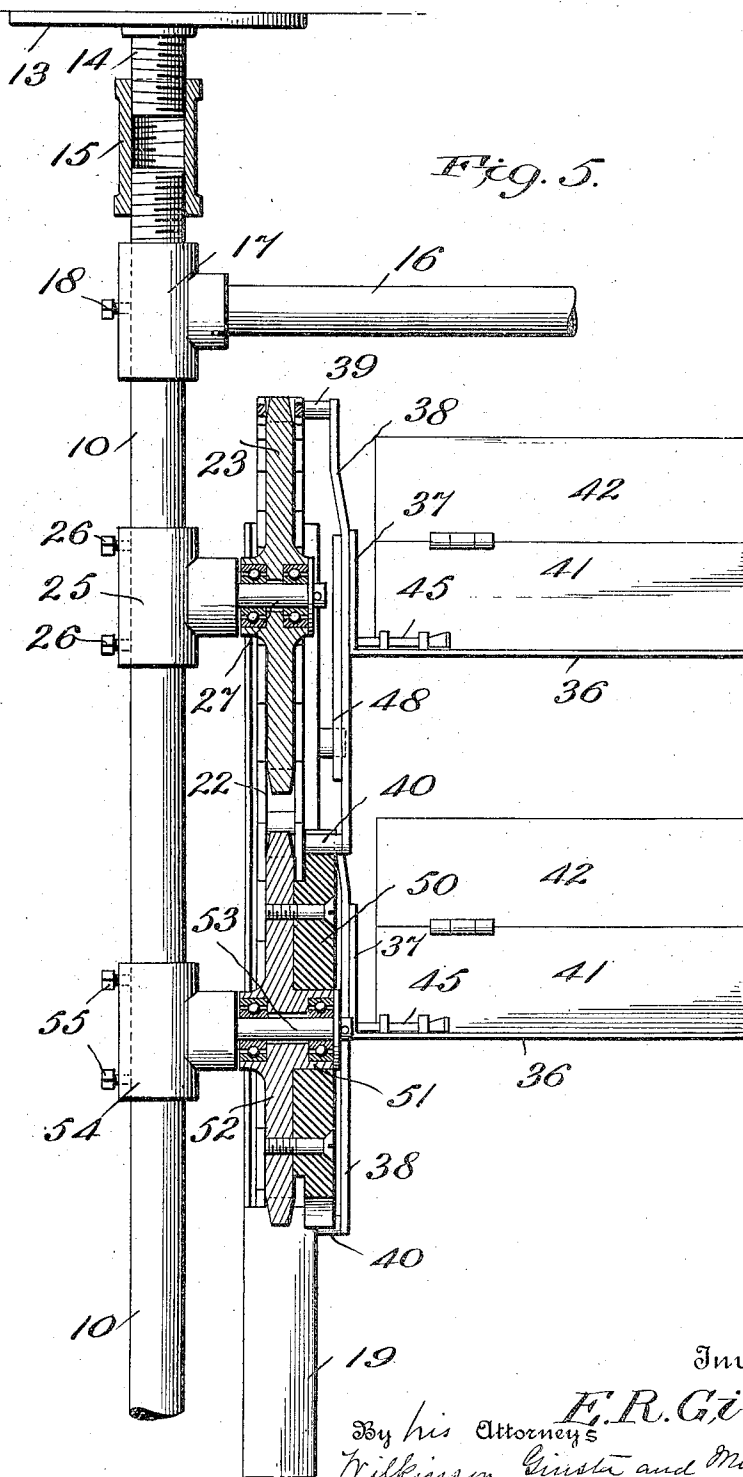


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5 SHEETS—SHEET 5.



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# UNITED STATES PATENT OFFICE.

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STORING AND DELIVERING APPARATUS.

1,348,490.

Specification of Letters Patent.

Patented Aug. 3, 1920.

Application filed July 22, 1916. Serial No. 110,664.

*To all whom it may concern:*

Be it known that I, EDWIN R. GILL, a citizen of the United States, residing at Park Hill, Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Storing and Delivery Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to a means whereby a great number of articles may be stored in a relatively small space, while at the same time making each article conveniently available at any moment. My invention involves a construction allowing free circulation of air in and around the storage space, thus contributing to better sanitation.

In libraries and shoe stores, for instance, it is customary to store the books and shoe boxes upon shelves extending all the way to the ceiling. This necessitates the use of ladders, and makes constant use highly fatiguing. My invention overcomes this difficulty.

My invention is of especial value in the storage of cards for indexes, etc. In insurance companies, public libraries, and in large businesses where many addresses or other records are preserved in card form, much space has hitherto been wasted and a great deal of labor and trouble has been expended in posting, sorting, and distributing the cards. It is one object of my invention to save space, time and trouble in such cases, and to provide means whereby any card can be brought directly to the hand without trouble or delay. In its preferred form, my apparatus is capable of being readily fixed in place in any room without marring floor, walls, or ceiling, and can be easily moved from place to place.

My invention, as applied to a card-filing system, is illustrated in a preferred form in the accompanying drawings, wherein Figure 1 is a side elevation, Fig. 2 is a front elevation, Fig. 3 is a partial elevation and partial vertical section of the bottom part on an enlarged scale, Fig. 4 is a similar view of the top of the device, and Fig. 5 is a view of a portion of the top of the device, shown partly in front elevation and partly in section.

Broadly speaking my invention covers a series of carriers (preferably containers) pivotally suspended to chains which travel over sprocket wheels driven by a suitable motive means, means to control the swinging of the carriers and means for stopping and starting the chains, whether or not the motor is correspondingly stopped and started.

In the preferred form shown, the main support consists of two side columns 10 and 11, which may be of steel tubing. The two ends of each are furnished with abutment disks 12 and 13, and in order that the entire device may be solidly fixed in place without injury to floor, walls, or ceiling, I prefer to make these side columns extensible, preferably by the means most clearly shown in Figs. 4 and 5.

For this purpose the top abutment disk 13 of each column is furnished with a short central projection 14, (preferably of tubing like that of the columns) and this is joined to the corresponding column by a sleeve 15, threaded upon it and the end of the column by a right and left thread. It is clear from this that, to take down the whole apparatus it is only necessary so to turn the sleeves 15 as sufficiently to loosen the abutment disks. In placing the apparatus, on the contrary, the sleeves 15 are so turned as to press the disks 13 upward, thereby firmly clamping the supporting columns between the floor and ceiling.

I prefer to supply a suitable cross brace 16, fastened to the columns 10 and 11, as by the T junctions 17 and set screws 18.

On each side of the device I provide two vertical trough-shaped guides 19 and 20 which are supported by cross bars 21 at proper intervals. A supporting chain 22 is arranged to travel on each side of the device, being carried over sprocket wheels 23 and 24, at the top and bottom respectively. The preferred mounting for the top wheels is clearly shown in Fig. 5, and comprises a T junction 25, fixed to the column on each side by the set screws 26, to which junction is fixed a shaft 27 upon which the wheel 23 revolves, preferably upon ball bearings, as shown.

A variety of mountings might answer for the lower wheel 24, but, where, as in the form shown, this wheel is directly driven by the motive means, I prefer to supply a double-T junction 28 on one side at least, and to supply the wheel 24 with a shaft pass-

ing outward through said junction and having on its outer extremity a worm wheel 29, engaged by a worm 30, all within a proper housing 31. While this worm may be driven  
5 by any well known means, I prefer to supply an electric motor 32 on a bracket 33, supported by one of the columns, and having an armature shaft 34 upon which the worm 30 is fixed. Push buttons 35, or the like  
10 may be used to stop and start the motor and thus stop and start the chain and carriers.

The carrier shown in the drawings consists of a platform 36 rigidly fixed by up-  
rights 37 at its two ends to guiding and  
15 supporting side bars 38. As shown in Fig. 5, each bar 38 is suspended at its upper end from a pin 39 pivotally connected with the corresponding chain 22. At the other end  
20 of each bar 38, a similar pin 40 projects parallel with the pin 39, and, as these pins move within the side vertical guides 19 and 20, they act to keep the carrier platforms 36 always horizontal.

The containers, or the like, associated with  
25 the carrier platforms 36 may take a great variety of forms, depending upon the particular use to which the device is applied. For instance, where a card file is used, I may use a box 41 on each platform for carrying  
30 the cards. The cover 42 is best arranged to open as shown in Fig. 1, and a table 43 may be fixed to one column by a swinging bracket, 44. The boxes may be removably fastened in place by bolts or latches 45  
35 (Fig. 5).

To produce the best results it is essential that the chain and carriers should move with a maximum speed, and, under these circumstances there is a strong tendency to cause  
40 swinging of the carriers, particularly at the top and bottom, where a sudden change of direction occurs. This swinging is prevented at front and back, during vertical travel by the guides 19 and 20 within which  
45 the guide pins 39 and 40 are made to move; but means must be supplied at top and bottom to insure the proper entrance of the pins 40 into said guides as they are transferred from one to the other. A variety of  
50 means may be employed for this purpose without departing from my invention, but the form shown in the drawings is preferred for simplicity and reliability.

At the bottom of the device swinging is  
55 prevented by supplemental curved guide strips 46 and 47 on each side. These are placed to form a continuation of each vertical guide 19 and 20, and they receive between them the guide pins 40, while the suspended carriers pass from front to back of  
60 the machine.

As best shown in Fig. 3, in order to insure smooth and certain entrance of each guide  
65 pin 40 into the space between the guide strips 46 and 47, I prefer to supply a steady-

ing strip 49, down which the carrier slides while the corresponding pin 40 is leaving the vertical guide 20, and entering between the guide strips 46 and 47.

Near the lowest point of travel of the pins  
70 40 the strips 46 and 47 are allowed to diverge and again converge higher up, so that the pins 40 may be drawn with certainty into the bottoms of the guides 19 on each side.

While the means just described will suffice at the bottom of the device, where the  
75 pins 40 follow and are merely drawn upward into the new guide 19; I have found it advisable to resort to different steadying  
80 means near the top, where each pin 40 leads its accompanying bar 38, and is thrust or pushed into its new guide 20. Here the carrier tends to swing violently and hence to throw the free leading pin 40 out of the line  
85 of descent into the new guide 20. Consequently, it is best to provide at the top some means for positively confining and conveying the successive pins 40 from one guide  
90 19 to the other guide 20.

For this purpose I prefer to provide a transferring wheel which receives each pin  
95 40 in turn and confines its movement, preventing all swinging, while transferring it from one guide to the other. Of course, there is a transferring wheel on each side.

As best shown in Figs. 4 and 5 the transferring wheel proper consists of an inner  
100 toothed wheel 50, preferably of wood or the like to prevent noise, which is fast on the hub 51 of a sprocket wheel 52. This last is mounted on a fixed shaft or spindle 53, fixed to a T junction 54, fastened to the proper column by set screws 55. The wheels 50, 52,  
105 are located at a proper distance below the upper sprocket wheel 23, and are driven at the same rate as said wheel by engagement of the sprocket wheel 52 with the chain 22.

As each following pin 40 rises from the  
110 guide 19, it finds opposite to it a space between two teeth in the wooden wheel 50, and, as the carrier begins to move across from back to front, the curved rear edge of its steadying plate 48 fixed on the carrier meets the fixed roller 56 on the frame, and  
115 this edge is so shaped that it maintains the vertical position of its corresponding guide bar 38 during the first forward movement of the carrier. It results from this that the pin 40 is smoothly and positively forced into  
120 the appropriate space between teeth on the wheel 50, and is held there by the contact between the plate 48 and roller 56, until said pin is effectively held between the teeth of said wheel 50.

For greater security, I also find it advisable to insure smooth and certain transfer of the pins 40 from the wheels 50 to the guides 20. For this purpose I provide  
125 a steadying strip 57 against which the beak

of each plate 48 slides along during the critical period of entrance by each pin 40 into the forward guide 20 (see Fig. 4).

It will be clear from the foregoing that a great number of cards, for instance, may be stored in the boxes 41, which may bear guiding marks to show what cards they contain. If any box that is wanted is not found at a convenient height in front of the machine, it is only necessary to keep the motor running until the proper box is in place, and then stop the motor. I have found that a great amount of room is saved by my device as over other systems hitherto in use, while the time saved and the convenience and ease of using are obvious.

My invention is not confined to the use of a separate motor for each machine, but it is within the scope of the invention to run a number of machines from a common motor. Also, instead of stopping and starting a prime mover each time the machine is operated, I may operate a clutch to start the machine from a constantly moving countershaft or the like.

A great variety of changes in construction and arrangement may be made in this device, without departing from the scope of my invention, and I do not limit myself to the details herein shown and described.

What I claim is—

1. In a device of the character described, sprocket wheels arranged over each other, chains on said wheels, and motive means for said wheels and chains; in combination with carriers pivotally suspended from said chains, a fixed stop, and steadying plates on said carriers each having an edge adapted to slide on said stop and suitably shaped to preserve the horizontal position of the carriers during the first portion of the movement over one end of the device.

2. In a device of the character described, sprocket wheels arranged over each other, chains on said wheels, and motive means for said wheels and chains; in combination with carriers pivotally suspended from said chains, guide bars on said carriers, front and rear guides for said bars, means at one end of the device for transferring one end of each guide bar from one guide to the other, and means independent of said transferring means and of said front and rear guides for automatically delivering each guide bar in turn to said transferring means.

3. In a device of the character described, sprocket wheels arranged over each other, chains on said wheels, and motive means for said wheels and chains; in combination with carriers pivotally suspended from said chains, guide bars on said carriers, front and rear guides for said bars, a sprocket wheel driven by one of said chains and a second toothed wheel fixed on said sprocket wheel and adapted to transfer one end of each guide bar from one guide to the other.

4. In a device of the character described, a frame, sprocket wheels arranged over each other on said frame, chains on said wheels, carriers pivotally supported on said chains and motive means for said sprocket wheels; in combination with guide bars on said carriers, vertical guides therefor, toothed guide wheels near the top of said frame, sprocket wheels engaging said chains and adapted to drive said guide wheels, a fixed stop and steadying plates on said carriers adapted to slide against said stops so as to lead the guide bars on the carriers into engagement with the teeth on said guide wheels.

In testimony whereof, I affix my signature.

EDWIN R. GILL.