Feb. 2, 1954 P. VAN ACKEREN ET AL 2,668,075

COKE OVEN DOOR

Filed Nov. 16, 1951

4 Sheets-Sheet 1

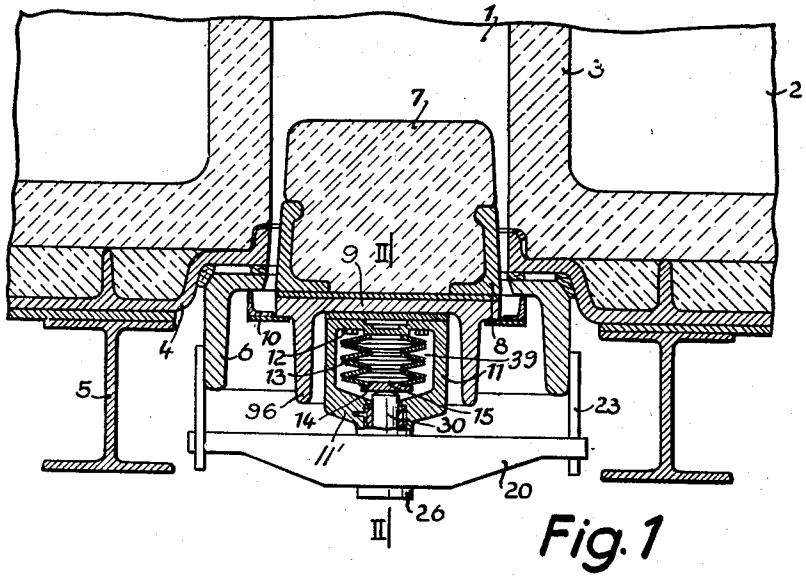


Fig. 1

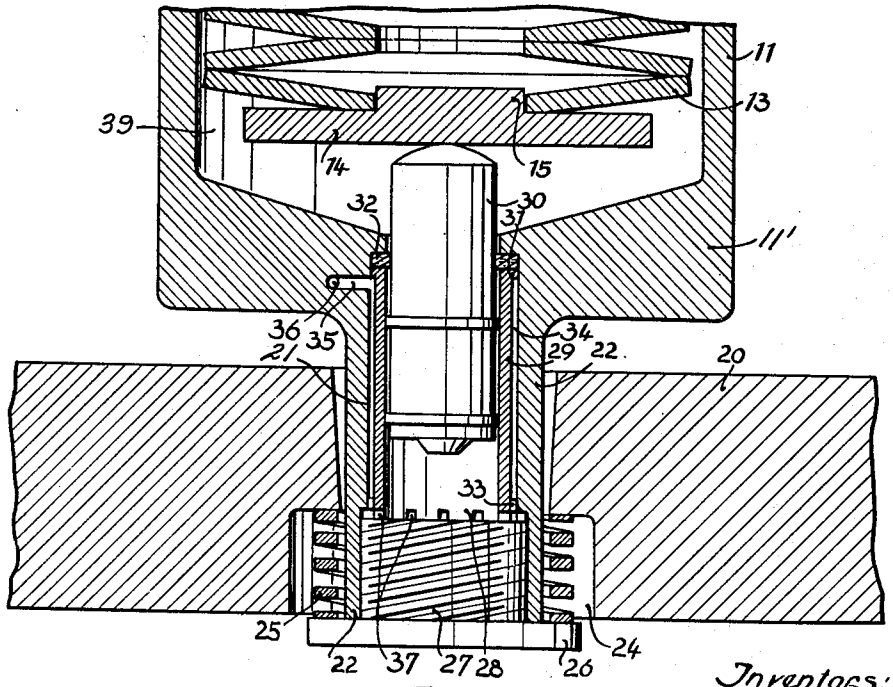


Fig. 3

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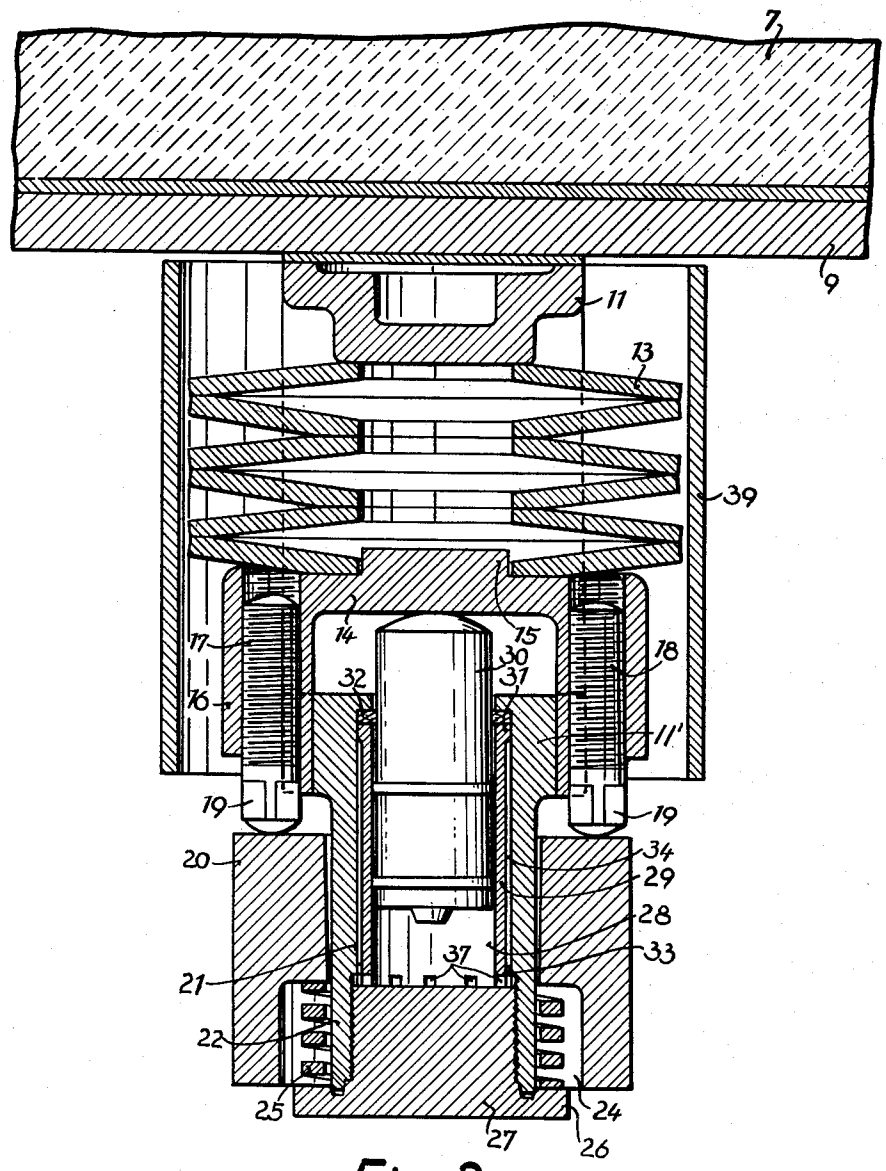


Fig. 2

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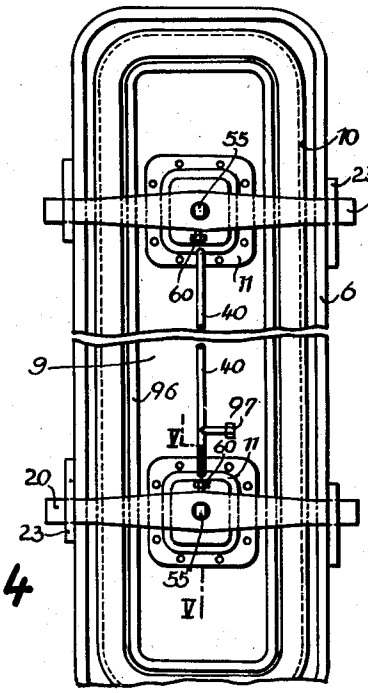


Fig.4

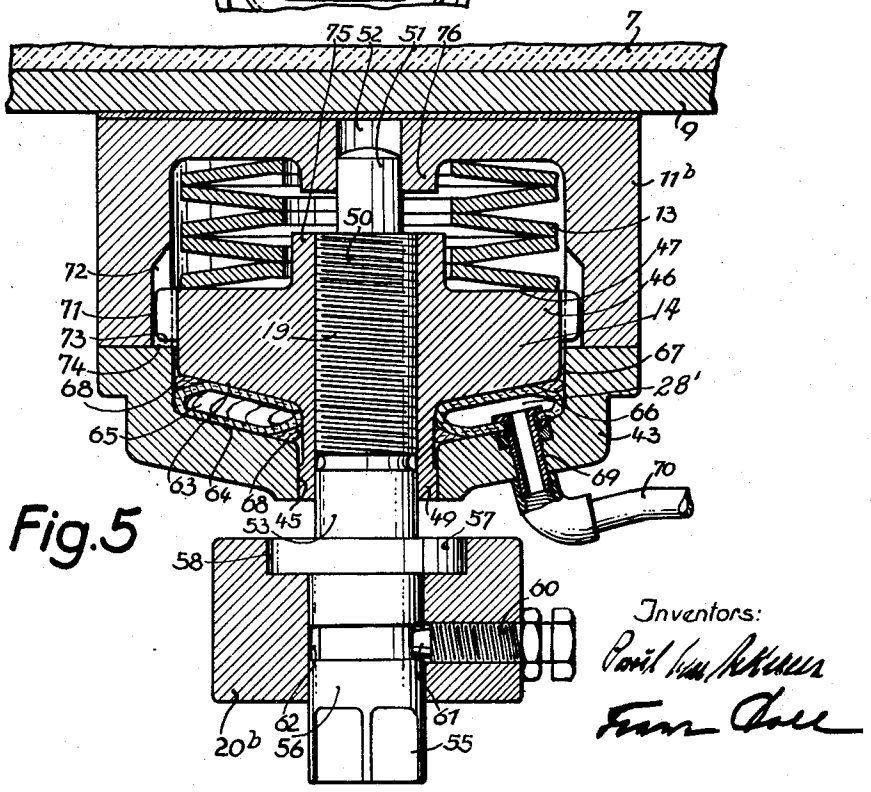


Fig.5

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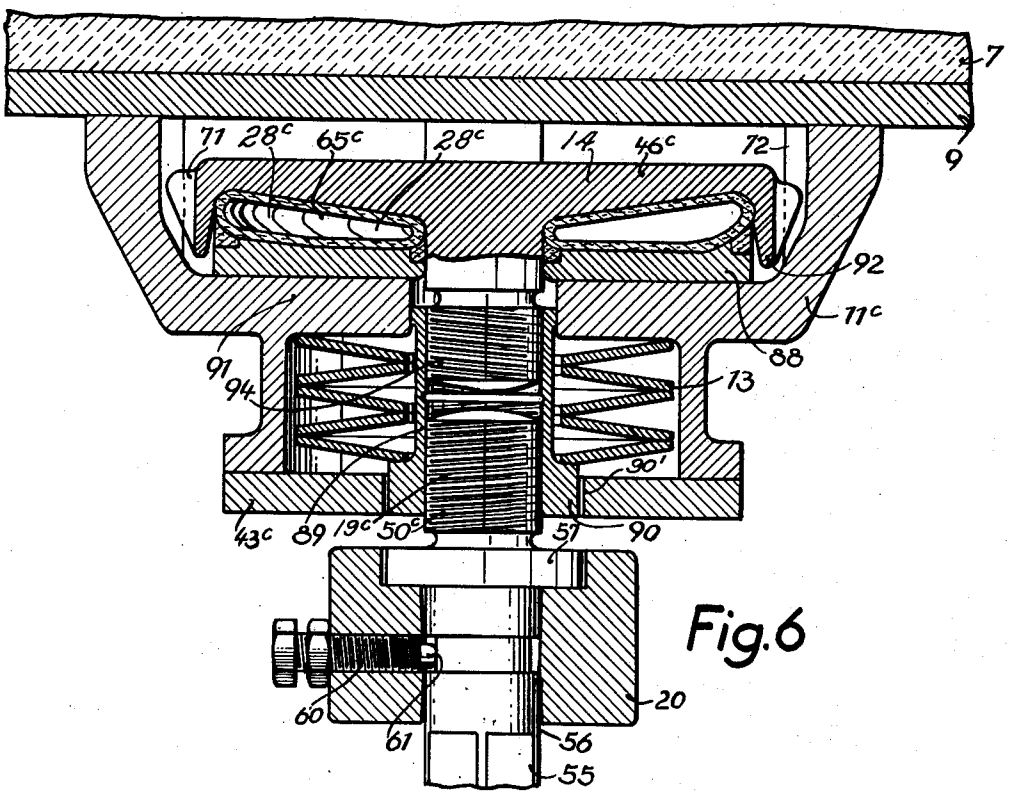


Fig.6

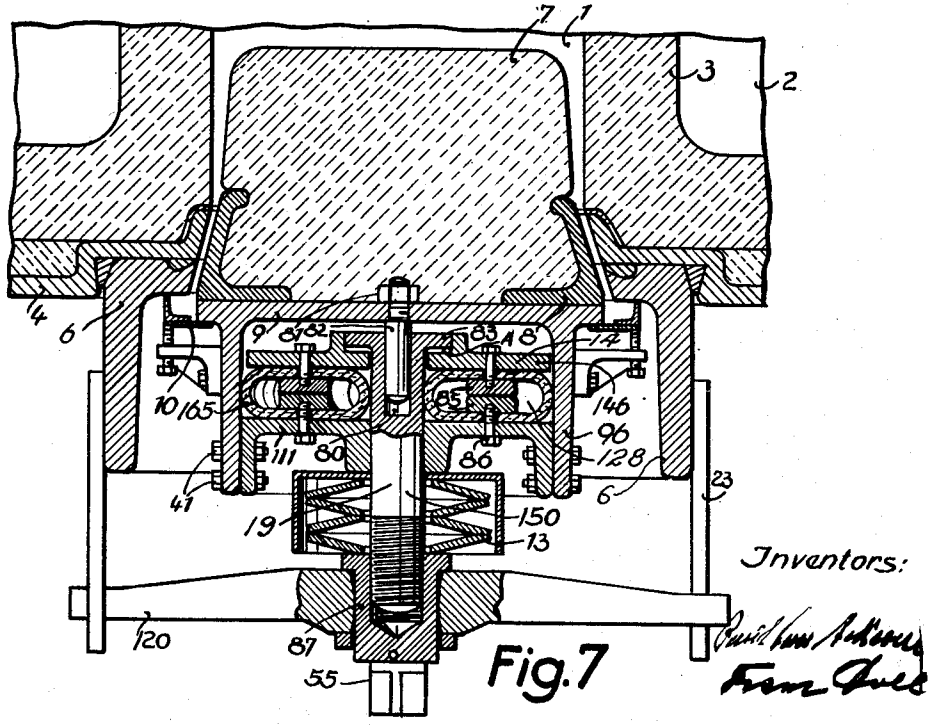


Fig.7

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UNITED STATES PATENT OFFICE

2,668,075

COKE OVEN DOOR

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Application November 16, 1951, Serial No. 257,624

20 Claims. (Cl. 292—259)

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The present invention relates to the doors of horizontal coke ovens and other ovens, and is concerned with latching means of such doors, these means being of the kind in which a latch is adapted to engage behind hooks on the oven, or on a door frame connected to this oven, and hold the door in place and in closed condition with the assistance of spring means producing a door-sealing pressure, the arrangement being such that when the door is to be withdrawn from, or mounted in position in, the oven chamber opening those spring means require to be compressed to relieve the latch of spring pressure and enable it to be pivoted away from, or into position behind, the aforesaid hooks.

It is an object of the invention to facilitate the compression of the closure spring means in question, for the purpose of relieving the latch of pressure in the horizontal direction. A further object is to attain such a result without the use of rotary pressure means.

In pursuance of these objects the present invention provides, in latching means of the kind set forth above, a pneumatically- or hydraulically-operated fluid pressure compression device disposed in the path taken by the spring means when these move to exert pressure, on release of the closure.

In one form of the invention we employ a pneumatically- or hydraulically-operated fluid pressure piston motor assembly, this preferably being mounted in an extension of a housing or frame carrying the closure spring means.

Further, in accordance with the invention, the latch is also conveniently mounted on this extension and is acted on by closure spring means, either directly or through the agency of one or more compression members.

Another feature of the invention resides in making the compression means adjustable, thereby to enable the effective pressure of the closure spring means to be regulated.

In other forms of the invention the compression of the spring means, when the door is being released or closed, is effected by means of a resilient hollow body or envelope which is adapted to be inflated by hydraulic or pneumatic fluid pressure and may be composed of rubber, artificial rubber such as "Buna" thin-walled, multi-folded metallic sheet, or the like. Such a body or envelope will advantageously be located between a fixed part of a housing or frame connected to the door and a movable compression member bearing against the closure spring means.

According to a further feature of the invention this compression member is mounted in the latching assembly in non-rotatable fashion, for example, around a latch screw. Advantageously this latch screw, which can be arranged to actuate

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the compression member, is held against rotary movement relatively to the latter, but is adapted to be axially movable in this member in the direction of compression or expansion of the spring means.

Thus, by means of an axially-adjustable, regulating nut which, in pursuance of a further feature of the invention, can be arranged on the front or outer end of the latch screw and carry the latch, and may be furnished with a pin or head for engagement by an operating tool or key, the closure pressure may be produced by rotation in the hitherto usual fashion, in the eventuality of the closure spring means becoming ineffective, for instance owing to lack of replacement when a spring or springs becomes or become ineffective.

By yet another feature of the invention the latch screw can be arranged in the compression ring so as to be non-displaceable relative to the compression ring in both axial directions.

It is also possible to screw the latch screw into the compression member, in which event the latching can be effected normally, by means of an appropriate mechanical device or, if necessary, by rotation of the latch screw.

In accordance with a further feature of the invention the latch screw is screwed into the compression ring suchwise that when the latch, which is firmly connected to the latch screw, is pivoted out of its hooks, a corresponding axial movement of the latch away from the door takes place. As a result of this mounting of the latch screw, should there be any excessive pressure against a surrounding limb or part of the door plate, the latch will be forced away from the door plate, during the pivoting thereof out of its hooks, thereby freeing the latch of counteracting frictional pressure during this pivoting movement.

In all embodiments of the invention, the fluid pressure operation of the springs, which exert the sealing pressure on the gas seals, is effected by means of a compression device comprising a fluid pressure chamber and a thrust member extending directly between the fluid pressure chamber and the spring means and movable by fluid pressure in a straight line motion, to provide both simplicity and economy of fluid pressure operation and faster closing and opening of the doors, with flexibility of sealing pressure on the seals.

In the accompanying drawings forming a part of this specification and showing for purposes of exemplification preferred apparatus and method in which the invention may be embodied and practized but without limiting the claimed invention in all its aspects to such illustration instances.

Figure 1 is a horizontal section through a coke

oven door equipped with a latching device according to an embodiment of the present invention;

Figure 2 is a vertical section, taken on the line II—II of Fig. 1, and showing a detail on an enlarged scale,

Figure 3 is an enlarged horizontal section of a part of the construction indicated in Fig. 1;

Figure 4 is a front elevation of a coke oven door in the closed condition;

Figure 5 is an enlarged partial vertical section, on the line V—V of Fig. 4;

Figure 6 is a similar partial vertical section illustrating a modification; and

Figure 7 is a further horizontal section corresponding to that of Fig. 1, but illustrating another embodiment of the invention.

Like parts have been given the same reference numerals in the different figures. Thus the coke oven chamber is designated 1, this being laterally defined by walls 3 containing heating flues 2. Hence the oven chambers 1 are arranged side-by-side with the flues 2 and alternate with these in the usual way. At the ends of the heating flues the oven battery is provided with a metallic guard or facing 4 against which the buckstays 5 bear. The door frame 6 is firmly sealed against the facing 4 around the opening of the oven chamber.

The plug 7 of the door projects into the oven chamber and is gripped in a retaining frame 8 connected to a member 9 comprising a plate with a socketed central portion and flange 96 outstanding therefrom. A sealing frame 10 is secured to the member 9, the peripheral edge of this frame 10 being offset at an angle so as to bear and seal against the sealing surface of the door frame 6 when the door is closed. Connected to the plate of the member 9 by screws 12 or the like on the upper and lower part of the door is a supporting housing 11 in which is arranged a pack of disc springs 13.

Referring now to the construction illustrated in Figs. 1 to 3 it will be observed that the outer end of the pack springs 13 bears against the pressure member 14 having a reduced portion 15 seated in a central opening in the spring pack. Furnished on opposite sides of the pressure member 14, Fig. 2, are extensions 16 which are disposed perpendicularly to the member and are tapped internally. Screwed into the threading are set screws 17, 18, the heads 19 of which are applied against the latch 20 when the door is in the closed condition. The heads 19 constitute axially movable members or means.

This latch 20 is mounted on an extension 22 of the housing 11, and this extension housing has an internal bore 21, and the ends of latch 20 engage behind hooks 23 connected to the door frame 6. The latch 20 is also provided with a central bore which, at its outer end 24, is of enlarged diameter. Arranged in the space thus provided between the latch and the outer end of housing extension 22 is a spring 25 which, at its outer end, abuts against a flange 26 on a plug 27. This latter is externally threaded so as to screw into the bore 21 of the housing extension 22, thereby to constitute an end closure for a fluid pressure chamber in the form of a piston cylinder space 28 in the housing extension. Disposed in the cylinder space 28 is a sleeve or bushing 29 in which a piston 30 is slidably mounted. The inner end of the bushing 29 is formed with a head 31 which bears against a packing 32 in the housing extension 22. The outer end of bushing 29 is furnished with a number of circumferential projections 33 which bear against the wall of the bore in extension 22 so as to form an annular chamber 34 between this wall and the outer surface of bushing 29. This annular chamber 34 communicates with a conduit 35 formed in the body of the housing 11 and connected through a corresponding screw-threaded duct to a line 36 for supplying pressure medium to the cylinder. Provided in the outer end of bushing 29 are openings 37 furnishing communication between the cylinder space 28 and the annular space 34 and conduit 35.

The closure spring assembly 13 is loaded so that the pressure transferred through the pressure member 14 and the set screws 17, 18, to the latch produces a sealing of the door by virtue of the application of the frame 10 against the sealing surface of the door frame. The set screws 17, 18, enable this closure and sealing pressure to be accurately adjusted.

When the door is to be withdrawn from the oven chamber, fluid pressure medium is forced through the conduit 35 and annular chambers 34 into the cylinder space 28, so that the piston 30 acts against the pressure member 14 and causes a slight compression of the closure springs 13. As a result the heads 19 of the set screws 17, 18, Fig. 2, also cease to exert pressure on latch 20 and the latter is moved slightly relatively to the hooks 23, Fig. 1, by spring 25, disposed in the recess 24 in the latch, Fig. 3, so that the latch 20 can easily be rocked away from the hooks 23. The door can now be removed from the oven chamber 1 in the usual way. The fluid pressure medium introduced into the annular chamber 34 acts, at the same time, against the head 31 on bushing 29, whereby the packing 32 is compressed and effectively seals the piston cylinder space 28.

In a similar way, when the door is being inserted in the oven chamber opening, a slight compression of the spring pack 13 is effected and, when the latch has been swung into co-operation with the latch hooks, the piston 30 is relieved of pressure. Pressure fluid, such as compressed air can be used, for example, as the pressure medium, and the required pressure can be obtained, for example, through a coupling 97 of the pipe 40, Fig. 4, and a flexible steel hose (not shown) from the door operating mechanism by means of a compression mounted on the latter which moves from oven 1 to oven 1 of the battery. It is, however, also possible to provide each door with a pressure generating device which is permanently connected up with the latch mechanism and which is capable of alternative manual or mechanical operation.

In the embodiment described the housing 11 is of bridge or yoke form 11', Figs. 1 to 3, so as to enable the lateral insertion thereinto of the various spring discs 13 which make up the closure spring assembly. The open sides of the housing 11 can then be closed by curved plates or sheets, such as 39, Fig. 2, which are disposed around the spring pack and are secured to the housing, e. g. by screws.

It is also possible to arrange for the piston 30 to project out of the bore 21 of the housing extension, the plug 27 then being dispensed with, so that the requisite compression of the closure spring 13 can be carried out by the door operating mechanism that moves from oven to oven, when the door is to be released or closed, using

a plunger on the door machine to exert pressure on the piston 30.

In the embodiment illustrated in Fig. 5 a closure plate 43 is connected by screws to a part, preferably cylindrical, of the body of the supporting housing 11b, thereby forming a closed hollow chamber which is open to the exterior only through an aperture 45 at the lower central part of the closure plate 43. This hollow chamber, which is preferably cylindrical, has mounted therein a compression ring in the form of a thick member 46 with an abutment surface 47 which bears against a pack of the springs 13 representing the door closure or sealing springs and mounted between this surface 47 and the inner end wall of housing 11b. The compression ring 46 is formed with a boss 49 disposed in the aforesaid aperture 45 and forming a bearing enabling the ring to slide axially in the body of the closure plate 43.

Screwed into a central bore in the compression ring 46 is an axially movable member 19 in the form of a latch screw bolt 50 with a slow thread in lieu of the form of the extensions 16 and heads 19 of Fig. 2. This latch screw 50 is provided at one end with a pin 51 which is mounted for axial displacement in an opening 52 in the housing 11b. At the other end of the thread thereon, the screw has a smooth shank portion 53 which is also axially-displaceable in the bore of compression ring 46. In addition, the screw 50 is furnished at its outer end with a shank portion 56, likewise of cylindrical form, on which the latch 20b is mounted. The shank portion 56 is formed with a flat head 55 for receiving a suitable operating key.

Provided between the inner shank portion 53 and the outer shank portion 56 is a rigid collar 57 which is mounted in a recess 58 in the latch such that the latch can be pressed against the hooks 23 connected to the door frame 6. In addition a screw 60 is arranged in the latch, and this screw has an end pin 61 engaging in an annular groove 62 in the shank of the latch bolt 50 and enabling the latch to be firmly clamped to this latch screw. Consequently, when the latch is rocked, the latch screw 50 is turned in its threaded mounting in the compression ring 46.

The compression ring 46 is positioned in the cylindrical interior of housing 11b so that the outer face 63 thereof is spaced from the opposed internal face 64 of the closure plate 43, thereby providing an annular fluid pressure chamber 28'. Mounted in this chamber is a hollow body or envelope 65 of resilient material, for example synthetic rubber of the buna type. When pressure is exerted thereon, or when it is expanded by internal fluid pressure, the hollow body 65 presses tightly against the various surfaces enclosing the same, including the rounded junctions, as at 66, between the body 65, on the one hand, and the closure plate 43 and the boss 49 portions of the compression ring, on the other hand. There are gaps 67 between the closure plate 43 and the compression ring 46, and to avoid the hollow body 65 being caught and nipped in these, packing rings 68, preferably also of synthetic rubber, of fender-like cross-section and extending around the closure plate, are placed in the appropriate corners. Pressure fluid medium is supplied to the hollow interior of the resilient envelope 65 through a conduit 69 in plate 43 and connected to an inlet pipe 70.

The compression ring 46 is provided with lateral lugs 71, preferably at two diametrically opposite positions, which engage with play in corresponding recesses 72, in the wall of housing 11b, thereby preventing rotary movement of the ring 46.

The outer end of each recess 72 is furnished by a shoulder 74 provided by the upper end of closure plate 43, and the lower end 73 of each lug 71 is so positioned relatively to the corresponding shoulder 74 that when the lug abuts against this shoulder the closure spring assembly 13 is substantially unloaded.

In addition, ring 46 has a central boss 75 projecting inwards therefrom, this boss being spaced from a corresponding annular stud 76 on the inner end wall of housing 11b an amount determining the maximum possible compression of the spring pack. The compression ring 46 and its bearing boss 49 are so constructed that, when a predetermined closure pressure is exerted, the boss 49 and closure plate 43 bind together and move outwards a distance limited by the elastic limit of plate 43. This enables the closure pressure to be easily adjusted.

The closure pressure is transmitted from springs 13, via compression ring 46 and the latch screw 50 threaded therein, to the latch 20b. When, for the purpose of enabling the door to be opened, the latch is to be relieved of pressure, pressure fluid, for example compressed air, is passed into the hollow body 65 through conduit 70. As a result, the compression ring 46 is forced against the spring pack 13 and compresses these somewhat. At the same time the latch 20b which is rigidly connected to the latch screw 50 by the screw 60, is forced back from its abutment against the latch hooks 23 as in Fig. 4, and can thus be rotated on its pivot. This latter action takes place in this way that, as a result of the correspondingly dimensioned threading of the latch screw 50 mounted in compression ring 46, a corresponding movement away from the door is produced. When the door is inserted into its opening, the resilient hollow body 65 is deflated, after the latch 20b has been swung around behind hooks 23, so as to allow the springs 13 to enforce their sealing action.

Should the closure springs 13 cease to act, the screw 60 then is unscrewed from the latch 20b so that the latch can be rotated freely on the shank portion 56 of the latch screw 50. To relieve the latch 20b of pressure the screw 50 is first turned in the compression ring 46 until the head of screw 50 abuts against stud 76 on the housing 11b. In so doing, upon further rotation of screw 50 clockwise the lugs 71 on the compression ring 46 bear against the shoulder 74 as a result of member 46 moving nonrotatively outwardly, upon arrestment of further axial inward movement of shaft 50 during its rotation in member 46 while the latter is arrested from rotating with shaft 50 by the interconnection of members 71, 72, so that the compressing ring becomes supported against the closure plate 43 of the housing 11b. During subsequent rotation in the reverse direction the latch 20 bears against its hooks 23, and produces the closure and sealing pressure again between the sealing frame of the door and the sealing surface of the door frame as in Fig. 4.

It is also possible, when there is a breakdown of the means producing the pressure of the compression ring 46 against the closure spring 13, for example, if the inflatable hollow body 65 leaks, to expand the closure springs 13 by rotating the latch screw 50 in the compression ring 46 and relieve the latch of this spring load. This again is done as above noted by screwing the screw 50 into the compression ring 46, but only sufficiently

for the lugs 71 to abut against the shoulder 74 of the closure plate 43. When this position is reached, the spring is unloaded, and the latch can be released. The compression of the spring pack takes place when the latch pin is turned in the opposite sense and compression ring 46 is thereby moved back against the springs 13.

As is also apparent from Fig. 5, when the hollow body 65 becomes ineffective, the pressure on spring pack 13 for the purpose of freeing latch 20b can be secured by a pressure device actuated by the door operating mechanism movable from oven chamber 1 to oven chamber 1 and engaging the projecting end 55 of the latch screw 50.

In a further modification of the arrangement just described, and illustrated in Fig. 6, the fluid pressure chamber 28c and its inflatable or expansible hollow body 65c is located between an intermediate, inwardly-projecting wall 91 of the housing 11c and the compression ring 45c, this wall 91 being disposed in the inner part of the housing defined between the wall 91 and the door plate 9. A ring 38 is interposed between the body 65c and the wall 91 of the housing 11c.

The compression ring 46c is connected to the axially movable member 19c in the form of a latch screw 50c through the agency of a screw-threaded stem 94 passing through a sleeve 89 having a flange 90. This flange is axially-displaceable, but as shown in not rotatable in the closure plate 43c, being keyed therein at 99', and the closure spring pack 13 is arranged between the flange 90 and wall 91 which latter may if desired, be continuous or interrupted around its periphery.

When the oven door is closed, the springs 13 exert the closure and sealing pressure in the same fashion as has been described in connection with the embodiment of Fig. 5. Again, too, the closure pressure is interrupted by the introduction of pressure fluid into the resilient hollow body 65c. When the pressure assembly ceases to act, the spring 13 can be unloaded by screwing the latch screw 50c into sleeve 89 until an annular skirt 92 on ring 46c, which acts as a stop, abuts against the wall 91. It is likewise possible, when the closure springs are cut out, to effect the latching by unscrewing the latch screw 50c from sleeve 89 until the compression ring 46c abuts against the door plate 9.

In the arrangement depicted in Fig. 7 the door plate 9 has a support secured to its forwardly projecting flange 96 by means of screws 41, which support corresponds to the housing 11 in the previous constructions, and is denoted here by the reference numeral 111, and through this housing 111 the axially movable member 19 in the form of a latch screw 150 passes. At its inner end, this screw 150 is formed with a smooth-walled longitudinal recess 80 into which projects a pin 82, also having a smooth surface, secured by a nut 81 to the door plate 9. The latch screw 150 is guided for axial movement by this pin in a corresponding bore in the housing or carrier 111. At its inner end the screw 150 passes through the compression ring 14 in the form of a plate 146 and is held against rotary movement relatively thereto, for example by means of a squared flange 83 on the inner end of this screw 150 which flange also is axially slidable in a correspondingly contoured recess in the compression ring 146.

The compression ring 146, which is also non-rotatably guided by the surrounding flange 96 on the door plate 9, or in a housing (not shown) mounted on this latter, is carried in a direction away from the door by the latch screw 150 on expansion of spring 13 for the latter, whilst, when the ring 146 moves in the opposite direction under fluid pressure in 165 the latch screw 150 is carried with it to release the latch of the pressure of spring 13.

Arranged between the support 111 and compression ring 146 is the fluid pressure chamber 128 in the form of an annular, hollow body 165 of resilient material, preferably of artificial rubber. This body can be composed of two parts which are each of half-ring appearance in cross-section. These two parts are pressed against the support 111 and the compression ring 146, respectively, by washer rings 85 and screws 86. When a pressure medium is supplied to the hollow body 165, the compression ring 146 is forced away from support 111, carrying the latch screw 150 with it toward the door thus releasing latch 120.

The outer end of the latch screw 150 is threaded and carries an adjusting nut 87. This nut has a pin 55 at its outer end whereby the nut 87 can be turned, using a key wrench. The pivotable latch 120 is disposed on the adjusting nut 87 with a certain amount of play and is arranged to engage in the usual way behind the hooks 23 connected to the door frame 6.

Disposed between the adjusting nut 87 and the supporting body 111 is the closure spring means 13 consisting of a plurality of disc springs 13 which, in the closed condition of the door (viz. that illustrated) exerts a pressure between the latch and the door through the supporting member 111 to produce the pre-set sealing pressure on the latch and door. In this position the washers 85 abut one another, as is seen in Fig. 7. The screw 150, which is relieved of pressure in the closed condition, must, however, have a certain amount of play to relieve the latch 120 of the pressure of springs 13, this being provided by the particular connection of screw 150 with the compression ring 146, and being indicated at A in the drawing.

To effect release of the door lock, pressure fluid is passed into the resilient hollow body 165 at a pressure sufficient to spread apart ring 146 and support 111 to compress the closure springs 13 by the small amount necessary to permit a rocking of the latch 120 away from hooks 23 free of pressure of springs 13.

When the action of the closure springs 13 is cut out, the adjusting nut 87 is rotated so that the flange 83 presses against the door plate 9 in the latched position of the door. As a result, the usual rotational unlatching movement of head 55 can now take place to free latch 120 from hooks 23 without opposition by the closure springs.

What we claim is:

1. In a coke oven door latching mechanism, the combination with a coke oven door and door retainer means therefor mounted exteriorly of a coke oven, of a door latch for securing the coke oven door to the retainer means which latter is mounted exteriorly of the door and which latch is movable relative to the door and to the retainer means for securing and releasing the door, a spring normally urging the latch and door from each other for effecting the securing pressure between the door and the retainer means, and a support for the spring on the exterior of the door for supporting the spring on the outside of the door in position to effect pressure movement of the latch and door from each other in opposite directions to secure them in place by the retainer means; and a fluid pressure-operated

compression device at the exterior of the door and operable on the spring means to relieve the latch of such spring pressure for release of the door from latching pressure relation with the latch and the retaining means therefor, said compression device comprising a fluid pressure chamber and a thrust member extending directly between the fluid pressure chamber and the spring means and movable by fluid pressure in said chamber in a straight line motion.

2. Apparatus as claimed in claim 1 and in which the fluid pressure operated device comprises a part movable relative to the supporting member under fluid pressure, to press the spring against a fixed part of the supporting member, and another part engageable with another fixed part of the supporting member under the pressure of the fluid pressure exerted on the movable part, to exert an opposing thrust force on the supporting member in a direction opposite to the direction the spring presses against a fixed part of the supporting member and thus neutralize the effect of the forces exerted on the supporting member and the door in relieving the latch of the closing pressure of the spring.

3. Coke oven door latch as claimed in claim 1, characterized by the fluid pressure operated device comprising a compression device in the form of a pressure piston motor assembly.

4. Coke oven door latching means as claimed in claim 3 characterized by a piston arrangement of the motor assembly accessible from outside the assembly for operation also by a pressure exerting member to compress the spring means, which member is arranged on a separate operating mechanism for the door to be latched.

5. Latching means according to claim 1 characterized in that the latch is mounted on an extension of the supporting member which member is in the form of a housing or frame for carrying said spring means on the body of the door to be latched, and the spring is adapted to act on the latch, in the closed condition of the door, through an interposed pressure-transmitting member.

6. Latching means according to claim 5 characterized in that the pressure-transmitting member is provided with set screws therein which bear directly against the latch, these set screws being adjustable in the said pressure transmitting member for varying the loading of the spring means.

7. Latching means according to claim 5 characterized in that the extension of the spring-carrying housing or frame comprises a bore or passage extending therethrough, and a part of the thrust member of the fluid pressure operated device for compressing the spring means to relieve the latch of pressure, when the door is released or engaged in latching position, is arranged to move through this bore or passageway.

8. Latching means according to claim 1, characterized in that the fluid pressure operated compression device comprises a resilient hollow body of thin material.

9. Latching means according to claim 8, characterized in that the hollow body is arranged between a fixed part of a housing or frame connected to the door and a movable compression member bearing against the spring means.

10. Latching means according to claim 9, characterized in that the said hollow body is composed of thin material and is secured, with the aid of annular spacers, to the movable compression member and to part of the housing or frame carrying the latch.

11. Latching means according to claim 9, characterized in that the movable compression member is mounted for axial movement with an axially movable shaft which carries the latch, and that means are provided for securing the compression member against rotary movement.

12. Latching means according to claim 11, characterized in that the axially movable non-rotatable compression member is provided with lateral lugs engaging in longitudinal recesses in said housing or frame.

13. Latching means according to claim 12, characterized in that said lugs are arranged a distance from a fixed stop surface in the latch-carrying housing or frame corresponding to the distance of travel of the spring means required to unload the same.

14. Latching means according to claim 11, characterized in that a latch carrying shaft is mounted in the non-rotatable compression member so as to be axially displaceable therewith.

15. Latching means according to claim 14, characterized in that the latch is carried by a nut threaded on the latch carrying shaft for axial adjustment therealong, this nut having a head or pin projecting outwards therefrom for engagement by an operating tool or key.

16. Latching means according to claim 11, characterized in that part of the latch carrying shaft has a screw threaded connection with the non-rotatable compression member.

17. Latching means according to claim 16, characterized in that the latch is rigidly connected to the latch carrying shaft and in that the threading of the part of the latch shaft to the compression members is such that when the latch, rigidly connected to the latch carrying shaft, is rocked out of the retainer means, the latch undergoes a corresponding axial movement away from the door.

18. Latching means according to claim 16, characterized in that the latch carrying shaft is guided in supported manner on opposite sides of the threaded portion thereof which connects it with the compression member.

19. Latching means according to claim 16, characterized in that the movable compression member is provided with a projection portion which is disposed at a distance from an abutment surface on a fixed part of the housing or frame, determining the maximum degree of compression of the spring means when the door is freed under fluid pressure, this said fixed part being arranged to form a counterbearing for latching by an unscrewing operation of the screw threaded part of the latch carrying shaft, without the action of the spring pressure.

20. Latching means according to claim 1, characterized in that the fluid pressure operated compression device is adapted to be connected to a compressed fluid generator on a door operating mechanism, apart from the supporting member and the door, by means of a coupling hose or the like.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
722,258	Sines	Mar. 10, 1903
922,083	Campbell	May 18, 1909
984,858	Gilroy	Feb. 8, 1910
1,050,558	McGill	Jan. 14, 1913
2,234,575	Otto et al.	Mar. 11, 1941