Jan. 6, 1942. K. KELLEY 2,268,945

STROKE ADJUSTER

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Fig.1

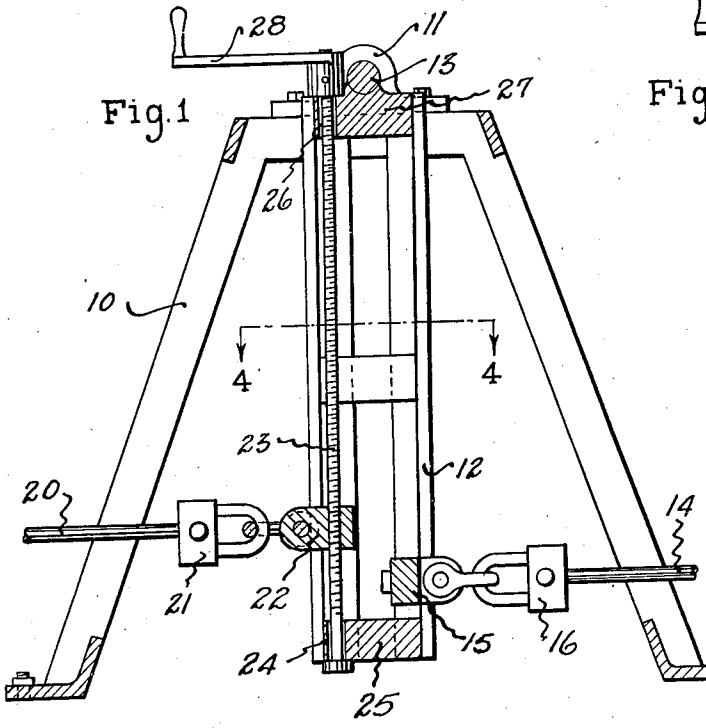


Fig.2

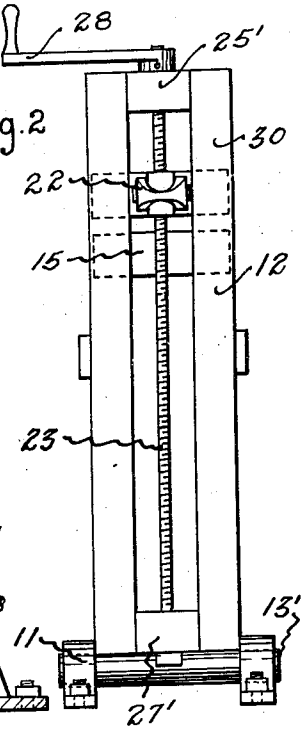


Fig.3

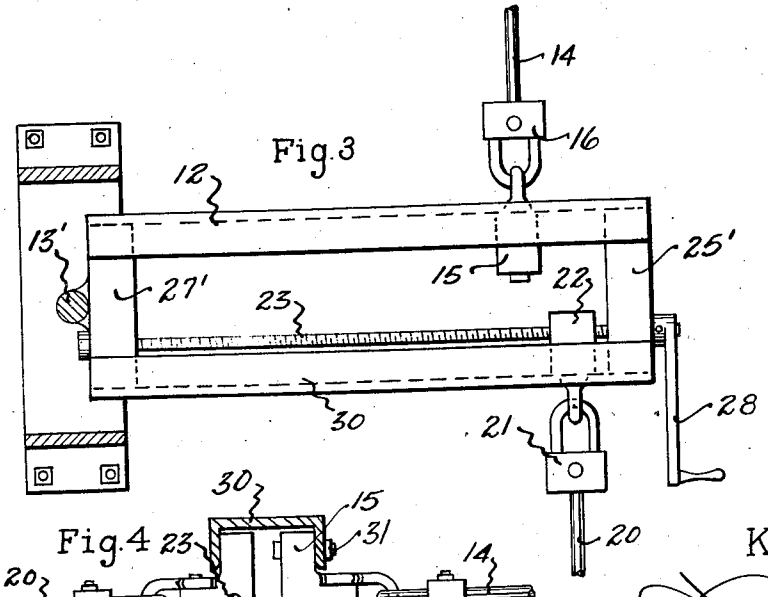
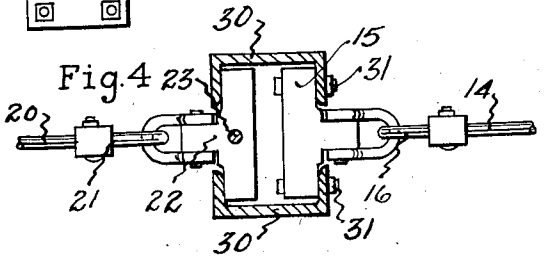


Fig.4



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Fig. 5

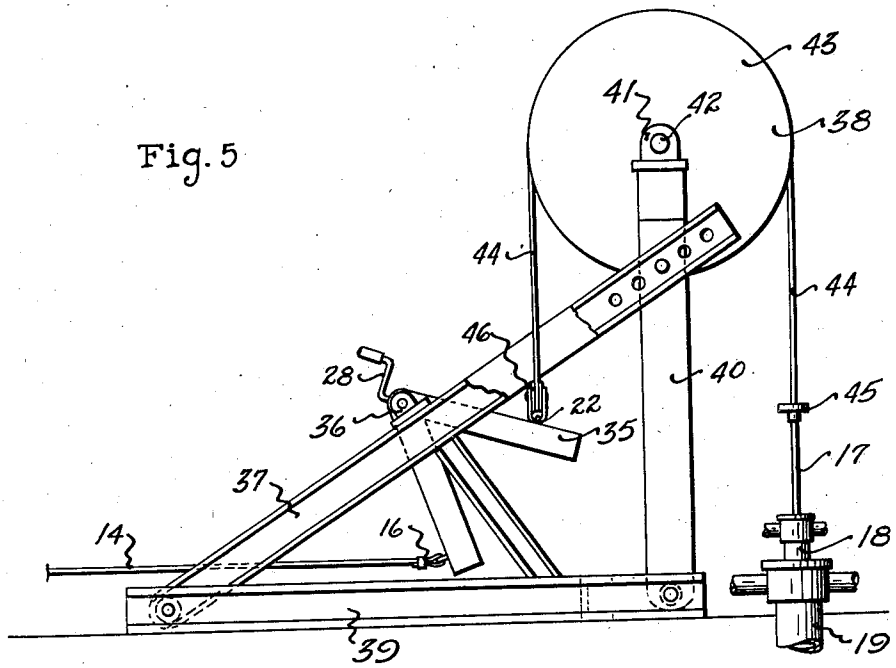
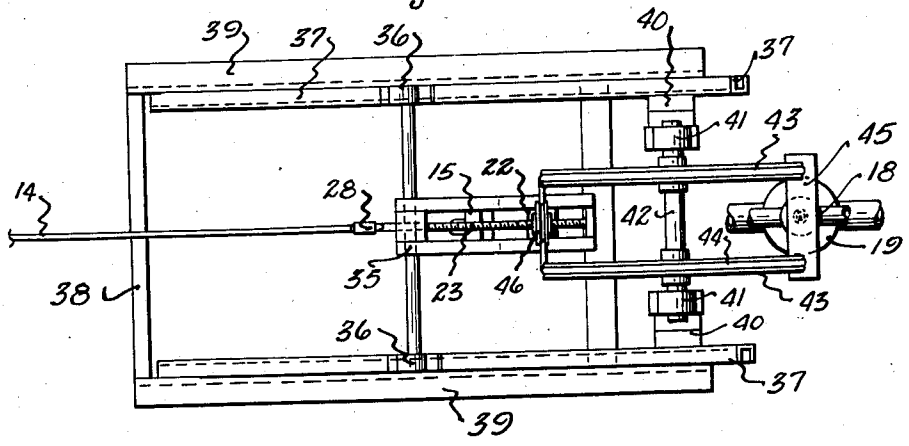


Fig. 6



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Patented Jan. 6, 1942

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UNITED STATES PATENT OFFICE

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STROKE ADJUSTER

Kork Kelley, Wichita Falls, Tex.

Application April 8, 1940, Serial No. 328,562

2 Claims. (Cl. 74—110)

This invention relates to new and useful improvements in stroke adjusters for rod lines.

One object of this invention is to provide a stroke adjuster for rod lines which adjuster may be used independently of or secured to a pump jack assembly.

Another object of this invention is to provide manually operated means for controlling the length of stroke which means may be operated at any time.

Still another object of the invention is to provide means for centering the lift lines when the device is used in conjunction with a pump jack assembly.

A still further object of this invention is to provide an adjustable standard when the device is used with a pump jack assembly.

Still another object of this invention is to provide a stroke adjuster which adjuster may be used in a horizontal, vertical or right-angular plane with equal efficiency.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is shown, and wherein:

Figure 1 is a transverse vertical sectional view of a stroke adjuster for rod lines constructed in accordance with the present invention.

Figure 2 is a side elevation of a slightly modified form of the invention.

Figure 3 is a plan view partly in elevation and partly in section showing the horizontal-type stroke adjuster.

Figure 4 is a horizontal cross-sectional view taken on lines 4—4 of Figure 1.

Figure 5 is a side elevational view having parts thereof broken away showing a slightly modified form of stroke adjuster used in connection with one type of pump jack assembly, and

Figure 6 is a plan view thereof.

In the drawings, the numeral 10 designates a standard constructed of suitable material and having bearings 11 positioned in the upper end thereof. A stroke adjuster 12 is suitably mounted in the bearings 11 by means of suitable stub axles 13 provided at the upper end of the adjuster 12 while the lower end of said adjuster is free to swing in an arc about said axles 13. The adjuster 12 is operated by means of a rod 14 which rod is connected at one end to a suitable source of power (not shown) while the other end is movably secured to a cross-member 15 by means of a clevis hook 16 which is secured to the rod 14.

The sucker rods 17 are disposed axially within the usual tubing 18 and casing 19, and are indirectly secured to an adjuster line 20. This line 20 carries a clevis hook 21 in one end thereof and which hook in turn is secured to an adjustable cross-member 22. By observing Figure 1, it may be seen that the cross-member 22 is threadedly secured to an elongated rod 23 which rod is journaled in its lower end in a suitable bearing 24 which bearing is provided in a lower brace member 25 of the adjuster 12. The upper end of the rod 23 is journaled in bearings 26 which bearings are provided in a head member 27 of which the stub axles 13 are an integral part thereof. A crank arm 28 is fixedly secured to the extreme upper end of the rod 23 whereby said rod may be rotated in either a clock-wise or a counter clock-wise direction.

The body of the adjuster 12 is comprised of a pair of channel bars 30 being secured together at their upper and lower ends by the members 25 and 27. By observing Figure 4, it may be seen that the cross-member 15 is secured by means of bolts 31 near the lower end of the channels 30 whereby this cross-member will exert an equal pressure upon each channel bar upon the back or power stroke thereof. The cross-member 22 is held in the desired vertical position only by means of the threaded rod 23, but this member contacts the opposite legs of the channel bars and exerts an equal pressure upon each on the down stroke of the device.

In operation, as the power unit (not shown) draws the adjuster 12 in a backward arc (to the right in Figure 1) the sucker rods 17 will be raised due to its connection to the adjuster 12 through the medium of the members 20, 21 and 22. The weight of the sucker rods will swing the adjuster in a forward arc (to the left in Figure 1) to allow for the down or intake stroke of the pump. In the event that it is desired to pump a hundred barrels a day from a well that is producing but a hundred barrels, the cross-member 22 may be raised and adjusted whereby that particular well would pump exactly a hundred barrels in a day. It is a well-known fact that by constantly removing the oil as it seeps into the well, the static head pressure is entirely eliminated whereby this pressure at no time forces the oil back into the oil-bearing sand to decrease the life of that well. By manipulation of the

crank arm 28, the stroke desired for each individual well may be acquired.

A slightly modified form of the invention is shown in Figure 2. In this form the body 12 of the adjuster is identical to that hereinbefore described as is the rod 23 and crank arm 28. The brace member 27' is provided at the lower end of the body and carries stub axles 13' thereon while a brace member 25' is provided at the upper end through which the rod 23 projects. The operation of this device is identical to that hereinbefore described and differs only in the fact that the pivot point of this adjuster is at the bottom instead of at the top.

In Figure 3 a slightly modified form of the invention is shown. In this type adjuster the parts are identical to those parts shown in Figure 2 but the axles 13' are shown in a vertical position whereby the body extends outwardly therefrom in a horizontal plane. The operation of this type adjuster is obvious.

In Figures 5 and 6 still another form of the invention is shown. In this form an angular stroke adjuster 35 is provided. In one leg of the body of this adjuster is disposed the cross-head 22 and its accompanying rod 23 and crank arm 28. In the other leg the cross-member 15 is positioned with its accompanying clevis 16 and power line 14. The adjuster assembly is pivotally mounted in suitable bearings 36 which bearings are secured to angular brace bars 37 of a pump jack assembly 38. The assembly comprises a base frame 39 having a pair of uprights 40 pivotally secured to the forward end thereof while the angular brace member 37 is pivoted at the rearward end of said base. The uprights 40 are bent inwardly toward each other near the upper ends thereof and carry bearing boxes 41 on their extreme upper ends. A horizontally disposed axle 42 is journaled in the bearing boxes 41 and carries thereon a pair of grooved pulley wheels 43. Particular attention is called to the fact that the wheels 43 are free to move longitudinally upon the axle 42 whereby said wheels are self-aligning.

A cable 44 has one end secured to one horizontal arm of a T-shaped cross-member 45 which member is secured to the extreme upper end of the pump rods 17. The cable is then threaded over one of the wheels 43 and arranged to engage a semi-circular aligning member 46 and is then arranged over the other wheel 43 and has its other end secured to the opposite arm of the T-shaped member 45. The semi-circular self-aligning member 46 is secured to the cross-member 22 of the adjuster 35. In operation of this device, the adjuster converts a horizontal power into a vertical pull. Attention is called to the fact that a predetermined ratio is arranged between the power unit (not shown), the stroke adjuster 35, and the direct-life pulley wheels 43 whereby the stroke may be adjusted through the medium of the threaded rod 23 as has hereinbefore been explained. Attention is also directed to the fact that the frame of this assembly is adjustable due to the pivot points of the uprights 40 and angular brace members 37 whereby minute adjustments of the wheels 43 may be made.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. A stroke adjuster arranged for incorporation in a reciprocable rod line, a supporting structure, a frame pivotally mounted for swinging movement at one end to said supporting structure, said frame comprising a pair of confronting channel members defining spaced apart tracks, a screw rod journaled at either end in bearings mounted in either end of said frame, a cross-head movable longitudinally in either of said tracks, one of said cross-heads having an internally threaded opening to receive said screw rod, means for stationarily securing said companion cross-head in its track, means on either cross-head for securing sections of said rod line thereto and means for rotating said screw rod whereby to vary the length of stroke of said rod line during reciprocation thereof.

2. In an apparatus for varying the length of stroke of a reciprocable rod line, a support, a frame pivoted at one end to said support for oscillating movement, said frame comprising a pair of relatively parallel tracks, a fixed cross-head in one of said tracks to which a section of rod line is connected, a slidable cross-head in the companion track having means for receiving a complementary section of said rod line, a screw rod having its ends mounted in bearings in either end of said frame and means for rotating said screw rod to change the positions of said slidable cross-head whereby to vary the length of the stroke of said rod line during reciprocation thereof.

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