E. L. SAVOIE.

GUSHER AND BLOW-OUT PREVENTER.

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Fig. 3.

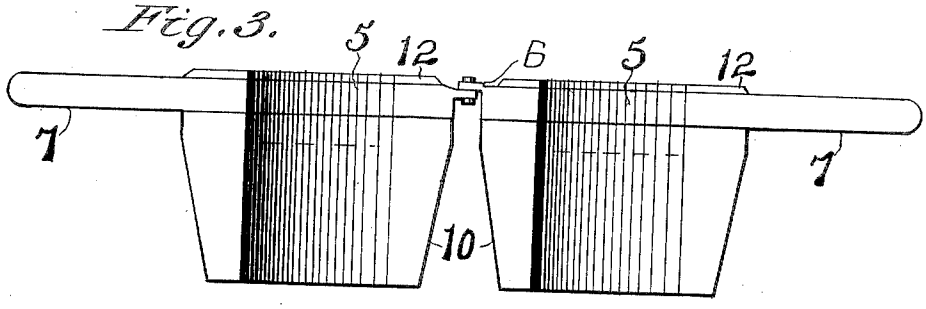


Fig. 4.

Fig. 1.

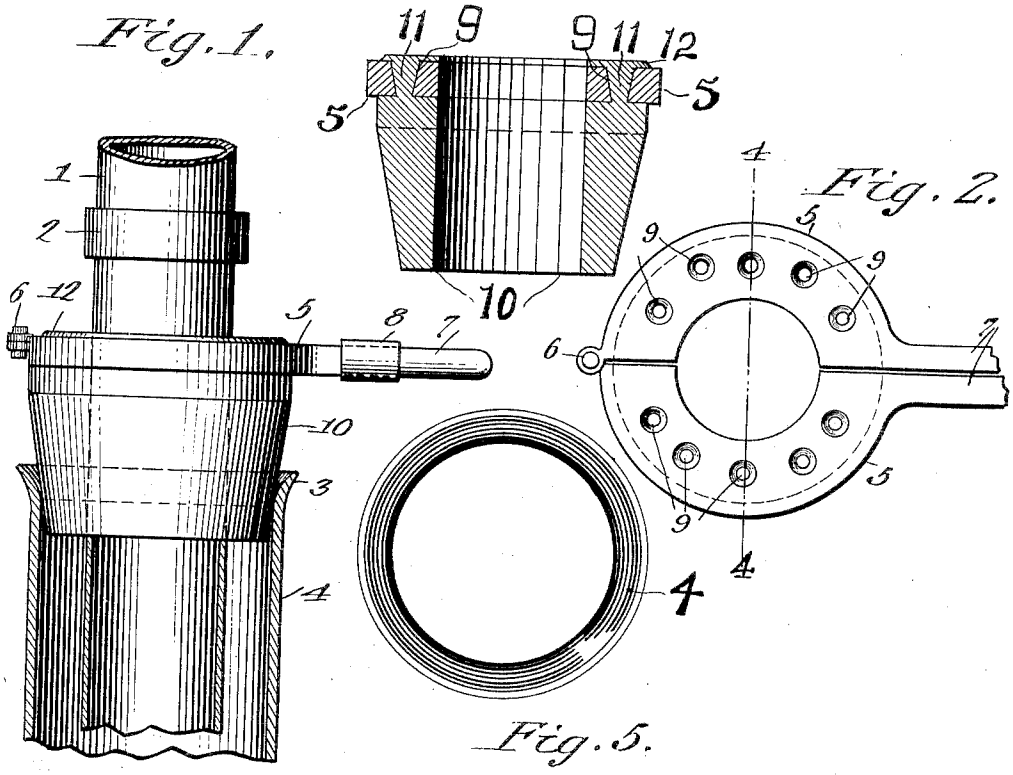


Fig. 2.

Fig. 5.

WITNESSES

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GUSHER AND BLOW-OUT PREVENTER.

1,009,998. Specification of Letters Patent. **Patented Nov. 28, 1911.**

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To all whom it may concern:

Be it known that I, EMILE L. SAVOIE, a citizen of the United States, residing at New Iberia, in the parish of Iberia and State of Louisiana, have invented certain new and useful Improvements in Gusher and Blow-Out Preventers, of which the following is a specification.

In drilling wells considerable pockets of gas are not often encountered until the surface casing is set, but after that the drill often penetrates them and the gas tends to blow out suddenly before the well is quite completed, through the interval between the drill pipe and the surface-casing at the top of the latter, which remains open to permit the operation, removal and reinsertion of said pipe. Hitherto, the driller has usually tried to prevent such explosive action by pumping slush mud into the well; but this is not always effective; and when it fails the driller must let the blow-out exhaust itself. This sometimes injures the drilling mechanism and the well or imposes great effort and expense to save them. Hence, it becomes very important to provide a satisfactory device, easily and quickly applied to the drill-tube and packing the space between the latter and the casing, so that the opening before mentioned will no longer be left and the blowout will be stopped or plugged, the gas then escapes only through a side opening which may be left in the casing. My invention supplies this want by means of the removable packing clamp hereinafter described. It is also applicable to the cure of oil wells gushing before the wash-pipe has been removed and while its presence prohibits the closing of the valve, a rather common experience, resulting in great loss of oil, danger of fire and divers disagreeable incidents. My packing clamp or plugging device is quickly applied between the wash-pipe and the casing to close that opening by the action of the weight of said pipe and stop the gush and waste of oil. In either instance I employ a truncated cone of lead, composed of two sections attached respectively to the two halves of a collar or ring, which halves are hinged together at one point and arranged to close on the pipe under a coupling, so that the weight of said pipe will bear through this coupling, on said leaden cone, forcing its downwardly tapering exterior surface against the inner face of the surface-casing and by reason of the softness of the lead, its conical form and said downward pressure, effectually plugging the space between the casing and said pipe. Neither oil, gas nor any other fluid can then escape through the top of the casing.

In the accompanying drawings, Figure 1 represents a side elevation of a packing clamp constructed according to my invention and applied between the drilling tube and the surface casing of a well, said surface section being shown in vertical section; Fig. 2 represents a detail plan view of the pair of clamping ring sections pivoted together, showing the countersunk holes; Fig. 3 represents a detail front elevation of said packing clamp, fully open to show its interior, the semi-circular conical packing blocks or sections being provided with integral semi-circular plates above the packing ring section; Fig. 4 represents a vertical section through one of the sections of the packing clamp on line 4—4 of Fig. 2 passing through the integral leaden rivet contained in one of said holes; and Fig. 5 represents a detail plan view of the flaring top of the surface casing.

The drill-pipe, tube or rod 1, Fig. 1, consists as usual of sections connected by nut-form couplings 2, its upper section being gripped by a rotary drilling machine not shown. The surface-casing 4, concentric with said pipe, has an upwardly flaring end 3 to avoid all risk of injury to the lead and insure fluid-tight packing.

My packing-clamp for preventing blow-outs and the waste of oil consists of a clamping ring, preferably of tempered steel, comprising two flat semi-circular sections 5, pivoted together at 6 and having their opening ends formed into a pair of slightly tapering handles 7, which are side by side when said ring is closed. Any convenient fastening device, for example a ring or ferrule 8, may be used for holding them in this position. Each of the sections 5 is provided with a series of holes 9, through which lead is cast, forming below the said section a tapering leaden packing-block 10 in the form of a half cone, truncated; the same being held to said ring-section by rivets 11 formed in the holes 9, said holes being countersunk to form heads for said rivets aforesaid. For greater security, the lead may also be cast in a half ring 12 above the holes, making a supplemental integral head in common for said

rivets, as shown in Fig. 2; but this is not absolutely necessary in view of the countersunk holes 9. The two half-cones or packing blocks 10, when brought together on the drill tube, make an efficient conoidal packing for closing the upper end of the casing.

When the drill strikes a gas-pocket and a blowout of gas is threatened, the driller pulls the drill pipe up to the first coupling 2, which may often be only a foot or two below the flaring end 3 of the surface-casing 4. The packing clamp, widely opened as shown in Fig. 3, is then placed below said coupling, closed around the drill-pipe and fastened. The coupling 2 above mentioned will of course be drawn down on said packing by the weight of said pipe so as to force the conoidal outer face of the former with wedge-action against the flaring inner face of the upper end 3 of the casing 4 and a tight packing will result. The application of said packing clamp is easy and almost instantaneous; and it becomes immediately effective to guard absolutely against any blowout. Nothing is required but a little vigilance and action before it is too late. Similarly, in oil wells, when oil begins to gush up prematurely before the wash pipe can be removed and while the said pipe prevents the valve of the casing from being closed, the operator simply applies the packing-clamp around the wash-pipe under the coupling and permits the weight of said pipe to draw said coupling down on said packing clamp and force the latter in between the pipe and the casing—all as hereinbefore described. There is no difference except in the function of the pipe and in the fluid inclosed; neither of which has any relation to the packing action. Thus in illustrating the application to the drill pipe, its application to a wash pipe or any other pipe is equally illustrated.

Of course the packing may be applied to the clamping ring by pressure or any other convenient means or in any other effective way, but the most natural and satisfactory method is to cast it on said ring and through the holes therein as already explained. The conoidal block below is then bored to fit the pipe or drill rod.

The countersunk holes 9 which form the lead rivets may be of any convenient number; but I prefer to make about 12 or 15 in each section of the clamping ring and distribute them over the same for insuring a perfectly secure fastening at all points as shown in Fig. 3. The said packing is of greater maximum diameter than said casing so that it cannot be drawn down too far unless by extreme violence and the clamping ring is still broader, so that it may fully protect the case of the leaden cone and afford a further guard against any such possible accident under excessive jar or strain. But the latter service will hardly ever be required.

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

1. A blowout preventing device consisting of a ring in hinged sections, a tapering leaden block in sections secured to the sections of the said ring respectively and means for securing said device in closed position.

2. A blowout preventing device consisting of a clamping ring in two hinged sections provided with holes, and a lead conoidal block composed of two sectional castings held to the sections of the said ring respectively.

3. A blowout preventing device consisting of a ring in two hinged perforated sections and a tapering block of yielding material composed of two sectional castings held to the sections of said ring respectively, the perforations of said sections being countersunk and filled with headed integral rivets of said material.

4. A blowout preventing device consisting of a ring in hinged sections and a tapering leaden block in sections secured to the sections of said ring respectively.

5. A blowout preventing device consisting of a ring in sections and a leaden block in sections secured to the sections of said ring respectively.

6. A blowout preventing device consisting of a ring in perforated hinged sections, a tapering block in sections depending therefrom and secured to the sections of the ring respectively, plates integral with said blocks above said ring sections and means for securing said device in closed position.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

EMILE L. SAVOIE.

Witnesses:
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J. E. SCHWING.