

March 24, 1942.

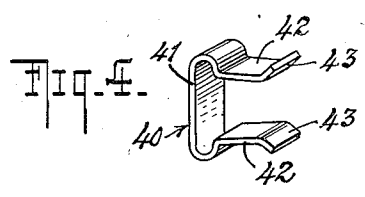
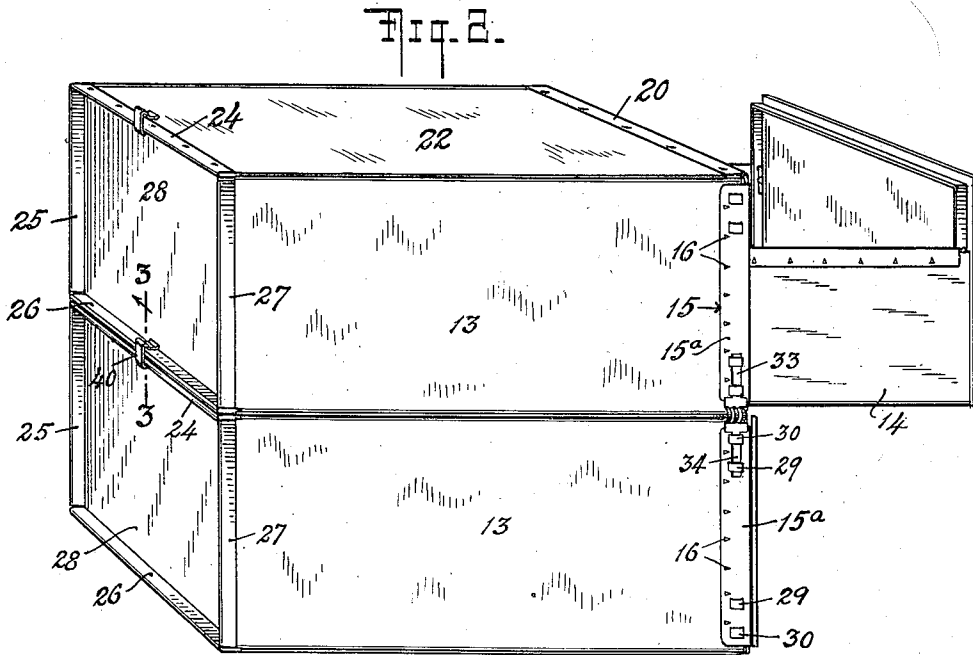
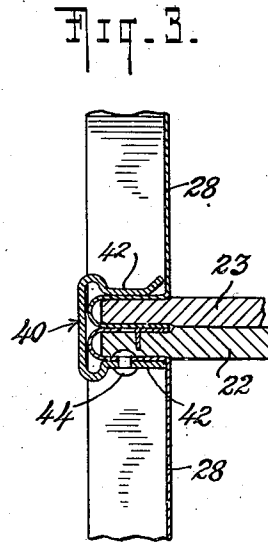
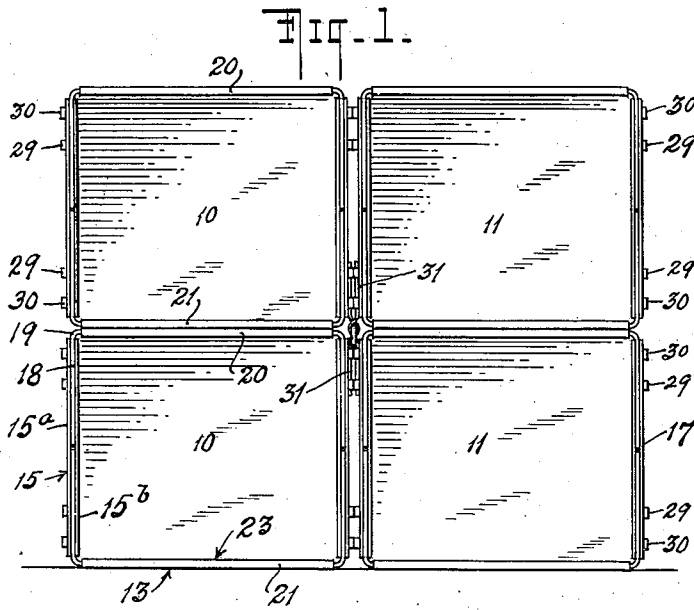
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2,277,155

STACKING DEVICE FOR STORAGE FILES

Filed Feb. 21, 1936

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

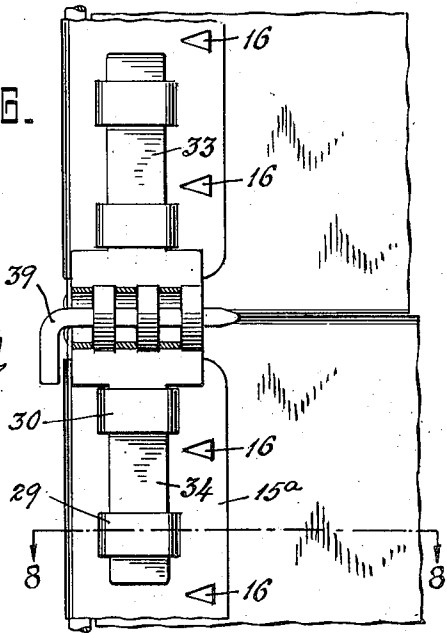
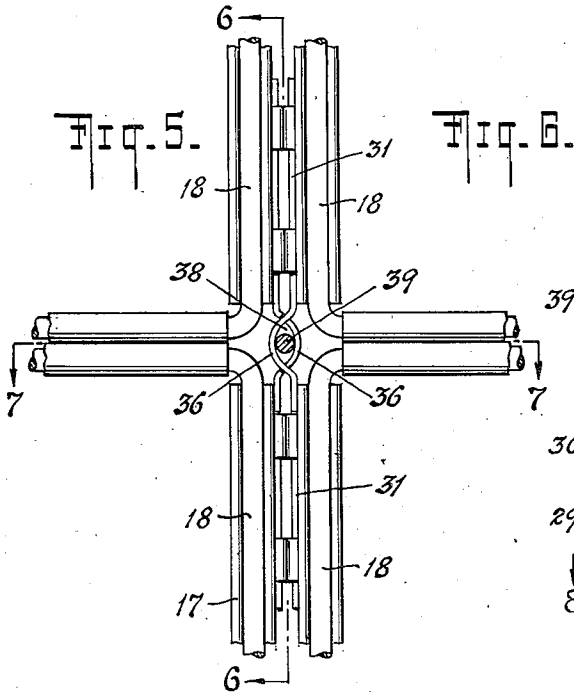


Fig. 7.

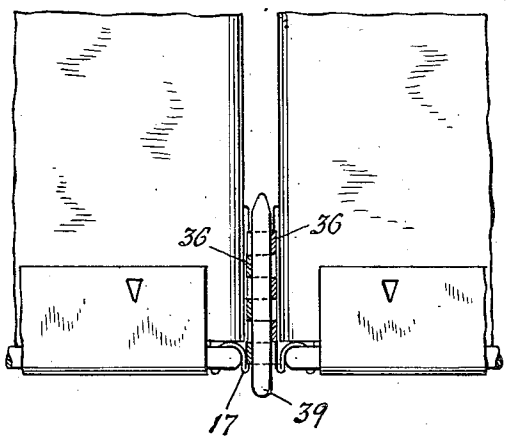


Fig. 9. Fig. 10.

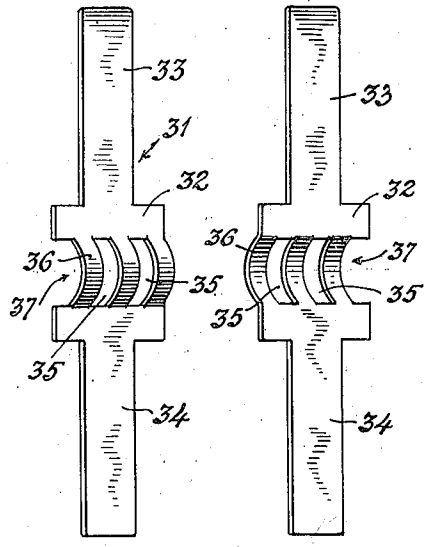
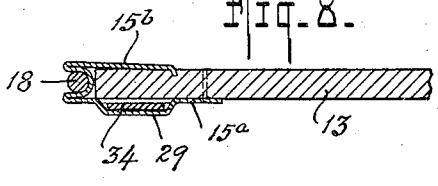


Fig. 8.



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STACKING DEVICE FOR STORAGE FILES

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Application February 21, 1936, Serial No. 65,037

17 Claims. (Cl. 312—111)

The present invention relates to storage files, and more particularly to devices for holding stacks of such files in vertical and horizontal alignment.

It is an object of the present invention to provide a simple and yet efficient stacking element which can be employed in various ways to hold storage files in position one above the other and alongside of each other. It is also an object of the invention to provide a stacking element which, when applied to hold two storage files in position one above the other, can also be employed to interlock with a similar element on an adjacent column of files with the aid of an interlocking member to hold the two columns of files close together in proper vertical and horizontal alignment, the files being thus secured in vertical columns and horizontal ranks.

It is a further object of the invention to provide a stacking device which can be used both at the top and at the bottom of a file to interconnect such file with other files positioned above and below it and hold the same against lateral displacement relatively to each other, the device fitting with a minimum of play into sockets formed in metallic plates secured to the casing.

It is a still further object of the invention to provide a stacking device which is strong enough for the intended purposes yet is so thin as not to operate to any material degree as a spacing element, the stacking device permitting adjacent stacks of files to be brought substantially as close to each other as they could be in the absence of such stacking device.

Other objects of the invention are to provide a stacking device which can be used upon either side of a file and at the top or bottom thereof so that but a single shape is required and only a single die is necessary, whereby the cost of manufacture is reduced to a minimum; to provide stacking devices having projections, ribs or lugs at their center which are adapted to interlock by movement toward each other in the horizontal plane and engage each other and prevent relative movement in the direction of a force tending to displace horizontally juxtaposed files relatively to each other in the direction of the side walls of the casings; to provide stacking devices which when mounted on horizontally juxtaposed files can be held against movement in a direction perpendicular to the planes of their vertical side walls with the aid of a third element which interlocks said stacking devices; and to provide a clip device which is adapted to engage the top edge of one casing and the hot-

tom edge of a superimposed casing to lock two casings together, the clip thus cooperating with the stacking device to hold the casings against relative horizontal and vertical displacement, particularly when the topmost of a column of files is being opened.

The invention will be further described with the aid of the accompanying drawings which illustrate a satisfactory embodiment of the invention. In said drawings,

Fig. 1 is a front view of four files arranged in two vertical columns and in two horizontal ranks and showing my improved stacking device in position;

Fig. 2 is a view in perspective showing the stacking device in position at the front of two vertically disposed files, and showing also the cooperating clip at the rear of the casing.

Fig. 3 is an enlarged vertical section through the clip member along the line 3—3 of Fig. 2;

Fig. 4 shows a detachable form of clip member in perspective;

Fig. 5 is an enlarged front view of two interlocking stacking devices on adjacent columns of files;

Fig. 6 shows a section approximately along the line 6—6 of Fig. 5;

Fig. 7 is a horizontal section along the line 7—7 of Fig. 5;

Fig. 8 shows a horizontal section along the line 8—8 of Fig. 6;

Fig. 9 is a view showing the stacking member in perspective, and

Fig. 10 shows an identical stacking member but rotated through 180° from the position of the member shown in Fig. 9, the stacking members of Figs. 9 and 10 being thus in position for interlocking engagement.

Referring to Fig. 1, wherein are shown two adjacent vertical columns of files 10, 10 and 11, 11 which are arranged in two horizontal ranks 10, 11 and 10, 11, the numeral 13 indicates the casing of each of the files which are adapted to receive a drawer member of suitable construction. This drawer member is shown in the partly opened condition at 14 in Fig. 2 and may be constructed in the manner described in my Patent No. 2,012,857. The front edges or margins of the casings 13 are provided with suitable reinforcing elements 15 which are adapted to take up, at least in part, the vertical or compressive stress imposed on any casing by the weight of the casings and their contents stacked above the same.

In the type of reinforced casing selected for

purposes of illustration, the reinforcing members 15 are made of sheet metal having side portions 15a and 15b which lie against the outer and inner surfaces of the side walls of the casing and are provided with teeth 16 struck from the body of such reinforcing members and pressed into the side walls of the casing, which may be, and preferably are made of corrugated paper board. The members 15 are bent rearwardly intermediate the side portions 15a and 15b to provide open, vertically extending sockets 17 which are designed to receive the legs 18 of angular members 19 whose intermediate portions are pivoted within metallic reinforcing members 20, 21 clamped or otherwise secured to the top and bottom walls 22, 23 respectively, of the casing. These angular members 19 act to stiffen the casing at the four corners thereof and hold the walls in the desired right-angular relationship. The legs 18 of the top and bottom members 19 are preferably made sufficiently long so as to engage each other at their ends within the sockets 17, so that such angular members are able to resist and transmit the vertical or compressive stresses and thus aid the reinforcing members 15. By this construction a very rigid and strong casing is provided.

The rear edges of the casing may likewise be provided with reinforcing members, as shown at 24, 25, 26 and 27. These reinforcements may form part of a metallic end wall 28, as described more fully in my copending application, Ser. No. 14,518, now Patent Number 2,181,918, issued December 5, 1939.

The reinforcing members 15 at both sides of the front end of the casing are identical in construction and are provided with pairs of spaced open-ended socket or retaining members 29 and 30 which are preferably struck from the side portion 15a of such reinforcing members and extend laterally thereof. These retaining members are provided both near the top and near the bottom of each member 15 and are preferably symmetrically positioned with respect to a central horizontal plane so that the members 15 on both sides of the casing are interchangeable.

The holding or stacking device 31 of the present invention is shown on an enlarged scale in Figs. 9 and 10. It is composed of a central portion 32 and end portions 33 and 34 which are narrower than the central portion 32 and are adapted to fit snugly within the socket or retaining members 29, 30. The central portion 32 is curved or bowed at its middle portion and is slotted as shown at 35 to provide three spaced and curved projections or ribs 36. The width of each of the two slots 35 is slightly greater than that of the ribs 36 for reasons which will appear hereinafter.

As will be seen from Fig. 9, the middle portion of the part 32 begins at the right with a rib 36 but ends at the left with an open slot 37. The latter is of substantially the same width as the slots 35. The construction is thus such that upon reversing one of the stacking members 31, as seen in Fig. 10, the end rib 36 of one member will be received in the open slot 37 of the other member, and the two inner ribs of each member will be received within the slots 35 of the other member. The two identical stacking members shown in Figs. 9 and 10 can, therefore, be brought into complete overlapping and interlocking relationship with the parts 33 and 34 of one member lying flat against the part 33 and 34 of the other member, while the projections or ribs lie in sub-

stantially the same horizontal plane or level, being located at substantially the central portion of the respective members. It will be seen that the interfitting projections 36 lock each other against relative horizontal movement in a direction parallel to the planes of the vertical side walls of the casings.

As will be clear from Figs. 1, 2, 5 and 6, each stacking member 31 is adapted to be received with its lower extension 34 in the top sockets 29 and 30 of a lower casing and with its upper extension 33 within the lower pair of sockets of a superposed casing. By shaping the sockets to the shape of the extensions 33 and 34 the holding members 31 can be made to secure the superposed casings to each other without any considerable lateral play.

When it is desired to lock two vertical columns of casings to each other to prevent displacement of such columns with reference to each other in a direction perpendicular to the planes of the vertical side walls of the juxtaposed casings, the holding members 31 on laterally adjacent pairs of casings are positioned relatively to each other in the manner shown in Figs. 9 and 10, so that upon moving the columns towards each other in the horizontal direction, the ribs on the adjacent holding members 31 are caused to interengage in the manner above described. Due to the curvature of the ribs 36, there is provided a doubly convexly shaped channel 38 whose walls are formed by the alternating ribs of the two members 31. In accordance with the invention a suitable locking device, such as a pin 39, is inserted within the channel 38 and operates to lock the two holding devices, and thus the two columns of casings, rigidly to each other. As will best be seen from Figs. 1, 5 and 7, the holding members 31 are quite flat in construction and do not cause any greater separation between the two adjacent columns, than is made necessary by the socket members 29 and 30. It will be noted that the curved rib portions 36 are located at the juncture of the four corners of the adjacent four casings, wherein ample space is present for receiving said portions. It will also be evident that but a single die is necessary for manufacturing the members 31 since the same members can be used upon the left and upon the right side upon each column of casings, and also at the top and bottom of the casings. As already explained, it is necessary only to bring the stacking members upon the contiguous sides of adjacent columns of casings into the relative positions shown in Figs. 9 and 10 to enable one stacking member to be interlocked with an identical member. It will be noted that the adjacent, reversed, and interengaged stacking members are locked and held without play against movement in horizontal directions parallel to and normal to the casing side walls; and also that in such interlocked condition the corresponding parts of the members, such as their upper and lower ends and the shoulders which engage the reinforcing members 15 are at the same horizontal level, so that rigid interengagement of the parts is assured. It will also be observed that, with the form of the invention illustrated, in reversing a stacking member with reference to a similar, adjacent, cooperating member, the first member is merely turned 180° about its longitudinal axis with reference to the position of the other member.

The stacking or locking devices shown in Figs. 9 and 10 thus operate, as hereinabove explained,

to prevent lateral shifting of individual files and also of vertical columns relatively to each other. The present invention, however, contemplates the provision of a system of locking devices which will hold the individual casings and also stacks of casings not only against relative lateral movement but also against vertical movement relatively to lower casings. In other words, the invention contemplates the provision, for example, of a four-casing unit as shown in Fig. 1 wherein the casings are locked to each other not only against relative horizontal movement, but also against vertical tilting movement.

There is accordingly provided a holding device 40 (see Figs. 2 and 3), which cooperates with the stacking devices 33 to lock any two of a column of casings against any substantial movement relatively to each other. The holding member 40 is in the form of a spring clip having a central portion 41 and two laterally extending spring tongues 42. In the form of the invention shown in Fig. 3 the clip is permanently secured to the rear edge of the top wall 22 of the casing, as by means of a rivet 44. The distance between the inner surfaces of the tongues 42 is somewhat less than the combined thickness of the rear end portions of the contiguous top and bottom walls of superposed casings, so that when the clip is sprung over the bottom wall 23 of a superposed casing, or rather when such wall is moved under the tongue 42, the clip holds the two casings against vertical movement relatively to each other. To facilitate the engagement of the clip with the end of the wall 22, the upper tongue 42 may be provided with an upwardly extending cam portion 43.

It will be readily seen that by the aid of the clip 41 the topmost of a column of casings is held against upward tilting upon opening of the drawer thereof. This is a decided advantage from the standpoint of safety as the storage files may be heavily loaded, and unless held against tilting as hereinabove described, the drawer and even its casing may be pulled off the stack with possible injury to the person examining the files.

The clip 40, as shown in Fig. 4, may be made in the form of an independent member which is sprung over the rear ends of superposed casings, the tongues 42 being in this case both formed with cam portions 43.

If desired, the clip 40 may also be employed to clamp together the rear edges of the side walls of horizontally adjacent casings.

It will be obvious that although in the preferred form of the invention described herein the stacking member 31 is constructed so as to be capable of being used upon either side of a casing and to be interlocked with an identical member on an adjacent laterally disposed casing, differently shaped members may be employed upon adjacent columns of casings while yet embodying certain of the advantageous features of my invention. It will also be obvious that the members 31 can be employed without the clip 41, although to secure a completely rigid group of associated files and columns of casings the use of such clip is desirable.

While the stacking devices 31 can be so shaped that they serve only to hold the casings in alignment, I prefer to proportion the parts 32, 33 and 34, and particularly the part 32, in such a manner that the pressure is transmitted from one reinforcement 15 to the reinforcement directly below it by way of the stacking device; the laterally extending shoulders on the intermediate

portion of such device engaging the horizontally projecting walls of the socket elements 30, as shown in Fig. 6.

It will be seen that when two adjacent stacking elements are interlocked by way of the pin there is obtained in effect an H-construction, the pin forming the horizontal bar of the H. I therefore consider it to be within the scope of the present invention to combine two of my improved stacking devices into a single rigid H-construction which can be employed to engage anchoring devices or sockets at the contiguous corners of four storage files as shown in Fig. 1.

It will be noted that with my improved stacking and interlocking members, a single file or a column of files can readily be removed from a battery of interlocked files. Thus, by removing the pins 39, a whole column can be separated from an adjacent column; while with a slight vertical movement sufficient to enable its stacking members to clear their sockets, an intermediate file can be removed from a column of files.

I claim:

1. A stacking member for individual files adapted to be arranged in vertical columns and horizontal rows, said member having end portions adapted to engage suitable anchoring means at the top of one casing and at the bottom of a superposed casing and having an intermediate portion composed of outwardly bent, spaced ribs, the spaces between the ribs being sufficiently wide to enable the ribs of a second similar member to interengage with the ribs of the aforementioned member, and means for limiting the movement of the stacking member with respect to the anchoring means at the top of the casing so as to position the spaced ribs for interfitting with the spaced ribs at a reversely positioned stacking member on an adjacent column of casings.

2. A stacking member as set forth in claim 1, wherein the intermediate portion of the stacking member terminates at one side in a rib and at the other side is provided with a cutout corresponding in width to a rib, whereby oppositely facing, identically constructed stacking members can be brought close to each other with their outlines in substantially complete coincidence and with their outwardly bent ribs in interlocking relation to hold adjacent vertical columns of files against relative displacement in at least one direction.

3. In combination, a file having a casing provided with a lateral socket element adjacent to the top wall thereof, and a stacking member having a lower portion adapted to be inserted within said socket element and an upper portion adapted to extend above the upper edge of the casing and be received in a similar socket element adjacent to the bottom wall of a casing stacked above the first casing, said member including a wider, intermediate portion having shoulders extending laterally in the plane of the lower and upper portions for engaging the walls of the socket element at the top of the first casing to limit the downward movement of the stacking member within said socket element, and to be engaged by the socket element at the bottom of the superposed casing so as to assist in transmitting the pressure from the upper to the lower casing through the socket elements, said stacking member having integral means shaped for interlocking engagement with similar means on a stacking member positioned on an adjacent column of files for holding the columns against displacement in at least one direction.

4. In combination, a file having a casing provided with a socket element adjacent to the top wall thereof, and a stacking member having a lower portion adapted to be inserted within said socket element and an upper portion adapted to extend above the upper edge of the casing and be received in a similar socket element adjacent to the bottom wall of a casing stacked above the first casing, said member including an intermediate portion adapted to engage the socket element at the top of the first casing to limit the downward movement of the stacking member within said stacking element, and to be engaged by the socket element at the bottom of the superposed casing so as to assist in transmitting the pressure from the upper to the lower casing through the socket elements, said intermediate portion including a plurality of spaced ribs extending forwardly of the plane of the lower and upper portions and adapted, upon relative movement normal to said plane, to interengage with an oppositely facing stacking member on an adjacent column of files to hold the column against longitudinal displacement.

5. In combination, four individual files arranged in two vertical columns and two horizontal rows, a stacking member for each pair of superposed casings and interengaging with the casings to hold the files in vertical alignment, each stacking member being provided with intermediate, spaced outwardly curved ribs, the ribs on laterally adjacent stacking members interlocking with each other to hold the adjacent columns of files against longitudinal displacement, and a pin passing through the space bounded by the interlocking ribs and acting to hold the columns against lateral movement, each stacking member having means for locating the same with reference to the superposed files so as to position the spaced ribs for interfingering with the ribs of the stacking member on the adjacent column.

6. A plurality of individual files each having a casing and drawer and arranged in vertical columns and horizontal rows, each casing having socket elements at the front corners thereof, stacking members each detachably received within the socket element at the top corner of one casing and within the socket element at the bottom corner of the superposed casing and thus connecting two adjacent vertically stacked casings by way of such socket elements, said stacking members provided with projecting means which interlock upon horizontal movement of one stacking member toward the other and hold the vertical columns of casings against endwise displacement, each stacking member having means for so locating the same with reference to the superposed casings that the projecting means are positioned for engagement by the projecting means on a stacking member on an adjacent column of casings.

7. An arrangement as set forth in claim 6 wherein the interlocking stacking members are of identical construction.

8. A stacking member for individual files arranged in vertical columns, said member having end portions adapted to engage suitable anchoring means at the top of one casing and at the bottom of a superposed casing and having an intermediate outwardly projecting portion shaped to interlock with the intermediate portion of a reversely positioned identical stacking member upon movement of such members relatively

portion of such device engaging the horizontal-level.

9. A stacking member for individual files arranged in vertical columns, said member being of elongate form and having end portions adapted to engage in the vertical direction within suitable anchoring means at the top of one casing and at the bottom of a superposed casing in a vertical column, and an intermediate portion wider than the end portions and providing shoulders for abutting engagement with the anchoring elements on the connected casings, said shoulders extending laterally of the end portions and lying in the planes of the latter, said intermediate portion including integral outwardly projecting means adapted to interlock with a similar, reversed stacking member on an adjacent column of files to hold the two columns against relative displacement in at least one direction.

10. A stacking member for superposed individual file casings composed essentially of relatively weak material and provided with vertical metallic reinforcements secured upon the outer surfaces of the side walls of the casings and having vertically spaced sockets adjacent to their opposite ends, the stacking member being of elongate form and its end portions being adapted to be received within the adjacent sockets at the top of one casing and at the bottom of the superposed casing to hold the casings in alignment and being provided with intermediate upper and lower laterally extending shoulders at the bases of such end portions and lying in the plane of such portions and so spaced that they engage the reinforcements on the superposed casings in the vertical direction and thereby aid in transmitting the pressure from the upper to the lower casings.

11. A stacking member for superposed individual file casings, comprising an elongated member having flat end portions and an intermediate portion provided with projecting means, the end portions being adapted to be anchored in open-ended sockets at the adjacent corner portions of superposed file casings, said member having a shoulder intermediately of the ends thereof for engaging the edge of a wall of the socket on the lower of two superposed casings to limit the movement of the stacking member in such socket, the projecting means on said member being adapted to interlock in such fashion with the projecting means on an identical but reversely positioned stacking member for holding adjacent columns of a casing against relative horizontal movement, that the outlines of the interengaged members are in substantial coincidence, the interlocked members being so positioned that, in the operative condition, one is rotated relatively to the other by 180° with reference to a vertical axis.

12. A stacking member for superposed file casings and the like comprising an elongated metallic member having end portions adapted to be anchored at the adjacent corner portions of superposed casings and provided with intermediate, integral projecting means adapted to interlock with the projecting means on an identical stacking member in a similarly upright position but rotated about its longitudinal axis by 180° with reference to the first described member, to hold the adjacent columns of casings against relative movement in at least one horizontal direction.

13. In combination, adjacent columns of vertically stacked individual files each composed of a collapsible drawer and a collapsible casing, the latter including hingedly connected side, top and

bottom walls, anchoring elements secured to the top and bottom of the side walls of each casing in vertically spaced relationship, an elongate stacking member structurally separate from the casing and engaging with the upper anchoring element of one casing and the lower anchoring element of a casing stacked immediately above the first casing and thus overlapping portions of both of the adjacent superposed side walls, and separate means for interlocking the stacking members on adjacent columns to hold such columns against lateral displacement, said means being detachable from the erected casings to enable a column of casings to be removed without disturbing the adjacent column of casings.

14. A plurality of individual files each having a casing and drawer and arranged in vertical columns and horizontal rows, each casing having socket elements at the front corners thereof, stacking members each detachably received within a socket element at the top corner of one casing and within a socket element at the bottom corner of the superposed casing and thus connecting two adjacent vertically stacked casings by way of such socket elements, said stacking members provided with projecting means which interlock upon horizontal movement of one stacking member toward the other and hold the vertical columns of casings against endwise displacement, the stacking members being provided also with lower and upper abutments adapted to be engaged by the socket elements at the top of a lower casing and the bottom of an upper casing whereby the intermediate portions of the socket members provide vertically rigid pressure transmitting means from an upper to a lower casing.

15. A stacking member for individual files arranged in vertical columns, said member having end portions adapted to engage anchoring means at the top of one casing and at the bottom of a superposed casing, and having an intermediate outwardly projecting portion presenting a plurality of spaced ribs shaped to interfinger with the intermediate portion of a reversely positioned identical stacking member upon an adjacent column of files in such manner as to provide a space

for the reception of a pin for locking the stacking members together.

16. In combination, adjacent columns of vertically stacked individual files each composed of a casing and drawer, each casing having socket elements at the front corner thereof, stacking members each detachably received within a socket element at the top corner of one casing and within a socket element at the bottom corner of the superposed casing and thus connecting two adjacent vertically stacked casings, said stacking members provided with cooperating projecting means, and a separate interlocking member adapted to engage said projecting means of horizontally adjacent stacking members to interlock the same.

17. In combination, a plurality of vertically stacked individual files, each comprising a casing and a drawer movable therein, vertically disposed reinforcing members secured to the sides of each casing and located upon the outside thereof adjacent to their front vertical edges, socket elements at the top and bottom regions of the reinforcing members and providing sockets open both at the top and bottom ends thereof, an elongated stacking member having flat end portions adapted to pass through the socket at the top of a casing and through the socket at the bottom of a superposed casing and to extend beyond the remote ends of both sockets, said stacking member being provided at an intermediate portion thereof with projecting means adapted to be interlocked with corresponding means on an identical but oppositely facing stacking member connecting a pair of superposed casings on an adjacent column of files, said stacking member being provided at its intermediate portion with a shoulder acting as a stop means adapted to engage the upper edge of the socket element at the top of the lower casing to limit the downward movement of the stacking member and thereby properly position the projecting means on the intermediate portion with reference to the corresponding projecting means on an interlocking stacking member of an adjacent column.

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