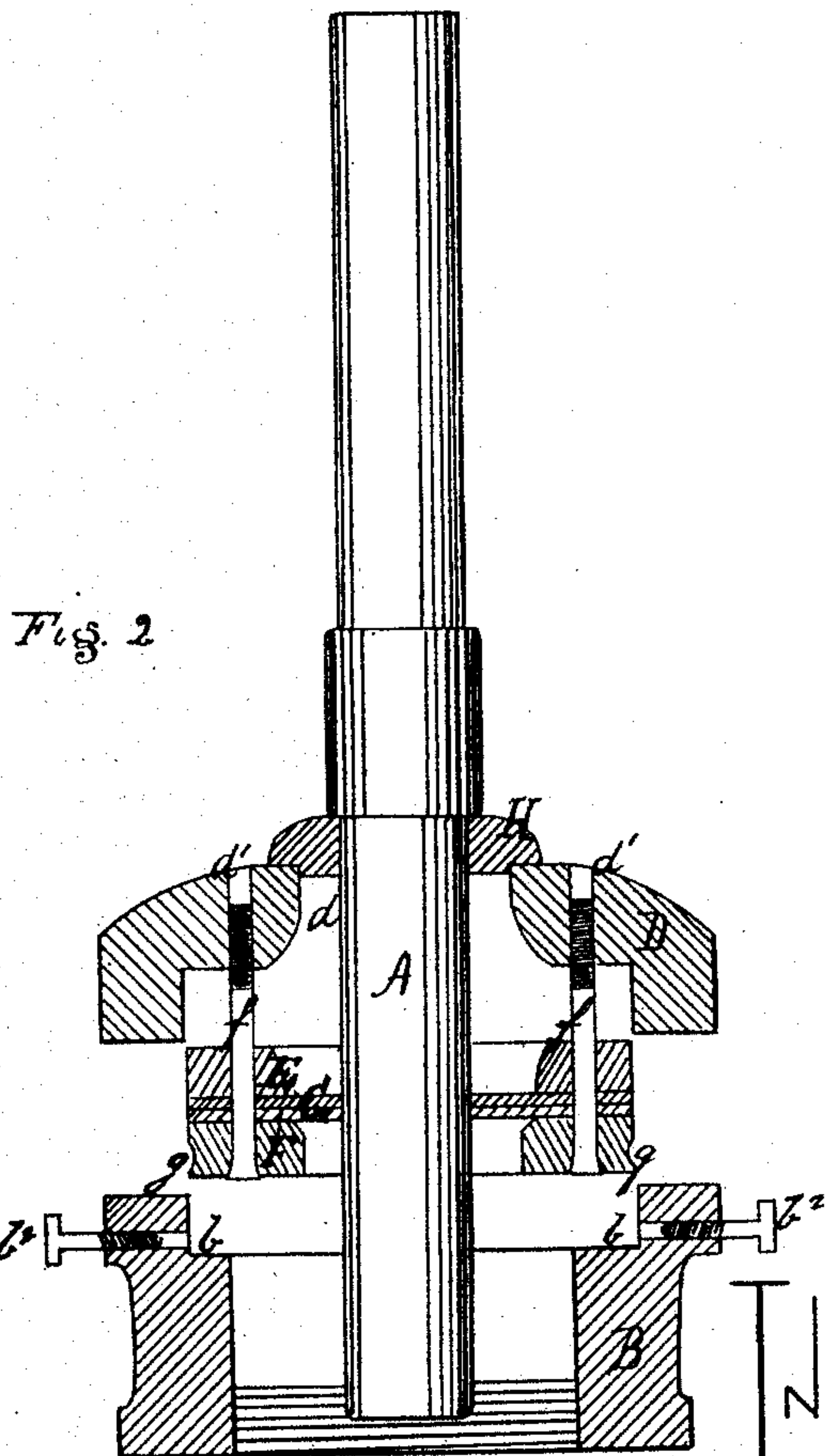
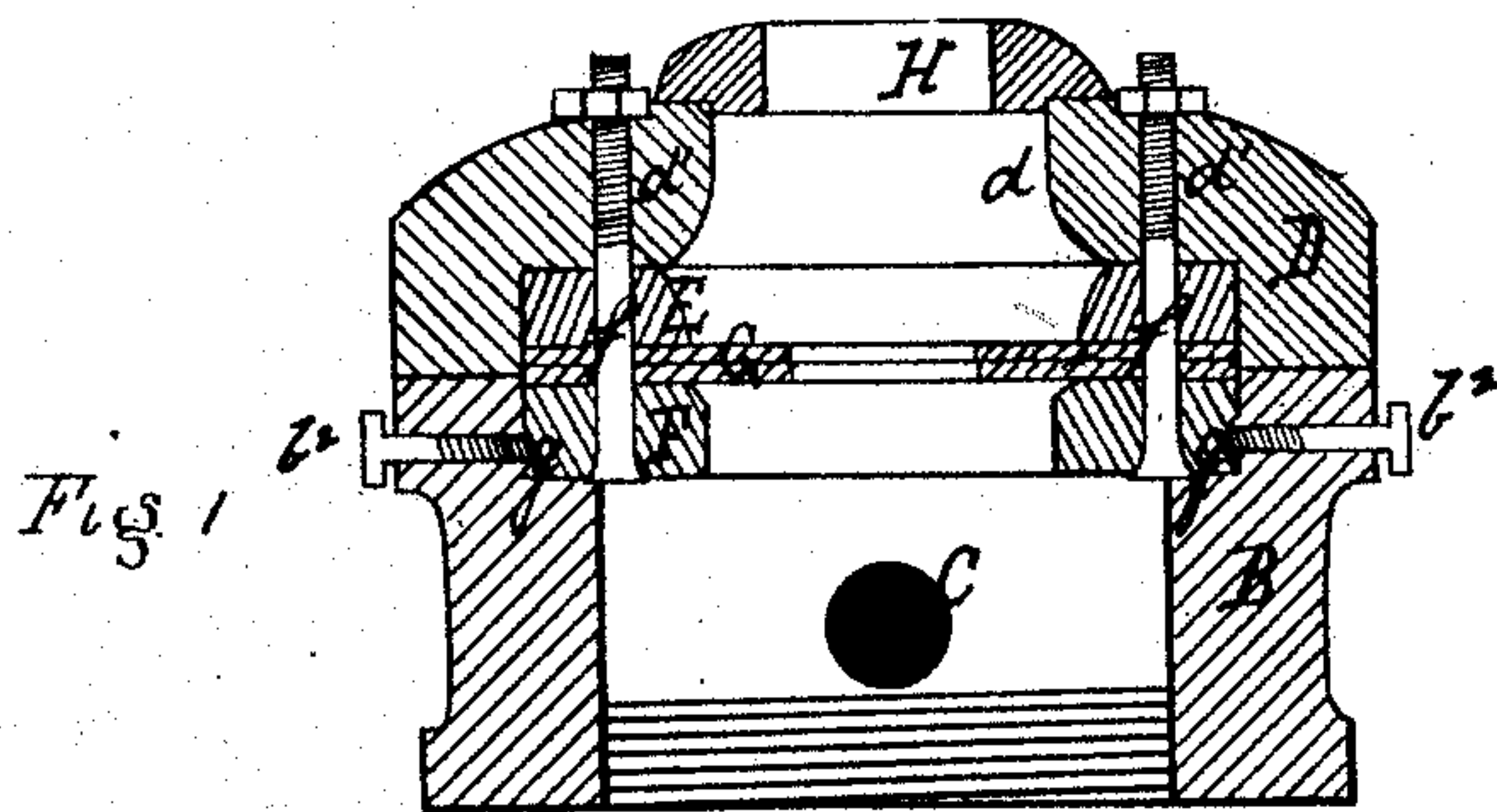


R. R. ARMOR.
Casing-Heads for Oil- Wells.

No. 155,401.

Patented Sept. 29, 1874.



WITNESSES

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UNITED STATES PATENT OFFICE.

ROBERT R. ARMOR, OF PARKER CITY, PENNSYLVANIA.

IMPROVEMENT IN CASING-HEADS FOR OIL-WELLS.

Specification forming part of Letters Patent No. **155,401**, dated September 29, 1874; application filed August 10, 1874.

To all whom it may concern:

Be it known that I, ROBERT R. ARMOR, of Parker City, in the county of Armstrong and State of Pennsylvania, have invented a new and useful Improvement in Safety Casing-Heads for Oil-Wells; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a vertical section of my improved safety casing-head, showing a portion of the oil-well tubing; and Fig. 2 is a detached sectional view of the cap of the casing-head and elastic packing.

My invention relates to safety casing-heads for tubing wells when flowing, and for controlling the gas when inserting or removing the tubing.

In drilling for oil it often occurs that when a crevice is opened the pressure of the gas causes a sudden discharge of the oil, either continuously or intermittently, and what is termed a flowing well is obtained, which, if no adequate means is at hand for readily tubing the well, results in the loss of many barrels of oil. Heretofore the ordinary method has been by placing a wooden clamp across the head to guide the tubing, which was liable to swing from side to side, or vibrate, so as to injure the thread on the tubing, rendering it almost impossible to tube a flowing well.

In tubing flowing wells it is necessary to have some means for partially closing the casing-head, so that as soon as the cap carrying the stuffing-box, through which the drill-rope works, is removed, the tubing may be put down without loss of time, and the flow of the oil speedily controlled, so that loss of oil and annoyance to the workmen may be avoided.

To supply such means is the object of my invention; and it consists in so constructing the cap of the casing-head, and connecting it with the packing-disks, that the lower disk, which confines the packing, and which projects into the casing-head, shall be clamped between set-screws passing through the upper part of the casing-head, whereby the cap and packing may be readily and quickly secured

to the casing-head at such times and for such purposes as may be required.

In the drawings referred to, A indicates a portion of the oil-tubing, and B the casing-head, of the usual construction. To the opening C of the casing-head the pipe-connection of the gas-pump is attached, and in the upper portion of the head is the annular seat *b*, which receives the lower packing-disk, which projects from the bottom of the cap of the casing-head. D represents the cap of the casing-head, having the opening *d* for the passage of the oil-well tube, and the two or more openings *d'* for the passage of the bolts which secure the disks and packing to the cap. E is the upper annular disk, and F the lower annular disk, between which is placed the elastic packing ring or rings G, all of which are provided with central orifices for the passage of the oil-well tubing, the diameter of the central opening of the elastic packing being of course less than the diameter of the well-tubing, so that it shall at all times apply itself closely to the tubing, and yet permit the passage of the tubing readily. *f* represents two or more bolts passing through the disk and packing, and through the bolt-openings *d'* of the cap. The lower face of the disk F is countersunk or recessed to receive the heads of the bolts, so that they may be flush with the face of the lower packing-rings. Around the circumference of the lower disk F I form a channel or groove, *g*, which receives the end of the set-screws *b²*, which pass through the casing-head B. The elastic packing or washer is held between the disks F and E, and clamped to the cap of the casing-head by means of the bolts in such a manner that the lower disk F projects beneath the lower face of the cap, and is seated within the recess *b* of the casing-head B. *b²* represents set-screws passing through the upper portion of the casing-head at such a point as to enter the recess *g* of the cap-head, so that when the head is in the position shown in Fig. 1 it can be firmly fixed therein by tightening the set-screws. H represents a collar or disk having a central opening equal in diameter to the pipe employed in the well-tubing, which is placed in position after the tub-

thimble or coupling is attached to the pipe, and is intended to make a bearing-surface for said thimble to take the weight off the elastic packing.

The operation of these devices is as follows: At the completion of the drilling operation, when the cap containing the stuffing-box, through which the drill-rope passes, has been removed, and the drill withdrawn from the well, the cap D is immediately slipped in position over the well, taking the place of the drill-cap and stuffing-box, and the casing-head cap is secured in position by turning the set-screws, at once closing, or partially closing, the head of the well, when the flow may be entirely stopped by plugging the central orifice; or the well may be at once tubed by inserting the tubing through the elastic packing. As the several sections of the tubing are passed down they are coupled as usual, the expansion of the packing being sufficient to allow the passage of the coupling, and when the last piece of tubing has been connected, and before the final thimble or coupling is applied, the piece H is slipped in position over the pipe. The thimble being applied, this piece H will form a shoulder, which will support the weight of the tubing, taking the strain off of the elastic packing, and enabling the pipe to be supported slightly above the bottom of the well as is desirable.

The advantages of my improved safety casing-head are the simplicity of its construction

be applied to the ordinary casing-head immediately upon removal of the drill-tube; the firmness with which it can be secured by the downward-projecting disk and the set-screws without the use of clamps or any other complicated devices. It also admits of the ready removal of the tubing and casing-head cap, should it be desirable at any time to use torpedoes in the well, being easily and quickly replaced as soon as the explosion has taken place. It is compact, not liable to be disarranged, and prevents the escape of gases from the well, thereby avoiding all danger by fire or explosion.

I am aware that elastic packings for oil-well tubing have been employed, and that said packings have been supported between disks and fastened to the casing-head of oil-wells by means of clamps, and such a device or combination of devices I do not claim; but

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

In combination with the elastic packing and its clamping-disks, cap D and the casing-head B, provided with the set-screws, substantially as and for the purpose specified.

In testimony whereof I, the said ROBERT R. ARMOR, have hereunto set my hand.

ROBERT R. ARMOR.

Witnesses:

T. B. KERR,
F. W. RITTER, Jr.