

J. W. KENT

FILE COMPRESSOR

Filed Nov. 8, 1950

3 Sheets-Sheet 2

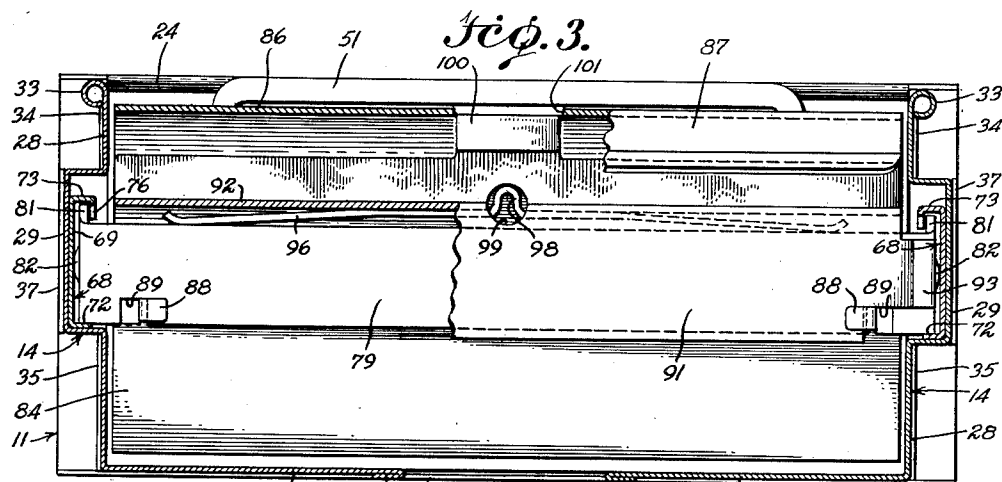
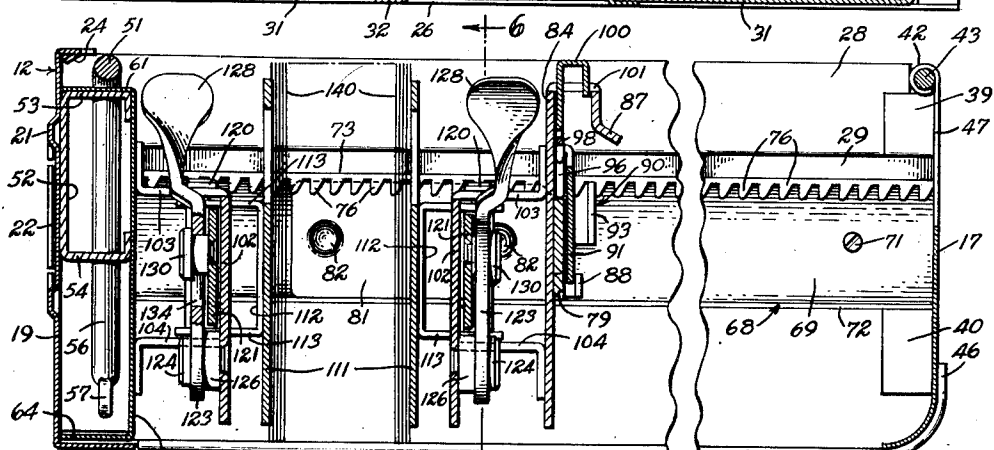
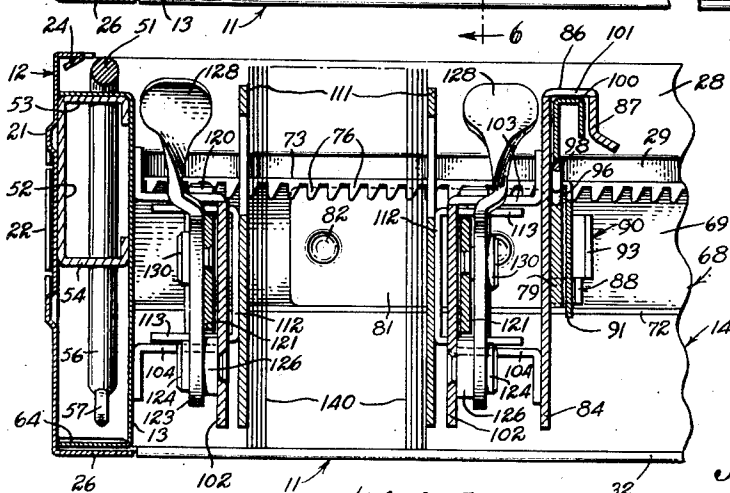


Fig. 5.

Inventor
John W. Kent
John W. Kent
Attorney

2,648,337

3 Sheets-Sheet 3

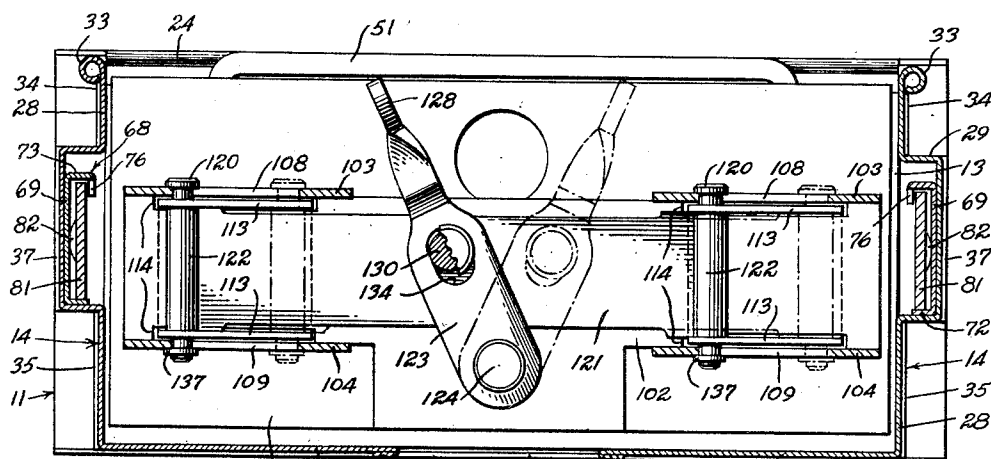


Fig. 6.

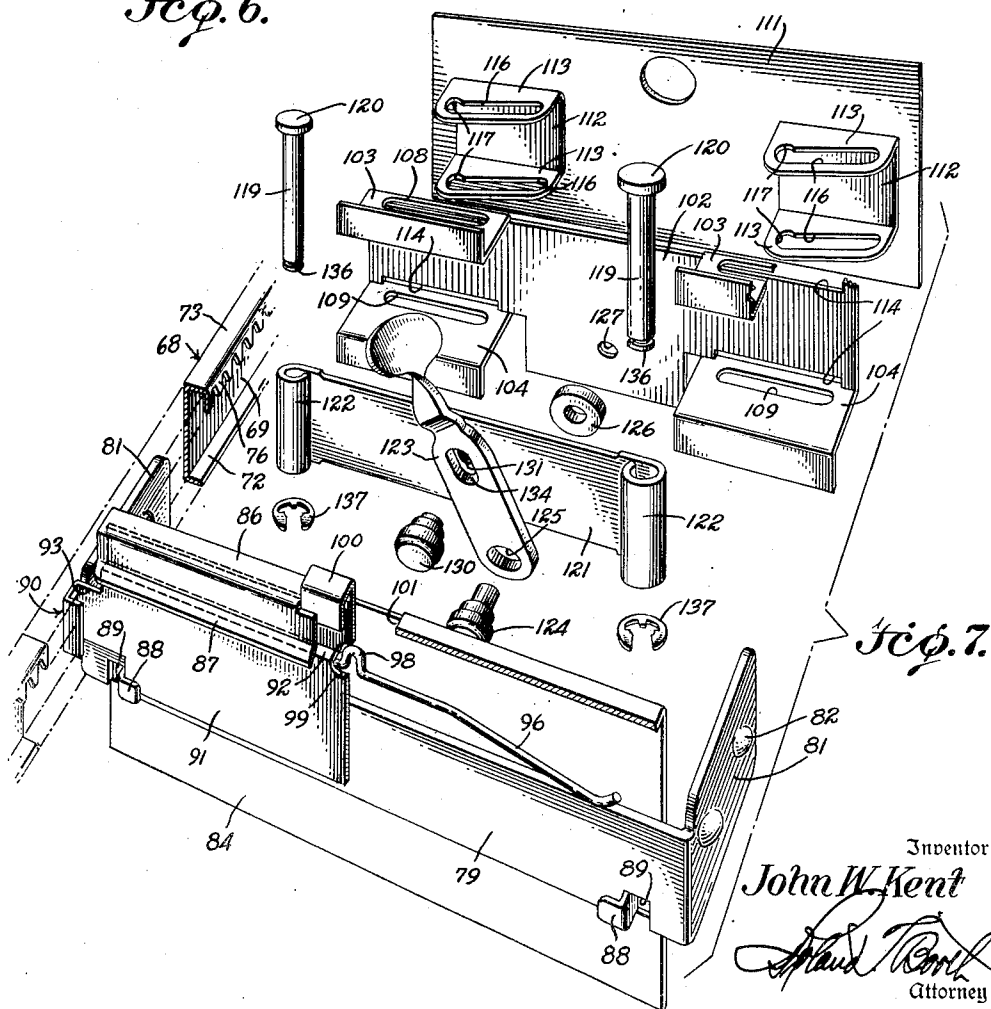


Fig. 7.

Inventor

John W. Kent

Attorney

UNITED STATES PATENT OFFICE

2,648,337

FILE COMPRESSOR

John W. Kent, Buffalo, N. Y., assignor to Remington Rand Inc., New York, N. Y., a corporation of Delaware

Application November 8, 1950, Serial No. 194,627

7 Claims. (Cl. 129—28)

1

This invention relates to vertical files and particularly to such files in which there is provided mechanism for compressing the cards, papers, or the like contained therein so as to hold them tightly in place in the tray.

The invention comprehends the provision in a vertical filing tray of a compressor of novel construction which may be fixedly mounted on the front of the tray or movably mounted on the follower in the tray.

The invention further comprehends the provision in a vertical filing tray of a compressor which may be operated independently of the operation of the follower in the tray.

The invention also provides a compressor for a vertical file tray which includes a compressor plate that is movable longitudinally of the tray and supported against tilting.

Still further comprehended by the invention is the provision in a vertical filing tray of a compressor which is durable in construction, easily operated, and which may be locked in extended position.

The compressor of the present invention may be used with any type of vertical file tray but is particularly useful in file trays used for tabulating or punched cards. Such cards are preferably stored in long drawers or trays since usually many of these cards will be used at a time in tabulating the information punched thereon, and the use of small drawers with a smaller capacity such as are customarily employed in a manual filing system is not, therefore, convenient. Consequently, it is difficult to compress the cards with the usual follower provided although compression is desirable to prevent warping of the cards in order that they will properly feed into and be usable in the automatic machines with which they are employed. The use of a compressor constructed in accordance with the present invention which will positively compress the cards to such an extent that a file tray full of cards may be inverted without danger of the cards falling out is very desirable.

In the drawings:

Fig. 1 is a plan view of the front end portion of a card tray constructed in accordance with the present invention and embodying both a fixed compressor and a movably mounted compressor, the compressor plates of both compressors being shown in card-compressing position;

Fig. 2 is a vertical, transverse cross-section taken on line 2—2 of Fig. 1 with the follower latch in locked position and with portions of the follower broken away to show the construction thereof;

2

Fig. 3 is a vertical, transverse cross-section similar to Fig. 2 but with the follower latch disengaged;

Fig. 4 is a vertical, longitudinal cross-section taken on line 4—4 of Fig. 1 illustrating details of the tray construction and showing both compressor plates in card-compressing position and the follower in latched position;

Fig. 5 is a fragmentary, vertical, longitudinal cross-section similar to Fig. 4 showing both compressor plates in retracted position;

Fig. 6 is a vertical, transverse cross-section taken on line 6—6 of Fig. 4 showing details of the operating mechanism for one of the card compressors; and

Fig. 7 is an exploded view showing in perspective and partly in section a portion of one of the follower tracks, the follower and, disassembled, the parts of the compressor mounted on the follower.

Referring to Figs. 1 and 4, the card tray designated generally by the numeral 11 comprises a vertical outer front 12, a vertical inner front 13, a pair of longitudinally-extending spaced body members 14, and a back 17, all of which may be formed of suitable sheet metal such as steel or aluminum. The outer front 12 of the tray 11 has a front wall 19 in which there is provided a label holder having an embossed rim 21 and a plurality of outwardly projecting punched tongues 22 suitable for holding a drawer label in position. The top of the front wall 19 is bent rearwardly and, except at the corners, downwardly, to form a top flange 24. The bottom of the front wall 19 is likewise bent rearwardly to form a bottom flange 26 adapted to support the lower front ends of the body members 14.

Two body members 14 are employed, each being the mirror image of the other and comprising a side wall 28 having an outwardly projecting channel portion 29 formed therein intermediate the top and bottom thereof and a bottom, inwardly-directed flange 31 which is provided along its free edge rearwardly of the flange 29 with a return bend 32 that strengthens and stiffens the edge. The tops of the side walls 28 are rolled to provide outwardly projecting beads 33.

The outer front 12 of the card tray 11 is preferably attached to the body members 14 by welding. The forward portion of the bottom flange 31 of each of the body members is supported on the bottom flange 26 of the front and attached thereto. Each side of the front wall 19 is provided with rearwardly bent attaching

flanges 34 and 35 and an intermediate attaching flange 37. The flanges 34 and 35 on each side of the front are bent inwardly into contact with the body members 14 above and below, respectively, the channel portions 29 thereof and are welded on the outside of the side walls 28. The intermediate attaching flanges 37 are welded to the outsides of the respective channel portions 29.

The back 17 of the tray 11 is provided at each of its side edges with a pair of forwardly-projecting, vertically-spaced tabs 39 and 40. Each pair of tabs is attached, preferably by welding, to the inner face of the side wall 28 of one of the body members 14 above and below, respectively, the channel portion 29 thereof. The top of the back 17 is provided with a forwardly turned bead 42 through which there extends a rod or heavy wire 43. The projecting ends of the rod 43 are bent forwardly and each end extends into the rear of one of the beads 33 formed at the tops of the body members 14, thus further reinforcing the sides of the tray. The bottom of the back 17 is curved forwardly below the flanges 40 and is preferably attached by welding to the up-curved ends 46 of the bottom flanges 31 of the body members 14. At the top of the back 17 there is provided a cutout portion 47. This permits the use of the rod or wire 43 as a handle for the rear of the tray.

The tray 11 is provided at its front end with a handle or bail 51 which is preferably formed of a steel rod bent into a U. A channel-shaped bail retainer 52 is mounted transversely across the front end of the tray 11 and is preferably held in place by welding the web thereof to the inner face of the front wall 19 with the walls 53 and 54 of the retainer projecting rearwardly. The retainer 52 is provided, adjacent each of its ends, with a pair of registering vertically spaced holes through the walls 53 and 54 thereof. The legs 56 of the U-shaped bail 51 extend downwardly through the pairs of holes in the bail retainer 52. After the bail has thus been assembled with the retainer, the ends of the bail legs 56 may be formed with heads 57 which will thereafter prevent the bail from being removed from the retainer.

The inner front 13 of the tray 11 is rectangular in shape with forwardly projecting flanges on all sides thereof that abut the inner face of the outer tray front 12. The upper flange 61 of the inner tray front 13 covers the top wall 53 of the bail retainer 52 and is secured thereto by suitable means such as screws 62. Suitably spaced slots 63 are provided in the flange 61 to receive the legs 56 of the bail 51. The forwardly extending flange 64 at the lower end of the inner front 13 rests against the front portions of the bottom flanges 31 of the body members 14.

A channel-shaped guideway or track 68, preferably formed of steel is mounted within each of the outwardly projecting channel portions 29 of the body members 14 and is secured vertically therein, with the flat web portion 69 thereof in face to face contact with the body member, by suitable means such as rivets 71. The bottom, inwardly extending flange 72 of each track 68 rests on the bottom of its associated channel portion 29. The inwardly extending flange 73 at the top of each of the track members 68 is turned down at its free end and serrated to provide a plurality of evenly spaced teeth 76. The two oppositely disposed tracks 68 are so mounted that the teeth on each track

member are aligned transversely of the card tray 11.

As is customary with card file trays, the tray 11 is provided with a follower which is movable longitudinally within the tray so the cards therein may be kept in vertical position even when the tray is only partially filled. As will be seen clearly from the drawings, the follower comprises a carriage 79 that extends transversely of the tray 11 and has at each end thereof a forwardly projecting tongue-like guide 81 adapted for sliding movement along one of the oppositely disposed tracks 68. Each of the guides 81 is provided with a plurality of dimples or bosses 82 projecting outwardly from the sides thereof which contact the web 69 of the track member 68 and prevent binding of the guide in the track. The tops of the guide 81 extend upwardly into the spaces between the downwardly projecting teeth 76 and the webs 69 of the tracks 68 and the carriage is thereby prevented from becoming displaced.

A follower plate 84, positioned transversely of the tray 11, is attached by suitable means, such as welding, to the carriage 79. The plate 84, the height and width of which are slightly less than the corresponding dimensions of the tray 11, is generally rectangular in shape. The top of the plate 84 is formed with a flange 86 which extends rearwardly over the carriage 79 and is provided with a downwardly and outwardly extending skirt 87. A rearwardly and inwardly turned tongue 88 is formed at each end of the follower plate 84 slightly below the middle thereof. Each tongue 88 is received within a slot or notch 89 formed in the lower edge of the follower carriage 79, the follower plate 84 being thereby properly centered with respect to the carriage.

A latch plate 91 that extends transversely of the tray 11 is also supported by the follower carriage 79. A joggle 92 is formed in the plate 91 intermediate its top and bottom, the top portion being disposed above and in the same plane as the carriage 79. The lower corners of the plate 91 are cut out and the bottom portion of the plate which is situated rearwardly of the carriage 79 is slidable vertically on the carriage under the tongues 88. Each end of the latch plate 91 is provided with a tongue 90 that extends into one of the channels forming the tracks 68 and is bent rearwardly and inwardly therein to form a channel portion 93. Downward movement of the plate 91 is limited by the tongues 88 on the plate 84 engaging the tops of the cutout corners. Its upward movement is limited by the tracks 68, the sides of each channel portion 93 engaging adjoining teeth 76 of opposite tracks.

The latch plate 91 is normally held in raised position in engagement with the teeth 76 by an elongated wire spring 96 which is bent, as clearly shown in Fig. 2, to form a bow. The spring 96 has its ends resting on the top of the follower carriage 79 with the bowed portion extending upwardly into contact with the joggle 92 of the plate 91. A loop or offset portion 98 of the spring engages in a cut-out portion 99 of the latch plate to prevent the spring from shifting. The latch plate 91 may be depressed against the resistance of the spring 96 and disengaged from the teeth 76 by a button 100 formed on the upper edge thereof by bending over an upwardly projecting tongue thereon. The latch release button 100 extends upwardly through an orifice 101 provided in the center of the top flange 86 of the

5

follower plate 84 to make it convenient for manual operation.

A card compressor mechanism operable to exert pressure on a quantity of cards contained in the tray 11 is shown in the drawings mounted on the forward side of the follower plate 84. The compressor comprises an anchor plate or support 102 which is provided at each of its ends with horizontal, rearwardly extending top and bottom flanges 103 and 104, respectively, the flanges 103 being bent upwardly at their free ends and the flanges 104 being bent downwardly at their free ends. The support 102 is mounted on the follower plate 84, within the file tray 11 and transversely of the tray, by welding the bent ends of the vertically-spaced flanges 103 and 104 to the plate 84.

The top and bottom flanges 103 and 104 on the anchor plate 102 are equal in width so that the anchor plate is parallel to but spaced forwardly in the tray 11 from the follower plate. A cam slot 108 extending transversely of the tray 11 and parallel to the anchor plate is provided through each of the upper flanges 103. A similar cam slot 109 is provided through each of the bottom flanges 104, the slots 109 being directly below and registering with the slots 108 in the upper flanges.

A compressor plate 111 is supported by the anchor plate 102 transversely of the file tray 11. A cam channel 112 is secured by suitable means such as welding to one face of the plate 111 adjacent each end thereof. The horizontal, vertically-spaced, rearwardly-extending legs or flanges 113 of the channels 112 project through narrow, horizontal slots 114 formed in the face of the anchor plate 102 adjacent each end thereof and directly below and above, respectively, the flanges 103 and 104. The compressor plate 111 is thereby slidably supported for reciprocating movement longitudinally of the tray 11 by the anchor plate 102.

As seen best in Fig. 7, each of the cam channels 112 is provided with a pair of cam slots 116 through the legs 113 thereof. The slots 116 are all disposed at identical slight horizontal angles to the plate 111 and each of the slots has, at its end farthest from the plate 111, a short portion 117 parallel to the plate. The pair of cam slots 116 in each cam channel 112 are in vertical registry and are horizontally spaced to register with the cooperating cam slots 108 and 109 in the flanges 103 and 104, respectively, of the support 102.

The compressor plate 111 and the anchor plate 102 are maintained in assembled relation by a pair of vertical pins 119 having enlarged heads 120. Each pin 119 passes downwardly through the slot 108 in one of the flanges 103, through the registering slots 116 in the associated cam channel 112 and through the cam slot 109 in the lower flange 104 of the anchor plate 102. A pin bar or support 121 is slidably supported at its ends by the flanges 113 of the cam channels 112 and is provided at each of its ends with a rolled, substantially cylindrical portion 122 that encircles one of the pins 119. The pins are thus held in spaced relationship transversely of the tray 11 and are simultaneously movable lengthwise of the cam slots 108, 109 and 116.

A lever 123 for actuation of the pin bar 121 is pivotally mounted at its lower end on a stud 124 that passes through an orifice 125 in the lever. A reduced end of the stud 124 passes through a washer 126 and the hole 127 in the anchor plate 102 and is there headed over or

6

riveted to the anchor plate. The other end of the lever 123 is bent to form a thumb grip 128. The pin bar or support 121 and the lever 123 are operatively connected by another stud 130 mounted on the support. The stud 130 has a reduced portion that extends through a hole 131 in the pin bar and is riveted or headed over to hold it in place. Intermediate its ends, the stud 130 passes through a slot 134 which extends longitudinally of the lever 123. The pins 119 are retained in place in the cam slots 108, 109 and 116 by providing, adjacent the lower end of each of the pins, a groove 136 adapted to receive an E retaining ring 137.

It will be seen from the foregoing description that the present invention provides for a card file tray in which the cards may be kept in erect position by a follower and may, when desired, be clamped tightly in the tray by operation of the compressor. From the description and drawings, the construction of the tray, the follower, and the compressor mechanism will be clearly understood. The operation and use of the improved tray of the present invention is as follows.

A number of file cards, indicated diagrammatically by the reference character 140 (see Figs. 1, 4, and 5), are placed in the tray 11. The follower latch 91 is actuated to disengage it from the teeth 76 of the guide tracks 68 by pressing downwardly on the release button 100. The follower may then be moved forwardly in the tray 11, while supported and maintained in alignment by the guides 81 sliding in the tracks 68, until the compressor plate 111 comes into contact with the file cards 140, as shown in Fig. 5. During normal use of the file tray this is all that is required. As cards are withdrawn from the tray 11 the follower may be moved forwardly in the tray to prevent the remaining cards from falling over, or, if more cards are placed in the tray, the follower may be moved rearwardly in the tray to provide the space necessary therefor.

When, however, it is desired to carry or store the tray, it is desirable to make certain that the cards will not fall out of the tray or be sufficiently loose therein that they may warp or be accidentally bent or creased. Accordingly, the cards 140 are placed under compression by actuation of the lever 123 to the position shown in Fig. 4 and in full lines in Fig. 6, from the position shown in Fig. 5, and by the broken lines in Fig. 6. It will be clearly seen from the drawings that such movement of the lever 123 causes transverse shifting of the pin bar which supports the pins 119.

The slots 108 and 109 in the flanges of the compressor anchor plate 102 may be regarded as fixed when the follower latch 91 engages the teeth 76. Consequently, moving the pins 119 simultaneously from the right ends of the slots 108 and 109, as viewed in Figs. 1 and 6, to the left ends thereof will bring about outward movement of the compressor plate 111 as the pins move along the angularly disposed slots 116, the plate 111 remaining parallel to the vertical face of the support 102 at all times. The portions 117 of the cams 116 which are parallel to the compressor plate 111 and to the slots 108 and 109 serve as locking means to prevent vibration or longitudinal pressure from causing release of the compression exerted on the cards 140 by the plate 111. Release of the compression is, however, easily obtained when desired by pivotal movement of the lever 123 in the opposite direction, thus retracting the compressor plate 111 as the pins 116 move to

7

the right ends of the cam slots, as viewed in Fig. 1.

As shown in the drawings, a second card compressor is provided at the front of the file tray 11. This compressor may be, as shown, identical with the compressor hitherto described except for the fact that the vertically bent portions of the flanges 103 and 104 of the support or anchor plate 102 are attached, preferably by welding, to the inner front member 13 of the tray. The provision of two compressors is particularly desirable where long trays are employed since the compression of a large number of cards from one end only is difficult. With two compressors acting against opposite ends of the array of cards, the cards in even extremely long trays may be clamped in place so securely that the tray may be inverted without danger of any cards falling out. It will be clear that where two compressors are provided, one in the front of the tray and the other carried by the follower, either or both may be used as desired and, moreover, that although one compressor is carried by the follower, the action of the compressor and follower are independent, the actuating means for each being separate and distinct.

As will be evident from the description given above, a file compressor embodying the present invention is highly advantageous. Space is conserved by having the actuating lever pivoted so as to move transversely of the tray. The cam slot and pin arrangement for reciprocating the compressor plate is simple and rugged and is capable of providing a high compressive force. Jamming or bending of the cards in the tray is prevented by forming the compressor plate with a flat face substantially the same size as the cards and by supporting and guiding the plate at a plurality of points for sliding reciprocating movement while it is maintained in a vertical position transversely of the tray. Independence in operation of the follower and the compressor is achieved by having the compressor actuating lever separate from the follower latch release.

Obviously many changes and modifications may be made in the construction described and shown in the drawings without departing from the spirit of the invention. It is to be understood, therefore, that the foregoing description is not to be considered as limiting the invention but that the invention should be interpreted broadly and limited only by the appended claims.

The invention claimed is:

1. A filing device comprising in combination, a file tray having a front wall, a back wall, and a pair of longitudinal side walls; a pair of tracks extending between the front and the back walls; each track being carried by one of the side walls and having a series of longitudinally spaced teeth; a card follower movable longitudinally of the tray and having a latch engaging said teeth to hold said follower at a predetermined position, said latch being disengageable from said teeth to permit of longitudinal adjustment of said follower relative to said tray, card compressor means carried by said follower having a compressor plate extending transversely of said tray, a plurality of flanges mounted on said plate having pairs of complementary cam grooves therein vertically and laterally spaced from each other, a pair of laterally spaced pins mounted on said follower to move transversely relative thereto in unison, each pin passing through a pair of said spaced cam grooves in vertical alignment; and a lever operatively connected to said pins to move them in unison transversely of said follower, to cause said plate

8

to be longitudinally moved relative to said follower by action of the pins and cam grooves while maintaining said plate in a single transverse plane relative to the tray even when a compressive force is being applied to material between said plate and the front wall of the tray.

2. A filing device according to claim 1 in which each cam groove is formed as a slot angularly disposed to the plane of the compression plate in which slots the pins ride to move the plate relative to the follower by riding the slope of the slots, there being a portion at one end of each slot parallel to the plane of the plate into which the pins can slide to lock the plate in position of greatest compression.

3. A filing device according to claim 1 in which the lever is pivotally mounted on the follower at one end to move in an arcuate path transverse of the tray and the pins are mounted on a bar pivotally attached to an intermediate portion of said lever, to move therewith and cause said pins to slide within said cam grooves.

4. In a file tray having a front wall, a back wall and a pair of longitudinal side walls, a pair of tracks extending between the front and the back walls of said tray, each track being carried by one of said side walls and being provided with a series of longitudinally spaced teeth; a card follower movable longitudinally of said tray and having a latch adapted to engage said teeth, the combination therewith a card compressing means, comprising an anchor plate disposed transversely of said tray; a pair of horizontal vertically spaced flanges extending outwardly from one face of said plate at each end thereof, each of said flanges being provided with a cam slot, said cam slots extending parallel to said anchor plate with the slots in said flanges at each end of said plate in registry; a movable compressor plate extending transversely of said tray and having a pair of channel members secured to one of its faces, one adjacent each end thereof, the legs of each of said channel members extending horizontally outwardly from said compressor plate and slidably engaging said anchor plate; a cam slot in each leg of the channels complementary in shape to each other, said cam slots being angularly disposed with respect to said compressor plate and being horizontally spaced to register, respectively, with the parallel cam slots in said pairs of flanges; a pair of pins, each of said pins passing through the cam slots in one pair of said flanges and through a pair of the corresponding inclined cam slots in said channels, said pins being movable lengthwise of said slots, a bar joining said pins and holding them in horizontally spaced relation, a lever pivotally mounted on said anchor plate and operatively connected to said bar for imparting transverse movement thereto to move said pins, said bar being pivotally mounted upon said lever, whereby said compressor plate can be moved bodily longitudinally of the tray and relative to said follower.

5. A file tray according to claim 4 in which said cam slots have a terminal portion which is parallel to said compressor plate in which said pins may be engaged to lock said compressor plate in fully compressed position.

6. In a file tray having a pair of longitudinal side walls, a front wall and a back wall, a pair of tracks extending between the front and the back walls of said tray, each track being carried by one of said side walls and being provided with a series of longitudinally spaced teeth, a card

follower movable longitudinally of said tray and
 having a latch adapted to engage said teeth to
 hold said follower in position, the combination
 therewith of card compressing means, comprising
 an anchor plate disposed transversely of said tray,
 a pair of horizontal, vertically spaced flanges ex- 5
 tending outwardly from one face of said plate at
 each end thereof and having means for mounting
 said anchor plate within said tray, each of said
 flanges being provided with a cam slot which 10
 extends parallel to said anchor plate, the slots in
 said flanges at each end of said plate being in
 vertical registry, a movable compressor plate ex-
 tending transversely of said tray and having a
 channel member secured to one of its faces adja- 15
 cent each end thereof, the legs of each of said
 channels extending horizontally outwardly from
 said compressor plate, each of said legs being
 provided with a cam slot angularly disposed with
 respect to said follower plate, the pair of cam 20
 slots in each of said channel members being hori-
 zontally spaced to register with the pair of cam
 slots in one of said pairs of flanges, a pair of pins,
 each of said pins passing through the cam slots
 in one of said channel members and the corre- 25
 sponding cam slots in said flanges, said pins being
 movable lengthwise of said slots, means for hold-
 ing said pins in horizontally spaced relation, and
 a lever pivotally mounted on said anchor plate
 and on said follower and operatively connected to
 said pins for imparting simultaneous transverse
 movement thereto, whereby said compressor will
 be longitudinally moved relative to said follower
 by the camming action of said pins and cam slots,
 to compress material between said compressor 35
 plate and the front wall of said tray.

7. A filing device comprising in combination a
 file tray having front, back and side walls, a pair
 of tracks extending between the front and back
 walls, a rack on said track, a card follower mov-
 able longitudinally of the tray and latchable onto
 said rack at any desired position, a card com-
 pressor means carried by said follower comprising
 a compressor plate extending transversely of said
 tray, a plurality of flanges mounted on said plate
 each having a cam groove therein of comple-
 mentary contour to the other cam grooves; said
 grooves being laterally and vertically spaced
 apart, a pair of vertically extending pins laterally
 spaced apart and mounted to move in unison on
 and relative to said follower, each pin passing
 through a registered pair of said vertically spaced
 cam grooves, and a lever operatively connected
 to said pins to move them simultaneously trans-
 versely of said tray, to cause longitudinal move-
 ment of said plate bodily in a plane lateral of
 said tray.

JOHN W. KENT.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
863,462	Spiro	Aug. 13, 1907
1,114,081	Weiss	Oct. 20, 1914
2,124,511	Schmitz	July 19, 1938

FOREIGN PATENTS

Number	Country	Date
802,124	France	1936