June 9, 1931. C. R. EDWARDS 1,808,770

SAFETY CATHEAD

Filed Aug. 21, 1925 2 Sheets-Sheet 1

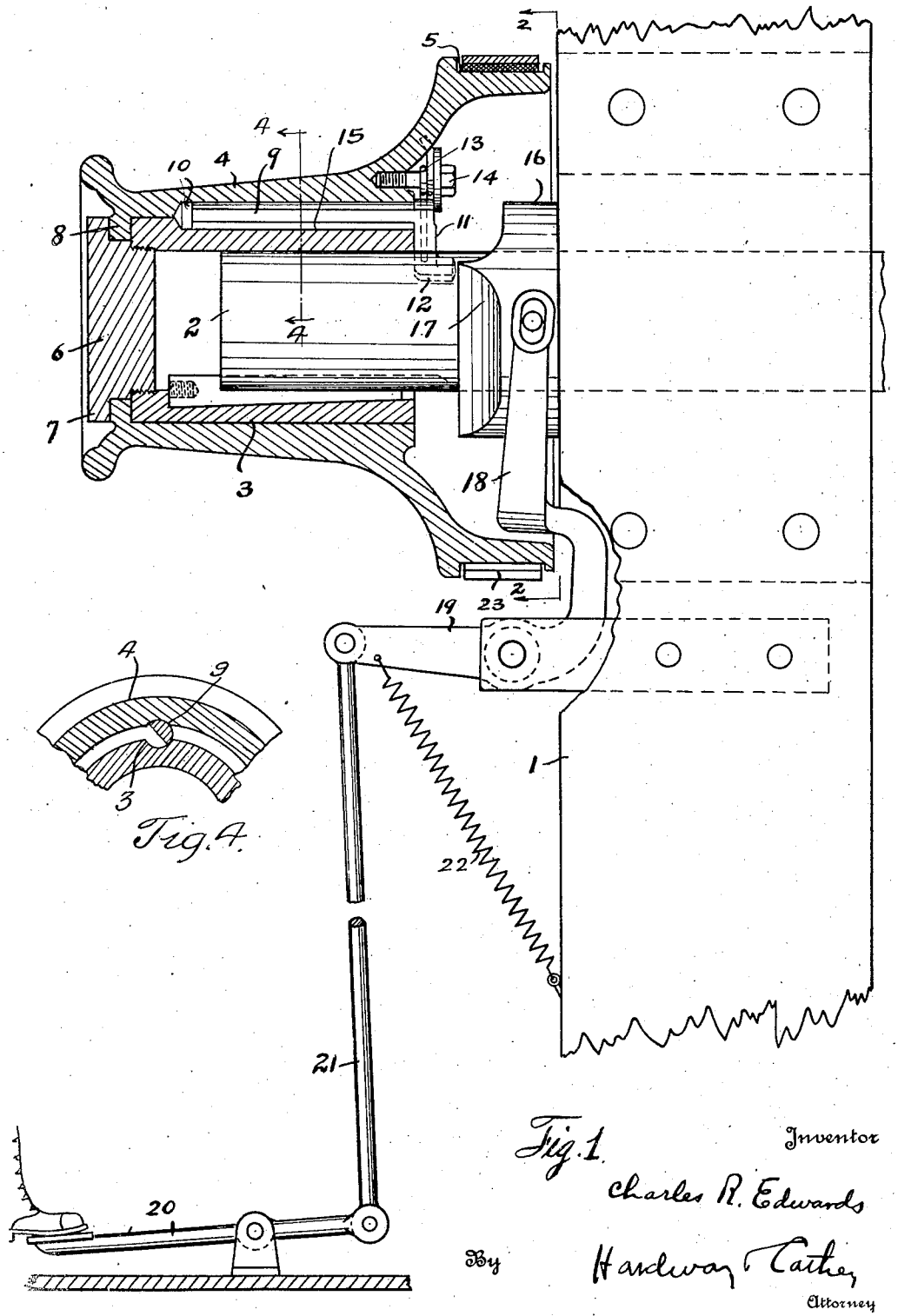


Fig. 1.

Fig. 4.

Inventor

Charles R. Edwards

By Hardway & Cather

Attorney

June 9, 1931. C. R. EDWARDS 1,808,770

SAFETY CATHEAD

Filed Aug. 21, 1925 2 Sheets-Sheet 2

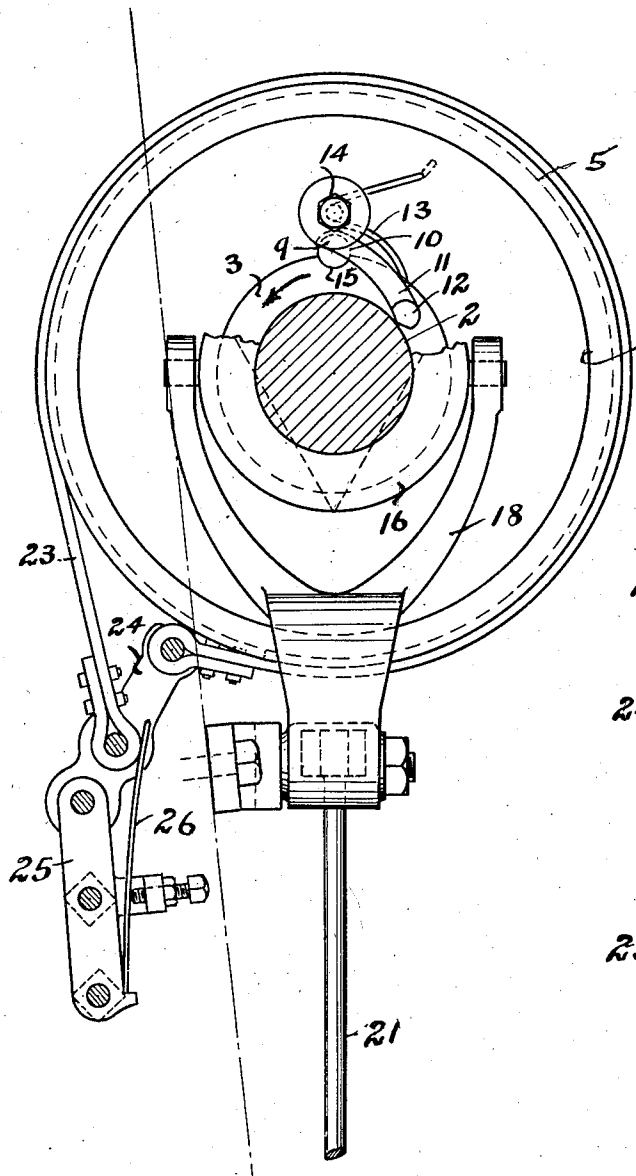


Fig. 2.

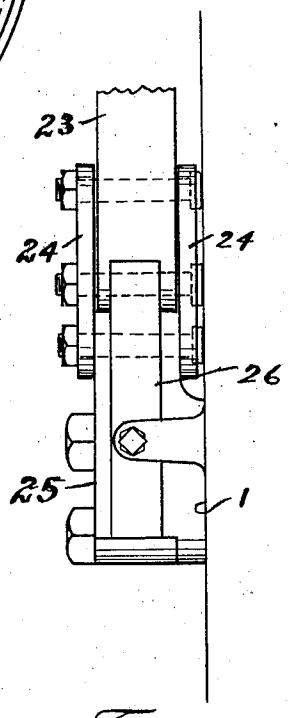


Fig. 3.

Inventor
Charles R. Edwards

By Hardway & Cathey
Attorney

Patented June 9, 1931 1,808,770

UNITED STATES PATENT OFFICE

CHARLES R. EDWARDS, OF HOUSTON, TEXAS

SAFETY CATHEAD

Application filed August 21, 1925. Serial No. 51,693.

This invention relates to new and useful improvements in a safety cathead.

One object of the invention is to provide a cathead designed to be used with, and which forms a part of, the conventional draw works used in well drilling operations, and the invention embodies novel means for operatively connecting the cathead with and disengaging it from the counter shaft of the draw works.

Another object of the invention is to produce a device of the character described which also embodies a one way brake designed to automatically operate to hold the cathead against backward rotation while sustaining a load and when disengaged from said shaft whereon it is mounted.

A further feature of the invention resides in the provision of a device of the character described embodying a novel type of clutch for clutching the cathead with its shaft for rotation with said shaft, when the shaft is rotated in one direction, said clutch permitting the shaft to turn, idly, in the other direction.

With the above and other objects in view this invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 shows a side elevation of the complete device partly in section.

Figure 2 shows a cross sectional view taken on the line 2—2 of Figure 1,

Figure 3 shows a fragmentary side view of the brake employed, and Figure 4 shows a fragmentary sectional view taken on the line 4—4 of Figure 1.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 designates the supporting framework of the conventional draw works. The numeral 2 designates the driving counter shaft thereof. Keyed on this shaft there is a sleeve 3, and loosely mounted on this sleeve there is the drum like cathead 4, having at its end, adjacent said framework, an enlarged annular friction surface 5.

The cathead is retained on the sleeve 3, by means of an internal nut or plug 6 which is threaded into the outer end of said sleeve and whose outer end has an annular, outwardly extending flange 7 which engages against the outside of the annular inwardly extending flange 8 carried by the cathead 4.

There is a long, substantially semi-cylindrical key 9 which is adapted to lie in a correspondingly shaped keyway 10, in the inner surface of the cathead 4 and with its flat face substantially flush with the inner surface of the cathead when completely seated in its keyway. The inner end of this key has a right angular arm 11, preferably integral therewith, and with its free end 12 inwardly turned and normally held against the shaft 2 by means of the pressure spring 13.

This spring is coiled around the set bolt 14, which is anchored to the adjacent end of the cathead, and it has one end anchored to the cathead, with its other end pressing inwardly against the arm 11. The shaft 2 and sleeve 3 normally turn in the direction indicated by the arrow in Figure 2, and with the arm 11 lying against the shaft 2 the key 9 will be partly unseated from its seat 10, and turned into the opposing semicylindrical keyway 15 in the outer surface of the sleeve 3, thus forming a clutch and locking the sleeve 3, in driving relation with the cathead 4. Should the shaft 2 be reversed the sleeve 3 will run idly with relation to the cathead, on the principle similar to that of the conventional roller clutch.

There is a clutch releasing mechanism embodying a loosely mounted collar 16, slidable on the shaft 2 and having the tapering faces, as 17. This collar is operatively connected with a yoke 18 which is pivoted to the framework and extended, forming the lever 19. There is a pivotally mounted foot pedal 20, whose inner end is connected to the lever 19 by means of the link 21. There is a pull spring 22 connected to the lever 19, at one end, and at its other end to the framework 1 and this spring normally holds the collar in such position that one of its sloping faces

17 will engage under the outturned end 12 of the arm 11 and hold the same away from the shaft 2 and thus fully seat the key 9 in its seat 10 and permit the sleeve 3 to turn idly in the cathead. By depressing the outer end of the pedal 20, the collar 16 may be released from the arm 11 and the pressure of the spring 13 will cause the key 9 to rise from its seat into interlocking position with the sleeve 3.

Various kinds of work is done with the cathead in drilling operations. In carrying out this work a cable is wound around the cathead and one end attached to a load to be lifted, or other work to be performed. The outer end of the cable is held, and manipulated, by a workman in the usual way. It sometimes happens that the cathead is released from its shaft while sustaining a load. In order to hold it, to prevent dropping of the load, there is provided a friction brake, embodying a band 23 which surrounds the friction surface 5, and also including a lever 24, pivoted to the bracket 25, which is attached to the frame 1. The respective ends of the band 23 are attached, one to the free end of the lever 24 and the other at an intermediate end thereof, and a flat, pressure spring 26 is arranged to press against said lever and tends to tighten the band 23 around the friction surface 5 so as to hold the band in readiness to be frictionally engaged and gripped by the friction surface 5, of the cathead, in case the cathead is declutched from the shaft 2 and starts to turn, under the influence of the load sustained by it. The cathead will thus be held against reverse rotation.

There are obviously many mechanical variations which may be made in the construction of the device and other combinations in which it may be used, besides its use in connection with draw works.

What I claim is:—

1. In a safety device, a cathead, means adapted to support and to drive said cathead, said cathead being adapted to receive and drive a line by friction while said line is manually held in contact with said cathead, engaging means whereby said cathead may be driven in only one direction, means through which said engaging means may be held in engaging position by the operator while manipulating the line, and means preventing a reverse rotation of said cathead.

2. In a safety device, a support, a cathead adapted to operate or hold a line as said line is manipulated into only a frictional contact therewith, a driving member, operative engaging means whereby said cathead may be driven in only one direction by said driving member only when said means is held by a line manipulator and means preventing a reverse rotation of said cathead.

3. In a safety device, a support, a cathead on the support and adapted to receive an operating line and normally revolvable in one direction only, a driving member to rotate the cathead, engaging means for driving said cathead, through said driving member, means through which an operator may hold said engaging means engaged while said cathead is being revolved and while said line is being operated on said cathead.

4. In a safety device, a cathead to receive a line, said cathead being normally rotatable in one direction only, engageable driving means for turning said cathead in only one direction, means through which a manipulator, while manipulating the line, may also engage and hold said driving means in driving connection with said cathead while the line is being operated on said cathead.

In testimony whereof I have signed my name to this specification.

CHARLES R. EDWARDS.