Nov. 22, 1927. 1,650,074

J. A. KAMMERDINER

BLOW-OUT PACKER

Filed Nov. 24, 1925

Fig. 1

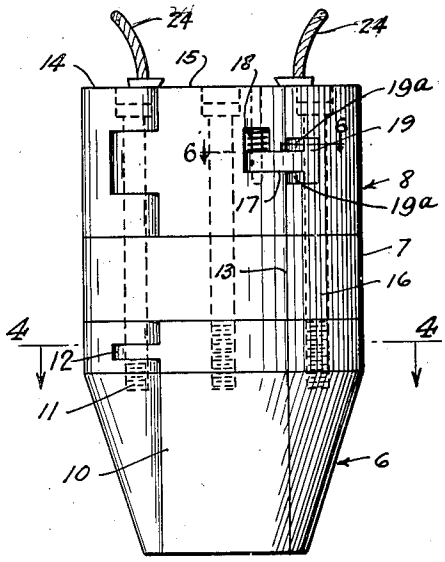


Fig. 3

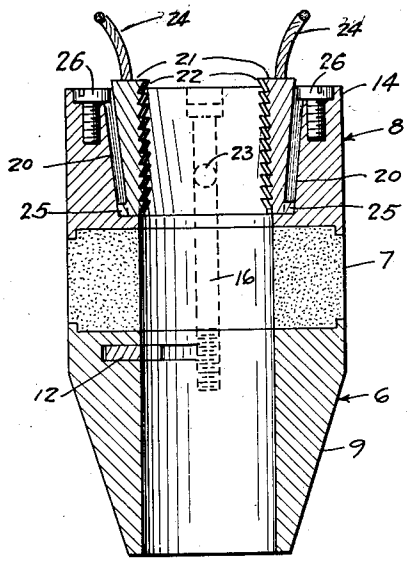


Fig. 2

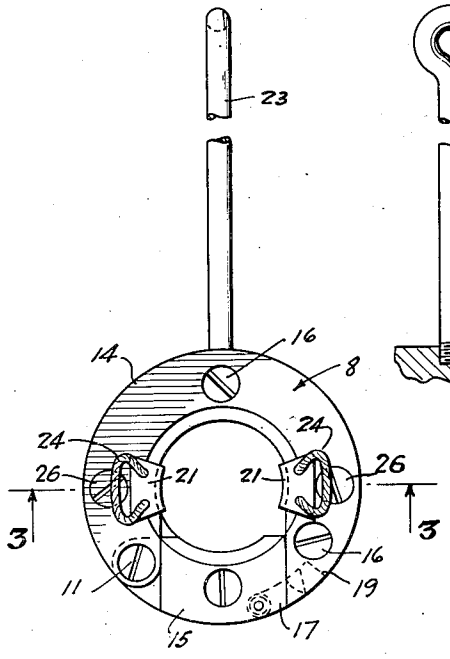


Fig. 5

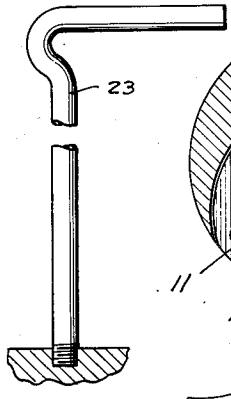
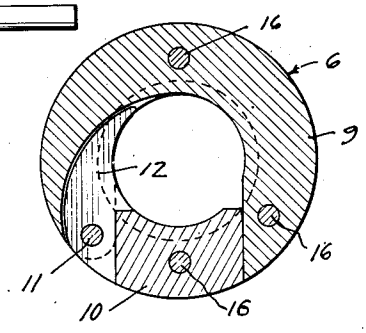


Fig. 4



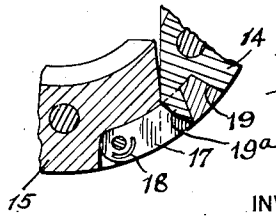


Fig.6.

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UNITED STATES PATENT OFFICE.

JAMES ALLEN KAMMERDINER, OF LOS ANGELES, CALIFORNIA.

BLOW-OUT PACKER.

Application filed November 24, 1925. Serial No. 71,078.

This invention relates to a blow-out preventer for use in drilling oil wells. Devices of this character are well known in the art.

In drilling oil wells, strata containing oil and gas under heavy pressure are often suddenly encountered, and when bored into, the high pressure released blows out the hole and equipment until the force is spent or the hole chokes up. A blow-out may ruin the well for deeper drilling. In the drilling of oil wells, the hole is made and the advance of te drilling tools followed by a well casing. Where there is liability of encountering high gas pressure, a head may be maintained on the top of the casing, such head having a seat to receive a packer which may be secured to the drill pipe. Thus, the packer may be seated in the head, when thought advisable, closing off the space between the drill pipe and casing. A head is provided with suitable take-off passages for permitting and controlling the flow of oil and gas therefrom. When a well starts blowing off, the stream of gas, oil, sand, gravel and rocks issuing therefrom, hinders the placement of the packer, and endangers those who are trying to place the packer in position.

The primary object of this invention is the provision of a packer arranged to be easily and quickly secured about the drill pipe. To this end, I have provided a split packing so that it may be placed around the pipe, closed and locked in position. Another object of this invention is to provide a packer of the character described having details of structure such that it lends itself to being expeditiously and quickly attached to the drill pipe, permitting those who are attaching the packer to remain at a distance and out of danger.

These objects, together with other objects and corresponding accomplishments are obtained by means of the embodiment of my invention illustrated in the accompanying drawing, in which:

Fig. 1 is a front elevation of a complete packer; Fig. 2 is a plan view; Fig. 3 is a section as seen on the line 3—3 of Fig. 2; Fig. 4 is a section as seen on the line 4—4 of Fig. 1; Fig. 5 is a fragmentary side elevation showing the handle for supporting and manipulating the device with a portion of its shank broken out to make the view more compact and Fig. 6 is a fragmentary section to an enlarged scale as seen substantially on line 6—6 of Fig. 1.

Referring more particularly to the drawing, 6 indicates a conical seat to which is secured a compressible and expansible packing ring 7. This packing ring is preferably made of rubber. Above the packing ring is a pipe follower 8 having dogs or slips for grabbing the drill pipe and preventing the packer assembly from being blown up the pipe by the upward stream of gas and oil. The parts just described are secured to one another to form an assembly unit having a bore extending therethrough for the passage of the drill pipe. However, the unit is split longitudinally so that it may be opened up for the entrance of the drill pipe thereinto.

The seat 6 comprises a body 9 having a gate 10 closing an opening therein and mounted upon a hinge pin 11 so that when the gate is swung outwardly, the bore through the seat is opened for entry thereinto of the drill pipe. Forming a part of the gate 10 and extending on the other side of the hinge pin 11 is a tongue 12 which swings with the gate. It is disposed in a suitable pocket at one side of the bore in the seat body 9, when the gate is closed. When the gate is open, the tongue will be disposed across the bore. Packing ring 7 is conveniently made of rubber and is attached to the seat member. It is split along the line 13 as shown in Fig. 1 so that it may be opened up. However, the resiliency of the rubber is such that the packing ring requires no hinge.

The follower ring comprises a body 14 to which a gate 15 is hinged by means of pin 11. The construction is such that gates 10 and 15 are hinged upon the same pin. Follower 8 is secured to the packing ring 7 so that the elements of the packer may be opened as a unit. The seat 9, packing ring 7 and follower 8 may all be secured together by means of pins 16 extending downwardly and into each of these elements. The hinge pin 11 may also be used as a member to tie the parts together. For the purpose of locking the packer in closed position, I have pivotally mounted a T-headed latch 17 within a recess in the gate and preferably provide a spring 18 tending to close the latch. A keeper notch 19 is provided in the body 14, portions of which form teeth 19^a, rounded on their outer faces. When the gate is closed, the head of latch 17 will ride up over these and drop into notch 19, holding the packer closed. In order to provide for the

packer gripping the drill pipe so as to prevent it from being blown up the pipe sliding along and abutting the next upper collar, I have provided inclined ways 20 on opposite sides of the bore in body 14, the walls of the ways being undercut and slidably mounted therein are slips 21 having serrations 22 on their inner faces. The slips are provided with abutments 25 at their lower ends, which limit their travel in an upward direction, by striking the heads of screws 26. This structure is such that when the slips are in their lower position within the ways, the slips will be located with the least diametrical distance between them. In order to provide for placing the packer about the pipe by a workman who may remain at some distance, I have provided a handle 23 which is secured in any suitable manner to the body 14.

The packer is applied to the drill pipe in the following manner: The gate is opened exposing the bore and bringing tongue 12 across it. The packer is then supported by the slips 21, loops 24 serving for attachment to tackle. By means of the handle 23 the unit is pushed toward the drill pipe so that the latter enters the bore. As the packer is forced against the drill pipe, tongue 12 engages the pipe and swings the gate to closed position. The latch 17 then locks the packer about the drill pipe, and the slips are then released. Lowering of the drill pipe will cause a collar thereon or clamps to move the packer downwardly, whereupon it may be seated in its head. Any tendency to blow or move the packer along the drill pipe is hindered by the slips.

What I claim is:

1. A packer unit comprising a follower having a hinged gate for opening the bore thereof, a split compressible and expansible packing ring secured to said follower so as to be opened therewith, a seat secured to said ring and having a hinged gate corresponding to said first mentioned gate, a lip on the rear portion of said gate for projection into the bore of said unit with the opening of said gate, and a spring latch for locking said unit closed.

2. A packer unit comprising a follower having a hinged gate for opening the bore thereof, a split rubber packing ring secured to said follower so as to be opened therewith, a seat secured to said ring and having a hinged gate corresponding to said first mentioned gate, a lip projecting from the joint of said last mentioned gate so as to be disposed within the bore of said unit when the gate is open, and a spring latch for locking said unit closed mounted upon said follower.

3. A packer unit comprising a follower having a hinged gate for opening the bore thereof, longitudinally movable slips for gripping the work mounted within said follower, a split rubber packing ring secured to said follower so as to be opened therewith, a seat secured to said ring and having a hinged gate corresponding to said first mentioned gate, said last mentioned gate having a lip projecting from its joint so as to be disposed across the bore of said unit when the gate is open, and a spring latch for locking said unit closed mounted upon said follower.

In witness that I claim the foregoing I have hereunto subscribed my name this 14th day of November, 1925.

JAMES ALLEN KAMMERDINER.