(No Model.)

B. FRANKLIN.

DEVICE FOR CONTROLLING AND REGULATING THE FLOW OF OIL WELLS.

No. 263,330. Patented Aug. 29, 1882.

Fig. 3.

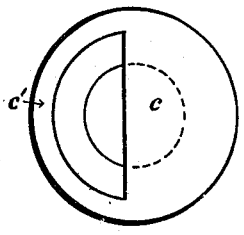


Fig. 4.

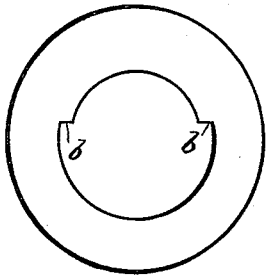


Fig. 5.

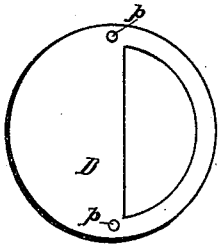


Fig. 1.

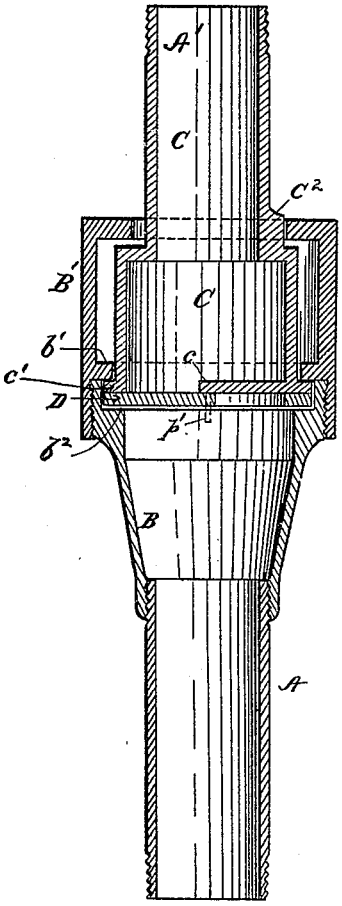
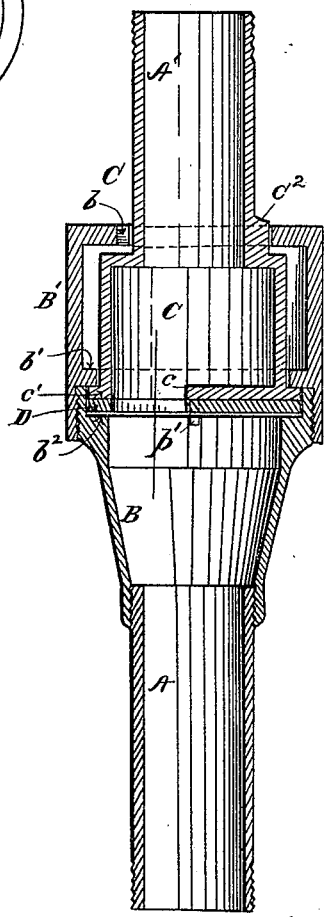


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

BENJAMIN FRANKLIN, OF BRADFORD, PENNSYLVANIA.

DEVICE FOR CONTROLLING AND REGULATING THE FLOW OF OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 263,330, dated August 29, 1882.

Application filed May 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN FRANKLIN, a citizen of the United States, and a resident of Bradford, county of McKean, and State of Pennsylvania, have invented new and useful Improvements in Devices for Controlling and Regulating the Flow of Oil-Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and the letters or figures of reference marked thereon.

My invention relates to devices for regulating or controlling the flow of oil-wells; and it consists in providing a device which can be connected with the tubing of the well, either within or without the well, but preferably within at a point above the packer, which has within it a damper or valve, which can be opened or closed by turning the tubing part way around.

My device is intended to perform the offices of two different classes of devices now in use for controlling and regulating the flow of wells, as follows: When the tubing is being put into the well or withdrawn from it, it is desirable that no flow take place through it. This is effected, so far as the placing in of the tubing, by a brittle disk, which is placed in the tubing at one of the lower joints, and which closes the tubing until it is broken, which is done after the tubing is in the well by dropping down upon it a sufficient weight to break it; but this is of no service in keeping the tubing closed while drawing it, and, indeed, there is no device to my knowledge, except my own, which will close the tubing while it is being drawn. The other class of devices to which I have above referred is those for temporarily closing the tubing for the purpose of allowing the gas to obtain a head, and then opening and allowing the well to flow copiously for a short time, so as to clear it of paraffine, and also to make a well with short pressure of gas obtain sufficient head to flow. These devices are often made so as to operate automatically, and are placed down in the well, but often the result is obtained by a simple stop-cock operated manually and placed on the flow-pipe at the top of the well.

My device has to be operated manually, but it may be placed deep in the well, and thereby obtain considerable advantage. All the automatic machines for this purpose with which I am acquainted depend upon the tension of a spring or the gravity of a weight to regulate the time of their opening by the confined gas. This necessarily makes them at times defective, for the spring may fail or break, and the whole tubing must be drawn, or it may confine the gas too long by being too heavily weighted. It is impossible to gage the operation of these devices so as to be just right for all the varying circumstances and conditions incident to a flowing oil-well.

My device is free from all complications, being perfectly simple in its construction and operation.

The accompanying drawings illustrate my invention as follows:

Figure 1 is a vertical section, showing the valve closed. Fig. 2 is a like view, showing it open. Fig. 3 is a plan view of the bottom of the part C of my device. Fig. 4 is a plan view of the top of the part B′. Fig. 5 is a plan of the contained disk D.

The construction is as follows: A represents a part of the well-tubing, and A′ the point at which the upper section of well-tubing is attached.

B is a flared casting, somewhat like a reducer, which screws onto the lower section of tubing. The top of this part is rabbeted out, so as to form a shoulder, b^2. It is also provided with a screw-thread on the outside.

D is a disk with a half-circle opening in it. (See Fig. 5.) This disk lies on the shoulder b^2 of the part B. The part C, which is attached to the upper section of tubing, is also in the form somewhat of a reducer. Its lower end is half closed by a half-disk, c, and it is provided with a flange, c', at its lower end, and above its offset it has a lug, c^2. The lower end of the part C seats in the rabbet of the part B over the disk D. There are in the disk D pin-holes $p\,p$, which fit over pins p', set in the shoulder b^2, and thus the disk D is prevented from turning around, but is allowed to move vertically.

B′ is a box-cup, which screws onto the part B. It is provided with an opening for the part C and the lug c^2; but this opening is of such a form (see Fig. 4) that the lug will abut upon shoulders $b\,b$ when the pipe is rotated, and will therefore prevent more than a half-rotation of

the pipe. The box B′ is also provided with an internal flange, b', which ledges in over the flange of the part C and holds it in the rabbet of the part B.

In Fig. 1 the parts are in such a position that the opening in the disk D is closed by the half-cover on the part C, and hence there is no opening through the device. A half-turn of the tubing from the top of the well will bring the parts into the position shown in Fig. 2, where the two half-openings are upon each other, thus leaving a free escape for the oil.

Between the shoulder b^2 and the flange b' there is enough room to leave a very little play vertically to the parts lying between. When the tubing is in the well the upper section is often held in suspension slightly, just to keep it taut. This relieves the disk D of the weight of the tubing, and when the device is closed the pressure of gas keeps it seated on the part C above it, so there will be no leak, and the tubing can be easily turned the half-turn necessary to open or close the valve.

It will be seen that my device can be operated from the top of the well by turning the tubing, as stated above; that the oil can be shut off by it or allowed to flow at will; that the device can be kept closed while the tubing is being put into the well and then opened, and can be again closed when the tubing is to be drawn.

The disk D may be attached solid to the part B, but it is better to be loose, as shown; but whether seated loosely and held by pins or lugs, or forming an actual part of the part B, it is in fact a part of the lower half of the valve.

What I claim as new is—

1. The combination, with the eduction-tube of an oil-well, of a valve consisting of two parts adapted to abut together and turn upon each other, and provided each with an opening on one side of its center, whereby as the said parts are turned upon each other the said openings may be brought in juxtaposition or not, as desired, and thus open or close the passage in said tubing, substantially as set forth.

2. The combination, with the eduction-tube of an oil-well, of a valve consisting of the parts B, B′, C, and D, constructed and arranged together substantially as and for the purposes set forth.

3. In a shut-off valve for use on oil-well tubing, the combination, substantially as shown, of the following elements: the part B, with shoulder b^2, the disk D, with opening on one side thereof, seated on said shoulder b^2 and retained from turning by lugs or pins p', the part C, with bottom having an opening on one side seated upon said disk D, the part B′, having opening to receive the part C, with stops b b therein to abut upon the lug c^2 on said part C, and also having a flange, b', and adapted to screw upon the part B and hold the part C and disk D upon the shoulder b^2.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of March, 1882.

BENJAMIN FRANKLIN.

Witnesses:
GEO. A. STURGEON,
H. F. BARBOUR.