109-84 CROSS REFERENCE SEARCH

June 19, 1956 R. E. McCLELLAN 2,750,901

INSULATED METAL CABINET CONSTRUCTION

Filed May 18, 1953 7 Sheets-Sheet 1

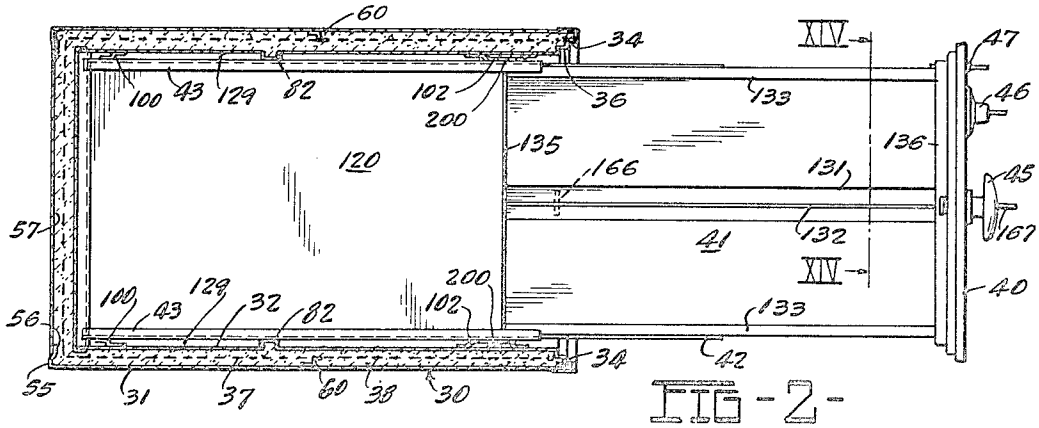


FIG-2-

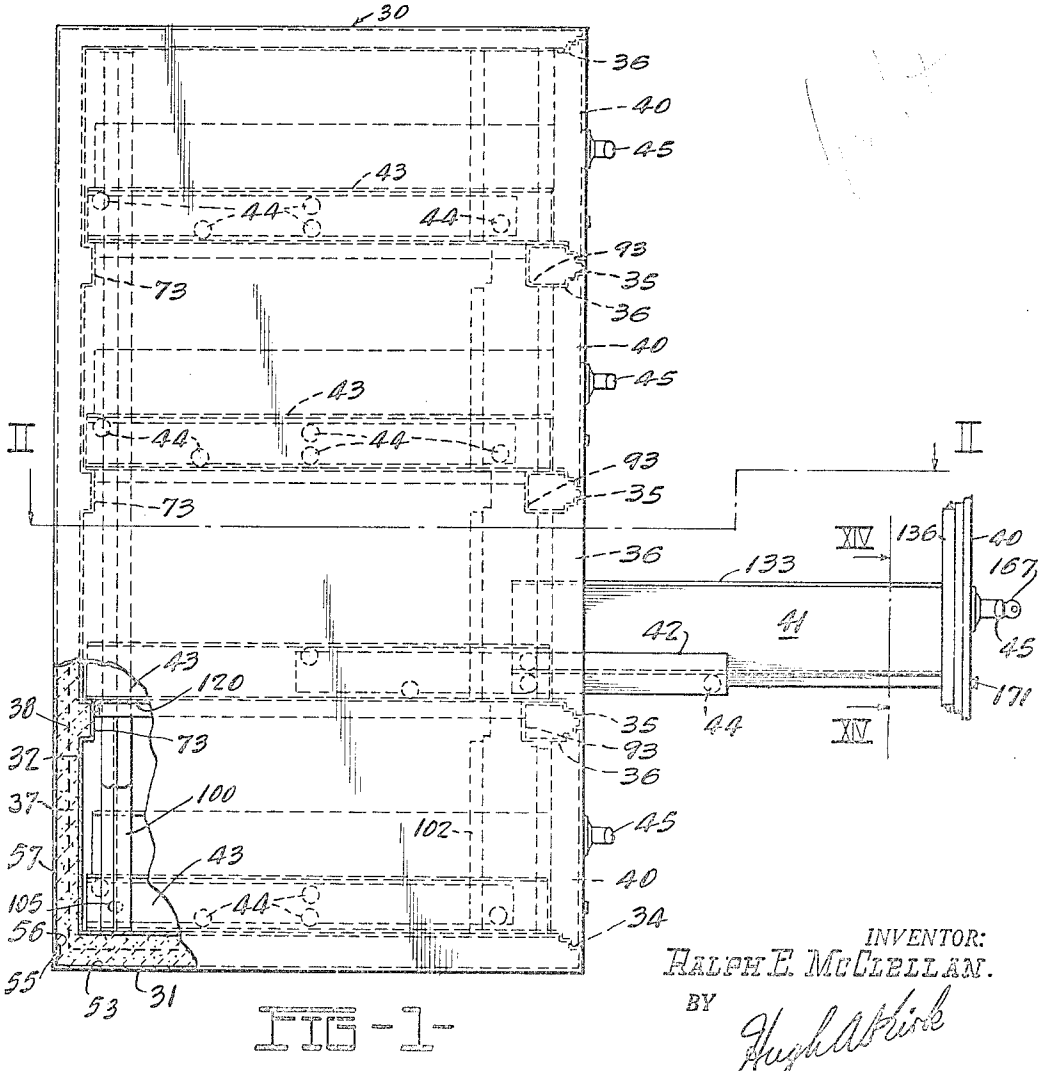


FIG-1-

INVENTOR:
RALPH E. McCLELLAN.
BY Hugh Atkinson
ATTY.

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INSULATED METAL CABINET CONSTRUCTION

Filed May 18, 1953 7 Sheets-Sheet 2

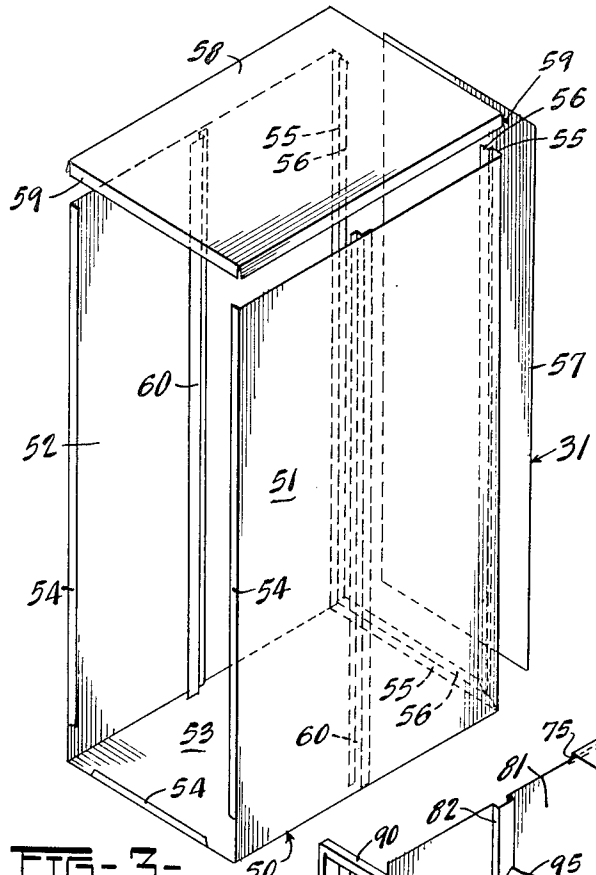


FIG-3-

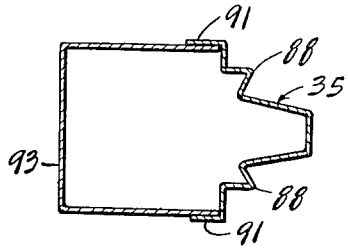


FIG-5-

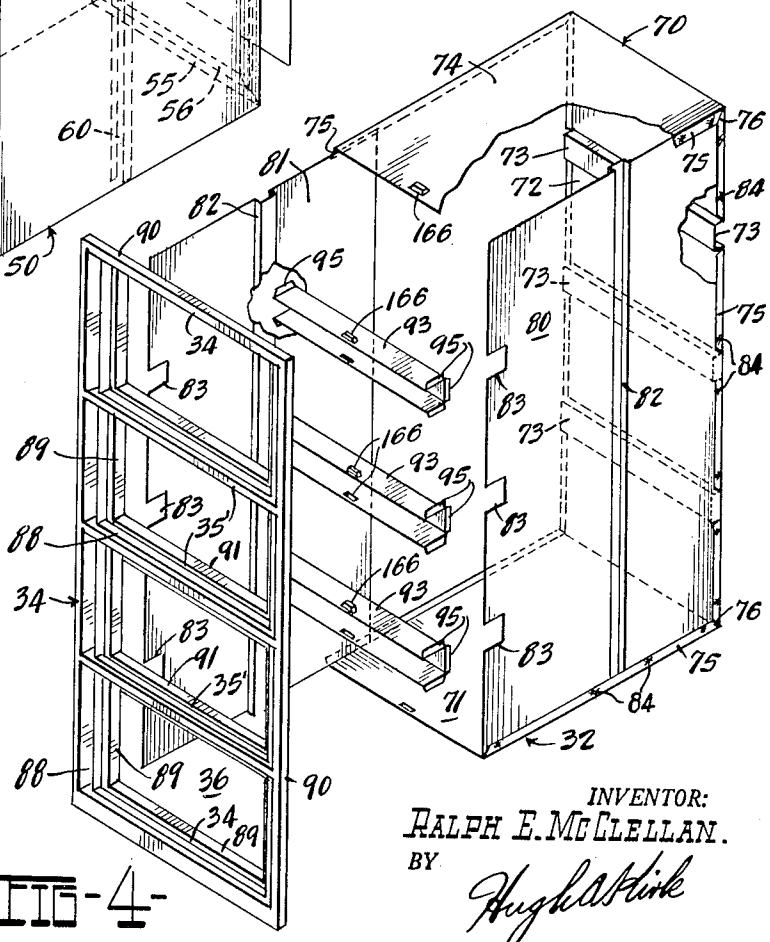


FIG-4-

INVENTOR:
RALPH E. McCLELLAN.
BY
Hugh A. Kirk
ATTY.

June 19, 1956 R. E. McCLELLAN 2,750,901

INSULATED METAL CABINET CONSTRUCTION

Filed May 18, 1953 7 Sheets-Sheet 3

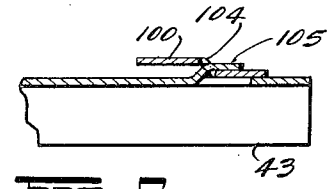


FIG-7-

FIG-6-

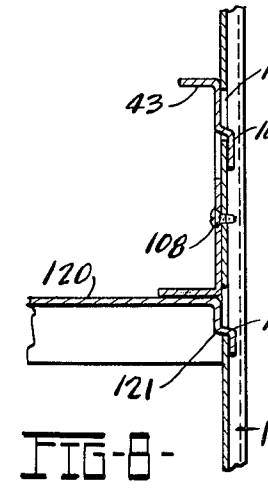


FIG-8-

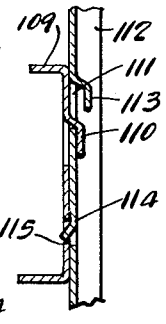


FIG-9-

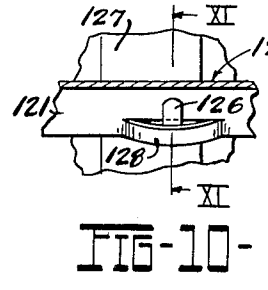


FIG-10-

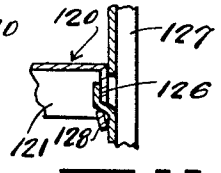


FIG-11-

INVENTOR:
RALPH E. McCLELLAN.
BY
Hugh A. Kirk
ATTY.

June 19, 1956 R. E. McCLELLAN 2,750,901

INSULATED METAL CABINET CONSTRUCTION

Filed May 18, 1953 7 Sheets-Sheet 4

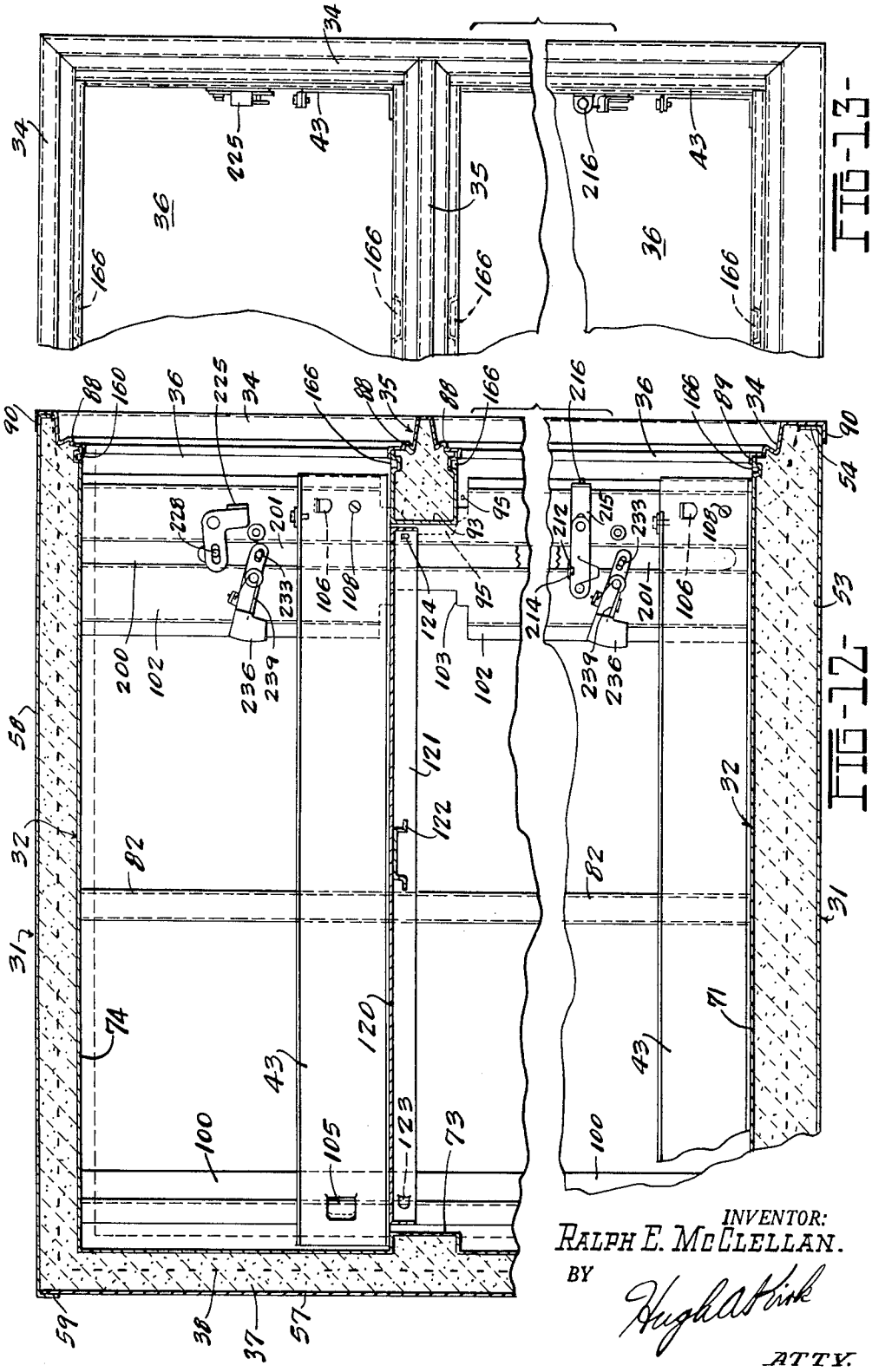


FIG-13-

FIG-12-

INVENTOR:
RALPH E. McCLELLAN.
BY Hughes & Kirk
ATTY.

June 19, 1956 R. E. McCLELLAN 2,750,901

INSULATED METAL CABINET CONSTRUCTION

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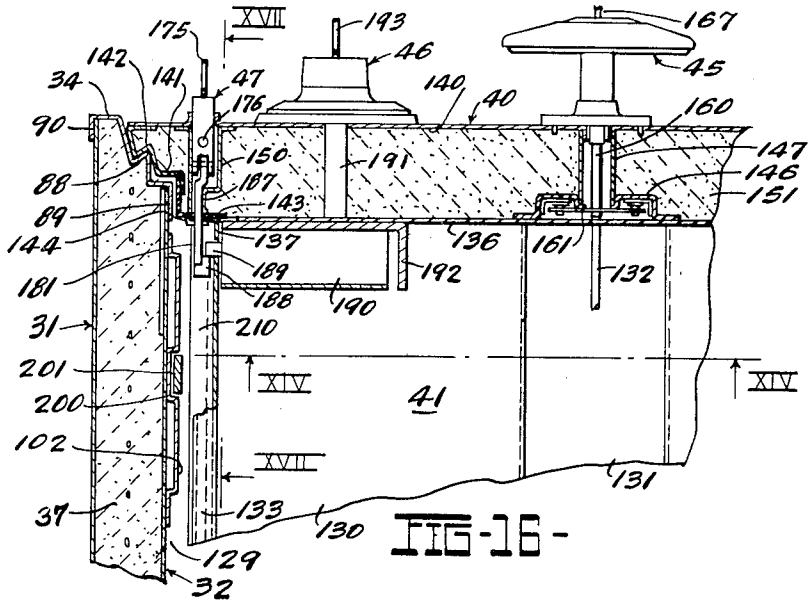


FIG-16-

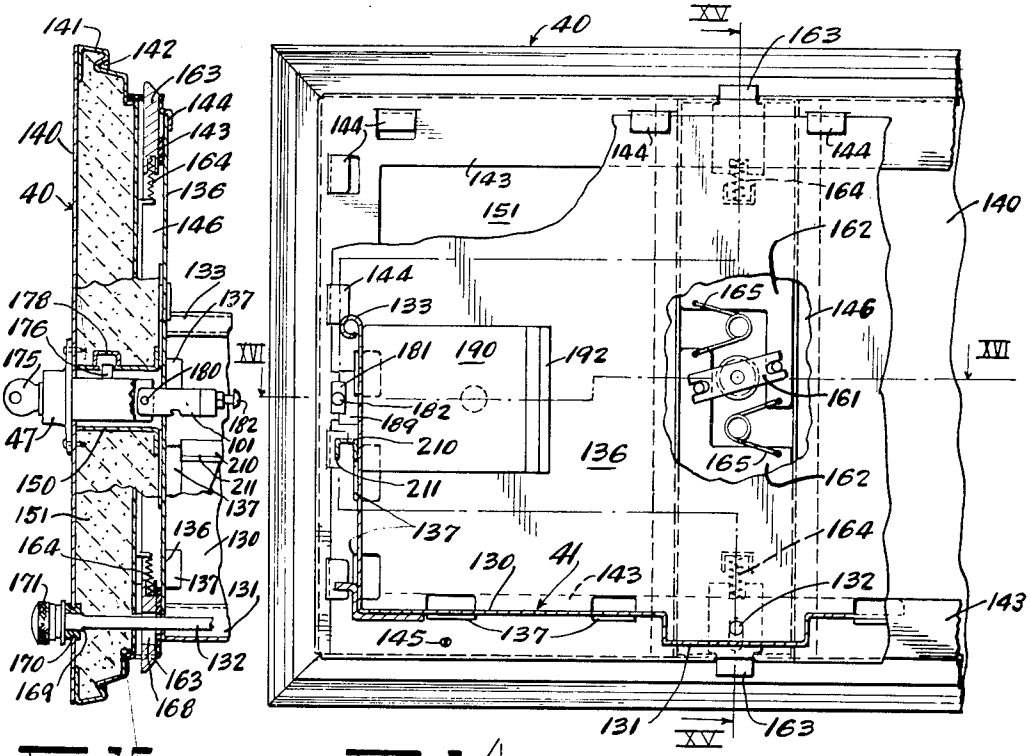


FIG-15-

FIG-14-

INVENTOR:
RALPH E. McCLELLAN.
BY Hugh A. Kirk
ATTY.

June 19, 1956 R. E. McCLELLAN 2,750,901

INSULATED METAL CABINET CONSTRUCTION

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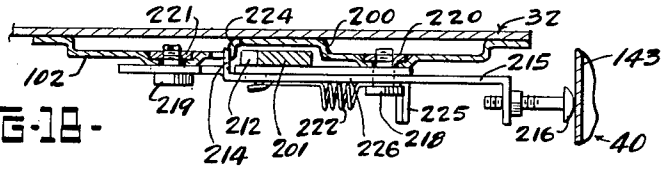


FIG-18-

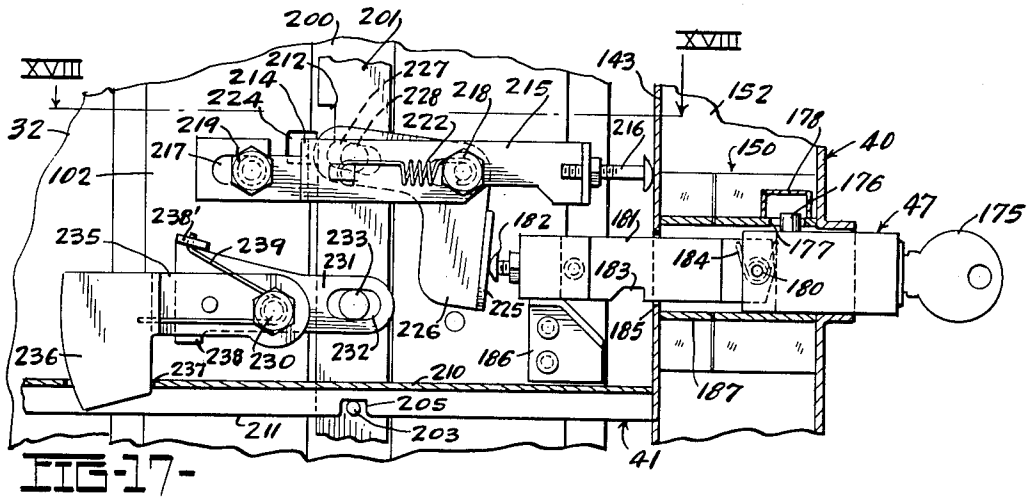


FIG-17-

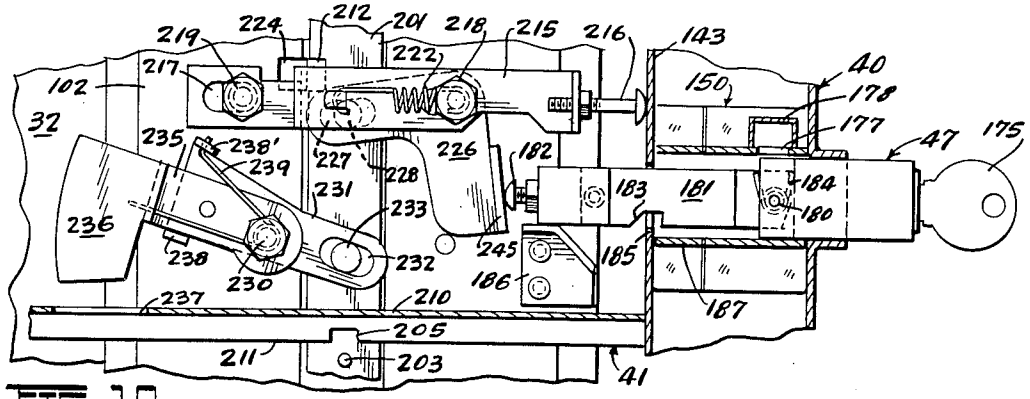


FIG-19-

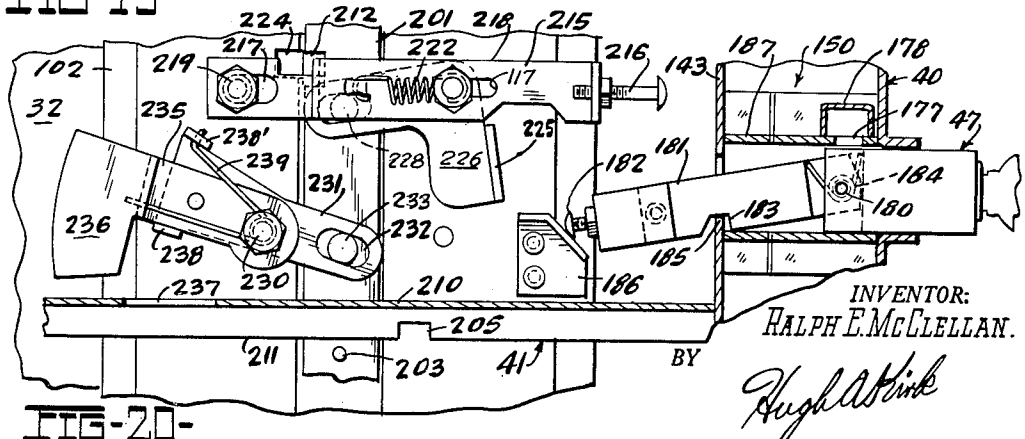


FIG-20-

INVENTOR:
RALPH E. McCLELLAN.

Hugh A. Kirk

ATTY.

June 19, 1956 R. E. McCLELLAN 2,750,901

INSULATED METAL CABINET CONSTRUCTION

Filed May 18, 1953 7 Sheets-Sheet 7

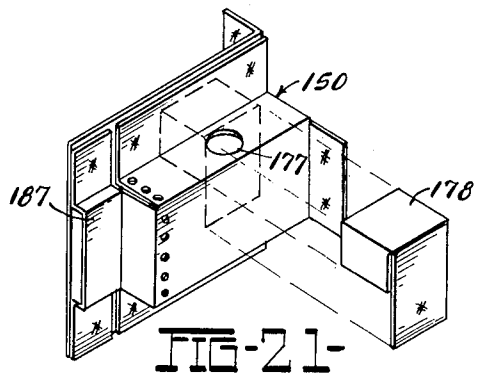


FIG-21-

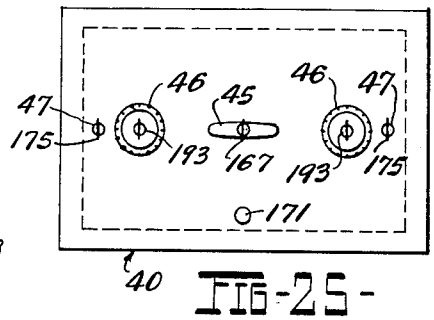


FIG-25-

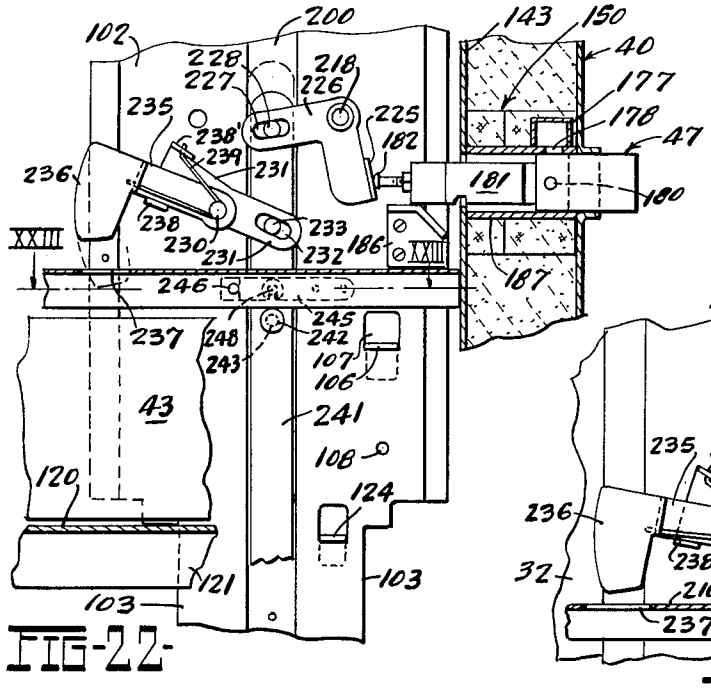


FIG-22-

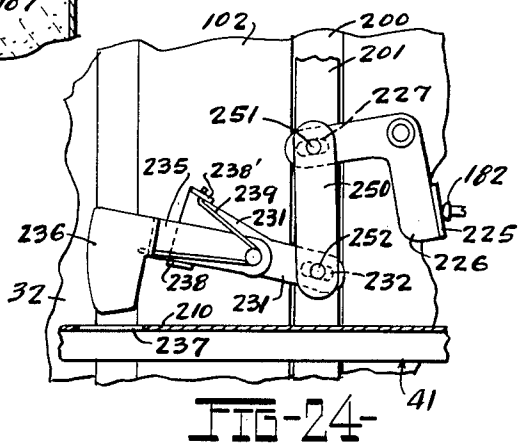


FIG-24-

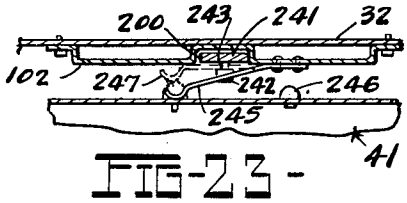


FIG-23-

INVENTOR:
RALPH E. McCLELLAN.
BY Hugh A Kirk
ATTY.

United States Patent Office 2,750,901 Patented June 19, 1956

2,750,901

INSULATED METAL CABINET CONSTRUCTION

Ralph E. McClellan, Toledo, Ohio, assignor to Meilink Steel Safe Company, Toledo, Ohio, a corporation of Ohio

Application May 18, 1953, Serial No. 355,496

37 Claims. (Cl. 109—59)

This invention relates to a fire and burglar resistant metal cabinet. More particularly it deals with construction of such a cabinet having a double metal outside wall and one or more separate openings, each with its own closure including the locking facilities for the closures, such as for example, a safe-type multi-drawer metal filing cabinet.

This invention also is an improvement over and a continuation-in-part of McClellan co-pending application Serial No. 213,020, filed February 27, 1951, on a "Locking Mechanism," now U. S. Patent No. 2,653,070, issued September 22, 1953, and Serial No. 186,830, filed September 26, 1950, on a "Cabinet and Drawer Extension," now U. S. Patent No. 2,675,277, issued April 13, 1954.

It is an object of this invention to produce a simple, efficient, effective, economic, light weight, rigid, tough and fire and burglar resistant cabinet.

Another object of this invention is to produce such a cabinet which reduces the amount of heat transferred into its interior and increases the vapor circulation of moisture within the cabinet, including vapor circulation between separate compartments inside the cabinet.

Another object of this invention is to produce a cabinet which will withstand the stresses occasioned by both the fire endurance and the explosion hazard-impact tests of the Underwriter Laboratories without bending, distortion, displacement, rupture, warping or other development which would vitally affect the security of the locking mechanism and fastening parts, or the strength of the parts of the assembly, or damage the contents within the cabinet itself. The fire endurance test briefly comprises heating the cabinet in a furnace up to 1700° F. and then cutting the heat off and measuring the temperature rise inside the cabinet until it finally cools off, during which heating the temperature inside must not rise above 350° F. The explosion hazard-impact test comprises inserting the cabinet for a half hour in a furnace which has been heated up to 2000° F. and then immediately taking the cabinet from the furnace and dropping it 30 feet onto a pile of broken brick where it is allowed to rest and cool for 24 hours and then placing the cabinet back in the furnace again for another half hour at a temperature raised up to 1550° F., after which the papers in the cabinet must still be legible and substantially unaffected. In passing, it can be stated that the cabinet of this invention has passed both of these tests.

Another object is to produce such a cabinet which will withstand handling, shipping, installation and repeated operations or wear, such as opening and closing of its closures or drawers without material injury or change to the fits or clearances of the cabinet or the reliability of the moving parts. To pass this wear test the drawer must be loaded with 90 pounds of weight and must be opened and closed at least 50,000 times during any one of which times the pull on the drawer must be less than 6 pounds, however, the drawer slides may be oiled after the first 10,000 cycles of opening and closing. In passing it can be stated also that the present cabinet passed this test.

Another object is to construct such a cabinet so that

the parts are positively positioned relative to each other and may be easily and quickly assembled to produce a more rigid final cabinet.

Another object is to produce a multiple type locking and interlocking mechanism for such a cabinet, so that if desired, up to 28 different keys and combinations may be required for opening all of the four drawers of a four-drawer filing cabinet and up to 25 different keys and combinations are required for opening any one of said drawers, and the number of different combinations of such locking mechanism are in the millions so that each cabinet produced could have a different combination of locks, if desired.

Another object is to produce a locking mechanism, partitions and drawer guides for inside such a filing cabinet which may be easily accessible and may be easily removed for repairs and replacement without affecting the monolithic outer double wall structure of the cabinet itself.

Generally speaking, the filing cabinet of this invention comprises: an outer wall or housing member of two concentric spaced sheet metal shells, the space between which is filled with a light weight filler material having a high molecularly combined water content which may be released upon heating; a separate removable inner frame structure for supporting the closure members and the compartment containers or drawers inside the inner shell of the cabinet; individual outside double walled closure for each of the openings, which may be removably attached to the compartment containers or drawers; and a multiple locking and interlocking mechanism for the closure part of which mechanism may be removably mounted on the inner frame inside the cabinet.

A construction of the outside wall or housing for a multi-drawer filing cabinet may be composed of an outer shell made of three separate sheet pieces, and an inner shell also made of three separate sheet pieces, which shells are ribbed for reinforcement purposes and to form supporting ledges inside the cabinet. The edges of the two concentric shells, formed by welding their said pieces together, are joined at their open side by a frame member composed of closure jamb strips, which strips may have reverse bent grooves for interlock with the closures or drawer edges that also may be grooved to cooperate with said grooved strips. This frame member may cooperate to form or contain hollow or tubular cross channel portions which separate the closure openings and provide in their hollow center space for an insulating filler, so that said filler may completely surround the jambs of each of the closures, without filling the space or partitions between the drawer compartments corresponding to each of the drawers or closures. Then the space between the inner and outer shells including the tubular cross channels are filled from the back with a fluid light weight cement filling material. After the cement has dried, the back of the outer shell is welded in place, making a monolithic interiorly ribbed outside wall or housing for the cabinet.

Inside the inner shell of the housing is placed a separate inner frame structure which may be welded or bolted to the inside of the inner shell, which structure anchors the guides for the closures or drawers as well as the partitions which may be used to separate the compartments corresponding to each of the closures. The drawer guides or slides and partitions may be attached to the inner frame by cooperating tongue and slot means which may be held in place either by their own weight and spring finger means, or sheet metal screws, so that these parts may be easily assembled and easily replaced or changed when desired or worn. The partitions, however, are so arranged and the interior is so ribbed that air may readily circulate around the edges of the partitions from one compartment to another, thereby materially increasing

the air and water vapor circulation within the cabinet when the cabinet is in a fire, which water vapor keeps the papers and ingredients in the cabinet below their combustion temperature and thus prevents their charring or burning. Thus, it can be seen that the circulation provided between the compartments in the cabinet by the inner frame member has a material advantage in enabling a reduced amount of weight for the housing to obtain the same amount of fire protection within the cabinet itself.

A multiple locking mechanism which may be employed in this multi-closure cabinet may comprise, on one or more of the drawers or on each side of each of the drawers, a plunger type lock which operates against a multi-closure locking bar mounted on the inner frame, which bar is provided with means so that it cannot be moved unless all of the closures are in their closed positions. The plungers on each closure may be provided with key locking mechanisms, and each of the plungers also may be locked against movement with key operated combination locks. The handle for operating the closure or drawer, may be rotary handle and is preferably provided with opposite spring engaging latches for fastening both sides or the top and bottom of the drawer itself. Such a rotating handle may be operated easily by either a right handed or left handed person and also may be provided with a key lock to lock it from turning. The housings for the locking mechanisms in the double walled closure are preferably provided in separate channels which not only reinforce the double walls of the closure itself, but also are so located as to be spaced from the edges of the drawer to eliminate as much as possible the concentration of metal in any point or corner which would tend to conduct heat more readily to the inside of the cabinet, than would ordinarily be conducted through the reverse bends of the metal door jambs. Furthermore, the combination or other locks inside the cabinet may be protected against burglarizing by drill resistant metal plates. The plunger locking mechanisms also may be provided with special means, so they cannot be jammed by the momentum of closing of one of the closures, by providing means which only becomes operative during the final stage of closing of each one of the closures.

The above mentioned and other features and objects of this invention and the manner of attaining them will be given more specific disclosure in the following description of an embodiment of this invention taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a side elevation of a four drawer filing cabinet according to the present invention with the third drawer from the top in open position, and with part of the lower left corner broken away;

Fig. 2 is a sectional view taken along line II—II of Fig. 1 showing in plan the cabinet of Fig. 1 with the third drawer open;

Fig. 3 is an exploded perspective view of the outer shell of the housing of the cabinet shown in Fig. 1;

Fig. 4 is a partly exploded perspective view of the closure jamb frame and the inner shell of the housing shown in Fig. 1 with parts broken away;

Fig. 5 is an enlarged transverse sectional view of an assembled tubular cross-channel grooved door jamb member that is between adjacent openings in the cabinet of Fig. 1;

Fig. 6 is an exploded view of the inner frame structure of the filing cabinet shown in Fig. 1 with parts broken away, which is mounted inside the inner shell of the housing;

Fig. 7 is a section taken along line VII—VII of Fig. 6 showing a tongue and slot anchoring means;

Fig. 8 is a section taken along line VIII—VIII of Fig. 6 showing a screw fastened tongue and slot anchoring means;

Fig. 9 is a section of a modified anchoring means similar to that shown in Fig. 8 showing a spring fastened means;

Fig. 10 is an enlarged side elevation of a modified form of partition tongue and slot anchoring means with parts broken away, showing a crimp fastening of the slot under the tongue;

Fig. 11 is a vertical section along line XI—XI of Fig. 10;

Fig. 12 is an enlarged vertical section of the assembled filing cabinet shown in Fig. 1 with parts broken away, showing the cooperation of the outer and inner shells, the inner frame and a locking mechanism mounted on a part of the frame;

Fig. 13 is a right end view of the upper right and lower right corners of the assembly shown in Fig. 10;

Fig. 14 is an enlarged sectional view of a drawer and the back wall of a closure taken along line XIV—XIV in Figs. 1, 2 and 16, with parts broken away;

Fig. 15 is a vertical section taken along line XV—XV of Fig. 14, showing the drawer latching and plunger operating mechanisms mounted in the closure;

Fig. 16 is a section taken along line XVI—XVI of Fig. 14 in cooperation with a part of the housing showing the drawer and closure in its closed position;

Fig. 17 is an enlarged sectional view taken along line XVII—XVII of Fig. 16 showing the drawer plunger and part of the multiple drawer locking mechanism mounted on the inner frame in locked position;

Fig. 18 is a sectional view taken along line XVIII—XVIII of Fig. 17;

Fig. 19 is a view similar to Fig. 17, showing the drawer closed but the plunger and multiple locking mechanism in their unlocked position;

Fig. 20 is a view similar to Figs. 17 and 19 showing the drawer open and the locking mechanism in open and unoperated position with the plunger locked to the drawer closure housing;

Fig. 21 is an enlarged and exploded perspective view of the housing for the plunger which is mounted in the thick wall of the closure;

Fig. 22 is a view similar to Fig. 17, but of a modified form of a multiple drawer locking mechanism;

Fig. 23 is a sectional view taken along line XXIII—XIII of Fig. 22;

Fig. 24 is a further modification of the drawer locking mechanism which is adapted for locking only one closure independently of the others in a multi-closure cabinet; and

Fig. 25 is a front view of one drawer closure showing seven separate locking means mounted thereon.

I. *The cabinet housing*

The particular embodiment of this invention described herein is directed to a four drawer safe-type filing cabinet having an outside or exterior double walled housing **30** composed of a smooth outer metal shell **31** and a ribbed inner metal shell **32**. The two shells **31** and **32** may be bridged together by a ribbed closure frame or jamb **34** which also may provide tubular cross-members **35** to define the four closure openings **36**. The space between the inner and outer shells **31** and **32** may be filled with a light weight filler **37**, preferably a porous cement which has a high content of water of crystallization which may be easily liberated when the device is heated as in a fire to produce water-vapor inside of the cabinet to keep the contents from being charred or burned. In the space and in the filler **37** may be provided a reinforcing wire mesh **38** to prevent large cracks from occuring in the cement which might permit heat to enter into the interior of the cabinet.

For each of the openings **36** there may be provided separate closures **40** which may be removably connected to separate drawers **41**, which drawers may be guided in slides **42** and **43**, the latter slide **43** being mounted inside of the cabinet. The slide **42** and drawer **41** may be mounted to roll on ball bearing rollers **44** mounted on slide **42**. Each of the closures **40** may be provided with sepa-

rate handles 45, as well as separate locking means 46 and 47 which will be described later in chapter IV of this specification.

Each shell 31 and 32 is composed of essentially three separate metal sheets, and each shell is open along one and the front side of the cabinet, namely the side in which the openings 36 for the four drawers of the filing cabinet are located. Referring now to Fig. 3 the three pieces of the outer shell are disclosed in perspective and slightly apart from each other to show how they may be fitted together. The main piece comprises a large U-shaped member 50 which is bent to form the opposite sides 51 and 52 integral with an end or the bottom 53. Each of these three members 51, 52 and 53 is provided on one or the front side with inwardly bent edge flanges 54 which extend substantially the full length of these edges except for the corners at the base of the U which may be cut out to prevent crimping of the flanges 54 when the piece 50 is bent into the U-shape shown. The back edge of each of the members 51, 52 and 53 is provided with longer inwardly bent edge flanges 55 having offset portions 56, which portions are offset about the thickness of the flat back pannel member 57. The corners of flanges 55 and 56 at the base of the U are preferably mitered as shown in Fig. 3. Over the top of the U-shaped member 50 is provided an inverted tray end, top or cover 58 which is provided with peripheral flanges 59 on each of its four sides, which flanges fit over the top edge of the sides 51 and 52 and back 57, as shown also in Fig. 12. Parallel to and midway between the side edges of the two sides 51 and 52 there may be welded Z-shaped strips 60 which act as anchors for the center of the side panels in the filler 37 as shown in Fig. 2. It has been found that one simple anchor 60 along each side is sufficient to anchor the outer shell as an integral part of the monolithic housing 30. In assembling the outer shell in Fig. 3, the top 58 is placed over the upper end of the sides 51 and 52 and welded thereto along flanges 59. At this time the wire mesh 38 may be secured to the inner edge of flanges 54 to hold it in place (see Figs. 2 and 12). The back 57, however, is not placed on the unit until after the inner shell is welded together and placed in the outer shell and the filler 37 is poured into the hollow space between the shells 31 and 32 and allowed to set. Then, the back plate 57 is slipped up under the back flange 59 of the top 58, and fitted snugly in the offset portions 56 of the flanges 55, and welded to flanges 56 and 59 to complete the monolithic housing 30, as shown in Figs. 1 and 12.

The inner shell 32 shown in Fig. 4, is similarly composed of three major separate sheet metal pieces, including a U-shaped piece 70 comprising the bottom 71, back 72 with integrally projecting ribs or ledges 73 corresponding in spacing to the divisions between the openings 36 at the front end of the cabinet, and top member 74. Along the sides of each of the members 71, 72 and 74 are provided inwardly bent flanges 75 which may be mitered at their corners 76. The other two major pieces of the inner shell 32 comprise panels or plates 80 and 81 which are preferably provided with longitudinal inwardly projecting central ribs 82, extending vertically with respect to the horizontally inwardly projecting ribs 73 on the back 72. The front edges of the plates 80 and 81 are provided with notches 83, which correspond with the ribs 73 along the back 72 and provide seats for the sheet metal tubular cross-channel members 35. Thus, in assembling the two ribbed panels or plates 80 and 81 may be slipped into the open end of the U-shaped member 70 to close the open sides thereof, and then may be spot welded at 84 to the flanges 75.

The closure jamb frame 34 may be welded to the front of the inner shell 32, which frame comprises on its outer side reverse bent grooves 88 around each of the closure openings 36 to reduce heat conductivity through the jamb frame as well as to form a metal tongue and grooved type joint with the closures 40 as shown in Fig. 16. These channels are preferably made of one piece of metal as shown in Figs. 5, 12 and 16 and are mitered and welded at the corners to form one piece 34, which piece includes flanges 89 and 90 on each side of the channels thereof for engaging and welding along the edges of the inner and outer shells, respectively. The front grooved portions 35' of the tubular cross-members 35 which separate the closure openings 36 have continuations of the grooves 88 and also of the flanges 89 identified as flanges 91, which flanges 91 may be welded to the edges of separate U-channels 93 to form the tubular members 35 (see Fig. 5). The ends of these channels 93 are made to fit into the notches 83 in the side panels or plates 80 and 81 (see Fig. 4) and may be welded thereto by the ends flanges 95 on the said channels 93.

This inner shell 32 and frame 34 may then be placed inside the outer shell 31, and the flanges 90 may be welded thereto to center the inner shell and to bridge the space around the closures between the inner and outer shells. Now the shells of the housing assembly are ready for the liquid filling material to be poured into the open back so the filler will fill all of the space between the shells, including the channels 73 and 82 and the cross-channels 93 and all around the edge of the openings 36.

II. *Inner frame structure*

Referring now to Fig. 6 there is shown in perspective the inner frame structure which may be either welded or screwed by metal screws (not shown) directly to the plates 80 and 81 of the inner shell 32. This inner frame structure comprises a pair of offset or Z-shaped strips or channels 100 which may be anchored adjacent the back edges of the plates 80 and 81, respectively, and a front pair of identical double U-shaped and notched strips or channels 102 which are preferably fastened to the side plates 80 and 81 along their front edges with their notches 103 aligned with the notches 83 to fit around cross channels 93. These strips or channel members 100 and 102 preferably extend from the bottom to the top of the inside of the shell as shown for example in Figs. 1 and 12, and it is on these channel members that the slide guides 43 are anchored. These guides 43 are preferably U-shaped channel members with upper and lower longitudinal flanges, into which channels the drawer slides 42 slide along the rollers 44.

So that the U-shaped channel members 43 may be readily assembled and removed inside the inner shell 32, special tongue and slot anchoring means may be provided at each end of these channels 43 to facilitate their assembly. For example, towards the back and in the strips 100 there may be cut out apertures 104 (see Fig. 7) in the offset portions of these strips into which upstanding lugs 105 directed longitudinally and towards the back of the cabinet, may be slipped. On the other hand, the front ends of the slide channels 43 may be provided with similar lugs 106 which project perpendicular to the line of the lugs 105, so that the back ends may be slid in longitudinally and the lugs 106 on the front ends of the guides 43 may be pressed downwardly (see Fig. 8) into partures 107 provided in one of the U-channels in the strip 102. Then in order to anchor the guides 43 in place, a metal screw 108 may be placed below the lug 106 through the web of the channel guide 43 into the strip 102.

Another modification or form of anchoring lug and slot means as shown in Fig. 8, is shown in Fig. 9 wherein a channel guide 109, corresponding to 43, is provided with a lug 110 fitting into an aperture 111 in vertical strip 112, corresponding to 102, which aperture 111 may be provided with a hood member 113. Instead of the screw 108 there may be applied a springy opposite tongue and slot means in which the springy tongue 114 may be pressed from the strip 112 to fit into a seat or aperture 115 in the web of the slide guide 109. Thus, as the front end of the guide 109 is forced downwardly with its lug 110 through the aperture 111, it clamps itself into position when the springy tongue 114 snaps into the seat 115.

Referring to Fig. 12, attention is called to the fact that the slides **43** bridge the distance between the U-shaped channels **93** and ledges **73**, and said slides **43** also preferably rest upon these members **73** and **93** of the housing structure to give added support for the weight of the drawer assembly which fits into the slides **43**.

If desired, the separate closures may give access only to separate compartments in the housing, which compartments may be divided by partitions or shelf members **120** (see Figs. 6 and 12). The shelves **120** may comprise flat metal trays with peripheral depending flanges **121**, and may also be reinforced by one or more U-shaped channels **122** welded across their centers. Along opposite peripheral flanges **121** there may be provided upstanding tongues **123** and **124** which may cooperate with apertures **125** and **126** in the corresponding strips **100** and **102**, similar to the tongues at the ends of the guides **43**. These tongues **123** and **124** are similarly at right angles to each other corresponding to the lugs **105** and **106**, respectively, and the trays thus may be suspended between and aligned with the top surfaces of the channel ledges **73** and **93** of the monolithic housing structure, as more specifically shown in Fig. 12.

Another form or modification of an anchoring means, such as means **124** and/or **123**, is shown in Figs. 10 and 11, wherein the tongues **126** are upstanding and provided by the vertical strips **127**, similar to strips **102**, **112** and/or **100**. The bottom edge of the flanges **121** of tray shelves **120** may be then provided with relatively long inwardly offset portions **128** forming upwardly open slots for the tongues **126**, which portions **128** are crimped back toward their original position in the flanges **121** as shown in Fig. 11 after the shelf **120** is in place. This crimping bends portion **128** downwardly beneath the offset of the lug **126** to hold the shelf **120** in place and prevent it from being lifted unwarrantedly from its supports, thereby preventing surreptitious entry from an upper compartment into a lower compartment without opening the closure to that lower compartment, or vice versa.

It is to be noted that these partitions **120** are spaced from the side plates **80** and **81** by a space **129** shown in Fig. 2 which corresponds to the depth of the inwardly extending ribs **82** in the side plates **80** and **81**, as well as to the thickness of the strips **100** and **102** including their offset portions. Although the metal partitions **120** between each one of the compartments corresponding to the openings **36** in the housing prevents a person from taking one drawer out to obtain access to another drawer below it, said partitions also permit circulation of air completely throughout the inside of the housing between the compartments through the narrow spaces **129** along each side of the housing. This is advantageous in that any hot spot which might occur in one compartment could be cooled by the moisture and air circulation from the other and cooler compartments in the cabinet, thereby more evenly distributing the water vapor generated by normal convection currents in the cabinet. This is not the case if each one of the compartments is completely and hermetically separated from the other. Thus, by not providing insulated partitions between the compartments in such a cabinet, not only is the overall weight of the cabinet materially reduced but its resistance to heat is increased, because of the added amount of air circulation permitted through the whole interior of the cabinet housing.

Furthermore, this space **129** also permits some deformation of the inner side plates **80** and **81** without producing binding of the drawers **41** or their slide mechanism **42** and **43**, such as by an inwardly bulging of the panels or plates **80** and **81** when the cabinet has been subjected to elevated temperatures. And again, such a wall structure being thinner and providing the space **129** reduces the overall weight of the cabinet and amount of material used in it without reducing its strength where strength and thickness are required, namely at the corners and in the center along the reinforcing ribs **82**.

III. *The closure and drawer structures*

A closure **40** and drawer **41** are shown more in detail in Figs. 14, 15 and 16, which together with Figs. 1 and 2, illustrate how the drawer container **41** is connected with the insulated walled closure **40**, how the thick walled closure **40** protects and mounts the latching and locking mechanisms for the drawer, and how the frame of the closure **40** cooperates with the door jambs **34** and **35**. The multi-drawer interlocking mechanism mounted on the inner frame strips **102** will be described later in the following chapter IV.

Referring first to Fig. 14 which shows the inside or back of the closure **40**, the drawer container **41** itself may be composed of a U-shaped channel member **130** forming the bottom and sides with a lower central longitudinal groove **131** for the index or file divider retaining rod **132**. The upper edges of the drawer member **130** may be beaded over as shown at **133**, and both ends of the drawer member **130** may be closed by metal sheets or plates **135** for the back and **136** for the front. The front member **136**, however, is a larger size than that for the back **135**, and may be welded to the front end of the U-shaped member **130** by ears **137** pushed perpendicularly out of the plane of the plate **136** as shown in Figs. 14 and 15.

Each of the closures **40** for the openings **36** comprises essentially a flat outer shell plate **140**, and a peripheral frame channel member **141** in which are impressed complementary reverse bent grooves **142** to fit with and cooperate with the reverse bent grooves **88** in the closure jamb frame members **34** and **35** for sealing and centering the closure in its housing opening (see Fig. 16). Over the inner edge of the frame channel member **141** may be welded an L-shaped frame **143** one side of which is parallel with the face member **140**. This flange **143** may be provided along the top and two sides of the frame **141** with inwardly extending tongues **144**, which tongues **144** are spaced the thickness of the plate **136** from the surface of the flange **143**. Thus, as shown in Fig. 14 the end plate **136** may be slipped in between the side tongues **144** and rest against the top tongues **144**, so that the closure **40** may be easily slipped on and off of the end of the drawer container assembly with the end plate **136** of the drawer completing the inner shell wall for the closure **40**. In order to hold this assembly in place, suitable screws **145** may be provided on each side of the center of the bottom edge of the plate **136** below the drawer member **130**, which screws anchor in the lower edge of the flange **143**. The closure frame member **141** is preferably welded to the periphery of the outer face plate **140**. Bridging and inside the top and bottom flanges **143** across the central portion of the closure **40** may be welded a U-shaped channel housing **146** in which the bolt and latch mechanism for the drawer handle **45** may be readily mounted. Between the channel **146** and the face **140** may be provided a circular sleeve **147** for housing the control shaft for connecting the handle **45** to the double latching mechanism mounted in the channel **146**. Mounted in the space between the flange **143** and the face plate **140**, there also may be mounted and welded a housing **150** (such as shown in perspective in Fig. 21) for spacing from the frame **141** and for housing a plunger and lock for controlling the multiple drawer interlocking mechanism which will be described later. Once these members are assembled together to form the shell of the closure **40**, the closure may be filled with a heat insulating material or filler **151**, similar to filler **37**.

The handle **45**, preferably at the center of the face plate **140** and closure **40**, may be partly rotated or twisted to operate an automatic latch for the closure. This

handle 45 may be accordingly connected to a shaft 160 which extends through the sleeve housing 147 into the channel housing 146, where radially extending arms 161 (see Figs. 14 and 16) are fastened to the inner end of the shaft 160, so that when the handle 45 is rotated a few degrees the arms 161 will also be rotated. In the channel 146, as shown in Fig. 14, there may be provided L-shaped slidable members 162, at the opposite ends of each of which members 162 may be mounted spring pressed latches 163, which latches may move relative to the members 162 against the action of their springs 164 mounted in said members 162, so that the drawer or closure 40 may be slammed or shut without rotating the handle 45. In order to keep the handle 45 in a given position relative to the drawers, additional springs 165 may be provided between the L-shaped projecting ends on the members 162, which ends extend along opposite sides of the central shaft 160. The outer ends of the latches 163 are preferably beveled on the side toward the closure, so that as the closure is pushed shut, they will ride over the edges of the door jamb frame flanges 89 and 91, and compress the springs 164 until the latches 163 snap into the openings 166 provided beyond said flanges in the edges of shell 32 and channels 93 (see Figs. 4, 12 and 13). Such a double acting latching mechanism housed on the inner side of the closure 40, latches the closure 40 both at its top and its bottom simultaneously, and provides an additional security both against fire hazard and the surreptitious opening of the closure. If desired, the rotating handle 45 may be operated either by a right-handed or left-handed person, since no releasing thumb latch is required at one side of the handle as in many present filing cabinets. The handle 45 also may be provided with a key 167 to lock it from turning.

At the lower edge of the closure 40, and through an aperture 168 in the lower latch 163, there may be provided an aligned hole through the closure 40 for the outer end of the index rod 132, which end may have a screw or friction engagement in the closure 40, such as the expanded or larger diameter collar 169 on the rod 132 which frictionally is held in a bushing 170 formed in the hole in the face place 140 (see Fig. 15). The outer end of the rod 132 may be provided with a knurled knob 171 to aid in gripping it for twisting or releasing and pulling the rod from the drawer and closure when it is required to reset the index dividers strung on the rod 132 in the file drawer.

IV. *The multiple closure locking mechanisms*

The multiple closure locking mechanism for locking all of the closures or the four drawers of the filing cabinet simultaneously, is actuated primarily by one or more plungers 47, mounted on at least one side of one of the closures, if desired, for operating one or a pair of such mechanisms. The mechanism for this multi-closure interlocking device is an improvement over that disclosed in McClellan co-pending application Serial No. 213,020 mentioned above.

Referring now more specifically to Figs. 17–20, the operation of the multiple drawer latching mechanism is accomplished by pushing the plunger 47 from the position shown in Fig. 19 to that shown in Fig. 17 wherein each one of the closures and its drawers is locked in the housing by a mechanism mounted in and on the channel 102. This mechanism, however, may be used for locking only one of the drawers instead of all the drawers as shown in Fig. 24 described later. Following through the operation of this mechanism the plunger 47 may, if desired, be provided with a lock with a key 175 which operates a locking bolt 176 having a seat 177 in the housing 150, which seat is protected from the insulating material 151 by means of a cap 178, see also the exploded Fig. 21. Thus when the key is turned and the plunger 176 is retracted from the apertured seat 177, the mechanism mounted in the housing causes the plunger 47 to project into its position shown in Fig. 19, which projection may be caused either by the gravity pull on the weight of the mechanism itself or by a spring action (not shown) applied either to the plunger itself directly in the closure 40 or in the housing mechanism. The inner end of the plunger 47 is provided with a pivot 180 to which is pivoted one end of an extension lever 181 provided with an adjustable abutment 182 at its inner and other end. The configuration of the lever 181 is such that when in its released position as shown in Figs. 19 and 20, a notch 183 in its lower edge engages by aid of gravity and/or a spring 184 an edge 185 of the plate member 143 as shown in Fig. 20, so that the plunger 47 cannot be operated when the closure is away from its closed position. However, when the closure is closed the outer end of the lever 181 may be cammed up into the position shown in Figs. 17 and 19 by means of a cam plate 186 which may be mounted on the strip 102 in the housing, which plate 186 raises the outer end of the lever 181 to raise the notch 183 to be clear of the edge 185. The inner end of the housing 150 may be reduced in thickness at section 187 to fit closer around the lever 181 and reduce heat conduction through the closure 40. The projection of the lever 181 beyond the closure 40 inside the cabinet housing may be provided with another notch or shoulder 188 (see Fig. 16) into which a positive latch 189 of a combination lock mechanism 190 may cooperate to further lock the plunger in its closed position shown in Figs. 16 and 17. This combination lock mechanism 190 may be operated through a sleeve shaft 191 connected to the number combination dial 46 mounted on the outside face 140 of the closure 40. Between the end wall 136 of the drawer and mechanism 190 may be mounted a drill resistant metal plate 192 to further protect the combination lock mechanism 190. Also a key 193 may operate another lock in the combination dial 46 to further lock the combination locking mechanism and add more security to the cabinet.

Between the two or the pair of U-shaped channels in the member 102, is a U-shaped groove 200 extending the full height of the filing cabinet and in which groove may vertically slide a locking bar member 201 which may be provided with outwardly extending pins 203 adjacent each of the closures. The pins 203 may cooperate with notches 205 mounted on, or formed in a latch engaging strip 210 mounted along the side of each of the drawers 41, so that pins 203 engage notches 205 when all of the closures in the filing cabinet are in their closed position and bar 201 may be raised into the position shown in Fig. 17 by operation of plunger 47. If any one or more of the closures is open, as shown in Fig. 20, the bar 201 cannot be raised because the pin 203 hits against the bottom edge 211 of the flange of the slide strip 210.

In addition to the pin 203, the bar 201 may have notches 212 adjacent each closure, which cooperate with ears 214 (see Fig. 18) mounted on sliding members 215 having screw abutment ends 216, which abutments may contact the inner flange 143 of the drawer closures 40 when the drawers are in closed position. Each member 215 may be mounted through slots 217 on the pins 218 and 219, which pins may be screwed into nuts 220 and 221 welded to the channel member 102 on either side of the groove 200 (see Fig. 18). The member 215 slides against the action of a spring 222 which may be connected between the member 215 and one of the pins 218. The ears 214 engage in the notches 212 in the bar 201 when the bar is in the position shown in Fig. 20, and the drawer closure is open, thus locking the bar 201 from operating until all the drawers are closed and in the position shown Fig. 19. Thus the closure of the drawer abuting against end 216 pushes the slide 215 inwardly to release the ear projection 214 from the notch 212 in the bar. To provide a free moving space for the ears 214 there may be cut out por-

tions 224 in the edge of one of the channel members of the strip 102.

After the drawer is closed or in its closed position shown in Fig. 19, the pushing in or to the left of the plunger 47 pushes lever extension 181 and its abutment 182 against the flanged end 225 of a bell crank lever 226, which also may be pivoted on the pin 218. The other end of the bell crank lever 226 may be provided with a slot 227 which may fit over another pin 228 anchored in the sliding bar 201. Thus, as the bell crank lever is rotated in the clockwise direction, and if all of the drawers are closed so that none of the projections 214 are in the notches 212 and all of the notches 205 on the drawers are in alignment with the pins 203 on the bar, then the bar 201 may be raised so that the projections 203 will fit into the notches 205 as shown in Fig. 17 locking the drawers from further movement outwardly. In addition to this there may be a positive latch pivoted at 230 on the other one of the U-shaped channels of this strip 102 on the opposite side from the bar 201 from the pivot 218. On this pivot 230 may be provided a lever arm 231 having a slot 232 aligned with another pin 233 mounted on the bar 201, so that as the bar is raised the pin 233 will rotate the lever 231 in the counter-clockwise direction from the position shown in Fig. 19 to the position shown in Fig. 17. Also pivoted on the pin 230 may be a second lever 235 having a latch engaging extension 236 which projects into an aperture 237 provided in the strip 210 along the edge of the drawer, thus further locking the drawer in its closed position. This lever 235 also may be permitted to move between limits 238 and 238' on lever 231 against the action of a spring, such as spring 239, which spring 239 would permit the drawer to be closed and latched, if bar 201 had already been operated and the interlocking mechanisms of notch 205 and pin 203 and of sliding ear 212 and notch 202 were not also employed with said drawer. But, since they are also employed in this particular embodiment shown, the additional latching device 236 is not also necessary, as it is in the modification shown in Fig. 24 described later. Thus, it can be seen that with the combination of the levers and links shown in Figs. 17–20, many different combinations of independent and dependent locking and latching means may be provided for each of the closures, which may be tied together by the bar 201, so that no one or more of the closures may be locked independently of all of the other closures to the filing cabinet.

A modification of the notch 205 and pin 203 interlocking mechanism shown in Figs. 17, 19 and 20 is shown in Figs. 22 and 23, in which the locking bar 241 corresponding to bar 201 is provided with a projecting headed button 242 adjacent each drawer, which button 242 has a narrow throat 243. Clamped on one of the channels of member 102 may be leaf springs 245 adjacent each drawer, which springs normally are in the full line position shown in Fig. 23 and cooperate with their corresponding cam projections 246 mounted on the side of the drawer 41. When the drawer is in its closed position the spring 245 is pressed into its dotted position 247 so that a narrow notch 248 in the spring 245 will permit the throat 243 of the button 242 to slide therein. If however, one or more drawers were open or even removed from the cabinet, the spring 245 would remain in the full line position shown in Fig. 23 and since the width of the throat or slot 248 is not sufficient to permit the head 242 of the button to slide therein, the spring 245 then would prevent raising and operation of the latching bar 241. The other portions of the mechanism shown in Figs. 22 and 23 operate similarly and have the same reference characters as the corresponding portions previously described in Figs. 17–20.

Another modification of the drawer latching mechanism is shown in Fig. 24, in which the bar 201 (or 241) may be by-passed by a link 250, which connects slots 227 and 232 of levers 226 and 231 through pins 251 and 252, respectively, on link 250, the pins 228 and 233 on the bar 201 (or 241) having been removed. Thus, with this link 250 there is no cooperation between this drawer and the other drawers of the cabinet, and its corresponding plunger 47 may operate the latch 236 into the aperture 237 independently of the other drawers in the cabinet. Accordingly, one or more of the drawers or closures in the cabinet may be separately locked or unlocked from the other drawers which may be interlocked without changing the principle of this invention.

If desired, in order to provide as many locks and safety latches as possible, each drawer may be provided with seven separate keys and combinations, as shown for example in Fig. 25, in which the center handle 45 is locked with a key 167, and two combination dials 46 and two plungers 47 on each side of the drawer are each and also provided with separate keys 193 and 175. Thus, in order to open one such drawer in a cabinet having four similarly locked and interlocked drawers, it could require $6\times4+1=25$ different people and to open all four of such drawers $7\times4=28$ different people. However, it is not always desirable to provide so many different locks for one and the same cabinet and in the above disclosure according to the modifications shown in Figs. 22 and 24, any one or more combinations of the locks may be employed for any one or more of the drawers or closures without departing from the scope of this invention. Thus, the degrees of versatility of the security combinations for locking the cabinet by employment of the same structural parts arranged cooperating in different manners, is one of the important features of this invention.

Also the fact that the interlocking and drawer latching mechanism is removably mounted on the strips 102, enables it to be removed, replaced and adjusted easily without dismantling the whole cabinet, but by only removing one or more of the drawers.

While there is described above the principle of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of this invention.

What is claimed is:

1. A fire resistant cabinet having a plurality of adjacent openings, separate closures for each of said openings, the walls of said cabinet and closures having inner and outer spaced metal shells, the space between said shells being filled with a heat resistant filler, a frame attached to said inner shell, said inner shell having two sets of inwardly extending reinforcing ribs, one set of ribs extending horizontally and being on one pair of opposite sides of said inner shell and the other set of ribs extending vertically and being along the other pair of opposite sides of said inner shell; said frame comprising: strips extending along the inside of said inner shell parallel to one set of said ribs, and channel means extending between and being attached to said strips.

2. A cabinet according to claim 1 wherein said channel means are anchored to said strips by corresponding tongue and slot means on opposing adjacent portions of said channel means and strips, and one of said adjacent portions on each said channel means includes a seat means and a springy lug on said strip cooperating with said seat means for holding said tongues in said slot means.

3. A cabinet according to claim 2 wherein the two spaced tongues on each of said channels are direced at right angles to each other.

4. A cabinet according to claim 1 wherein said channel means are supported by the horizontally extending set of said ribs.

5. A cabinet according to claim 4 including drawers attached to said closures and said channel means comprise slides for said drawers.

6. A fire resistant cabinet having a plurality of adjacent openings, separate closures for each of said openings, the walls of said cabinet having inner and outer

metal shells, the space between said shells being filled with a heat-resistant water-containing filler, a frame attached to said inner shell, said inner shell having two sets of inwardly extending reinforcing ribs, one set on one pair of opposite sides of said inner shell, the other set along the other pair of opposite sides of said inner shell; said frame comprising strips extending along the inside of said inner shell parallel to said other set of said ribs, channel means extending between and being supported by said strips, and partitions parallel to said channel means and supported by said strips, the side edges of said partitions being spaced by the thickness of said strips and said other set of said ribs from the corresponding sides of said inner shell, whereby air and water vapor may circulate throughout said inner shell around the edge of said partitions.

7. A cabinet according to claim 6 wherein said partitions divide said inner shell into compartments corresponding to each opening, and including means for anchoring said partitions for preventing pilferage from one compartment through another when only one compartment is accessible through its opening.

8. A cabinet according to claim 7 wherein said means for preventing pilferage includes means for anchoring said partitions to said strips on one side of each partition by a corresponding tongue and slot on opposite adjacent portions of said partitions and strips, and on the other side of each partition by additional means anchored to said strips and overlapping the edges of said partitions.

9. A cabinet according to claim 8 wherein the material along one side of said slot is crimped against said tongue to hold said tongue in said slot.

10. A cabinet according to claim 8 including drawers in each compartment connected to said closures, and wherein said additional means overlapping the edges of said partitions comprise slides for said drawers.

11. A cabinet according to claim 10 including latching means for interlocking at least two of said drawers, with at least a part of said latching means being mounted on one of said strips.

12. A cabinet according to claim 11 wherein said latching means includes a bar extending the full length of said one strip, and latch means operated by the movement of said bar for engaging each of said drawers when all of said drawers are in their closed position.

13. A cabinet according to claim 12 including means mounted on at least one of said drawers for operating said bar mounted on said strip.

14. A cabinet according to claim 13 including separate means mounted on said one strip associated with each said drawer, and cooperating means on each said drawer for preventing the operation of said bar except when all of said drawers are in said cabinet and in their closed position.

15. A heat and burglar resistant cabinet having a plurality of compartments, each having an opening along one side of said cabinet, separate closures for each of said compartment openings, the wall for said cabinet including said closures having inner and outer metallic shells and a heat insulating filler between said inner and outer shells, said inner shell for said cabinet comprising: a U-shaped top, back and bottom piece ribbed along said back parallel to said top and bottom to provide ledges corresponding to the divisions between said compartments, U-shaped channels with flanged ends parallel to each other and extending across the front or open end of said cabinet dividing the front of said inner shell into said separate compartment openings, and notched plates for closing the open sides of said U-shaped piece and to fit around said channels.

16. A cabinet according to claim 15 wherein each of said plates is provided with a longitudinal inwardly extending rib.

17. A heat and burglar resistant cabinet having a plurality of compartments, each compartment having an opening along one side of said cabinet, separate closures for each of said compartment openings, the wall for said cabinet and said closures having inner and outer metallic shells, and a heat insulation filler between said inner and outer shells; said inner shell comprising: a U-shaped top, back and bottom piece ribbed along said back parallel to said top and bottom to provide ledges corresponding in number to the divisions between said compartments, U-shaped channels with flanged ends parallel to and across the front of said cabinet dividing the front into said separate compartment openings, notched plates for closing the open sides of said U-shaped piece to fit around said channels, and each of said plates having a longitudinal rib; and said outer shell comprising: a U-shaped bottom and two side pieces having inwardly extending flanges around the back and front edges thereof, said sides having integral longitudinal filler anchoring strips, and said back flanges having inwardly offset portions, a top with a peripheral flange fitting over the top of the second said U-shaped piece, a back plate fitting under said peripheral flange of said top and into said offset portions of said back flanges; and a ribbed closure jamb channel member for the front of said cabinet bridging the space between the front edges of said inner and outer shells and the front of said U-shaped channels to completely enclose said filler between said two shells and around each of said compartment openings.

18. In a heat-resistant cabinet having a compartment with at least one opening, a closure for said opening, said closure comprising: an outer flat shell, a peripherally grooved frame having inwardly extending flanges, said flanges having ears along three of its four sides, a container for said compartment having at least two parts including a flat end plate, said frame being attached by said ears onto said flat end plate, and a heat insulating material substantially filling the space between said end plate and said outer flat shell.

19. In a cabinet according to claim 18, said flat end plate being provided with additional ears for anchoring said flat end plate with the remaining part of said container.

20. In a cabinet according to claim 18, said closure including a U-shaped channel mounted to said flanges across said closure, and a latching mechanism housed in said U-shaped channel.

21. In a cabinet according to claim 20, said latching mechanism having a pair of spring urged latches, one extending from each end of said U-shaped channel to latch opposite sides of said closure simultaneously.

22. In a cabinet according to claim 18, including a closure latching plunger mechanism, and a housing for said plunger mechanism having a restricted portion and mounted in said closure surrounded by said insulating material.

23. In a cabinet according to claim 22, including means on said closure for locking the movement of said plunger mechanism.

24. In a cabinet according to claim 23 wherein said plunger mechanism is provided with a plurality of separate seating means, and said closure is provided with a plurality of locking means for cooperating with said seating means for locking said plunger.

25. In a cabinet having a plurality of aligned closures, a common means for locking all of said closures together in their closed position, said means comprising: slidable bar means mounted in said cabinet adjacent to at least two of said closures, separate lug means mounted on said bar means adjacent each of said two closures, means on each of said closures cooperating with a corresponding lug means on said bar means to lock each closure in its closed position, means on at least one of said closures independent of the movement of said

closure for operating said bar means to lock another closure, and movable means mounted on said cabinet operable by the movement of said other closure into its closed position for permitting the operation of said bar means when said other closure is in its closed position and preventing the operation of said bar means to lock said other closure when said other closure is not in its closed position.

26. In a cabinet according to claim 25, wherein said movable means is normally resiliently urged into its position for preventing the operation of said bar means to lock said other closure.

27. In a cabinet according to claim 25 including a notched leaf spring mounted in said cabinet adjacent a said lug means, and wherein said means mounted on a corresponding closure comprises cam means for moving said spring when said closure is in its closed position, said lug means having a reduced section cooperating with the notch in said spring to permit operation of said bar means only when said corresponding closure is closed in said cabinet.

28. In a cabinet according to claim 25 wherein said closures are aligned vertically, and including two of said locking means for all of said closures one on each side of said cabinet adjacent each of said closures.

29. In a cabinet according to claim 25, said means on said closure for operating said bar means comprising a plunger having two limiting positions of movement.

30. In a cabinet according to claim 29, including a plurality of plungers each provided with a plurality of separate seating means, and a plurality of said locking means on at least one of said closures for cooperating with said seating means to lock the movement of said plunger.

31. In a cabinet according to claim 29, wherein separate locking means are provided for holding said plunger to each of its two limiting positions.

32. In a cabinet according to claim 29 including plungers on two of said closures, and a second bar means associated with one of said plungers for independently locking the one closure corresponding to said one of said plungers with respect to said other closures locked by the other plunger.

33. A heat and burglar resistant single cavity cabinet having a plurality of sections each of which have an opening along one side of said cabinet, separate closures for each of said section openings, the wall for said cabinet including said closures having inner and outer metallic shells, a water containing heat insulating filler between said inner and outer shells, said outer shell comprising: a single U-shaped piece of sheet material forming the bottom and two sides and having inwardly extending flanges around the back and front edges thereof, said sides having longitudinal filler anchoring strips, said back flanges having inwardly offset flange extensions parallel thereto, a top with a peripheral flange fitting over the top of said U-shaped piece, and a back plate fitting under said peripheral flange of said top and into said offset extensions of said back flanges of said bottom and said two sides.

34. In a cabinet frame having junctions between adjacent strip portions of the members forming said frame, one of said portions having a stepped offset tongue providing an offset section substantially perpendicular to the planes of said strip portions, and the other of said strip portions adjacent said tongue having an offset crimpable bowed strap section pushed out of the plane thereof to expose a seat on the remainder of said other strip portion for the inside of said offset section of said tongue which tongue extends between said seat and said strip section, the length of said strap section being perpendicular to the length of said tongue and said strap section being crimped inwardly adjacent the outside of said stepped offset section of said tongue to clamp said offset section of said tongue against said seat.

35. A heat and burglar resistant cabinet having a single cavity divided into a plurality of communicating compartments each of which has an opening along one side of said cabinet, separate closures for each of said compartment openings, the wall of said cabinet including said closures having inner and outer metallic shells with a water containing heat insulating filler between said inner and outer shells, said inner shell for said cabinet comprising: a U-shaped top, back and bottom piece, opposite parallel plates for closing the two sides of said U-shaped piece, said plates having aligned U-shaped notches at the open end of said inner shell between said compartment openings, and outwardly open U-shaped channels with flanged ends and extending across the open end of said inner shell in and between said aligned notches to define and separate said separate compartment openings in said single cavity, said flanges being attached to the sides of said plates adjacent said notches to form a unit inner shell.

36. A single cavity fire resistant cabinet having a plurality of openings along one side of said cabinet, separate closures for each of said openings, the walls of said cabinet and closures having inner and outer spaced metal shells with said inner cabinet shell being notched at its open end, tubular metal channels extending across said open side of said cabinet for defining with the walls said separate openings and fitting in said notches and attached to said inner shell around the edges of said notches to provide communication between said inner and said outer metal shells and said tubular channels, the space between said shells and said tubular channels being filled with a water containing fire resistant material to form an integral monolithic structure, the edges of the openings of said cabinet including said tubular channels having closure jambs for engagement with the edges of said closures.

37. A cabinet according to claim 36 including drawers attached to each of said closures, and guide means for said drawers resting on said tubular metal channels.

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