C. D. COLLEY.

INDEX APPARATUS.

APPLICATION FILED OCT. 13, 1911.

1,067,799.

Patented July 22, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

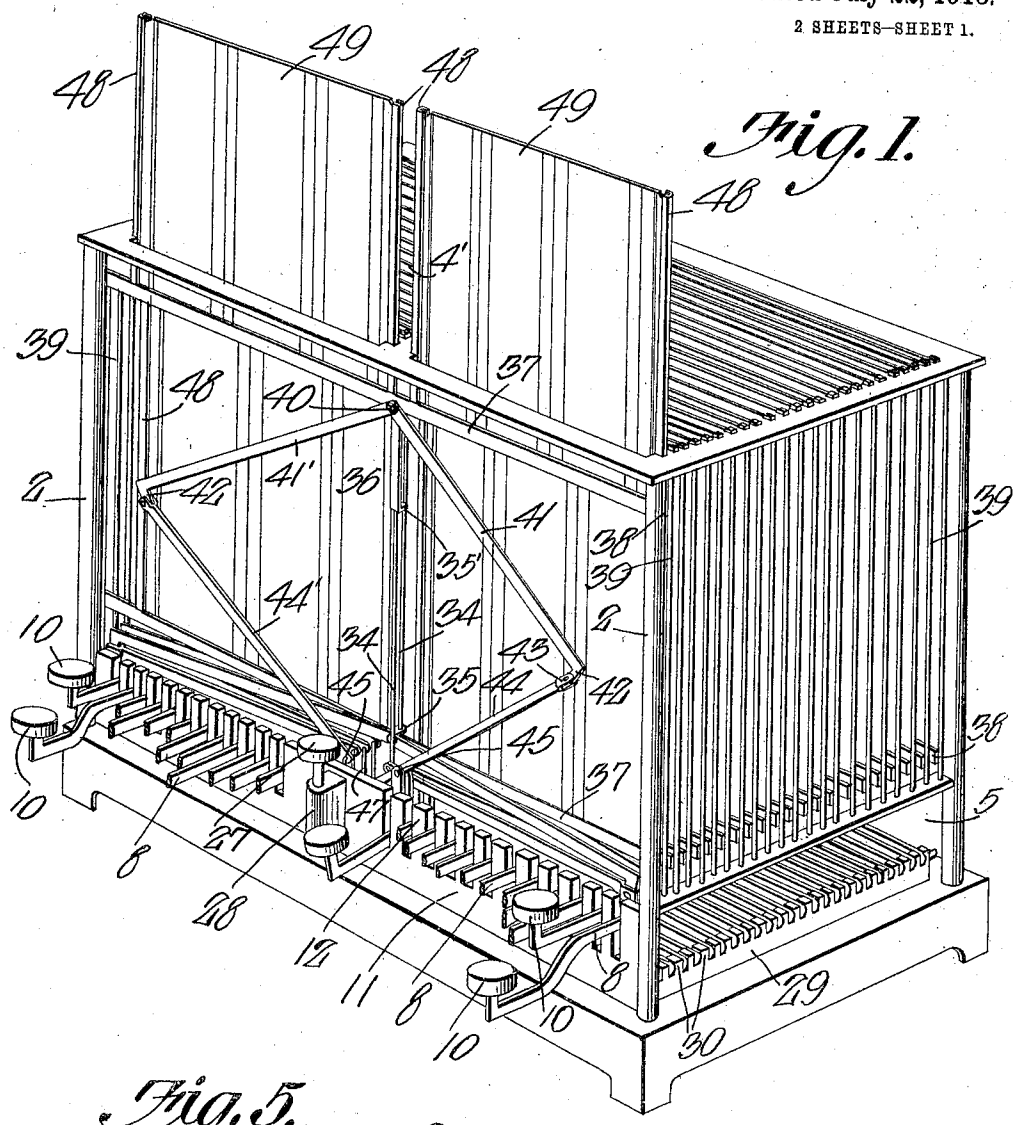
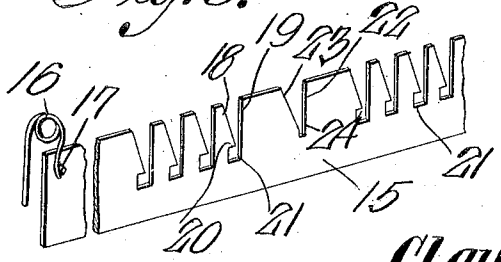


Fig. 5.



Witnesses

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2 SHEETS—SHEET 2.

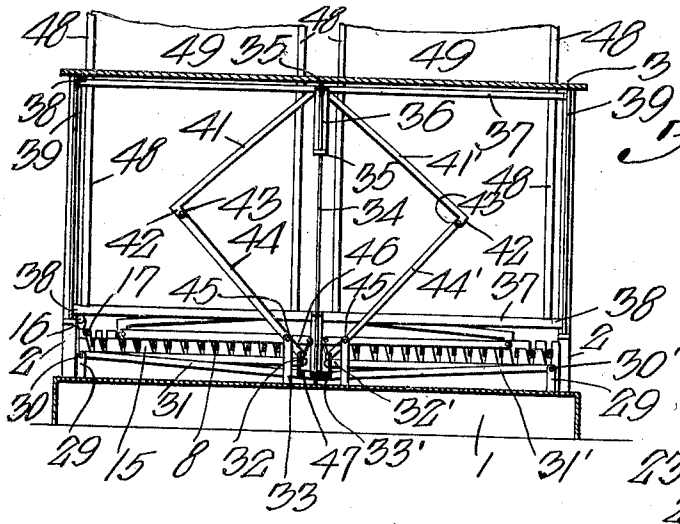

Fig. 2.

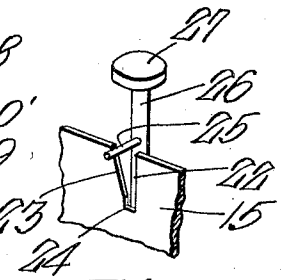

Fig. 4.

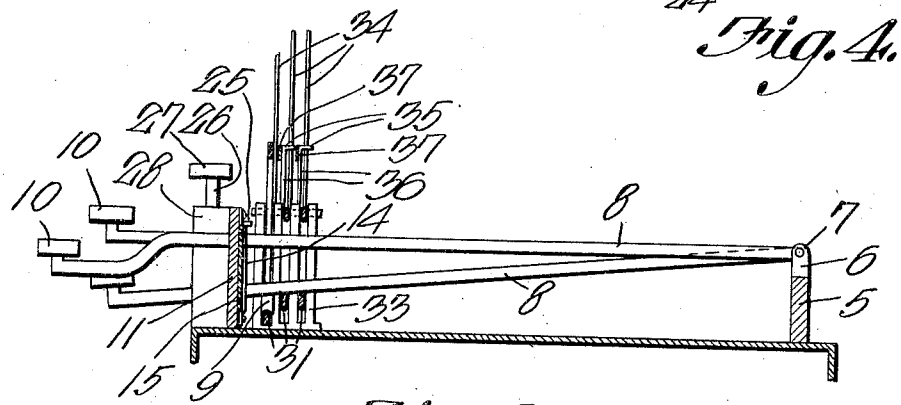

Fig. 3.

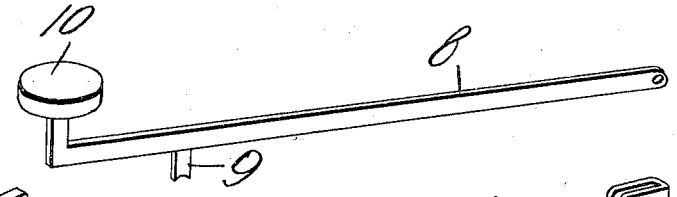

Fig. 8.

Fig. 6.

Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

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INDEX APPARATUS.

1,067,799. Specification of Letters Patent. Patented July 22, 1913.

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To all whom it may concern:

Be it known that I, CLAYTON D. COLLEY, a citizen of the United States, residing at Narrows, in the county of Giles and State of Virginia, have invented a new and useful Index Apparatus, of which the following is a specification.

The present invention relates to improvements in indexing apparatus, and the primary object of the same is the provision of a plurality of key actuated and projected index carrying frames disposed within a peculiarly constructed casing, combined with a lock for engaging the respective keys of the index carrying frame to lock the keys in depressed position and consequently the indices in projected position, the lock being so constructed and arranged that the manipulation of another key to project another index frame, will release the lock to permit the index frame remaining projected to be returned to receded position by gravity.

A further object of the present invention is the provision of a lock actuating key adapted to be used to release the lock when it is desired to have all of the index frames receded within the main casing of the machine.

A still further object of the present invention is the provision of a casing provided with oppositely disposed and pivoted actuating levers, said levers being operably connected to a lazy-tong whereby the depression of the lever at any point between its free end and pivotal point will actuate the lazy-tong to extend the same and project the index carried thereby, a key carrying the proper index letter having its shank pivoted within the casing and disposed to engage one or the other of said oppositely disposed levers to depress the same and project the index, a spring returned locking bar being disposed in the path of travel near the forward end of the key shank or levers, to be engaged thereby and shifted to be finally actuated by the spring to release the shank or lever of the key levers, to lock the same and the indices in projected position, the subsequent actuation of a key lever actuating the lock to release the locked key lever and permit the return of its respective index by gravity, the said levers and key levers being so pivoted and at right angles to each other that the distance of depression of the key will depress the oppositely disposed levers in the proper ratio whereby all of the index frames are projected identically the same distance, regardless of the pivoting of the respective levers.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a perspective view of the complete apparatus with a portion of the key board shown, one of the index frames being projected to demonstrate the operation of the device. Fig. 2 is a longitudinal sectional view through the machine looking toward the front thereof with the parts in the position as viewed in Fig. 1. Fig. 3 is an enlarged detail transverse sectional view taken to the right of the center of the machine as viewed in Fig. 1, only the base and adjacent portions being illustrated. Fig. 4 is a detail perspective view of the locking bar with the release key. Fig. 5 is an enlarged detail perspective view of the central portion and one end of said locking bar taken from the rear side thereof. Fig. 6 is a perspective view of one of the key levers. Fig. 7 is a perspective view of the upper end of one member of the index carrying frame.

Referring to the drawings, the numeral 1 designates the base of the machine which may be made of any preferred design, but in the present instance is shown as rectangular in plan, and has upstanding therefrom or near the respective corners thereof four cylindrical posts 2, which carry at their top a metal plate 3 provided with two series of slots 4 and 4′, the purpose of which will presently appear.

Carried by the base upon the upper face thereof near the rear and extending longitudinally thereof is a plate 5 provided with a plurality of fingers 6 through which is passed a pin or pivot 7 to properly pivot or fulcrum the rear ends of the key levers 8, each one of which is provided with its respective lug or finger 9 projecting from the lower side thereof, and with the key cap 10 which projects through the proper slots

in the forward longitudinal plate 11 of the machine between the respective fingers 12 thereof. By this means the key levers are guided properly in their vertical up and down movements and are presented in front of the main casing of the machine in a position readily accessible for the manipulation of the various indices which will presently appear.

Connected to the rear of the plate 11 are a plurality of guide strips 14 which hold the locking bar or plate 15 in slidable relation and parallel to the rear face of the said plate 11, the detail construction of said locking plate 15 being clearly shown in Fig. 5. In order to normally hold the said locking plate 15 to the right as viewed in Fig. 2, a spring 16 is disposed so that one terminal is connected rigidly to the plate 11 while the other terminal is free to engage the pin 17 carried at the end of the slidable locking bar 15, and formed in the upper edge of said locking bar throughout the length thereof are a plurality of slots of peculiar shape. The slots are formed by the inclined wall 18 and the straight wall 19, for the reception of the respective square shanks of the key levers 8, the inclined portion 18 being normally in the path of the lower portion of the said shank, so that the depression of the shank by the operator to engage the said inclined portion 18 moves the locking bar 15 to the left as viewed in Fig. 2, the said shank continuing its movement downwardly and finally entering the rectangular slot 21 and having its upper face engaged by the square shoulder 20, the spring 16 at this point having slightly moved the locking bar 15 to the right as viewed in Fig. 2, so that the squared shank of the key is locked within the recess and below the shoulder 20, and thus the said key lever is locked in the depressed position. The subsequent manipulation of any of the other keys will as stated engage the inclined edges 8 of the respective slots so as to move the locking bar 15 to the left as viewed in Fig. 2, thereby disengaging the shoulder 20 from the shank of the key lever which is depressed and locked thereby, so as to cause the straight edge 19 to abut one face of the shank, the said key thus being in a position to be automatically elevated and released, as will presently appear.

Disposed centrally of the locking bar 15 is a slot formed by the straight wall or edge 22, and the inclined bar actuating edge 23 which terminates in the open end 24, this slot being provided for the actuation of the locking bar 15 when it is desired that all of the key levers shall be released and elevated and the indices as will presently appear properly incased within the machine. In order to accomplish this, the cylindrical shank 26 carrying the key cap 27 and provided with a pin 25 is mounted within the tubular support 28 carried upon the forward central portion of the plate 11 of the casing, said pin 25 being disposed to engage the inclined face 23 of the slot, so that the depression of said key will cause the pin to ride thereon and consequently move the locking bar 15 to the right as viewed in Fig. 2, thereby releasing the depressed key lever permitting the same to be elevated when the index is to be receded within the casing.

Mounted at opposite sides of the base and at right angles to the respective plates 5 and 11 are the two bars 29 and 29′, which are slotted upon their upper ends to provide the fingers 30 and 30′ forming pivotal connections for the outer ends of the oppositely disposed levers 31 and 31′ respectively, said levers having their free ends 32 and 32′ toward the center of the machine as clearly shown in Fig. 2, and being arranged in pairs for simultaneous depression by their respective key levers, the projections or fingers 9 of the said levers being disposed above the levers 31 or 31′ of its respective pair. The inner ends 32—32′ of the respective levers 31 and 31′, as clearly shown in Figs. 2 and 8 are connected together through the medium of the slot *a* and the pin *b*. By this means the depression of one lever 31 or 31′ will cause the consequent depression of the other lever 31′ or 31. As the key levers 8 are pivoted at right angles to the respective actuating lever 31 or 31′ of the pair to which the said key lever is disposed to actuate, the said projection 9 will at all times describe the proper arc of a circle to depress its respective lever 31 or 31′, so that all of said levers 31 and 31′ are depressed the same distance regardless of the distance the projections 9 are from the fulcrums which are disposed with relation to the pivotal point of the respective key lever.

Disposed upon the upper face of the base 1 near the center thereof and at equi-distance upon each side of the center thereof and transversely of the machine, are the two plates 33 and 33′ which are slotted to provide a guiding means for the inner ends 32 and 32′ of the respective levers 31 and 31′, thus maintaining the free ends thereof in the proper relative position and for vertical movement within the slots of the said plates 33 and 33′.

Connected centrally of the base 1 and to the underside of the plate 3 of the casing of the machine are a plurality of vertically disposed cylindrical rods 34 which have slidably mounted thereon the eyed lugs 35 and 35′ of the sliding frame 36, the said frame 36 being provided with a cross bar or frame 37 which is disposed longitudinally of the casing of the machine and is provided with the sleeves 38 at the respective ends thereof

for sliding movement upon the guide rods 39 disposed in opposed pairs at the respective short ends of the casing and providing means for retaining said frame 37 in parallel position and to guide the same in its movement up and down within the casing. Pivotally connected to each frame or bar 37 centrally thereof at its junction with the vertical plates 36 by means of a pin or other pivotal means 40, are the two oppositely extending links 41 and 41′ provided with the right angled ends 42 which have pivoted thereto the yoke 43 of the links 44 and 44′ which combined with the links 41 and 41′ form a lazy-tong connection between the index carrying frame 37 and the pivotal point of the links 44 and 44′ at 45 to the upper end of the slotted transversely disposed plates 33 and 33′ respectively. The lower projecting ends 46 of the lower links 44 and 44′ project within the space between the said plates 33 and 33′, and have connected to their lower ends the short links 47, whose lower ends are in turn pivotally connected to the inner free ends 32 and 32′ of the respective oppositely disposed key actuated levers 31 and 31′. By this means it will be seen that the depression of any one of the key levers 8, will cause its respective finger 9 to engage one of the levers 31 or 31′, causing the simultaneous depression of the inner free ends thereof and the opening of the lazy-tong links to raise the index carrying frame 37 and project the card guides 48 which carry the index cards 49 as clearly shown in Figs. 1 and 2.

As before stated when the respective keys are depressed to project the respective indices as shown in Figs. 1 and 2, the locking bar 15 is operated to engage the shank of the respective key lever and lock the said indices in the uplifted or projected position, the same being held in such position until another key is actuated at which time the locking bar as before described is moved to the left as viewed in Fig. 2 to release the depressed key lever, the weight of the frame 37 and its indices, and the respective lazy-tong links being sufficient to cause the automatic retraction or fall thereof and the consequent raising of the inner ends 32 and 32′ of the oppositely disposed levers 31 and 31′ and finally the elevating of the key levers 8.

The respective index carrying guides 48 are disposed as viewed in Fig. 1 so as to be guided in the respective slots 4 and 4′ in the upper plate 3 of the casing, and by reason of the respective rods and slotted plates, it is evident that the various projecting mechanisms are retained in individual and operable relation and that the indices 49 when in retracted position within the casing may be covered by any form of top or closure to exclude the dust from the operating mechanism and the index cards.

By employing two levers 31—31′ arranged in pairs and operably connected to the respective links 41—41′ and 44—44′, it is evident that a straight movement will be imparted to the eyed lugs 35—35′ upon the rod 34, and thus any side tension that would tend to produce friction and thereby retard the elevation and retraction of the index, is avoided. Should a single lever 31 be employed, with only one link as 41 and 44 connected together, the tendency is to bind the lugs 35—35′ upon the rod 34 and thus not elevate the index with the desired easy motion or in the same vertical alinement as when they are arranged in pairs as illustrated.

Although in the present invention there is shown two indices, it is evident that the device or the casing may be elongated or reduced to carry a greater number of indices or a less number as desired.

In the present structure as shown it has been determined by preference, to use 24 of the keys 10 to actuate 24 pairs of the index sheets or cards 49, and as there is a single locking bar 15 to each machine, it is only necessary to have one release key 25 to actuate the same when it is desired that all of the indices be receded within the casing.

By constructing the card guides as shown U-shaped in cross section and open at the upper ends, it is evident that the respective indices may be removed at will, and that by the present construction that these indices are held in a compact and desirable form, and by reason of the peculiar construction of key actuated projecting mechanism, in which each key has its particular index frame to project, in combination with a locking bar which locks the key shank in depressed position to hold the indices projected, that a very practical device for the purpose described is produced. Further by providing the peculiar shaped cam slots in the said locking bar, the necessity of releasing each index when desired to project the same or holding the key depressed to hold the index projected, is dispensed with, the subsequent actuation of a key lever performing the function of releasing the previous locked key shank to permit the gravity of the various parts to return the indices and key levers to receded position. At the end of the day it is also evident that when it becomes necessary to retract all of the indices within the casing, that the key 27 may be manipulated to release the locking bar 15 to permit the recession or retraction of the last projected index within the frame of the main casing of the device. It is also evident that various forms of pivoting plates may be mounted within the main frame of the device to provide the various fulcrums for the levers and connections for the links, the present form having been de-

vised as being preferable and as providing a means to rest near the base of the casing and below the respective indices when in retracted position.

What is claimed is:

1. An index apparatus, having a frame, a plurality of index carriers disposed for vertical reciprocatory movement within and without the frame, and a mechanism for actuating each index carrier, comprising two levers oppositely disposed with their outer ends pivoted to the frame and their inner ends toward each other and operably connected for movement in unison, a key lever disposed at right angles to said levers and above and in engagement with one of the two levers, and a lazy-tongs having four members, the terminals of the upper two members being operably connected to the index carrier, while the terminals of the lower two members are operably connected to the respective inner ends of the first two levers.

2. An index apparatus, having a frame, a plurality of index carriers disposed for vertical reciprocatory movement within and without the frame, and a mechanism for actuating each index carrier, comprising two levers the outer ends of which are pivoted to the frame with their inner ends disposed toward the center of the frame and operably connected for movement in unison to each other, a key lever having its inner end pivoted to the rear of the frame with the body of the key lever disposed at right angles to the first two levers and above one of the two levers to engage the same upon depression, two arms having their upper ends pivotally connected to the carrier, a pair of levers having their upper ends pivotally connected to the lower ends of said arms, the lower ends of said last mentioned levers being pivoted to the frame and projecting within the space between the first two levers, and means for operably connecting the lower end of said arm actuating levers to the first two levers.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CLAYTON D. COLLEY.

Witnesses:
FRANK B. OCHSENREITER,
LENA WILLSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."