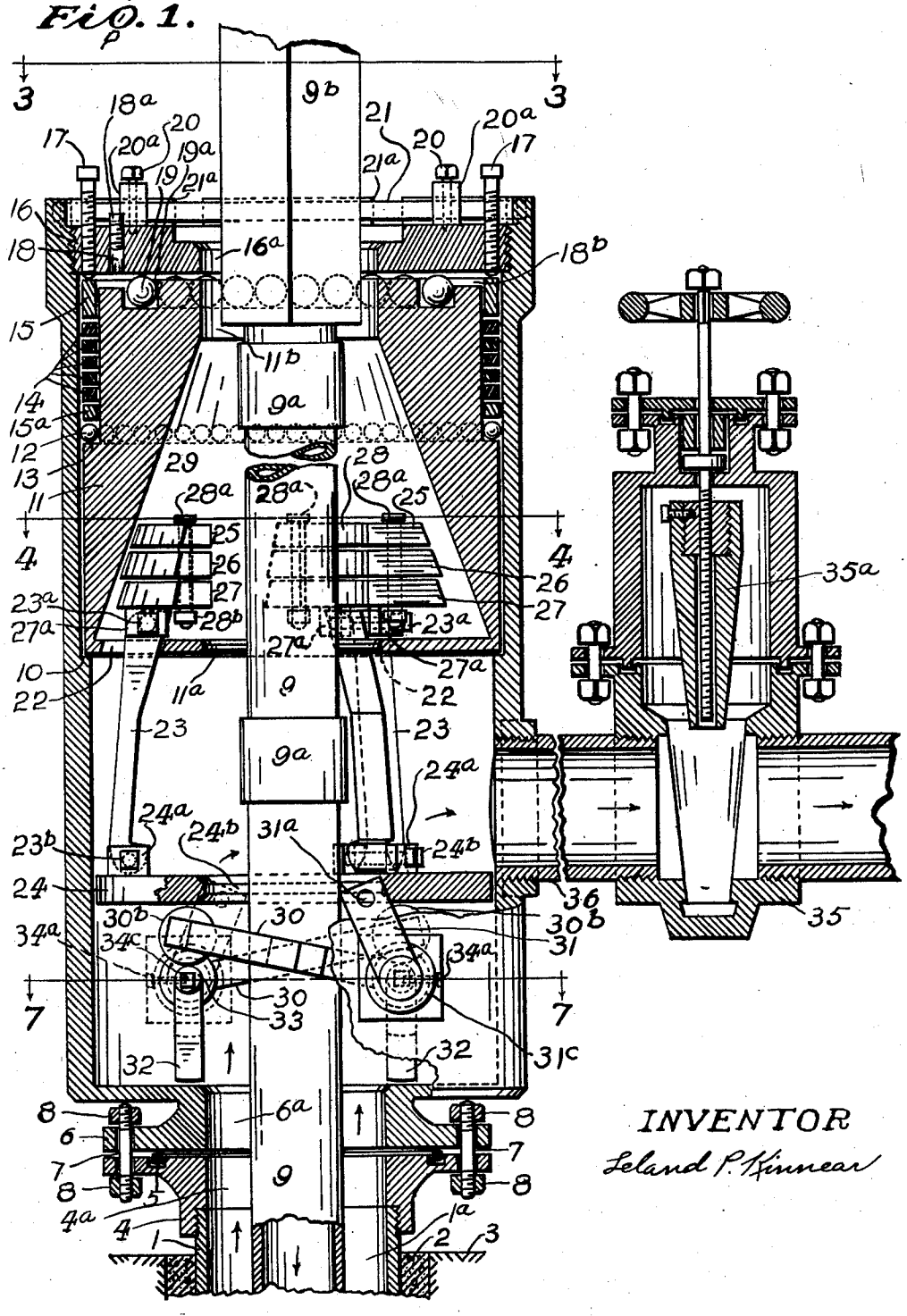
Nov. 12, 1935. L. P. KINNEAR 2,021,104

BLOW-OUT PREVENTER

Filed Aug. 26, 1933 5 Sheets-Sheet 1

Fig. 1.



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BLOW-OUT PREVENTER

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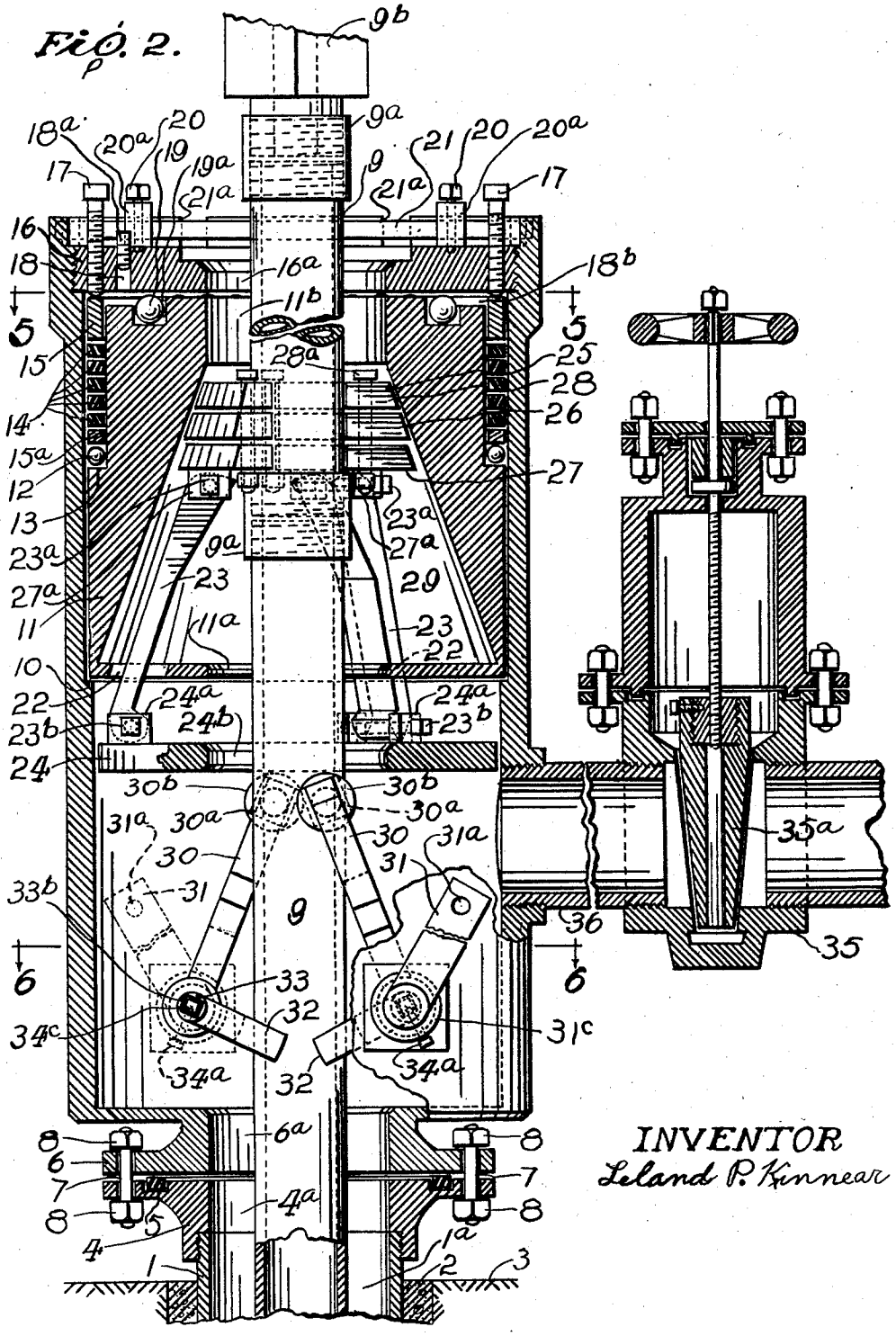
Fig. 2.



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BLOW-OUT PREVENTER

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Fig. 3.

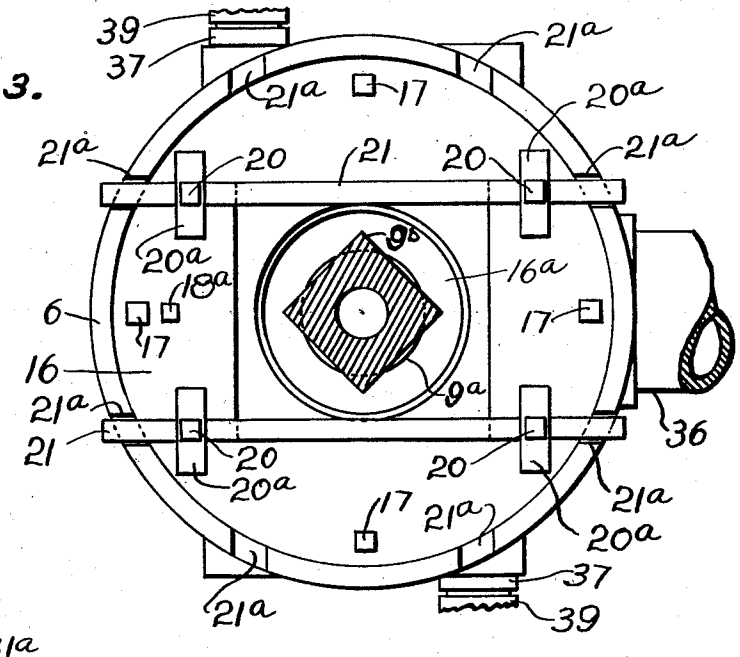
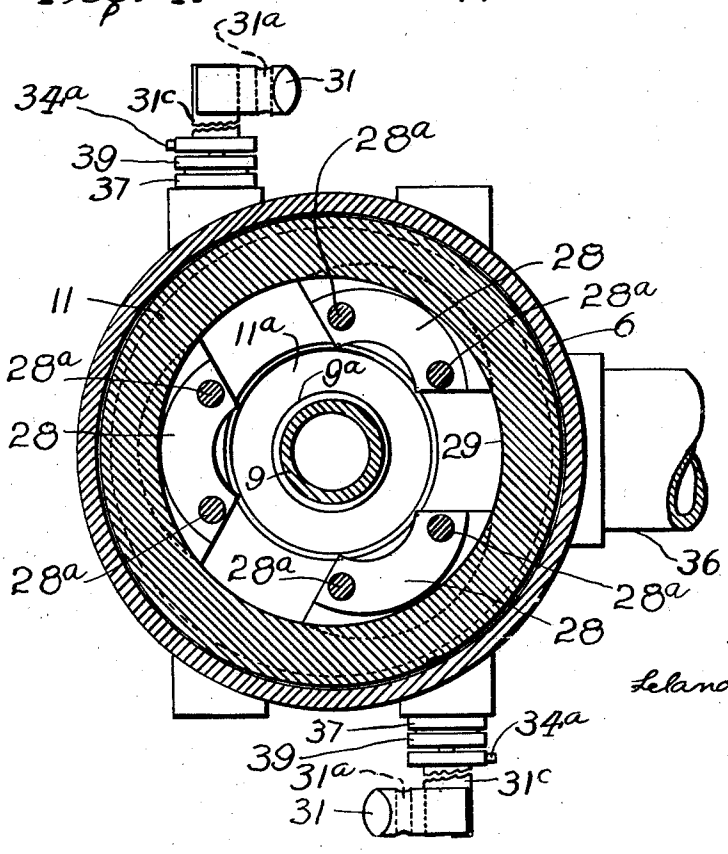


Fig. 4.



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BLOW-OUT PREVENTER

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Fig. 5.

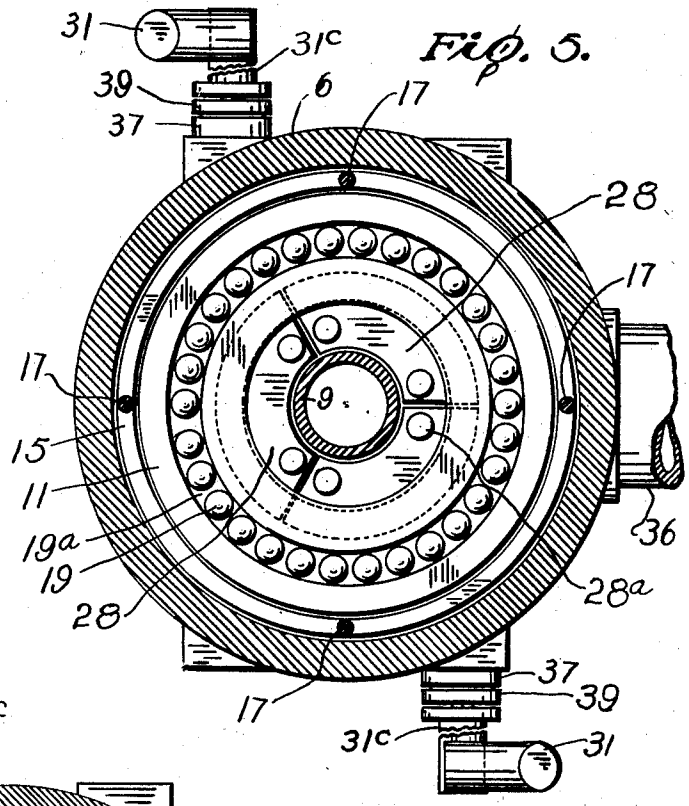

Fig. 6.

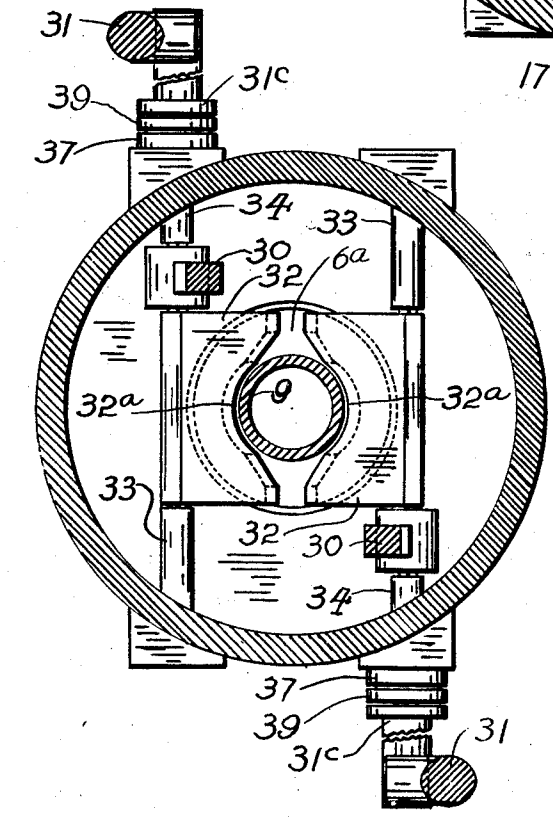

Fig. 9.

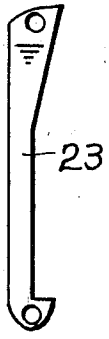

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Fig. 8.

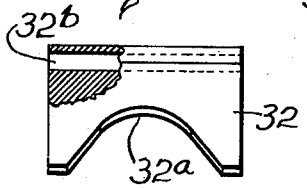


Fig. 7.

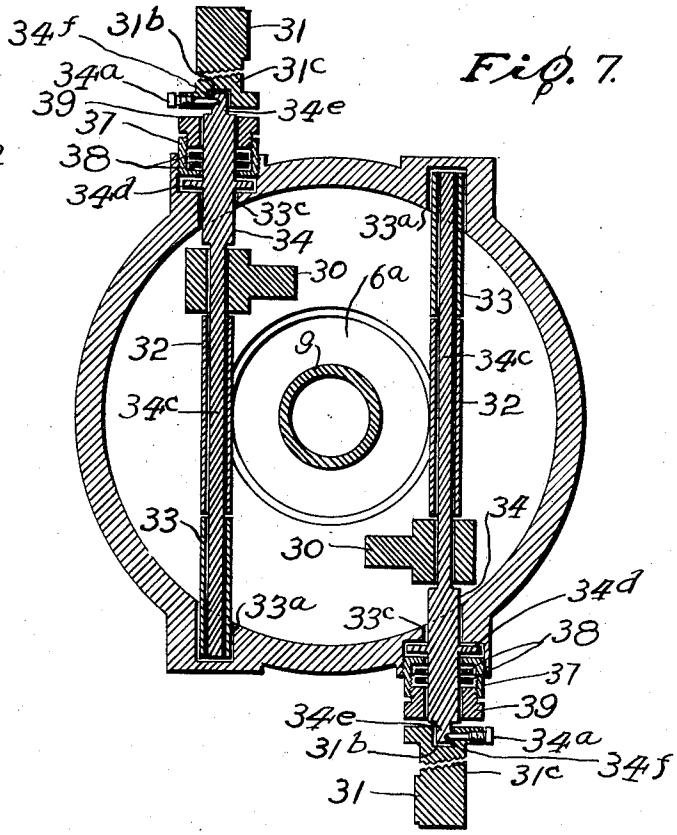


Fig. 10.

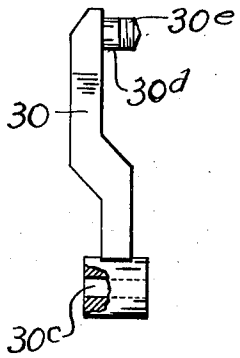
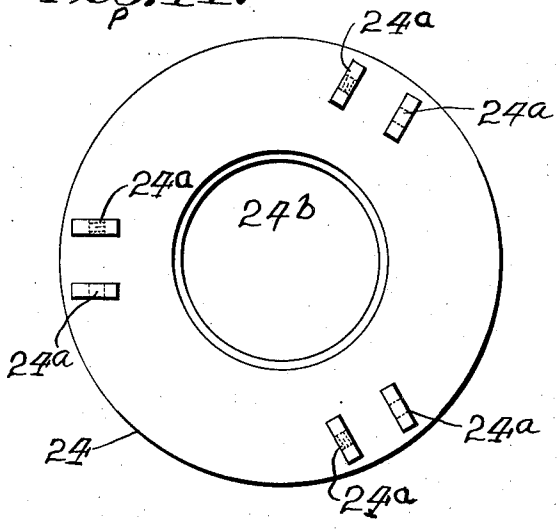


Fig. 11.



INVENTOR

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Patented Nov. 12, 1935

2,021,104

UNITED STATES PATENT OFFICE

2,021,104

BLOW-OUT PREVENTER

Leland P. Kinnear, Beaumont, Tex.

Application August 26, 1933, Serial No. 686,919

20 Claims. (Cl. 255—1)

This invention relates to new and useful improvements in a blow-out preventer for capping-off gas pressures encountered during the course of drilling wells by the rotary system, particularly, oil and gas wells.

An object of the invention is to provide a blow-out preventer apparatus to be attached to a well casing wherein the well casing may be used as a support therefor and drill bits attached to drill tube sections may be passed therethru and rotated in drilling a well.

Another object of the invention is to provide a blow-out preventer apparatus of the above type whereby members arranged therein may be employed to form a seal about a drill tube section and hermetically seal-off high pressures within a well hole and control the same with valves attached to said apparatus to regulate the return fluid flow directed thru said drill tube sections and drill bits under pressure in combating a gas pressure encountered by the drill bit in the well hole.

A further object of the invention is to provide a blow-out preventer apparatus of the above type whereby members within said apparatus are arranged to grip a drill tube section therein and form a seal thereabout and rotate therewith, while fluid under pressure may be directed thru said drill tube sections and drill bits attached thereto the well hole being completely sealed-off and means to regulate the return flow of said fluid under pressure used in combating volatile gas pressures encountered by the drill bit in the well hole.

These and other objects will in part be obvious and will in part be more fully disclosed in the drawings, which show by way of illustration one embodiment of the invention, in which—

Fig. 1 is a vertical side view partly sectional of the blow-out preventer apparatus attached to the well casing, showing the drill tube sections in drilling position thru said blow-out preventer apparatus and well casing with the wedge block sealing members in an inoperative position and the discharge line and valve open showing the course of the drilling fluid under pressure directed thru the drill tube sections and the return fluid flow about the exterior thereof and within the well hole passing upwardly to the earth's surface to outlet thru discharge line and valve connection;

Fig. 2 is a similar view to Fig. 1, showing the wedge block sealing members in operative position about a drill tube section with valve in discharge line closed completely sealing-off the well hole;

Fig. 3 is a section taken on the line 3—3 of Fig. 1;

Fig. 4 is a section taken on the line 4—4 of Fig. 1;

Fig. 5 is a section taken on the line 5—5 of Fig. 2;

Fig. 6 is a section taken on the line 6—6 of Fig. 2;

Fig. 7 is a section taken on the line 7—7 of Fig. 1;

Fig. 8 is a detail view of equalizer;

Fig. 9 is a vertical side view of a guide arm;

Fig. 10 is a detail view of an actuating arm;

Fig. 11 is a top view of washer showing bifurcated extensions for guide arm connections.

The invention is directed to a blow-out preventer apparatus to be used as a safety device in connection with drilling wells, particularly oil and gas wells. The structure includes a shell which is attached to a well casing member cemented in the earth, to be known hereinafter as the well casing, however, it is understood that said shell may be attached to any casing member which forms a support therefor and usually protrudes above the earth's surface, said shell containing a revolvable body seated therein with a central vertical opening therethru, said opening in alignment with the opening in a casing member to permit drill tube sections and drill bits to pass therethru into the well hole. The revolvable body carries tapered wedge block members which move longitudinally and laterally along the inner surfaces of a conical section of said opening in said revolvable body and seat therein to form a seal about a drill tube section present within said revolvable body. Each wedge block has flexible packing members, preferably rubber, whose inner faces conform to the outer periphery of a drill tube section and whose outer tapered faces conform to the inner periphery of the conical shaped section of the opening in said revolvable body. By applying pressure to said wedge block members by means of levers and actuating arms together with an upward lift on the drill tube sections a seal may be formed about said drill tube section and the wedge block members hermetically seal said opening in the revolvable body. A well known back-pressure valve may be used within the drill tube sections to allow fluid under pressure to pass downwardly therethru, but will resist any upward pressure so that when the wedge block members are moved to form a seal exteriorly of

the drill tube section the well hole may be completely sealed-off by closing a valve provided in a discharge line in the shell attached to the well casing. Guide arms are connected to said wedge blocks by pins which allow the guide arms to pivot and work upwardly and laterally thru slots in the bottom of said revolvable body, said guide arms being connected at the lower end to an annular washer by pins to allow the guide arms to pivot thereon. The annular washer rests on rollers attached to actuating arms, said actuating arms and rollers positively force said annular washer, guide arms and wedge blocks upwardly in response to turning of shaftings attached to said actuating arms, said shaft assembly being operated by upright levers. The shafts to which said actuating arms are connected are disposed thru packing glands and journal boxes horizontally in the sides of the shell and protrude outwardly in opposite directions and provided with suitable upright lever arms for applying hand pressure or mechanical force to actuate the same. The lever arms also work equalizers, centrally positioned within said shell, simultaneously with the working of the actuating arms so that the drill tube sections will be centrally positioned within said shell during the ascension of the wedge blocks to insure the free movement of the same to their sealed position around said drill tube section. The revolvable body is seated on an annular shoulder within the shell and is provided with roller bearings at its top which work against a cap attached to the top of said shell. The revolvable body is also provided with roller bearings, annular metal packing rings above said roller bearings, a series of annular rings of packing above said annular metal packing ring all of which are positioned on the outer surface of said revolvable body and seated on an annular shoulder thereof and which may be adjusted by stud bolts so positioned in the cap above another annular steel ring above said rings of packing so as to adjust the packing to prevent the escape of fluid or gas pressures between said revolvable body and said shell. The top and bottom sections of the wedge blocks are steel while the center sections thereof are flexible packing members, preferably rubber. The sections are bolted together with tie bolts so as to allow the bottom steel section of each wedge block to move slidably upward so that when said top and center sections of each wedge block reach their limit in their upward ascension in surrounding a drill tube section, the bottom steel section of each wedge block may move upward against the center rubber section of each wedge block by pressure applied below by the actuating arms, washer and guide arms and if necessary by the aid of a shoulder on a coupling of the drill tube section by an upward lift on the drill tube sections, thus said center rubber sections are positively expanded to form a seal surrounding said drill tube section and to seal said opening in said revolvable body. The drill tube sections and drill bit attached thereto may be rotated by a turn-table in the well known manner of the rotary system of drilling and thus impart rotation to the revolvable body, wedge blocks, guide arms and annular washer all as one unit with the wedge blocks gripping said drill tube section about a common axis and remaining constant thereabout and sealing said opening in the revolvable body. The drill tube sections are rotated to prevent the drill tube sections and bit from becoming fast in the earth from crumbling and heaving formations disrupted by gas pressures encountered. Upon closing the valve in the discharge line connected to said shell the well hole may be completely sealed-off, or if it is desired to circulate fluid under pressure to mud-off the walls of the well hole to combat the gas pressure, the valve may be used to regulate the return flow of the fluid to the earth's surface and discharge thru the outlet provided therefor. To continue drilling after having mudded-off the wall in the gas area by fluid under pressure directed thru the drill tube sections and drill bits the valve may be completely opened and the drill tube sections lowered which will force the wedge blocks downwardly to an unsealed position, thus the drill tube sections and drill bits may be fed forward without obstruction from the blow-out preventer apparatus until further needed.

It is thought that the invention will be better understood by a detail description of the present embodiment thereof.

Fig. 1 shows the blow-out preventer apparatus attached by its lower end to a well casing member 1, that is cemented in the earth. The cement 2, is provided to form a support for the well casing members. The earth's surface is indicated at 3. The casing 1, is provided with an opening 1*a*, substantially larger than the drill tube section and the drill bits to be inserted therethru. A flange section 4, is provided to be attached to the well casing member with central opening 4*a*, consistent with opening 1*a*, in the casing member and the central opening 6*a* of the lower end of the shell 6, packing 5 being inserted between flange members and bolts 7 and nuts 8 are used to secure said flange members together. Tube sections 9, couplings 9*a* and Kelley joint 9*b* comprise a drill stem to which drill bits are attached, said drill stem and drill bits being rotated and fed forward by the well known rotary system of drilling. A revolvable body 11 seats on an annular shoulder 10 in the shell 6 and is retained therein by cap 16 which is screwed to the top of said shell. The bottom of revolvable body 11 has a central vertical opening 11*a* provided for the free passage of drill tube sections and drill bits therethru. The cap 16 has an opening consistent with the central vertical opening 11*b* in said revolvable body 11 and said opening 6*a* in the bottom of shell 6 and the opening 1*a* in the casing member. Ball bearings 19 are seated in annular race 19*a* in top of revolvable body 11 and race against the bottom of cap 16. The annular rubber packing rings 14 around revolvable body 11 are used to pack-off fluids or pressures between the revolvable body and the inner face of shell 6, said rubber packing rings 14 being adjustable by an annular metal packing ring 15 with the adjustment stud bolts 17, provided to contact said metal packing ring 15 which tightens the rubber packing rings between another metal ring 15*a* therebelow. Ball bearings 12 are mounted below the metal packing ring 15*a* and race on the shoulder 13 of revolvable body 11.

Cap 16 is provided with an oil course 18 thru which to lubricate the ball bearings 19, said oil course having a plug 18*a*. Bars 21—21 are passed thru holes in lugs 20*a*—20*a*, located at the top of cap 16, said bars also pass thru holes 21*a*—21*a* in the top of the rim of shell 6 to prevent cap 16 from unscrewing. Pins 20—20 are inserted in lugs 20*a*—20*a* and into bars 21—21 to positively hold said bars to said cap.

Guide arms 23, (three in number) are connected between bifurcated extensions 27*a* to each bottom steel section 27 of wedge blocks 28 (three

in number) by pins 23a and connected by their lower ends to washer 24 between bifurcated extensions 24a by pins 23b, said connections to said wedge blocks and washer forming joints to allow the guide arms 23 to move longitudinally and laterally in passing thru slots 22 in bottom of revolvable body 11 while wedge blocks are moving to their sealed and unsealed positions. Central opening 24b in washer 24 is provided to allow drill bits and drill tube sections to pass therethru, also the return fluid flow that carries the cuttings to the outlet in discharge line 36 and thru valve 35 and valve gate 35a, as indicated by arrows showing course of fluid in Fig. 1.

Wedge blocks 28, (three in number) are composed of top steel sections 25, center rubber sections 26 and bottom steel sections 27, said sections being slidably mounted on tie bolts 28a secured by nuts 28b to hold said sections of each wedge block member together. The conical shaped opening 29 in revolvable body 11 is so constructed to limit the upward movement of the wedge block members and is a seat for said wedge block members in forming a seal about a drill tube section.

Actuating arms 30—30 carry rollers 30b—30b on bearings 30d—30d and said rollers are held by nuts 30a—30a. The actuating arms and rollers are substantially in horizontal position and rest on sleeves 33—33 when the wedge block members are in retarded unsealed position as shown in Fig. 1, with washer 24 resting on rollers 30b—30b. The washer 24 is raised by actuating arms 30—30 to substantially vertical position in raising said wedge block members 28 in sealed position around a drill tube section as shown in Fig. 2, and upon rotation of the drill tube sections, the wedge block members, revolvable body, guide arms and washer rotate as one unit, said washer may impart rotation to the rollers 30b—30b and race on top of said roller while being rotated. Pressure may be applied to said actuating arms and rollers by shafts 34—34 joined by shafts 31c—31c when turned by lever arms 31—31 to hold said wedge block members in positive sealed position with said revolvable body and a drill tube section.

The equalizers 32—32 are centrally positioned on squared sections 34c—34c of shafts 34—34 within the shell 6, said equalizers provided with concave faces 32a—32a to contact a drill tube section and force the drill tube sections in central position within said shell by means of turning the shafts 31c—31c and 34—34 by lever arms 31—31. The equalizers move inwardly and upwardly simultaneously with the wedge block members and are actuated by the same shafts and levers thereby enabling the wedge block members to move freely to their sealed position as the equalizers have centrally positioned the drill tube sections in advance to the wedge block members having reached their sealed position.

The shafts 34—34 have reduced squared sections 34c—34c passing thru squared sockets 30c—30c of actuating arms 30—30 and thru squared sockets 32b—32b of equalizers and thru squared sockets 33b—33b of sleeves 33—33, said squared portions of said shafts 34—34 control the squared socketed members above-named and impart positive movement to said socketed members when said shafts 34—34 joined by shafts 31c—31c are turned by upright lever arms 31—31. Squared sockets 31b—31b of shafts 31c—31c are adapted to receive squared sections 34e—34e of shafts 34—34, said sockets being coupled by pins 34a—34a thru shafts 34c—34c and into countersunk holes 34f—34f of squared sections 34e—34e of shafts 34—34 as shown in Fig. 7. Thrusts 34d—34d of shafts 34—34 are held in shell 6 by bushings 37—37 which are screwed into said shell, said bushings being provided with packing glands to receive rubber packing rings 38—38 around said shafts 34—34, said packing being held in said glands by bushings 39—39 which are screwed into bushings 37—37. The sleeves 33—33 rest in journal boxes 33a—33a to form a support for shafts 34—34 in shell 6, as shown in Fig. 7.

It will be apparent from the above description that a very simple means has been provided whereby levers and mechanisms may be utilized for actuating the wedge block members within a revolvable body and to use said wedge block members to form a seal about a drill tube section and seal-off a well hole to resist high pressures which are often encountered in the drilling of a well. A safety device such as provided herein with positive locking means to grip a drill tube section and form a seal thereabout and being capable of being rotated therewith in said locked sealed position is of extreme importance in preventing the drill tube sections from becoming fast in the earth as a result of the heaving formations breaking down the walls of the well hole from gas blow-outs and also to prevent the drill tube sections from being blown from the well.

It is obvious that many changes in the details of construction and arrangement of the parts may be made without departing from the spirit of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. A blowout preventer apparatus comprising a shell to be attached to a well casing, a revolvable body seated in said shell, a race in said revolvable body, ball bearings provided for said race, a cap attached to said shell to positively hold said revolvable body within said shell, oil courses in said cap to lubricate said ball bearings, said revolvable body having annular packing rings on the outer periphery thereof mounted on an annular steel ring, said steel ring mounted on ball bearings, said ball bearings being mounted on an outer shoulder of said revolvable body, another steel ring above said annular packing rings, stud bolts for adjusting said packing rings, said shell, cap, revolvable body and well casing having openings for the free passage of drill bits and drill tube sections therethru.

2. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body seated in said shell, a race in said revolvable body, ball bearings provided for said race, a cap attached to said shell to positively hold said revolvable body within said shell, oil courses in said cap to lubricate said ball bearings, said revolvable body having annular packing rings on the outer periphery thereof mounted on an annular steel ring, said steel ring mounted on ball bearings, said ball bearings being mounted on an outer shoulder of said revolvable body, another steel ring above said annular packing rings, stud bolts for adjusting said packing rings, said shell, cap, revolvable body and well casing having openings for the free passage of drill bits and drill tube sections therethru, equalizers radially swung by means to position said drill tube sections centrally of a blow-out preventer apparatus and a well casing.

3. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolva-

ble body seated in said shell, a race in said revolvable body, ball bearings provided for said race, a cap attached to said shell to positively hold said revolvable body within said shell, oil courses in said cap to lubricate said ball bearings, said revolvable body having annular packing rings on the outer periphery thereof mounted on an annular steel ring, said steel ring mounted on ball bearings, said ball bearings being mounted on an outer shoulder of said revolvable body, another steel ring above said annular packing rings, stud bolts for adjusting said packing rings, said shell, cap, revolvable body and well casing having openings for the free passage of drill bits and drill tube sections therethru, equalizers radially swung by means to position said drill tube sections centrally of a blow-out preventer apparatus and a well casing, tapered wedge block members positioned in said revolvable body, each tapered wedge block member connected to a guide arm, said guide arms extend thru slots in the lower section of said revolvable body, and attached at their lower ends to a washer for holding said tapered wedge block members in uniform alignment, actuating arms and rollers controlled by levers to impart movement to said washer and guide arms in forcing said tapered wedge block members upwardly, pin joint connection on said guide arms to allow longitudinal lateral movement to said wedge block members and vertical upward movement to said washer, said washer provided with an opening for the free passage of drill bits and drill tube sections therethru.

4. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body seated in said shell, a race in said revolvable body, ball bearings provided for said race, a cap attached to said shell to positively hold said revolvable body within said shell, oil courses in said cap to lubricate said ball bearings, said revolvable body having annular packing rings on the outer periphery thereof mounted on an annular steel ring, said steel ring mounted on ball bearings, said ball bearings being mounted on an outer shoulder of said revolvable body, another steel ring above said annular packing rings, stud bolts for adjusting said packing rings, said shell, cap, revolvable body and well casing having openings for the free passage of drill bits and drill tube sections therethru, equalizers radially swung by means to position said drill tube sections centrally of a blow-out preventer apparatus and a well casing, tapered wedge block members positioned in said revolvable body, each tapered wedge block member connected to a guide arm, said guide arms extending thru slots in the lower section of said revolvable body and attached at their lower ends to a washer for holding said tapered wedge block members in uniform alignment, actuating arms and rollers controlled by levers to impart movement to said washer and guide arms in forcing said tapered wedge block members upwardly, pin joint connection on said guide arms to allow longitudinal lateral movement to said wedge block members and vertical upward movement to said washer, said washer provided with an opening for the free passage of drill bits and drill tube sections therethru, said drill tube sections and drill bits having openings thru which fluid under pressure may pass interiorly thereof, said fluid returning exteriorly thereof and interiorly of said well hole and casing and discharged thru outlets in said shell and means for regulating the return of said fluid.

5. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body seated in said shell, packing means between said revolvable body and said shell, said revolvable body having movable wedge block sealing members stationed therein, an actuator, connecting means between the actuator and the wedge block sealing members adapted to be actuated to move the wedge block sealing members into operative sealed position about a drill tube section to cap a well hole, said connecting means being independent of said actuator and adapted for rotation in relation with said wedge block sealing members, revolvable body and drill tube sections as a hermetically sealed unit.

6. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body seated in said shell, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethrough, packing means between said revolvable body and said shell, said revolvable body having movable sealing members stationed therein, an actuator, connecting means between the actuator and the sealing members, roller bearings between the actuator and the connecting means, said connecting means adapted to be actuated to move the sealing members into operative sealed position about a pipe to cap a well hole.

7. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body mounted on said shell, packing between the revolvable body and shell, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethru, a seat in said opening in said revolvable body adapted to receive a seal, sealing members adapted to be actuated simultaneously to seal the opening between a pipe extending thru said revolvable body and said seat therein.

8. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body mounted on said shell, packing between the revolvable body and shell, adjusting means for the packing, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethru, a seat in said opening in said revolvable body adapted to receive a seal, sealing members adapted to be actuated simultaneously to seal the opening between the revolvable body and a pipe extending therethru, said pipe, sealing members and revolvable body capable of being rotated as a sealed unit.

9. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body mounted on said shell, packing between the revolvable body and shell, adjusting means for the packing, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethru, wedge block sealing members which may be actuated simultaneously longitudinally and laterally of said revolvable body and a pipe extending therethru to seal the opening between the revolvable body and the pipe.

10. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body mounted on said shell, packing between the revolvable body and shell, adjusting means for the packing, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethru, a section of said opening in said revolvable body being conical shaped, tapered wedge block sealing members positioned in said conical shaped section of said revolvable body and adapted to be actuated simultaneously longitudinally and laterally of said

revolvable body and a pipe extending therethru to seal the opening between the revolvable body and the pipe.

11. A blow-out preventer apparatus comprising a shell to be attached to a well casing, a revolvable body mounted on said shell, packing between the revolvable body and shell, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethru, a seat in said opening in said revolvable body adapted to receive a seal, sealing members adapted to be actuated simultaneously to seal the opening between a pipe extending thru said revolvable body and the seat in said revolvable body, said sealing members adaptable as a frictional clutch in imparting rotation from said pipe to said revolvable body.

12. A blow-out preventer apparatus comprising a shell to be attached to a well casing, said shell and well casing having openings for the passage of a pipe and bit therethru, an actuator, sealing members adapted to be actuated to seal the opening between said shell and a pipe extending therethru, equalizers attached to said actuator for centrally positioning said pipe of the opening in said shell and well casing, said equalizers and sealing members adapted to be simultaneously actuated.

13. Wedge block sealing members for closing the opening in a blowout preventer apparatus wherein a pipe extends through said opening, a seat formed in a section of said opening, said seat having a small opening on one end and a large opening on the other end, said wedge block sealing members having a small end and a large end and adapted to seal the opening between the seat and the pipe and being so constructed that when the small ends of said wedge block sealing members reach their limit in the small end of the seat that the large ends of the wedge block sealing members are adapted to be moved toward the small ends of the wedge block sealing members and the small end of the seat for positively sealing the opening.

14. Wedge block sealing members for closing the opening in a blowout preventer apparatus wherein a pipe extends through said opening, a conical shaped seat formed in a section of said opening, said wedge block sealing members each having a small end and a large end and so constructed that when the small ends of the wedge block sealing members reach their limit in the small end of the conical shaped seat that the large ends of the wedge block sealing members are adapted to be moved toward the small ends of the wedge block sealing members and the small end of the conical seat for positively sealing the opening.

15. Wedge block sealing members closing the opening in a blowout preventer apparatus wherein a pipe extends through said opening, a seat formed in a section of said opening, said seat having a small opening on one end and a large opening on the other end, said wedge block sealing members comprising end sections and packing elements between said end sections and so constructed that when one end of the end sections of the wedge block sealing members and the packing elements close the opening between the seat and the pipe the other end sections of the wedge block sealing members are adapted to move toward the first named end sections and the small end of the seat to tighten the packing elements for positively sealing said opening.

16. Wedge block sealing members for closing the opening in a blowout preventer apparatus wherein a pipe extends through said opening, said wedge block sealing members adapted to seal the opening between the pipe and the blowout preventer apparatus and being so constructed that a portion of each wedge block sealing member may be limited in its movement in closing said opening while another portion of each wedge block sealing member may have further movement within said opening with respect to the limited portion of each wedge block sealing member for positively sealing said opening.

17. A blowout preventer apparatus comprising a shell to be attached to a well casing, a revolvable body seated on said shell, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethrough, said revovable body having movable sealing members thereon, an actuator, connecting means between the actuator and the sealing members, anti-frictional bearings between the actuator and the connecting means, said connecting means adapted to be actuated to move the sealing members into operative sealed position about a pipe to cap a well hole.

18. A blowout preventer apparatus comprising a shell to be attached to a well casing, a revolvable body mounted on said shell, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethrough, a seat in said opening in said revolvable body adapted to receive a seal, sealing members adapted to be actuated simultaneously to seal the opening between a pipe extending through said revolvable body and said seat therein.

19. A blowout preventer apparatus comprising a shell to be attached to a well casing, a revolvable body mounted on said shell, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethrough, said pipe adapted to be rotated, a seat in said opening in said revolvable body adapted to receive a seal, sealing members mounted on actuating means, said sealing members adapted to be actuated to seal the opening between the pipe and the seat, said actuating means non-rotative with respect to the pipe, said sealing members adapted to rotate with said pipe.

20. A blowout preventer apparatus comprising a shell to be attached to a well casing, a revolvable body mounted on said shell, said shell, revolvable body and well casing having openings for the passage of a pipe and bit therethrough, a seat in said opening in said revolvable body adapted to receive a seal, sealing members mounted on actuating means and adapted to be actuated to close the opening between the seat and said pipe therethrough, said sealing members rotatable on said actuating means.

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