Dec. 29, 1931. J. H. HOWARD 1,838,401

RETRACTABLE TUBING

Filed Feb. 14, 1931

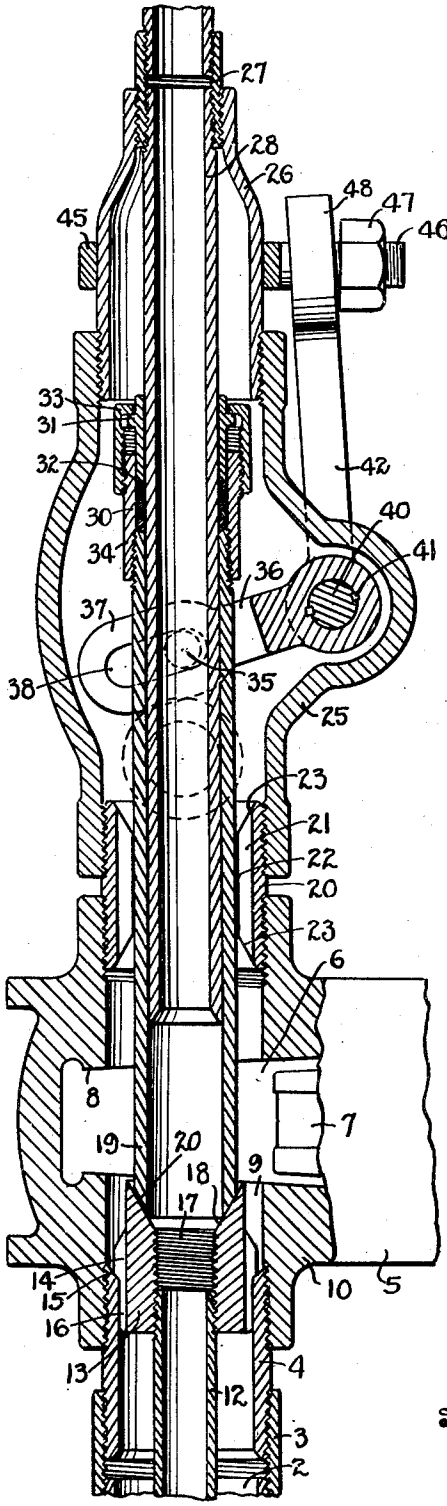


Fig. 1.

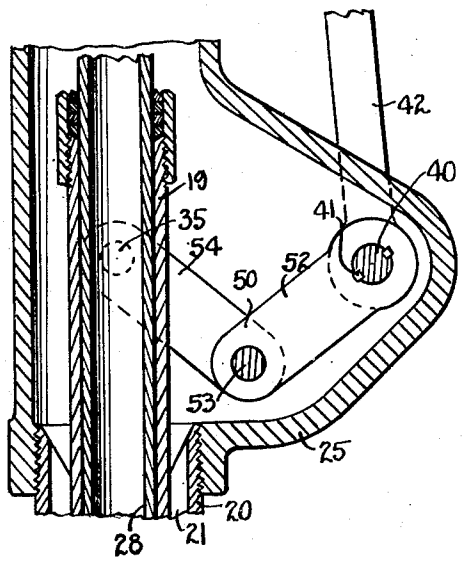


Fig. 2.

Inventor
JAMES H. HOWARD
Jesse R. Stone
Lester B. Clark
By
Attorneys.

Patented Dec. 29, 1931

1,838,401

UNITED STATES PATENT OFFICE

JAMES H. HOWARD, OF HOUSTON, TEXAS, ASSIGNOR TO J. H. McEVOY & COMPANY, OF HOUSTON, TEXAS

RETRACTABLE TUBING

Application filed February 14, 1931. Serial No. 515,880.

The invention relates to an improvement in tubing retractors which are used in connection with tubing head assemblies so that the passage from the well may be closed.

It is one of the objects of the invention to provide a section of retractable tubing, which may be operated by a lever or link construction and in which the retracting operation may be quickly accomplished.

Another object of the invention is to provide a retractable tubing section, having studs thereon so that the section may be retracted.

A still further object of the invention is to provide a guide for the retractable section of tubing.

A still further object of the invention is to provide a mechanism for locking the tubing in closed position so that leaking will be avoided and any pressure exerted in the tubing will be resisted.

The present invention relates to somewhat the same subject matter as disclosed in the co-pending application, Serial No. 497,757, filed November 24th, 1930.

The invention will be readily understood by having reference to the drawings in which

Figure 1 is a central vertical section through one embodiment of the invention, and showing the tubing in closed position.

Figure 2 is a broken detailed sectional view of a modified form of the operating mechanism.

The top of the casing which extends downwardly into the well is indicated at 2 and is provided with a coupling 3, which supports a nipple 4. If desired, however, the coupling and nipple may be dispensed with and the gate valve 5 coupled directly on the casing tubing. As here illustrated, however, the valve 5 is threaded to the nipple 4, but flanged connections may be used if desired. The valve 5 is of the usual construction and includes the valve chamber 6 and the gate member 7, which is adapted to move transversely to engage the seat 8 and close the passage 9 through the valve housing 10. It is often desirable in the operation of the well to separate the tubing and close the valve member to avoid excessive pressure accumulating in the well, or to close off the well when different types of fittings or adjustments to the existing fittings are to be made on the Christmas tree.

The tubing which extends into the well is indicated at 12 and has connected to its upper end a hanger or tubing support 13. This hanger has been shown as provided with wings 14, which are beveled at 15, to seat on the upper end of the nipple 4, or this beveled portion may seat on the casing 2. Flutes 16 in the side of the hanger are provided to permit a flow of gas or oil past the hanger. The hanger is threaded internally at 17 to receive the tubing 12, and is provided with a tapered seat 18, which is adapted to receive the retractable section of tubing 19, which is tapered at 20 to fit the seat 18. The construction of this seat is described in somewhat different form in my co-pending application, but may assume various constructions without departing from the spirit of the invention.

The nipple 20 is shown as being connected to the body 10 of the gate valve on the upper end thereof. This nipple or guide 20 is provided with flutes 21 to allow passage of fluid, but has a main portion of the nipple extending inwardly to form a guide surface 22. This guide surface terminates in the upper and lower faces 23 so that the retractable section of tubing 19 will be guided therethrough in its movement and any flow of fluid will also pass over this tapered surface. Supported on this nipple 20 is a housing 25, which in turn supports a fitting 26. This fitting 26 may be swaged, as shown, or it may be of uniform diameter. In either instance, however, it is provided with an adapter 27, which carries a piece of stationary sections of tubing 28. This tubing forms a continuation of the string 12 of tubing, but is separated therefrom and is arranged to become a continuous string of tubing by seating of the retractable section 19. This retractable section telescopes about the stationary portion 28 and a stuffing box assembly 30 has been shown to insure a proper seal between the two telescoping pieces of pipe. This stuffing box may assume any de-

sired form, but here includes a gland 31, packing 32 and a cap 33, which holds both the gland and packing in proper position within the seat member 34, which has been shown as threaded to the retractable section 19.

In order to retract the tubing 19 and to again move it or seat it in closed position, a pair of studs or lugs 35 have been provided on opposite sides of the section of tubing. A yoke 36, which preferably straddles the pipe 19 is arranged in the housing 25 and includes an arm 37, which extends beyond and to one side of the pipe. This arm 37 has therein a slot 38, which is adapted to receive the studs 35. The yoke 36 is connected to a rock shaft 40 by means of the keys 41. This rock shaft extends transversely of the housing 25 and protrudes from at least one side thereof. On the extending end of this shaft 40 is mounted a lever 42, which may be used to manipulate the device. This arm 42 may be moved away from the vertical position of the tubing head so as to rock the shaft in a clockwise direction. This will obviously raise the yoke 36 and the arm 37 so that an upward pressure is exerted on the studs 35. This pressure will raise the tubing 19 so that it will telescope upwardly about the stationary section 28, thus leaving the chamber 36 of the gate valve 35 open so that the gate 7 may be moved to closed position.

It is to be understood that the lever or arm 42 may have connected therewith any suitable device so that it may be operated from a distance, if desired. In order to insure that the section 19 of the tubing will remain in proper position a bracket 45 has been provided, which is connected to the tubing head assembly and carries a threaded spindle 46. A nut 47 may be run on to this spindle to engage the lever 42 and hold it in the position shown in Figure 1. If desired, this nut 47 may be drawn up tightly against the lever so that considerable pressure may be exerted upon the tubing 19 to hold it in the seat 18. The arm 42 is provided with a bifurcated portion 47 which straddles the spindle 46.

Figure 2 shows a modified form of the yoke 36 and the lever 42, which is quite similar to the structure already described except that a linkage indicated generally at 50 is connected with the shaft 40. The first link 52 is held on the shaft by means of the keys 41. A pin 53 passes through this link 52 and carries two spaced links 54. These links are pivoted on the studs 35, which extend from the side of the section 19, as previously described. In this modification, there is a positive connection between the parts at all times, and by varying the length of the link 52 or the link 54, any desired leverage may be obtained to cause movement of the section 19 of tubing.

While two modifications of the invention have been shown and described, it seems readily apparent that other forms may be adopted, and it is intended broadly in this application to cover the idea of operating a retractable tubing by a lever or arm or linkage construction of any type.

Having described the invention, what I claim is:

1. A tubing retractor including a housing, a transverse shaft therein, a lever to fulcrum about said shaft, a retractable section of tubing, and means connecting said shaft and tubing whereby pivoting of said lever will move said tubing.

2. A tubing retractor including a housing, a transverse shaft therein, a lever to fulcrum about said shaft, a retractable section of tubing, means connecting said shaft and tubing whereby pivoting of said lever will move said tubing, and means on said housing to lock said lever in immovable position when said tubing is seated.

3. A tubing control head including a gate valve, a casing on which said valve is supported, a string of tubing suspended in said casing, a housing connected above said valve, a string of tubing supported in said housing, a retractable section of tubing in said housing and telescoped about said supported tubing, and means carried by said housing and including a rock shaft, a lever, and yoke to move said retractable section of tubing.

4. A tubing control head including a gate valve, a casing on which said valve is supported, a string of tubing suspended in said casing, a housing connected above said valve, a string of tubing supported in said housing, a retractable section of tubing in said housing and telescoped about said supported tubing, and means carried by said housing and including a rock shaft, a lever, yoke to move said retractable section of tubing, and a slot and stud connection between said yoke and said retractable section of tubing.

5. A tubing control head including a gate valve, a casing on which said valve is supported, a string of tubing suspended in said casing, a housing connected above said valve, a string of tubing supported in said housing, a retractable section of tubing in said housing and telescoped about said supported tubing, and means carried by said housing and including a rock shaft, a lever, yoke to move said retractable section of tubing, a bracket on said housing and means on said bracket to clamp said lever in position to retain said retractable section closed.

In testimony whereof I hereunto affix my signature this 2nd day of February, A. D. 1931.

JAMES H. HOWARD.