Jan. 10, 1933. F. V. BARYCZ 1,893,489

CONTROLLING APPARATUS FOR DRILLED WELLS

Filed Sept. 23, 1931

Fig. 1.

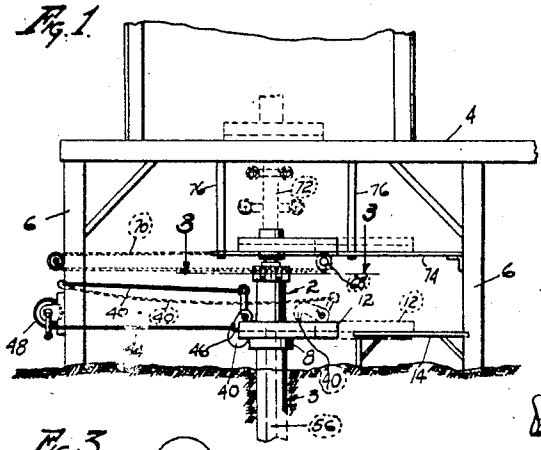


Fig. 2.

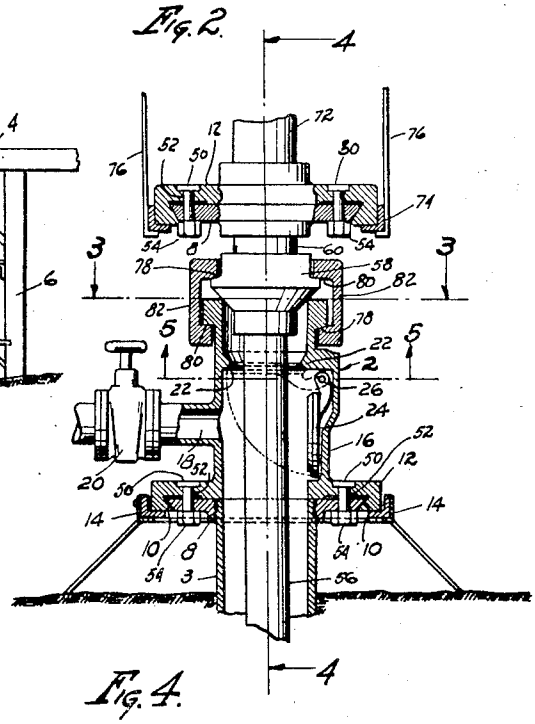


Fig. 3.

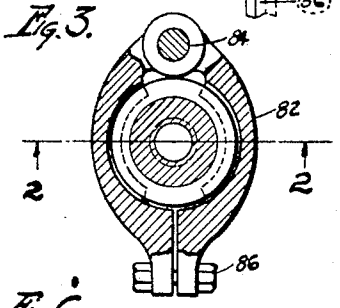


Fig. 4.

Fig. 6.

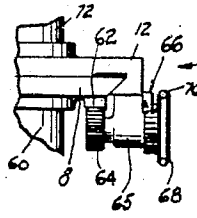
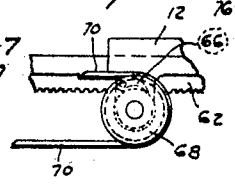


Fig. 7.



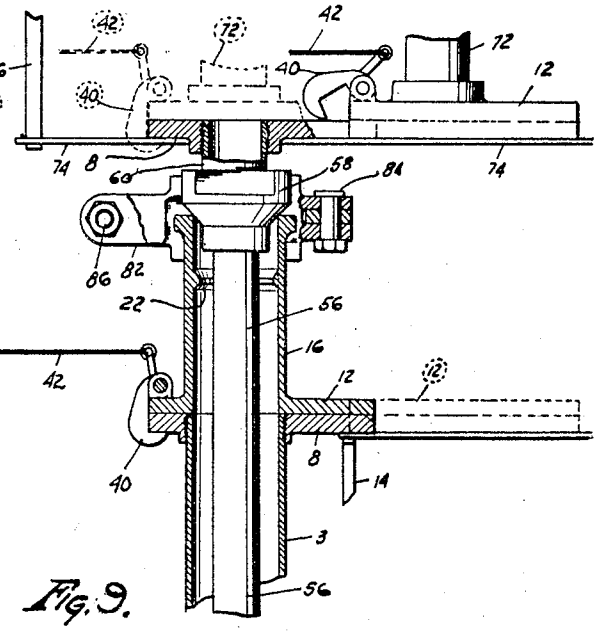


Fig. 5.

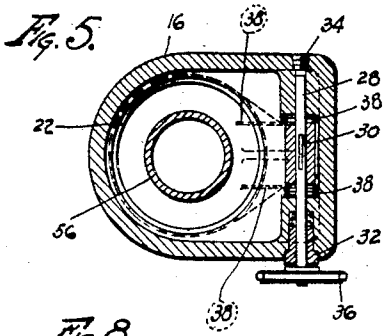


Fig. 8.

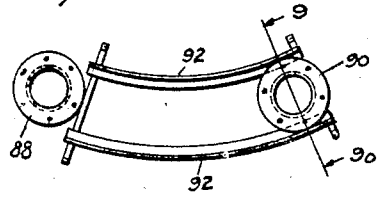
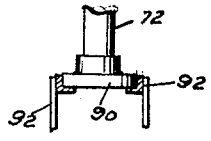


Fig. 9.



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UNITED STATES PATENT OFFICE

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CONTROLLING APPARATUS FOR DRILLED WELLS

Application filed September 23, 1931. Serial No. 564,551.

My invention relates to controlling apparatus for drilled wells and more particularly to such devices which are used for capping said well, such as oil, gas or water wells, which are usually difficult to close because of heavy gas pressures encountered at deep horizons, and when unable to close, resulting in exceedingly heavy damage, to the well and the surrounding properties, further, in case of violent overflow, such well is very difficult to bring under control, or when on fire, in many instances such a well must be left burning, until the gas pressure subsides.

It accordingly is an object of my invention to provide a simple means of capping a well, when it is coming-in, to withstand the heavy gas pressure, which at times exceeds 1000 pounds per square inch, and also to withstand the acute corrosive and abrasive action caused by sand and mud being forced through the connections, under such a pressure.

A further object of my invention is to provide safety means, which may be if desirable, associated with the well casing, thus preventing gushers to spout the liquid emanating from said well all over the ground, and consequently preventing the blow-out, reducing the fire hazards, providing the positive control during all drilling operations, also easy and safe casing capping.

An other object of my invention is to provide safe and simple means for working upon the well when under pressure or flowing, whereby the so called "Christmas tree" apparatus may be easily attached to said well casing, which is for the purpose of diverting the fluid from said well into pipe lines or tanks, as the case might be.

Further objects and advantages as will hereinafter more fully appear, I attain by the construction described in the specification and illustrated on the drawing, forming a part of my application.

Reference is had to the accompanying drawing in which the similar reference characters denote similar parts.

In the drawing:

Fig. 1 is the elevational view of my invention, connected to the drilled well.

Fig. 2 is an enlarged cross sectional view of my invention, connected to the well casing, taken in the direction of the arrows 2—2 of the Fig. 3.

Fig. 3 is the cross sectional view, taken in the direction of the arrows 3—3, in the Figs. 1 and 2.

Fig. 4 is the cross sectional view of my invention, taken in the direction of the arrows 4—4, of the Fig. 2.

Fig. 5 is the transverse cross sectional view, taken in the direction of the arrows 5—5, of Fig. 2.

Fig. 6 is the fragmentary view of the controlling mechanism.

Fig. 7 is the side view of the controlling mechanism, taken in the direction of the arrow 7, of the Fig. 6.

Fig. 8 shows another method of capping a casing.

Fig. 9 is partly cross sectional and partly elevational view taken on the line 9—9, of the Fig. 8.

Describing my invention more in detail, said invention comprises of a capping apparatus which is connected to the well casing having the top capping members in position, ready for instant use, mounted upon guides or rails, and equipped with a shut-off valve and the by-pass passage, equipped with the control valve.

The shut-off valve, is arranged in such a manner, whereby the fluid tubing may be easily manipulated, extended or taken out of said casing, having a head attached to the last section of said tubing, to which the "Christmas tree" apparatus is attached, and which is held in position, upon the head casing by means of the self adjustable clamp.

More particularly said invention comprises of a head casing 2, which is attached to the pipe casing 3, positioned under the derrick platform 4, supported by columns 6; the pipe casing 3, is connected permanently to the male flange plate 8, having dove-tail sides 10, and adapted to receive the female flange plate 12 of said head casing 2, which is guided in place by means of angle guides 14, and having the body 16, equipped with an opening 18, which may be if preferred, asso-

ciated with a control valve 20, to divert the flow of the fluids within said head casing 2.

The upper section of the body 16 of said casing 2, is also equipped with a valve seat 22, which is to receive the valve plate 24, which is hinged as at 26 and held in place by means of a shaft 28, keyed as at 30, having the packing gland 32 and the plug 34, associated therewith to prevent the leakage, also said shaft 28, is connected to a wheel 36, which is used for manual operation of said valve plate 24; and for emergency, I have equipped said valve plate 24 with a set of springs 38, which are for the purpose of closing the well automatically, in the event sudden pressures are encountered, thus preventing blow-out and fire.

The male plate 8 and the female plate 12, are also equipped with a latch 40, shown in Figs. 1 and 4, respectively, which is controlled by means of a line 42, and which may be of any desired length in practice most adaptable; sliding said plate 12 over said plate 8, is accomplished by means of a line 44 attached to the hook 46 and operated by means of a winch 48, preferably positioned at a safe distance of the well (see Fig. 1.) and when said plate 12 is in position, the latch 40 in place, held tight by means of the line 42, then the bolts 50 are being placed in sockets 52, tightened by means of nuts 54, and in the meantime the valve 20 may be opened to relieve the pressure within said well, and said valve plate 24 held in seat 22 by means of springs 38 prevents said fluid under pressure from emanating upwardly.

When the well is capped, the next main operation is to place within the well casing 3 the fluid tube 56 comprising a plurality of sections and the screen, (not shown) and to the last tube section 56 I have connected a locking head 58, adapted to receive a nipple 60 to which the male flange plate 8 may be attached and which is slideably associated with the female flange plate 12 as hereinbefore described.

Said male plate 8 may be, if desirable, equipped with a gear rack 62 held in mesh with a gear 64, which is mounted upon a bearing 65 of the female plate 12, having a ratchet 66 and the pulley 68 associated therewith, and operated by means of a line or chain 70 which extends a considerable distance from said well, or it may be attached to the columns 6 as shown. (Fig. 1.)

The plate 12, is connected to the "Christmas tree" apparatus 72 (shown in dotted lines Fig. 1.) and is held in position by means of guides 74 and the hangers 76; (see Figs. 1, 2 and 4).

Said locking head 58 and the upper body section 16 of the casing 2, is provided with the tapered sections 78 and the straight cut sections 80 which are adapted to receive the clamp 82, made of two parts, which is hinged as at 84 and held in place by means of locking bolt 86, as shown.

When desirable, said nipple 60, may be connected to a standard flange connection 88 and the "Christmas tree" apparatus 72 may be connected to a flange 90, which is slideably positioned upon a circular track 92, thus permitting said apparatus 72, to be easily located over the flange connection 88, and locked in position.

While I have thus described my invention with great particularity, I wish it to be understood that the same is only illustrative and may be modified throughout a wide range; I accordingly do not propose to be limited to the exact details of construction shown and described, but reserve the right in practice to make any and all modifications which may come within the scope of the appended claims.

I claim as my invention:

1. In the apparatus for controlling drilled wells, adapted to be connected with the well casing, a male flanged plate connected to said well casing, a female flanged plate adapted to be slideably associated with said male flanged plate, a casing upwardly extending from said female flanged plate, a passage associated with said casing, a pressure controlling valve connected to said passage, a tapered valve seat substantially associated with said casing and internally positioned within said casing at the discharge end thereof, a hinged valve plate positioned within said casing adapted to be associated with said valve seat, and means connected to said valve plate to control the manipulation of said valve plate manually and automatically.

2. In the apparatus for controlling drilled wells, adapted to be connected to the casing of the well, comprising in combination, a male plate connected to said casing, a female plate slideably associated with said male plate, a casing substantially associated with said female plate, a passage associated with said casing, a relief valve connected to said passage of said casing, a valve seat positioned at the discharge end of said casing, a valve plate hingeably associated with said casing and adapted to be associated with said valve seat, and a plurality of locking means associated with said male and female plates adapted to lock said plates in position, over the well casing, substantially as described.

3. In the apparatus adapted to be used for controlling the drilled wells, comprising, a male plate, a female plate having the casing associated therewith, a relief passage associated with said casing, a pressure controlling valve positioned within said casing, and controlling means associated with said controlling valve of said casing, and the locking means associated with said plates of

said casing so the pressure within the drilled well may be controlled at all times.

4. In the apparatus of the class described, a male flanged plate, a female flanged plate slideably associated with said male flanged plate, a gear rack substantially associated with said male plate, a bracket connected to said female plate, a gear associated with said bracket and adapted to be positioned in mesh with said rack of said male plate, a controlling ratchet means associated with said gear and said female plate, so the position of the female plate may be controlled upon said male plate, and a pulley connected to said gear and said ratchet, so the position of said female plate upon said male plate may be regulated, from a distance.

5. In the apparatus adapted for controlling drilled wells and connected to the well casing, a male flange plate substantially associated with said well casing, a plurality of holding means positioned at each side of said plate, a female flanged plate slideably associated with said male plate, a capping means substantially positioned upon said female plate and the locking means associated with said plates whereby said well casing may be capped and locked in position.

6. In the apparatus adapted for capping drilled wells, a well casing, a flanged male plate connected to said casing, controlling means slideably associated with said plate, pressure holding means hingeably positioned within said last mentioned means adapted to hold the pressure of the fluid within said well, pressure relief means associated with said controlling means, so that the pressure within said well may be controlled and relieved.

7. A controlling head adapted for use in drilled wells, comprising a well casing and fluid regulating apparatus, a male flange plate connected to said casing, a female flange plate of said controlling head positioned in close proximity with said male plate, a plurality of guiding means adapted to guide said female plate over the male plate, and supporting means connected to said guiding means and the derrick of said drilled well, so that said guiding means may be held rigidly in position.

8. In the apparatus of the character described comprising a male plate, a female plate slideably associated with said male plate, a casing connected with said female plate, the fluid controlling apparatus adapted to be connected with said female plate and the guiding means associated with the derrick of the well adapted to guide said female plates in position, in combination, means associated with said female plates adapted to hold said plates over the said male plates, locking means associated with said male and said female plates, regulating means associated with said male and said female plates so that the relative position of said plates may be regulated from the distance of said drilled well, substantially as described.

In testimony whereof I have signed my name to this specification.

FRANK V. BARYCZ.