

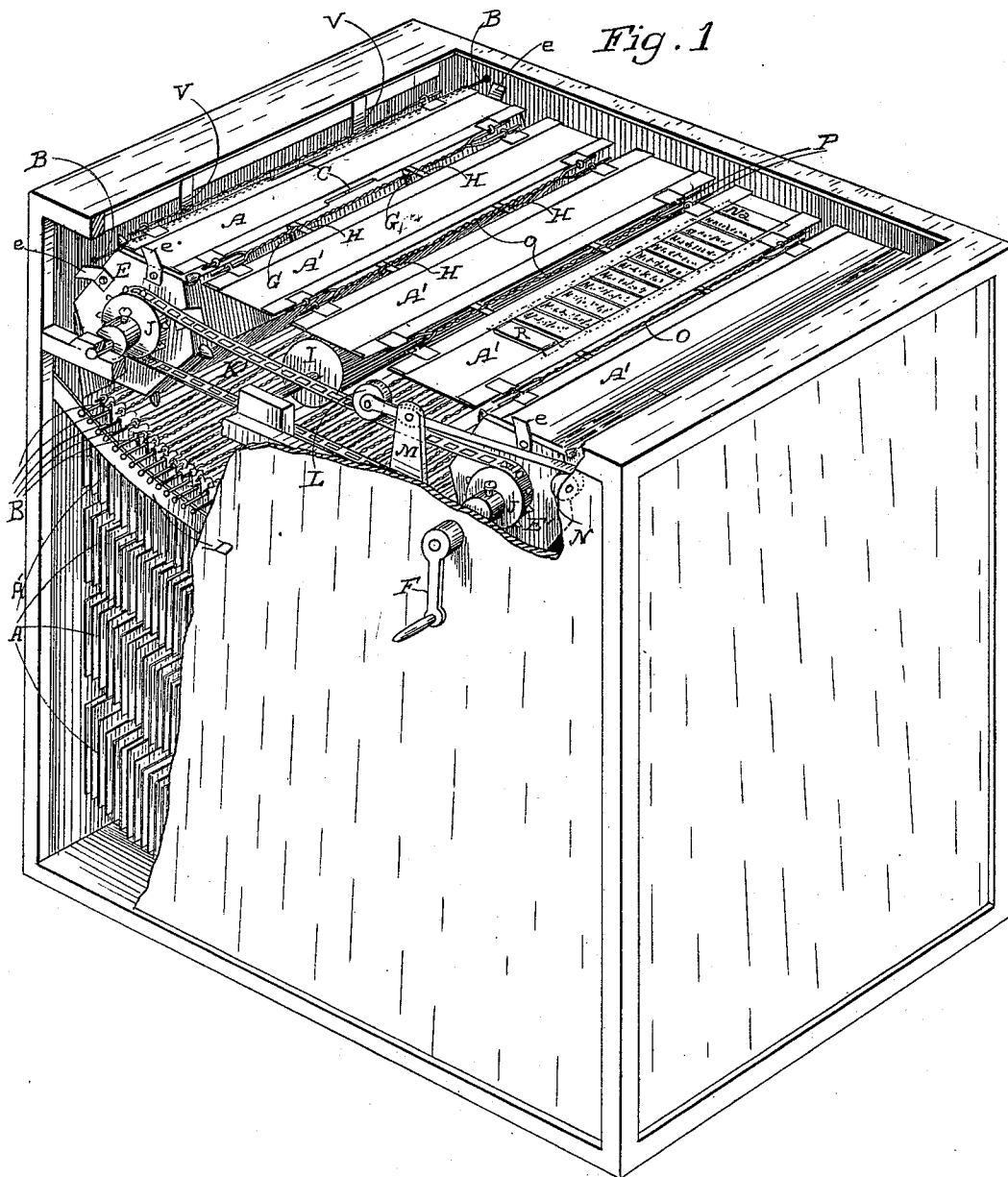
(No Model.)

2 Sheets—Sheet 1.

A. J. RUDOLPH.
CONTINUOUS FILE OR INDEX.

No. 499,443.

Patented June 13, 1893.



Witnesses,
J. H. Bayless

Inventor,
Alexander J. Rudolph,
By Dewey & Co.,
attys

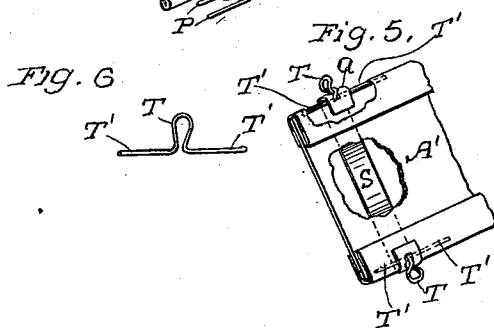
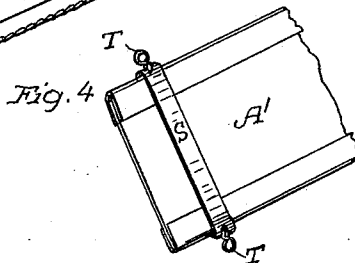
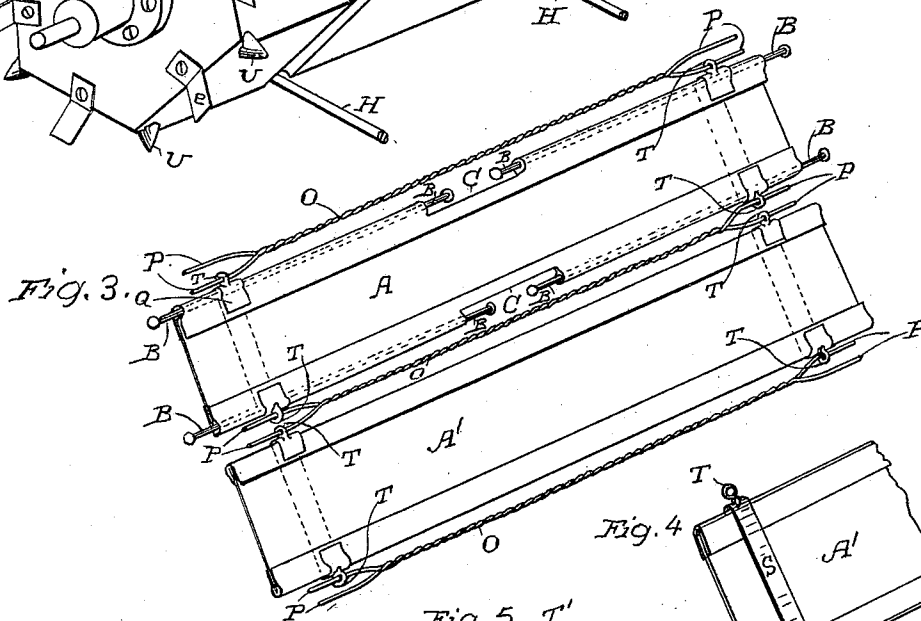
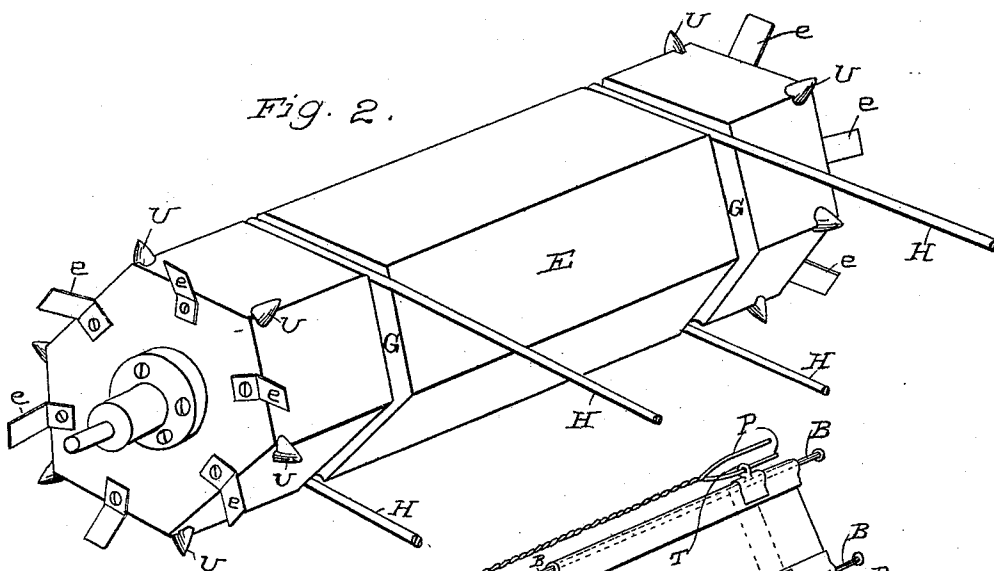
(No Model.)

2 Sheets—Sheet 2.

A. J. RUDOLPH.
CONTINUOUS FILE OR INDEX.

No. 499,443.

Patented June 13, 1893.



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UNITED STATES PATENT OFFICE.

ALEXANDER J. RUDOLPH, OF SAN FRANCISCO, CALIFORNIA.

CONTINUOUS FILE OR INDEX.

SPECIFICATION forming part of Letters Patent No. 499,443, dated June 13, 1893.

Application filed February 8, 1893. Serial No. 461,505. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER J. RUDOLPH, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in a Continuous File or Index; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device which I call a continuous file or index.

It consists of a series of cards, the faces of which are adapted to receive slips containing the subject matter of the index, said cards being hinged or linked together at their edges to form a flexible belt; pins projecting from the ends of certain cards in the series; a support upon which these pins are carried so that the cards hang in folds of any desired length upon the support; a means for changing or adjusting the pins so that any even number of slip-holders may be introduced at any desired points without altering the hanging of the cards; and in certain other details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved device. Fig. 2 is a perspective view of one of the polygonal drums. Fig. 3 is a perspective view of two of the slip-holders and manner of hinging them together. Fig. 4 is a part of a slip-holder showing the stiffening strap. Fig. 5 shows a portion of a slip-holder and the manner of securing the hinge pins. Fig. 6 is a view of the hinge pin.

The object of my present invention is to provide certain improvements upon a device which was patented to me September 27, 1892, No. 483,312. In this apparatus certain cards of the series are provided with projecting pins or rods by which they are suspended, and which are so situated as to contain any even number of the cards or slip-holders between them, as 10, 14, 20, &c.

In case any slip-holder becomes filled and a new one must be introduced, it will be necessary to introduce two, otherwise the cards will not hang in folds side by side, but the bottom card would stand transversely, making with the two next adjacent above it a triangular open space which would cause detrimental wear of the cards, besides making them oc-

cupy too much space, by reason of their not hanging in parallel lines. It is not always desirable, however, to introduce two slip-holders at one point, and in order to enable me to introduce the second one at some point where it will soon be needed, I have constructed slip-holders A with adjustable rods B which are fitted to slide in tubular channels formed upon the edges of the slip-holders. These tubular channels are formed by properly bending the aluminum or other metal plates, of which the slip-holders may be entirely composed, or which serve to bind and strengthen the edges of cards of other material which may be used in place of the metal. These tubular channels extend from the ends of each side of the slip-holder to a point near the center where they are cut away, as shown at C, leaving an open space at this point. The rods are made sufficiently long to extend from the ends of the slip-holders to the center, there being two rods upon each side of the slip-holder, and they are headed or enlarged at each end so as to prevent their being withdrawn from the tubes. The central space allows convenient access to the inner ends of the rods so that they can be easily pushed outward. When the two rods are pushed so that their inner ends meet in the open central space, the outer ends will be just flush with the ends of the slip-holders, and in this position they do not interfere with the folding of the cards when they are suspended upon the supporting curved segments D below the drums E E' by which they are moved.

When it has been determined how many of the cards A' shall hang in each fold below the segment, the rods B of the supporting cards A are drawn outward so that as the cards are moved by the drum, the rods which are drawn out will fall into the supports and slide down toward the center, as shown, while the remaining cards in which the rods are pressed in closely to the ends will depend in folds from the ones by which they are suspended. When it is found that a slip-holder is to be introduced at any point in the chain of cards, it is only necessary to disengage the hinges by which the cards are joined together at that point, and introduce the new leaf. The second leaf may be then introduced at any other point where it is most likely to be need-

ed, and the chain will thus be completed. The suspending rods B are then adjusted to suit the new arrangement of the chain of cards, so that with this new arrangement the cards
5 will continue to hang in symmetrical and parallel folds from the supporting segments.

In my present invention I have shown two polygonal drums E and E' journaled side by side in the frame, one of these drums being
10 provided with a crank F at the end of its shaft by which it may be turned. The two drums and rollers have grooves formed in them as shown at G, and around these drums are placed endless flexible belts H of any suitable material. Between the drums one or
15 more friction rollers I are mounted over which these belts pass, and by which they and the chain of cards are supported as they pass between the drums to prevent an uneven or
20 waving motion by reason of the weight of the cards. This is necessary to prevent any strain upon the cards and their connecting hinges which would soon separate them, and make the distance between them too great for them
25 to fit accurately about the drums and the projecting spurs thereon with which they engage, and this stretching would prevent their registering perfectly, which is absolutely necessary.

30 Flanges or arms e projecting around the peripheries of the drums, serve to retain the chain of cards on the drums, and direct them, if for any reason the drums are not journaled exactly parallel.

35 Upon the shafts of the drums, at one or both ends, are fixed the sprocket wheels J around which pass chains K, so that the drums are both rotated by means of the crank which turns one of the drums, and they are both
40 thus caused to move at an even pace, and without strain upon the chain of cards which would otherwise take place. In order to keep a proper tension upon the chain, I have shown a tightening pulley L mounted upon a suitably fulcrumed lever arm M, and the outer
45 end of this lever is adjusted by an eccentric roller N which allows the end of the lever arm to be raised or depressed, and thus correspondingly increase or decrease the pressure
50 of the roller L upon the chain and the consequent tension of the latter. It will be manifest that in place of the chain or flexible belt connection, gear wheels may be used to produce the same result, but I prefer the chain
55 or belt as being simpler or more noiseless.

In order to conveniently connect and disconnect the cards, I have shown hinge pins consisting of twisted elastic wires O extending from one of the hinge lugs to the other.
60 At the ends, these wires are separated to form forks P, the sides of which are wide enough apart to allow one of them to engage the hinged loop Q of each of the adjacent cards. These cards may be made of metal or of pasteboard or other suitable material having metallic strips fixed upon the edges and bent
65 over so as to form grooves or channels upon

each side for the reception of the slips which are introduced transversely across the cards until the cards are filled from end to end. The
70 ends of the grooves or channels are closed or made narrower so as to prevent the slips from being displaced or removed, and when the cards are only partially filled with slips, I employ
75 elastic stop pieces or checks R which fit sufficiently close within the grooves or channels to prevent the slips from moving.

Across the back of each of the cards or slip-holders is fitted a strip of metal S which is bent into a hook form at each end, and its
80 length is such that when it is slipped over the card any transverse strain or tension will be brought directly upon these metal strips.

Through the bend or bight, where the hook portion is formed, a hole is made of sufficient
85 size to receive the eye-loop T which forms the hinge. This eye-loop is formed of a wire bent as shown, and having the ends T' extending in line with each other over a short distance.
90

Holes corresponding with those in the strips are made through the bent metallic edges of the slip-holders, and of sufficient diameter to allow the eye or loop T to be passed through the hole, and the parallel portions T' of the
95 wire pushed in until they lie along the inner edge or bottom of the grooves or channels formed by the folds of the metallic plates on the edges of the cards. The loop is then
100 twisted to stand at right angles with its former position, and in line with the edges of the cards so as to receive the hinged pins P. As these metallic strips are bent short enough so that all strain by reason of the
105 weight or pull upon the cards, is brought upon these strips, the cards are thus relieved from it and prevented from being torn, pulled apart, or stretched in the direction of their width, so as to lengthen the chain and prevent their registering perfectly as they pass
110 around the polygonal drums. The wires O which extend between the hinges are sufficiently flexible so that by bending them into a curve at points between the hinges they will be sufficiently shortened to withdraw the ends
115 P, and thus allow the cards to be separated for the introduction of others, or for any other purpose and when the ends P are introduced into the hinged loops of two adjacent cards and the wire allowed to straighten out
120 between them, these ends will be pushed through the loops far enough to hold the cards together and form the hinges about which they move. It will be manifest that these hinge wires may be formed in various other
125 ways, the object being to provide a sufficiently elastic wire or connection having the forked ends to serve as hinge pins. The central portion is ornamental and serves to partially fill the space between the adjacent cards, and to
130 cover such portions of the interior drums as would be visible through these spaces.

In my former patent I showed pins projecting at each end of the drum and in the

flat sides thereof, and corresponding holes were made in the ends of the slip-holders to fit these pins. This construction made it necessary to make the holes very exact in order to cause the cards to register accurately as they passed over the drums, and it was also objectionable because the holes occupied a certain amount of space that could otherwise be utilized for the reception of slips. In my present invention I make these projecting spurs U upon the angles at the ends of the polygonal drums, and they then project between the adjacent edges of the cards and outside of the hinge strips, thus causing the cards to register perfectly, saving the expense of making the holes, and causing them to register accurately as in the former construction. It also allows the full length of each slip-holder for the introduction of slips which in a long series and for large catalogues becomes very important.

In order to prevent the chain of cards from knocking against the sides of the case within which they are contained by reason of the centrifugal force and swing produced by the revolution of the drums, I place on opposite sides of the case two or more strips V of leather, rubber, or other flexible material, which are supported in such a manner as to leave a little space between the strips V and the wall of the case. These strips thus receive the cards if they have any swinging motion and prevent their striking against the sides of the case, and being of soft material they prevent any injury to the holders or slips contained in them.

In connection with this device I use a series of movable catch letters or numbers printed in heavy bold faced type, which are introduced at intervals between the slips in the slip-holders, and by their appearance arrest the attention, and assist in rapidly locating the place of entry or entries which it is desired to examine. In connection with this I may also use movable subdivisions or headings marked in colors. The importance of this will be recognized when it is understood that for each State of the United States, and each other country, there are about one hundred and forty subdivisions. The subdivisions for cities amount to one hundred and fifty. The subdivisions for the Bible amount to about three hundred, and in addition to these are the subdivisions for astronomy, chemistry, engineering, architecture, arts, sciences, theology, philosophy, &c., in the printed catalogues, as, for instance, in the Peabody catalogue all these subdivisions are printed in italics. By means of movable colored subdivisions they are made to stand out so that any work is easily located without spending much time to find it.

The cost of printing the Peabody catalogue in the one color is about twenty-five thousand dollars. If printed in two colors the same catalogue would cost about fifty thousand dol-

lars, while by the use of these colored subdivision indicators I am enabled to keep my catalogue up with no more expense than the cost of introducing any of the slips into the slip-holders.

The drums are retained centrally and prevented from shifting endwise by means of collars fastened to the drums, and adjusted by set screws so as to allow the drums to revolve freely and at the same time within the proper limits.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A file or index consisting of a series of cards or holders linked together at their edges to form a flexible endless belt, rods or hangers projecting from the ends of the cards at certain intervals, said rods being slidable in guides upon the edges of the cards whereby they may be drawn out or retracted to change the points of suspension of the cards, and lugs adapted to receive these rods and suspend the cards in successive sheets substantially as herein described.

2. A file or index consisting of the series of cards or holders having channels formed upon their opposite edges to receive the ends of transverse placed slips, tubular channels formed in the edges of the cards, said channels being cut away at the central portion of the card as shown, rods fitting said channels and slidable therein so as to be projected beyond the ends of the cards or closed up flush with the ends, yokes adapted to receive these rods and suspend the cards in sheets with folds of a length which is determined by the distance between the projected rods, substantially as herein described.

3. A file or index consisting of a series of cards having channels formed upon their edges to receive transversely located slips, independent metallic strips extending across the cards near each end and bent over the edges of the cards so as to clasp them, wire loops passed through holes in the turned over edges of the channels, and the overlapping metallic strips and projecting exterior to said strips so as to form hinged loops, the inner portions of the wire extending along the bottoms of the channels parallel with the sides of the cards, substantially as herein described.

4. A file or index consisting of a series of cards having grooves or channels formed upon their opposite edges for the reception of transversely located movable slips, transverse metallic strips extending across the cards, near each end, and bent over the opposite edges thereof, wire hinge loops extending through openings in the groove channels and corresponding holes in the metallic strips whereby the transverse tension is received by the metallic strips, hinge pins by which the adjacent edges of cards are flexibly connected together, said pins consisting of elastic rods having forked ends adapted to fit the hinge

loops at opposite ends of two adjacent cards and connect them together, substantially as herein described.

5 5. A file or index consisting of a series of cards or holders having grooved channels upon their opposite edges for the reception of movable transverse slips, hinges by which the adjacent edges of the cards are flexibly connected together, and adjustable rods or hang-
10 ers projecting from the ends of the cards at certain intervals, yokes so fixed as to receive the rods or hangers and suspend the cards therefrom in folded sheets, polygonal drums, the faces of which correspond in width with
15 the cards, said drums being journaled in the case and having connecting flexible bands, intermediate supporting rollers over which the bands and cards pass from one drum to the other, sprocket-wheels upon the drum
20 shafts with chains connecting them whereby the drums are rotated in unison and the strain and tension removed from the cards and their connecting hinges, substantially as herein described.

25 6. A file or index consisting of the series of cards or holders having their edges flexibly linked together to form a series or endless belt, rods or hangers adjustable in the ends of the cards, and yokes upon which said
30 hangers are received, polygonal drums mounted parallel with each other in the containing case having their faces of corresponding width with the cards, connecting belts and chains whereby the cards are supported be-
35 tween the drums and the drums are caused to rotate in unison, spurs projecting from the angles of the drums at each end, and adapted to enter the spaces between the cards in line with their hinge connections whereby the
40 cards are caused to register accurately upon the drum faces as they move over them, substantially as herein described.

7. A file or index consisting of a series of cards or holders linked together at their edges

to form a flexible endless belt, projecting rods 45 and hangers by which the cards are caused to hang in a series of folds, polygonal drums journaled parallel with each other over which the cards are caused to pass by the rotation of the drums, endless connecting bands and 50 supporting rollers between the drums over which the cards pass, sprocket-wheels upon the drum shafts, and endless chains passing around said sprockets whereby the drums are rotated in unison without tension upon the 55 cards, a fulcrumed lever having a roller journaled in one end and adapted to press upon the chain, and an eccentric or cam adjustable with relation to the opposite end of the lever whereby the tension of the chain and the 60 power required to rotate the drums are regulated, substantially as herein described.

8. A file or index consisting of a series of cards or holders linked together at their edges to form a flexible endless belt, drums jour- 65 naled parallel with each other in the upper part of a case and connected together so as to be rotated in unison, said drums having polygonal faces corresponding in width with the cards and connecting endless belt and 70 supporting rollers whereby the uppermost cards are supported and exposed beneath a transparent top of the case for inspection, rods projecting from the ends of the cards at certain intervals, and yokes fixed beneath the 75 drums adapted to receive these projecting rods and suspend the intervening cards in parallel hanging sheets, and elastic strips fixed upon the sides of the case opposite the lines of cards whereby the latter are prevented 80 from swinging outwardly and striking the case, substantially as herein described.

In witness whereof I have hereunto set my hand.

ALEXANDER J. RUDOLPH.

Witnesses:

S. H. NOURSE,

GEO. H. STRONG.