

June 3, 1969

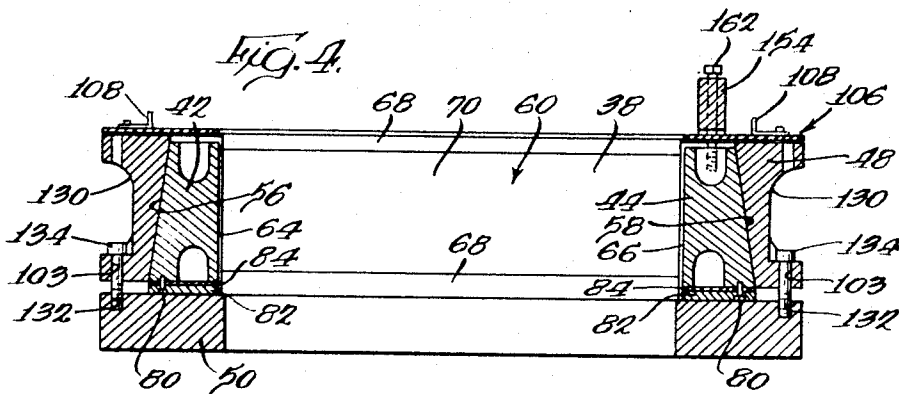
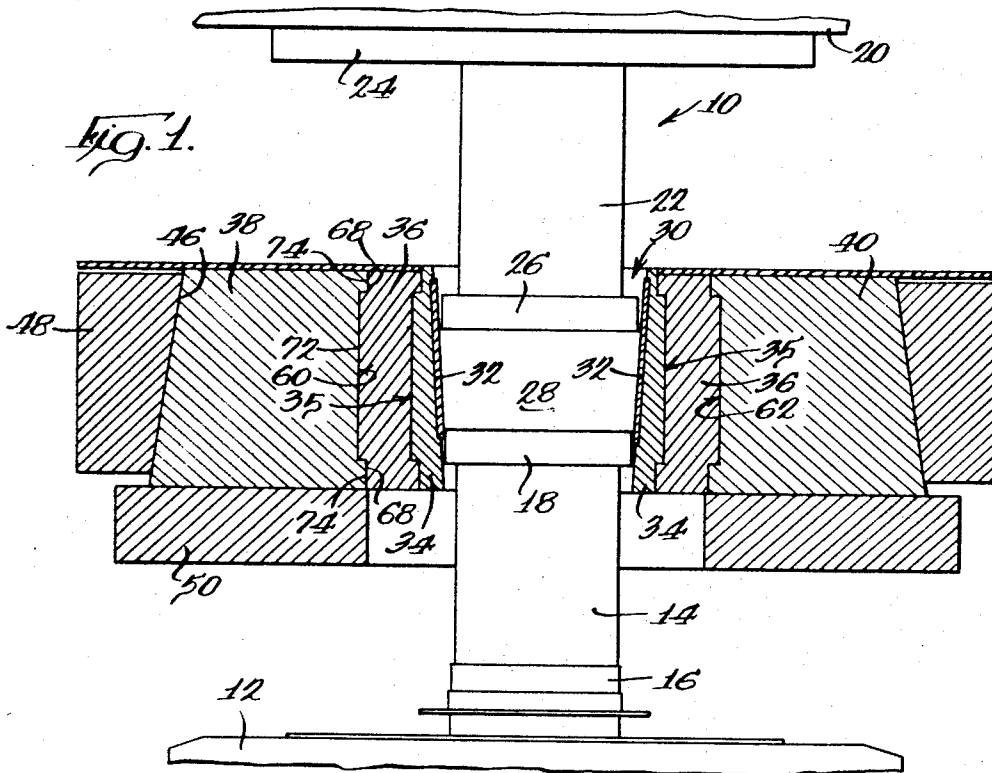
R. J. DORSEY

3,447,205

PRESS MOLD BOX ASSEMBLY

Filed Nov. 29, 1966

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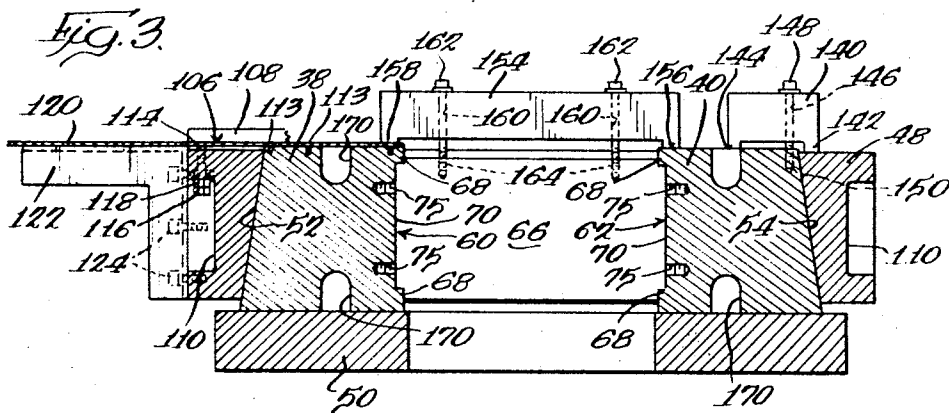
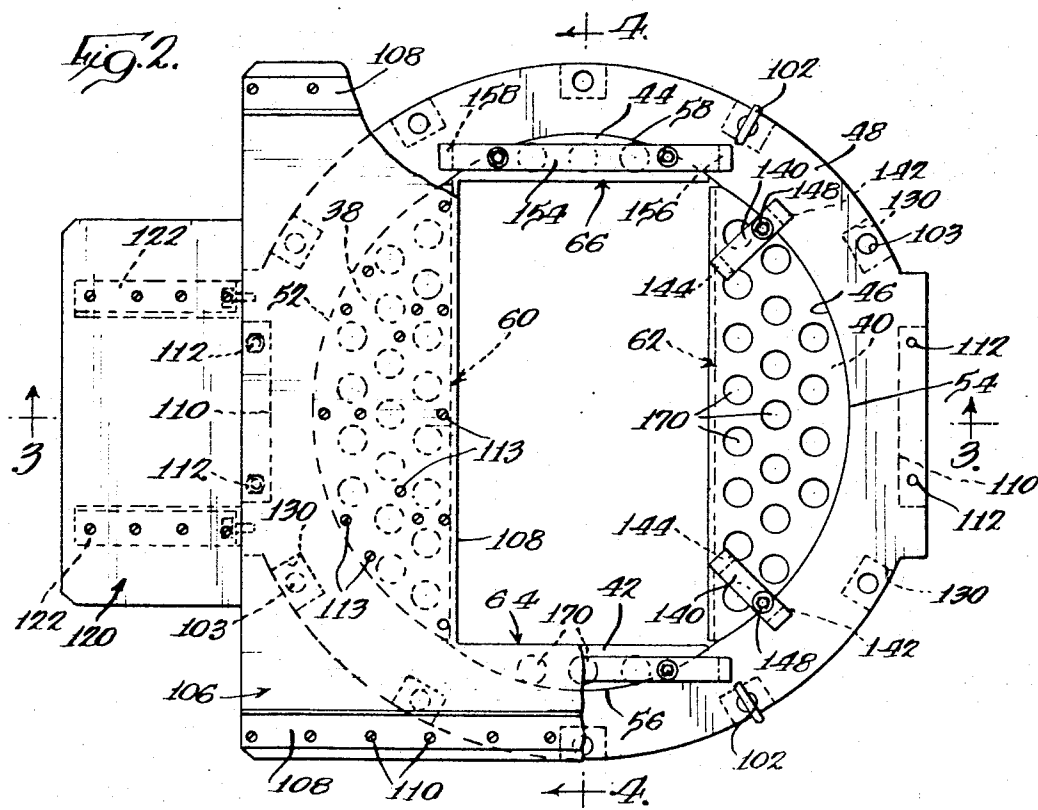
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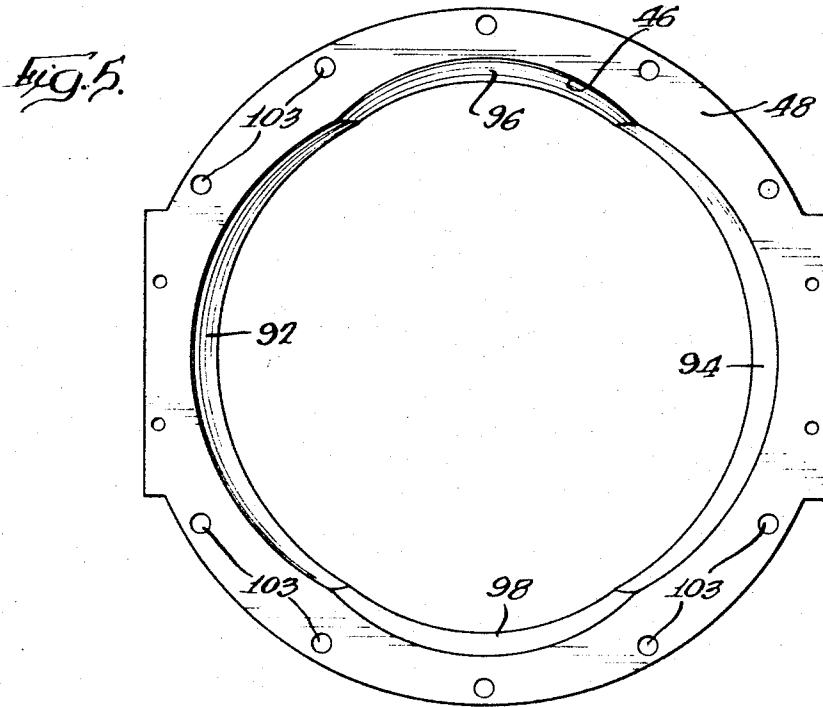


Fig. 6.

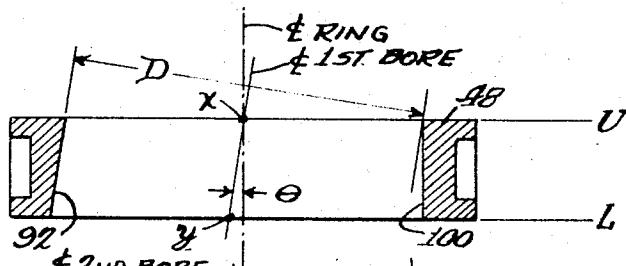


Fig. 7.

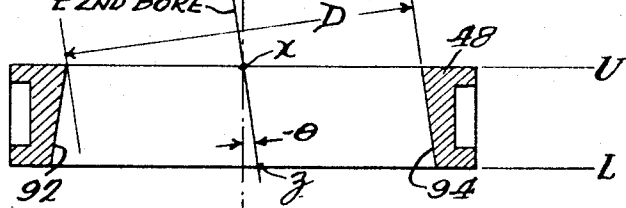


Fig. 8.

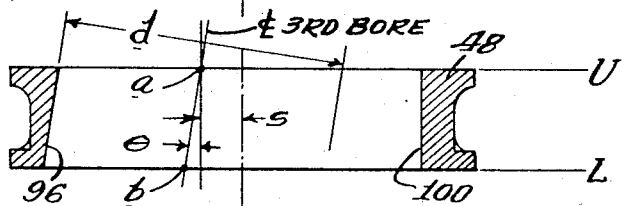
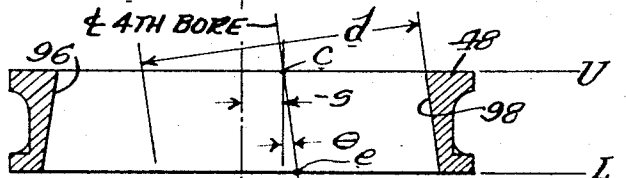


Fig. 9.



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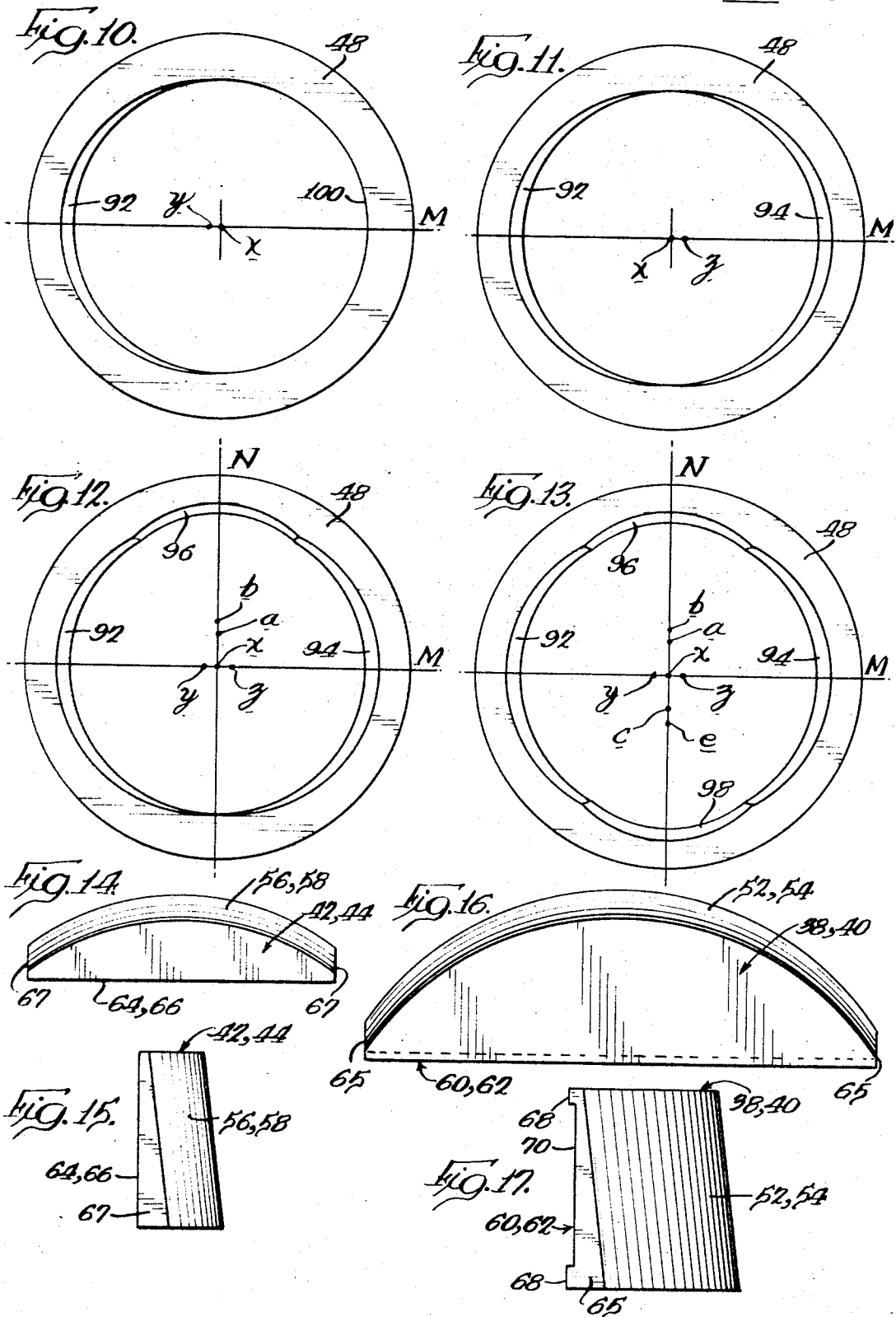
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PRESS MOLD BOX ASSEMBLY

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3,447,205

PRESS MOLD BOX ASSEMBLY

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Int. Cl. B29c 1/06

U.S. Cl. 18—34

12 Claims

ABSTRACT OF THE DISCLOSURE

Contemplated is a mold box assembly for use in high pressure presses used in forming bricks or the like. The mold box assembly includes a large circular ring having a generally conical central aperture in which a plurality of removable wedges having surfaces that mate with the aperture surface are received. The wedges in turn support a mold box within the center of the apertures and during compression of the molded material, the loading on the mold box is substantially equally distributed about the ring. Because of the removability of the wedges, the mold box assembly is susceptible to rapid changing of the mold box to enable rapid conversion from one molded article size to another.

Background of the invention

A typical press for molding bricks or the like includes a pair of generally vertically arranged plungers. The ends of the plungers are used to compress a refractory material or the like within a mold to form it into the desired shape of the finished article. Typically, the mold or mold box in which the refractory material is compressed is comprised of a plurality of holders fitted together to form a cavity of the desired shape. In order to add flexibility to the molding operation, the holders are conventionally provided in a variety of sizes and fitted with wear resistant liners which form the surface that contacts the material to be molded. Means are provided for maintaining the holders in a desired location to thereby maintain the liners in a desired configuration.

Because in a typical press one of the plungers is used to eject the molded article from the mold box, substantial vertical forces are developed and means must be provided to maintain the mold box in a relatively stationary position with respect to the ejecting plunger. Additionally, during compression of the material to be molded within the mold box, substantial horizontal forces are developed. Accordingly, there may be some deflection of the sides of the mold position due to such horizontally acting forces.

In recent years the trend in the industry has been to use higher forming pressures, and as a result, greater deflections of the mold position are encountered. In order to counteract such deflections, resort was had to the use of larger securing means for holding the mold position in the desired configuration. Specifically, bolts were used for holding the mold box in the desired configuration and in order to prevent the deflection, it was necessary to use a greater number of larger bolts. As a result, larger tools and more man hours were required to fabricate the mold box assembly. Additionally, because the larger securing means were used in substantially the same amount of space, restricted working conditions resulted.

As the severity of the problems increased with the use of increasing pressures, a one piece assembly or frame for the mold box was developed. Such a means provided at least short-lived relief from the problems in that the frame provided more resistance to stretching of the mold cavity from front to back or the increasing thereof in cross sectional area than could be achieved through the use of bolts. However, two limitations became readily apparent. Because most articles to be molded were of rectangular shape, the assembly was of rectangular shape

and with relatively sharp internal corners, stress concentrations thereat caused cracking thereby significantly reducing the life of the assembly. Additionally, since the assembly was of one-piece construction, the problem of how to place the liners and holders within the assembly was posed.

The liners and the holders could be pressed into the assembly or bolted down to resist ejection forces but such techniques could not assure that the parts were butted tightly together within the assembly. Accordingly, during compression of the molding material expansion of the mold cavity could take place before the liners and holders would bear against the internal walls of the one-piece frame. Thus, during ejection when the liners and holders have reverted to their original configuration after compression has been removed, the ejection of the brick through an opening smaller than the brick could result in deformation of the brick. Additionally, because such contraction of the mold cavity would result in a greater gripping force on the brick during ejection, there was the possibility that the ejected brick would resist ejective movement until the high frictional resistance was suddenly overcome. At this time, the brick would tend to "pop" out of the mold box to possibly strike the opposite die plate and/or fall to the mold table top causing the corners of the brick to be cracked or broken.

Summary of the invention

It is, therefore, the principal object of the invention to provide a new and improved mold box assembly.

More specifically, it is an object to provide a solid mold box assembly in which the holders and the liners may be easily introduced in such a way as to minimize the possibility of expansion of the mold cavity during compression to thereby eliminate the problems caused by contraction during ejection.

Another object is the provision of a mold box assembly such as that set forth above wherein the liners and holders may be easily changed so that the device is readily susceptible for use in forming articles of many different sizes.

A still further object is the provision of a solid mold box assembly that is designed to minimize stress concentrations to thereby provide a long-lived device.

Yet another object of the invention is the provision of a mold box assembly comprised of a plate having a generally centrally arranged and generally conical aperture extending therethrough together with a plurality of segmented wedges each having a surface formed to mate with at least a portion of the surface of the aperture and means on each of the wedges for supporting a mold box within the aperture.

A further object is the provision of a mold box assembly such as that set forth in the preceding paragraph wherein the conical aperture is defined by portions of the surface of a plurality of intersecting cylindrical bores corresponding in number to the number of wedges, the cylindrical axes of the bores being nonparallel to thereby provide a plurality of discontinuities, the surface of the wedges being formed to mate with a corresponding discontinuity so that the discontinuities serve to aid the positioning of the wedges during assembly of the mold box device.

A still further object is the provision of a mold box assembly such as that set forth above wherein the angle of the aperture has a tangent whose value is slightly less than the coefficient of friction between the plate and the wedges so that the wedges will be frictionally engaged within the aperture as desired and that very little effort will be required to overcome the frictional hold on the wedges.

Other objects and advantages will become apparent from the following specification and drawings.

Description of the drawings

FIG. 1 is a somewhat schematic side elevation of a press having a mold box assembly made according to the invention with parts shown in section;

FIG. 2 is a plan view of the mold box assembly with parts thereof broken away for clarity;

FIG. 3 is a vertical section taken approximately along the line 3—3 of FIG. 2;

FIG. 4 is a vertical section taken approximately along the line 4—4 of FIG. 2;

FIG. 5 is a bottom view of a portion of the mold box assembly;

FIGS. 6–9, inclusive, are schematic vertical sections illustrating various steps in the formation of a retaining ring used in the mold box assembly;

FIGS. 10–13, inclusive, are schematic bottom views illustrating the steps in the formation of the retaining ring;

FIG. 14 is a plan view of a wedge used in the mold box assembly;

FIG. 15 is a side elevation of the wedge illustrated in FIG. 14;

FIG. 16 is a plan view of another wedge used in the mold box assembly; and

FIG. 17 is a side elevation of the wedge illustrated in FIG. 16.

Description of the preferred embodiment

A conventional high pressure forming press is schematically illustrated in FIG. 1 and is generally designated 10. The press 10 includes a bottom cylinder 12 having a lower plunger 14 mounted on a mounting plate 16. The upper end of the lower plunger 14 terminates in a die plate 18.

The press 10 additionally includes a cross head 20 and an upper plunger 22 which is mounted on a second mounting plate 24. The upper plunger 22 also terminates in a die plate designated 26. The plungers 14 and 22 and their respective die plates 18 and 26 are arranged to compress an aggregate of refractory material 28 in a mold cavity generally designated 30. The mold cavity 30 is rectangular in shape and is formed by wear-resistant liners 32 suitably mounted on holders 34. The holders 34 in turn have a tongue and groove connection 35 to a mold box 36. The mold box 36 is, in turn, held in place by four wedges 38, 40, 42, and 44 (only the wedges 38 and 40 are illustrated in FIG. 1) which are received within an aperture 46 in a plate-like retaining ring 48. The retaining ring 48 is mounted on a floating mold table plate 50 customarily found in a conventional press such that the plane of the ring 48 is generally transverse to the direction in which the plungers 14 and 22 act.

As will be recognized by those skilled in the art, during press operation, the mold cavity 30 is charged with the material 28 to be molded and the upper plunger 22 is driven downwardly to compress the material 28 between the die plates 18 and 26. This operation forms the molded article in the mold cavity 30. To eject the molded article from the mold cavity 30, the upper plunger 22 is withdrawn and the lower plunger 14 is extended to eject the molded article upwardly and out of the mold cavity 30. In order to facilitate such ejection, the holders 34 and the liners 32 may be arranged with respect to each other such that the latter are slightly canted to diverge upwardly and outwardly as shown in FIG. 1 although not to the somewhat exaggerated extent indicated.

Referring now to FIGS. 2, 14 and 16, the ring 48 and the aperture 46 therein are seen to be generally circular in shape. The wedges 38, 40, 42 and 44 are generally in the shape of a segment of a circle and each has a first surface 60, 62, 64 and 66, respectively, that is adapted to engage the corresponding side of the mold box 36 and a second surface 52, 54, 56 and 58, respectively, that is

adapted to mate with a portion of the surface of the aperture 46. As best seen in FIGS. 14–17, the ends of the wedges 38 and 40 terminate in flat surfaces 65 while the ends of the wedges 42 and 44 terminate in flat surfaces 67 to eliminate force transmitting contact between the wedges when the press is in operation.

Referring now to FIGS. 1, 3 and 17, the first surfaces 60 and 62 on the wedges 38 and 40, respectively, are each seen to comprise a pair of relatively narrow lands 68 and a relatively wide groove 70. There is also provided a relatively wide, flat projection 72 on the mold box 36 and a pair of relieved portions 74 disposed on either side of the projection 72. The projection 72 nests within the groove 70 while the relieved portions 74 receive the lands 68 to provide a means for securing the mold box 36 to the wedges 38 and 40. More specifically, the elements 68, 70, 72 and 74 serve to retain the mold box 36 in a position with regard to the corresponding wedge 38 or 40 such that the mold box 36 cannot move in a vertical direction and can only be moved inwardly of the aperture 46 with respect to the corresponding wedge in the horizontal direction. If desired, tapped bores 75 may be used in conjunction with bolts not shown to supplement the elements 68, 70, 72 and 74.

As seen in FIGS. 4 and 15, the first surfaces 64 and 66 of the wedges 42 and 44, respectively, are merely flat and are arranged to snugly abut the flat outer side (not shown) of the mold box 36. For purposes to be described in greater detail hereinafter, the wedges 42 and 44 have secured to their lower edges by means of screws 80 or the like, wedge plates 82. Additionally, shims 84 may be interposed between the wedge plates 82 and the wedges 42 and 44.

Turning now to FIG. 5, the aperture 46 in the ring 48 together with the second surfaces 52, 54, 56 and 58 of the wedges 38, 40, 42 and 44, respectively, will be described in greater detail. The aperture 46 is generally conical in form and is centrally located within the retaining ring 48. It is defined by four intersecting surfaces 92, 94, 96 and 98, each of the surfaces being a portion of the surface of a corresponding one of four cylinders having non-parallel longitudinal axes. In the exemplary embodiment of the invention, the partial cylindrical surfaces 92 and 94 have identical diameters as do the partial cylindrical surfaces 96 and 98 although the diameter of the surfaces 92 and 94 need not necessarily equal the diameter of the surfaces 96 and 98.

The second surfaces 52 and 54 of the wedges 38 and 40 are located generally oppositely of the first surfaces 60 and 62 of the corresponding wedge and are also defined by a portion of the surface of a cylinder. The diameter of the partial cylindrical surfaces 52 and 54 is equal to the diameter of the surfaces 92 and 94. Similarly, the second surfaces 56 and 58 of the wedges 42 and 44 are located generally oppositely of the first surfaces 64 and 66, are portions of a cylindrical surface and have the same diameters as the surfaces 96 and 98. Thus, the surfaces 52 and 54 will mate with the surfaces 92 and 94 and the surfaces 56 and 58 will mate with the surfaces 96 and 98.

In order to provide a wedging action for purposes to be seen hereinafter, it is necessary that the axis of each cylinder defining one of the above mentioned partial cylindrical surfaces be nonparallel to the direction in which the plungers 14 and 22 (FIG. 1) act. In other words, any straight line drawn along one of the partial cylindrical surfaces must intersect a line running generally transverse to the plane of the retaining ring 48 thereby insuring that an angular relationship exists so as to provide a wedging action.

One method by which the partial cylindrical surface defining the aperture 46 may be formed in accordance with the just stated relationship is illustrated in FIGS. 6–13, inclusive. Initially, the retaining ring 48 may be formed with a central cylindrical aperture 100 that has its longitudinal axis running generally transverse to the plane defined by

the ring 48. Additionally, the central aperture 100 must be of a smaller dimension than the dimension of the desired finished aperture 46. The longitudinal axis of the cylinder defining the aperture 100 may be considered to be coextensive with the center line of the ring 48 and such an axis bears this notation in FIGS. 6-9.

By conventional milling techniques, a first bore is milled within the ring 48. The diameter of the bore is indicated as D and the center line of the bore intersects the center line of the ring at the point of intersection x of the center line of the ring with a plane U defined by the upper surface of the ring 48 at an angle designated θ . As inferred previously, in order to insure a wedging action the value of θ must be greater than 0° . The point of intersection of the center line of the bore with a plane L defined by the lower side of the retaining ring 48 is designated y .

As a result of the first milling operation, the partial cylindrical surface 92 will be formed as seen in FIG. 10. In order to form a partial cylindrical surface 94, the technique is repeated except that the center line of the bore is rotated about the point of intersection x with the center line of the ring within a single vertical plane M to an angle of $-\theta$. The point of intersection of the center line of the second bore with the plane L is designated z . The resulting configuration is illustrated in FIGS. 7 and 11.

In order to form the partial cylindrical surface 96, a third bore is milled in the ring 48 that has a diameter d which is less than the diameter D , and because of this factor, it is necessary to provide an offset from the center line of the ring 48. The length of the offset is designated S and the direction in which the offset is measured is transverse to the plane M as indicated in FIG. 12. The center line of the third bore is made to intersect at the angle θ a line that is parallel to and spaced the distance S from the center line of the ring 48 in a vertical plane N that is transverse to the plane M and intersects the latter along the center line of the ring 48 in the plane U at the point designated a . The point of intersection of the center line of the third bore with the plane L is designated b . The configuration of the structure after the third bore is milled is illustrated in FIG. 12.

The surface 98 is formed similarly to the surface 96 except that the offset is measured oppositely of the center line of the ring within the plane N and the angle θ is negative. The point of intersection of the center line of the fourth bore, the line defining the offset and the plane U is designated c while the point of intersection of the center line of the fourth bore with the plane L is designated e . After the fourth bore is milled, the structure will appear generally as indicated in FIG. 13.

The angle θ is chosen such that the value of the tangent thereof is just less than the coefficient of friction between the wedges 38, 40, 42 and 44 and the retaining ring 48. When the angle is chosen according to the just stated relation, the parts will tightly wedge together during assembly and will not slip during operation of the press. Yet, when it becomes necessary to disassemble the assembly to change the mold box, excessive force is not required to remove the wedges from their position between the retaining ring 48 and the mold box 36.

The diameters D and d of the cylindrical bores that define the aperture 46 are chosen on the basis of the shape of the mold box 36. Thus, where the mold box is generally rectangular in shape as in the exemplary embodiment, the diameter d will be smaller than the diameter D . However, if the mold box 36 were to be square in shape, the diameter d would be substantially equal to the diameter D .

This is due to the fact that compressive forces exerted by the mold box 36 on the wedges together with the compressive forces set up within the wedges themselves tend to cam the wedges out of the aperture 48. When the tangent of the angle θ is equal to the coefficient of friction, the camming forces will equal the force resisting movement of the wedges within the aperture 46, which force is

the force of friction. Of course, such equilibrium between the forces would result in slipping of the parts during press operation and therefore, it is necessary that the frictional force be greater than the oppositely acting camming forces so that the wedges will not slip within the ring 48. The angle could be chosen so that the frictional force greatly exceeds the camming forces but in such a case, an extreme amount of force would be necessary to remove the wedges from the ring during the changing of the mold box 36.

By causing the frictional force to just slightly exceed the camming forces, the optimum situation is attained wherein the parts will not slip during operation of the press and yet very little force is required to overcome the frictional force which is almost entirely balanced by the camming forces, and this is attained if the angle θ is such that its tangent is just slightly less than the coefficient of friction between the wedges and the retaining ring.

The four partial cylindrical surfaces 92, 94, 96 and 98 in essence define a generally conical surface that is somewhat discontinuous because of the differing diameters of the bores used to form the four partial cylindrical surfaces 92, 94, 96 and 98, each of the latter being in effect a discontinuity. Since there is a corresponding wedge for each of the four partial cylindrical surfaces defining the aperture 46, it will be appreciated that each partial cylindrical surface serves as a guide for its corresponding wedge when the device is being assembled. In other words, the discontinuities provided by the partial cylindrical surfaces 92, 94, 96 and 98 aid the orienting of the wedges during assembly.

Returning to FIGS. 2, 3 and 4, the peripheral structure associated with the mold box assembly will now be described. As best seen in FIG. 2, eye bolts 102 may be secured within certain of a plurality of vertical bores 103 that are spaced at various locations about the periphery of the retaining ring 48. A hoist may be used to lift the retaining ring 48 by means of a connection to the eye bolt 102. However, as will be seen, it is desirable that the eye bolts 102 may be removably secured to the retaining plate 48.

When the mold box assembly is located on the press, it is desirable to provide a wear plate therefor. One form of a wear plate is illustrated in FIGS. 2-4 and is generally designated 106. The wear plate 106 is generally rectangular and includes a central opening 108 that is rectangular in form and has the sides thereof corresponding in dimension approximately to the length of the wedge first surfaces 60, 62, 64 and 66. Angle brackets 106 run along opposite sides of the wear plate 106 and are secured to the latter by means of rivets 110 or the like. The angle brackets 108 serve to rigidify the wear plate 106. By means of screws 113, the wear plate 106 is secured to the wedges 38 and 40.

Because the wear plate overlies the retaining ring 48 as well as the wedges 38, 40, 42 and 44, and is mounted on the wedges 38, 40 which may have their upper surfaces above the upper surface of the ring 48, it is desirable to provide for support of the portions of wear plate 106 overlying the ring 48 to prevent deformation thereof. To this end, there is provided a pair of cavities 110 in opposite sides of the retaining plate 48. Spaced, tapped bores 112 communicate between the cavities 110 and the upper surface of the retaining plate 48. As best seen in FIG. 3, a threaded bolt 114 is disposed in each of the bores 112 to project upwardly from the upper surface of the retaining plate 48. The bolt 114 includes a head 116 and a lock nut 118.

By adjusting the position of the bolt 114 within the bore 112, the wear plate 106 may be supported at any desired level above the retaining ring 48 as the wear plate 106 will be supported by the upper end of the bolt 114.

It may be desirable to provide an extension of the wear plate 106 on two sides of the mold box assembly. One such extension is shown and is seen to comprise a plate

120 mounted on angle brackets 122 that are secured by means of bolts 124 to the retaining ring 48.

The manner in which the mold box assembly is secured to the press is best illustrated in FIGS. 2 and 4. A plurality of recesses 130 are disposed about the periphery of the retaining ring 48 at the position of each of the bores 103 described previously. Aligned with the bores 103 are corresponding tapped bores 132 within the floating mold table plate 50 as illustrated in FIG. 4. Cap screws 134 are projected through the bores 103 and are threaded into the tapped bores 132 in the floating mold table plate 50 thereby securing the retaining ring 48 to the press in the desired position.

As seen in FIGS. 3 and 4, when the retaining ring 48 is properly affixed to the floating mold table plate 50, the wedges 38, 40, 42 and 44 are all in contact with the floating mold table plate 50. In order to insure such contact, the plates 82 and shims 84 on the wedges 42 and 44 are utilized, the thickness of the shims 84 being a parameter that may be varied to insure the desired contact.

During assembly of the mold box assembly but not during the operation of the press, clamps are used. Specifically, two clamps are associated with each of the wedges 38 and 40 while a single clamp is associated with each of the wedges 42 and 44. Referring to FIGS. 2 and 3, the clamps are used in conjunction with the wedges 38 and 40, are designated 140 and are in the general shape of an inverted U having a first leg 142 arranged to contact the upper surface of the retaining ring 48 and a second leg 144 that is arranged to contact the upper surface of the associated wedge 38 or 40.

The body of the clamp 140 is also provided with a bore 146 which is adapted to receive a jack bolt 148. The jack bolt 148 is adapted to be threaded into a tapped bore 150 in the upper surface of the corresponding wedge 38 or 40.

As may be seen from the general arrangement shown in FIG. 2, two such bores 150 are provided in the upper surface of each of the wedges 38 and 40 to cooperate with two clamps 140.

The clamps associated with the wedges 42 and 44 are designated 154 and are illustrated in FIGS. 2, 3, and 4. The clamps 154 are also in the general shape of an inverted U and include a first leg 156 and a second leg 158, both of which are adapted to contact the upper surface of the retaining ring 48 on opposite ends of the associated wedge 42 or 44. The body of the clamp 154 includes a pair of bores 160 that receive jack bolts 162. A pair of aligned tapped bores 164 are located in the upper surface of the corresponding wedges 42 and 44 to receive the bolts 162. The manner in which the clamps are utilized will be described hereinafter.

A plurality of large bores 170 are formed in both the upper and lower surfaces of each of the wedges 38, 40, 42 and 44. The presence of the bores 170 significantly decreases the weight of each of the wedges and when patterned as indicated in FIGS. 2 and 3, does not materially detract from the amount of loading of which the wedges are susceptible during press operation. The weight reduction permits relatively easy manipulation of the wedges during assembly.

The manner in which the mold box assembly is assembled will now be described. Initially, the mold box 36 is supported on any suitable surface and surrounded with the wedges, 38, 40, 42 and 44 such that the projections 72 on the mold box 36 are engaged in the grooves 70 of the wedges 38 and 40. The retaining ring 48 is then lowered upon the wedges and the mold box 36 and the wedges are reoriented if required so that their partial cylindrical surfaces mate with the partial cylindrical surfaces defining the aperture 46 of the retaining ring 48.

The clamps 154 are then secured to the assemblage and the bolts 162 are used to pull the wedges 42 and 44 to their maximum upward travel. In order to insure

proper force distribution during the pressure operation, it is important that the wedges 42 and 44 are drawn upwardly equally to insure that the mold cavity 30 will be located in the center of the retaining ring 48. The clamps 140 are then applied and the wedges 38 and 40 seated within the ring 48 by alternately tightening the bolts 46 of oppositely disposed clamps.

The assembly may then be raised and the distance between the bottoms of the wedges 38 and 40 and the bottoms of the wedge plates 82 for the wedges 42 and 44 is measured. The assembly may then be lowered and the clamps 140 and 154 loosened and the wedges removed. Shims 84 having a thickness of the distance measured are then inserted between the plates 82 and the bottoms of the wedges 42 and 44.

The device may then be reassembled in the manner described previously and the clamps 140 and 154 left in place while the assembly is moved to and mounted on the floating mold table plate 150 of the press 10. The bolts 134 are then tightened, the clamps 140 and 154 are removed and the wear plates 106 and 120 secured in place. The device is then ready for use.

Referring to FIG. 1 wherein the mold box assembly is shown in conjunction with the press, it will be apparent that the upwardly acting vertical forces developed during ejection will tend to cause a tightening of the wedges within the retaining ring 48. Thus, a mold box assembly made according to the invention will tightly hold the mold box 36 in spite of vertically acting forces. Similarly, because of the generally circular nature of the retaining ring 48, the loading thereon will be substantially evenly distributed about it whereby stress concentrations will not occur to cause cracking of the ring.

It will also be observed from FIG. 2 that where deflection due to horizontally acting forces during compression of the material to be molded is likely to be the greatest, the mold box assembly has its larger dimensions and, therefore, will provide much greater resistance to deflection than do previously known devices. That is, at the center of the surfaces 60, 62, 64 and 66, in a direction extending radially outwardly from the center of the retaining ring 48, there is the greatest dimension of solid material in the form of the wedge and the ring to resist such deflection.

Finally, in spite of the great forces that a mold box assembly made according to the invention will withstand, it will be appreciated that it is susceptible to rapid changing from one type of mold cavity to another and is easily disassembled due to the desired relation between the angle of the surfaces forming the conical aperture 46 and the coefficient of friction between the ring 48 and the wedges 38, 40, 42 and 44.

Although in the exemplary embodiment the angle θ is chosen on the basis that its tangent is just less than the coefficient of friction, if desired, the angle could be chosen to have its tangent equal to the coefficient of friction. In such a case, during the assembly of the mold box, the clamps 140 and 154 would serve to support the wedge within the retaining ring and during operation of the press, the clamping force provided by the bolts 134 in securing the retaining ring to the floating mold table plate 50 would serve to keep the wedge from loosening within the aperture 46.

While the invention has been described in conjunction with high pressure presses, it will be apparent that it is susceptible to use in many environments wherein a cavity is subjected to extremely high internal pressures and wherein it is necessary to preclude deformation of the cavity due to such pressures.

Having described a specific embodiment of my invention for exemplification purposes, I do not wish to be limited to the specific details set forth, but rather, to have the invention construed broadly according to its true spirit as set forth in the following claims.

I claim:

1. A mold box assembly for use in high pressure presses

comprising: a plate having a generally conical aperture extending therethrough, the surface of said aperture including a plurality of discontinuities; a plurality of segmented wedges corresponding in number to the number of discontinuities and each having a surface formed to mate with a corresponding discontinuity whereby said discontinuities serve to aid the positioning of said wedges during assembly of said mold box assembly; and means on at least some of said wedges for supporting a mold box within said aperture.

2. A mold box assembly for use in high pressure presses comprising: a plate having a generally conical aperture extending therethrough, said aperture being defined by portions of the surfaces of a plurality of intersecting cylindrical bores, the cylindrical axes of said bores being non-parallel; a plurality of segmented wedges each having a surface formed to mate with at least a portion of the surface of said aperture; and means on at least some of said wedges for supporting a mold box within said aperture.

3. A mold box assembly comprising: a generally circular, planar plate-like member having a centrally disposed opening defining an internal surface, said internal surface being in turn defined by portions of the surfaces of four intersecting cylindrical bores, alternate ones of said bores having the same radius, the cylindrical axes of alternate ones of said bores sharing a common point of intersection with each other and a line normal to the plane of said member and passing through the center of said opening, the cylindrical axes of said bores intersecting said line at a common angle; and four plate-like wedges each corresponding to one of said bores and having a cylindrical surface of identical dimension to that of the corresponding bore, each said wedge further including a generally flat, mold box engaging surface disposed generally oppositely of its cylindrical surface.

4. A mold box assembly for use in high pressure presses that apply force to an article to be formed generally in a single direction comprising: a generally circular ring having a central aperture, the boundary of which is defined by portions of the surfaces of a plurality of intersecting bores; a plurality of wedges within said aperture; each bore having a constant radius throughout its length, alternate ones of said bores having an equal radius, said boundary forming surfaces being formed at an angle with said plurality of wedges corresponding in number to the number of bores and associated with a corresponding one of said bores and having a first surface formed to mate with the corresponding one of said boundary forming surfaces and a second surface including means for supporting a mold; the tangent of said angle being just less than the coefficient of friction between said ring and said wedges.

5. A mold box assembly for use in high pressure presses comprising: a plate having an aperture extending therethrough, said aperture having an internal surface defined by the surfaces of a plurality of intersecting cylinders, the cylindrical axes of the cylinders being nonparallel; a mold box defining a molding cavity located in said aperture; and a plurality of wedges corresponding in number to the number of cylindrical surfaces defining said aperture in-

terposed between the internal surface of said aperture and said mold box, each of said wedges having a cylindrical surface constructed to mate with one of the cylindrical surfaces defining said aperture.

6. The invention of claim 5 wherein said plurality of wedges substantially surround said mold box and are in contact with substantially all of said internal surface whereby forces developed within said molding cavity are transmitted by said wedges to said plate and are substantially equally distributed about said plate.

7. The invention of claim 6 wherein each said wedge includes two angularly related surfaces, the angle between said surfaces having a tangent whose value is just less than the coefficient of friction between one of said surfaces and a mating surface on one of said plate and said mold box.

8. The invention of claim 6 wherein said mold box is polygonal in shape and the number of said wedges correspond to the number of sides of said mold box, each said wedge including first side engaging said plate and a second side engaging said mold box, said second side of each of said wedges being in contact only with a corresponding side of said mold box.

9. The invention of claim 6 wherein each said wedge includes a plurality of bores to minimize the weight and facilitate manipulation thereof.

10. The invention of claim 6 wherein each said wedge includes means for providing an interlocking connection between one of said plate and said mold box.

11. The invention of claim 10 wherein said interlocking connection means comprises lands and grooves in a surface of the wedge.

12. The invention of claim 5 wherein said plate is generally circular, said aperture being centered therein; a plurality of recesses about the periphery of said plate, a bore extending downwardly through said plate from each recess; and means for cooperating with said recesses and said bores for mounting said assembly on a press.

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