June 24, 1941. H. ALLEN 2,246,709

BLOWOUT PREVENTER

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FIG. 1.

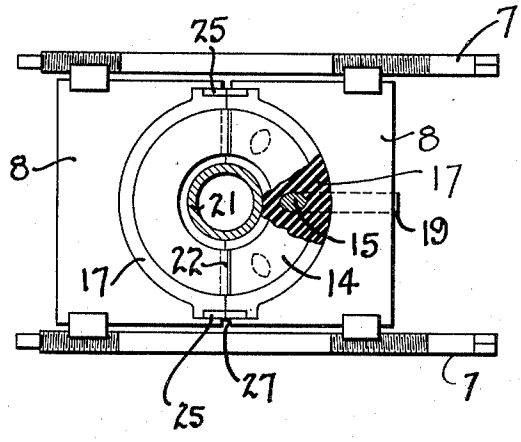
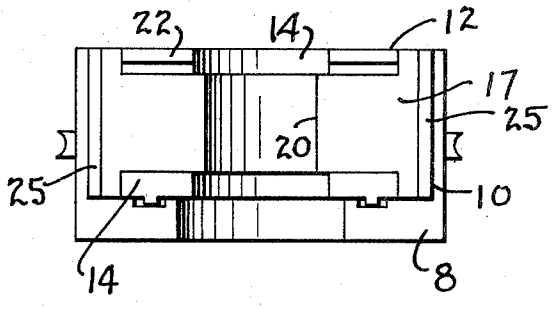


FIG. 2.



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FIG. 3

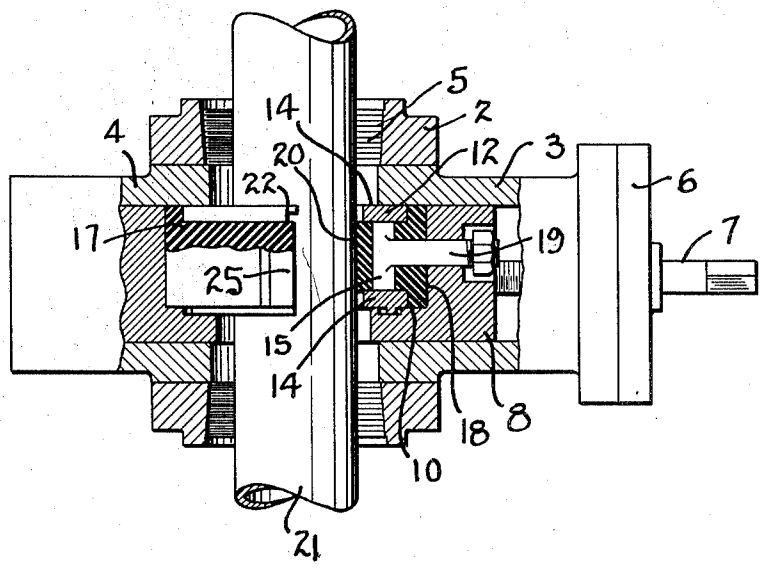
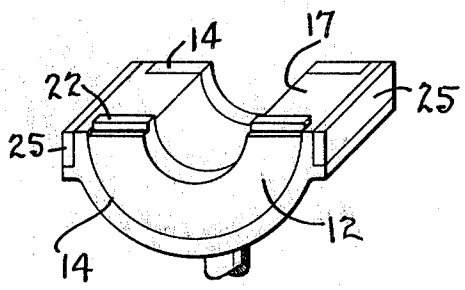


FIG. 4



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BLOWOUT PREVENTER

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Application August 21, 1939, Serial No. 291,181

2 Claims. (Cl. 251—159)

The invention relates to an improvement in blowout preventers and particularly a preventer of the type shown in the patent to W. D. Shaffer et al., 2,060,252, granted November 10, 1936.

In the above noted Shaffer patent a general type of floating block gate ram for blowout preventers is disclosed and in this type of construction it has been found impossible to apply enormous pressure to the packing so as to close off the passage in the well bore. The present invention directs itself to an improvement in this type of preventer whereby the packing may be completely confined in order to apply pressure thereto.

Another object of the invention is to provide a side bar or confining member for floating gate blowout preventer rams so that the resilient packing will be confined against lateral escape.

Another object of the invention is to provide a side bar retaining member for blowout preventer rams.

Other and further objects of the invention will be readily apparent when the following description is considered in connection with the accompanying drawings, wherein:

Fig. 1 is a top plan view of the gate members in closed position about a pipe.

Fig. 2 is a front elevation of one of the gate members.

Fig. 3 is a vertical sectional view illustrating the arrangement of the member as it is disposed inside of the housing.

Fig. 4 is a perspective view of one of the cage members with the present invention applied thereto.

In Fig. 3 the blowout preventer housing is illustrated generally at 2 and includes oppositely extending ram chambers 3 and 4, one of which projects laterally from each side of the opening 5 thru the housing.

Each of these ram chambers 3 and 4 is closed at its outer end by a plate 6 which carries the spindle 7 by which the ram member 8 is moved. As seen in Fig. 1 there are two spindles 7, one on each side of the housing and by suitable connection they are arranged to move the ram members 8 toward and away from each other as the spindles are rotated. The ram member is shown in front elevation in Fig. 2 and has a pocket 10 therein which is arranged to receive a cage 12. This cage is best seen in section in Fig. 3 and in perspective in Fig. 4 and is formed by two top and bottom plates 14. These plates are vertically spaced by the studs 15 so that they are held rigidly in position. Disposed about the studs 15 and between the plates 14 is a body 17 of resilient material such as rubber. This rubber extends behind the cage 12 and abuts the rear face 18 of the pocket 10 so that as the ram member 8 is moved forwardly by the spindle 7, it will cause the rubber to move forwardly and the rubber in turn will carry the cage with it.

A shank and nut 19 extend rearwardly from the cage and pass thru the ram 8 so as to hold the cage and ram against displacement. The ram can slide relative to this shank in applying pressure to the rubber packing.

If sufficient pressure is applied the face 20 of the rubber is forced against the periphery of the pipe 21 with a view of forming a seal therewith. The top and bottom plates 14 are shown as being interfitting by having a tongue and groove arrangement 22 thereon.

In the construction shown in the Shaffer patent as is evident from Fig. 2 thereof, there is no protection or support for the resilient material at the edges between edges of the rams, whereas, in the present construction a reinforcing bar 25 has been positioned at each side of the cage and may be carried by either the cage or the rubber. It is preferably positioned as shown in Fig. 4 being mounted upon the rubber packing 17 at the edge thereof so that the bar will float with the rubber and confine the rubber against lateral extrusion when pressure is applied thereto.

As the two gate members move together, as seen in Fig. 1 there will be a space such as 27 between the forward edges of the rams 8 and the reinforcing bars 25 are shown as abutting each other at the edge when the two rams approach. In this manner it will be noted that the bars 25 cover the openings 27 between the rams and thereby prevent the escape of the rubber material. If sufficient pressure is applied to the rubber then of course the ram 8 will move forwardly and tend to carry the plates 14 with it against the pipe 21. If the face 20 of the rubber wears away a sufficient amount, then the plates 14 may abut the pipe and in this way additional pressure may be applied when the rubber is entirely confined.

Side plates or bars 25 cooperate with the ram body 8, the plates 14 and the housing or ram chamber so as to confine the packing when it is subjected to pressure.

What is claimed is:

1. In a blowout preventer having a housing and movable rams therein the combination of a resilient packing carried by the ram, a cage to reenforce said packing, and means to confine the packing at the sides thereof including a rigid vertical member at each edge of the cage.

2. In a blowout preventer cage and packing, means on said cage to confine the packing against vertical movement, and additional means on said cage to confine the packing against lateral escape when pressure is applied thereto, said last means including a rigid plate or bar floating in the packing at the vertical abutting edges.

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