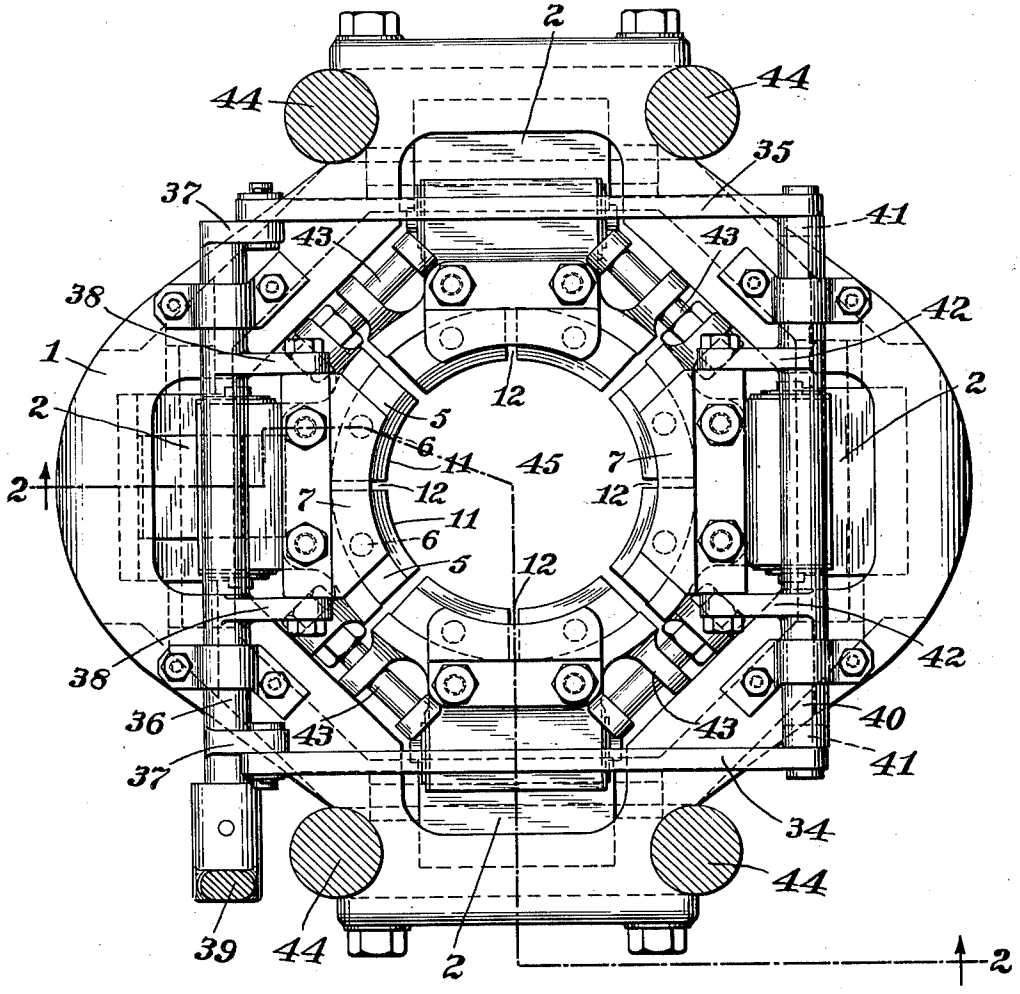
Dec. 3, 1929. C. E. REED 1,737,893

WELL CASING ELEVATOR

Filed March 15, 1928 2 Sheets-Sheet 1

Fig. 1.



Inventor:

Clarence E. Reed,

by Spear, Middleton, Donaldson & Haley
Attys.

Dec. 3, 1929. C. E. REED 1,737,893

WELL CASING ELEVATOR

Filed March 15, 1928 2 Sheets-Sheet 2

Fig. 2.

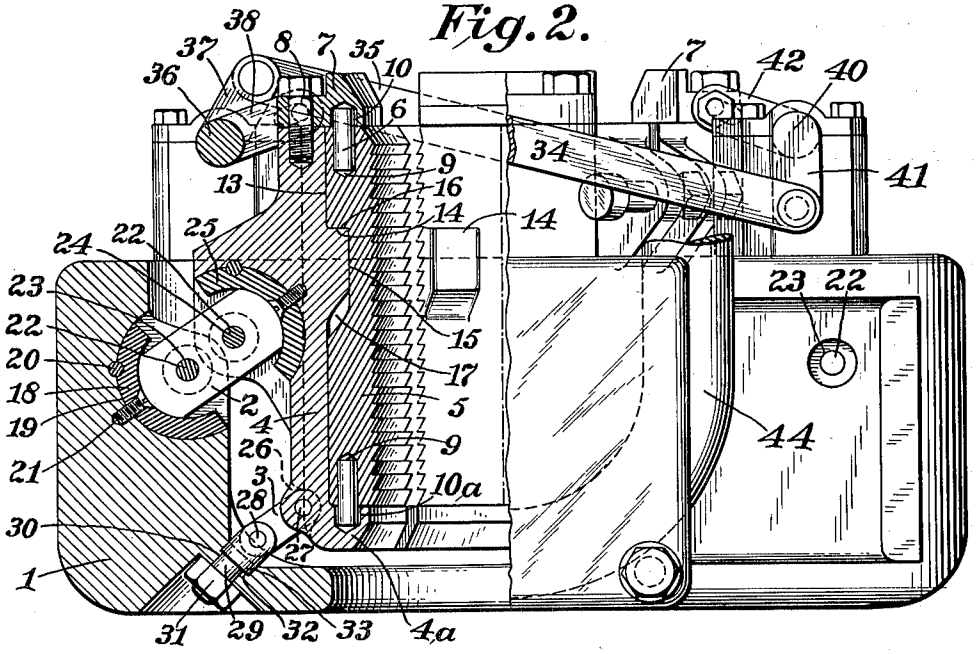
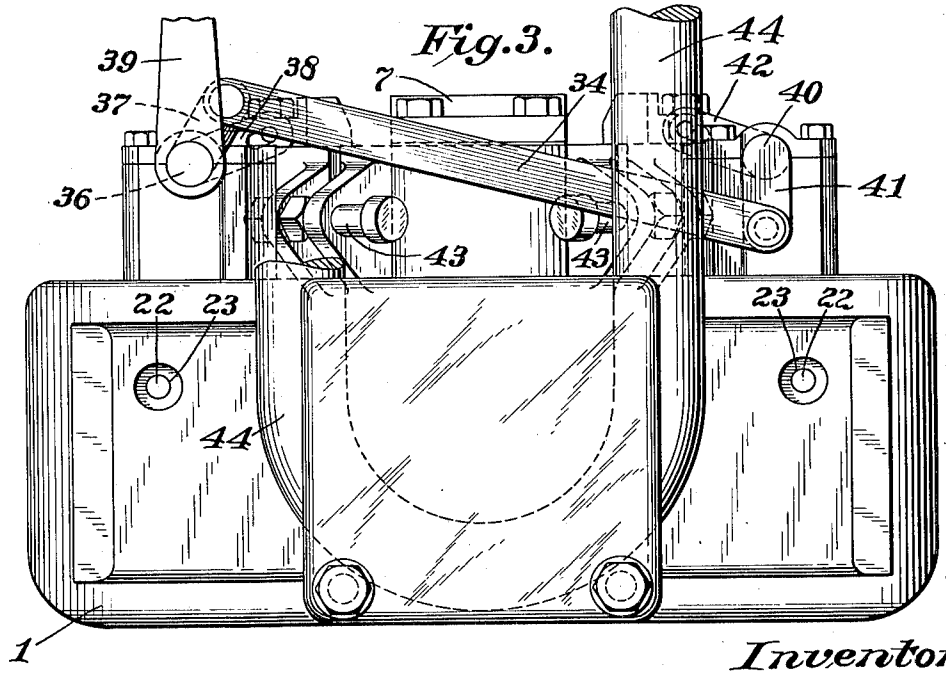


Fig. 3.



Inventor:

Clarence E. Reed,

by Spear, Middleton, Donaldson & Hall
Attys.

Patented Dec. 3, 1929 1,737,893

UNITED STATES PATENT OFFICE

CLARENCE E. REED, OF WICHITA, KANSAS

WELL-CASING ELEVATOR

Application filed March 15, 1928. Serial No. 261,866.

My invention relates to improvements in elevators for well casings or tubing.

An object of the invention is the provision of improved apparatus to be used for efficiently lowering and raising pipe or tubing into or from a well bore.

The invention consists in the features, combination and arrangement of parts, hereinafter described and particularly pointed out in the claims.

In the drawings:

Figure 1 is a plan view of my improved apparatus with elevator bails shown in section.

Fig. 2 is a view partly in transverse section through the elevator, substantially on line 2—2 of Fig. 1.

Figure 3 is a partial front elevation of the apparatus.

Referring to the drawings 1 is the base of the elevator, 2 is a main thrust sustaining link, 3 is a subsidiary link, 4 is a jaw. 5 are segmental slips which are held by terminal pins 6, one in bracket 7 which is secured to the upper end of the jaw by screw 8, and the other in socket 10^a in inwardly extending lower flange 4^a of the jaw 4. The pins are mounted in sockets 9 in the segmental slips and extend into sockets 10 and 10^a in bracket 7 and jaw 4 respectively. The cylindrical pins 6 are of smaller diameter than the socket 10 and 10^a to provide a loose mounting of the segmental slips in the jaws.

The slips and pins are therefore free to turn about the axis of the pins 6 so that the teeth 11 of the slips may adjust themselves to the surface of the pipe. Two slip segments are shown in each of the four jaws and are spaced apart as shown at 12 to provide additional room for free movement of the slips in their loose mounting.

The curved faces of the jaws 4 are maintained in proper angular position by links 2 and 3 which connect the jaws to the base. A hanger shoulder 14 is provided on each jaw face 13 upon which the segmental slip is adapted to rest, a recess 15 forming cooperating shoulder 16 being formed in the rear curved surface of the slip.

When the slips are in place on the jaws they are supported by shoulders 14 but are movable in the jaws about the axis of the pivot pins 6 sufficiently to permit the slips to adjust themselves to the pipe or well casing. A clearance space 17 is provided to allow the slip more readily to adjust its toothed face to the pipe surface.

Referring to the link connections of the jaws to the base, 18 is the liner of a socket 19 in the base 1. The liner 18 may be held by a key 20 and a screw 21 or by any other suitable means. Pins 22 are provided which pass through aligning bores in the base and links 2 as shown at 23 to provide the lower pivoted connection, and pass through aligning bores in the jaws and links 2 as shown at 24 to provide the upper pivotal connection of the links 2 with the base. A liner 25 is provided in each jaw 4, and is held in place in the same manner as the liner in the base. The lower link 3 is secured in socket 26 in the jaw by pin 27 and is secured at its other end by pin 28 in a socket member 29 which is removably secured in bore 30 of the base by means of nut 31 screw threaded on the end of socket member 29. A shoulder 32 is provided in the base at the upper end of bore 30 adapted to receive the shoulder 33 of socket member 29 and to thus limit downward movement of the socket member in the bore 30.

The lower link connection permits better control of the contact face of the segmental slips with the surface of the pipe or well casing and permits uniform initial contact for the full length of the slip contact face. This eliminates danger of pipe slippage due to the slip contacting on the pipe with a few teeth only initially at the top or bottom of the slip, as is the case where the jaws are free to rock about a single pivot or link connection. By the double link connection the contact face of the slips may be maintained substantially vertical so as to uniformly engage the well casing or pipe upon initial contact therewith.

For manual manipulation of the jaws to raise and lower them to and from the pipe, an arrangement of links 34, 35, crank shaft 36 having crank arms 37 and 38 and operating lever 39, and crank shaft 40 having crank arms 41 and 42, is provided. The mounting of these lifting connections at the top of the

jaws gets them out of the way of the derrick man and makes possible the use of a foot treadle to operate in the derrick, instead of using a hand lever, besides placing the lifting connections in convenient position for operation. Crank arms 38 and 42 are connected to the top of two of the jaws, the others being operated by the usual slip connections 43.

The subsidiary lower guiding link 3 is smaller than the main jaw carrying link 2. The main link 2 is connected to the jaw about midway of the height of the jaw. The guiding link 2 is made small in size and is provided with a small removable socket member requiring only a small bore in the base, so that the massive lower structure of the base 1 of the elevator remains substantially unimpaired.

The elevator bails 44 are shown in section in Fig. 1.

The jaws form a segmental pipe clamping or gripping bowl or ring 45 as shown in Fig. 1.

I claim:

1. In a well casing elevator, a base, a jaw, links pivotally connected at their ends to said base and jaw, said base having a bore through the lower portion thereof enlarged at its inner end to provide a shoulder, a link socket member having a screw threaded shank and shoulder adapted to lie in said bore and to engage the shoulder of the bore and a nut engaging the screw threads of the shank and bearing against the base at the outer end of the bore to securely hold the socket member removably in place, said socket member being connected with one of said links.

2. In a well casing elevator, a base, a jaw, links pivotally connected at their ends to said base and jaw, said base having a bore through the lower portion thereof enlarged at its inner end to provide a shoulder, a link socket member having a screw threaded shank and shoulder adapted to lie in said bore and to engage the shoulder of the bore and a nut engaging the screw threads of the shank and bearing against the base at the outer end of the bore to securely hold the socket member removably in place, said socket member being connected with one of said links, said links comprising an upper main thrust sustaining link connecting each jaw with the base and said lower subsidiary guiding link connecting the jaw to the said removable socket member.

3. In a well casing elevator, a base, a jaw, a link pivotally connected at its ends to said base and jaw for rocking movement in a plane vertical with respect to said base, pipe slip segments self adjustable in said jaw about substantially vertical axes, said jaw having a shoulder projecting from its face, and said slip segments having recesses in their jaw contacting surfaces adapted to receive said shoulder whereby said slips are movably supported by said shoulder and means connected with the jaw to lift the same together with its pipe slip segment.

4. Apparatus according to claim 3 in which said slip segments have pivot pin receiving sockets in their ends, and pins in said sockets and projecting therefrom to be carried by said jaw.

5. Apparatus according to claim 3 in which said slip segments have a pivot pin receiving socket in each of their ends, pins in said sockets and projecting therefrom, to be carried by said jaw, said jaw having a horizontal flange projecting inwardly therefrom at its lower end, said flange having a socket for loosely receiving the lower pin, a bracket mounted at the top of said jaw and extending inwardly thereof beyond the jaw and provided with a socket therein for loosely receiving the upper pin, said pins being of less diameter than said sockets.

6. Apparatus according to claim 3 in which said slip segment recesses are of greater depth than the said jaw shoulder whereby a clearance space is provided therebetween to allow the slip to adjust its face readily to the curved surface of the pipe.

7. In a well casing elevator, a massive base, a jaw, a comparatively massive thrust sustaining link connected at one end to the base and at its other end to the jaw substantially midway of the depth of the jaw, a subsidiary guiding link smaller than the main link and connected at one end to the lower end of the jaw and at its other end to the lower part of the base so that the mass of the base at its lower portion is substantially unimpaired.

8. A well casing elevator having a plurality of jaws, each jaw having a plurality of slips, each slip being pivotally mounted in the jaws to have independent movement of accommodation to the surface of the well casing, and means for supporting and operating the jaws, said pivotal connection comprising pins carried by the slips and loosely mounted in the jaws, and shoulders on the jaws for movably supporting the slips.

9. In combination, in a well casing elevator, a base, a jaw, a comparatively massive link having one end connected to the jaw substantially midway of the depth of said jaw, said link connecting the jaw with the base to sustain the thrust, and a lighter guiding link connecting the lower part of the jaw with the base for guiding the jaw and maintaining substantial parallelism between the said jaw and the vertical axis of the apparatus.

10. Apparatus according to claim 9 in which lifting mechanism for the jaw is connected with the upper end of the said jaw, said jaw having slips pivotally mounted thereon substantially as described.

11. In a well casing elevator and in combination, a jaw, a slip segment having sockets with pins seated therein and projecting there-

from, said jaw having at its lower end and integral therewith a flange projecting therefrom provided with a socket for loosely receiving the lower pin of the slip and a bracket removably secured to the upper end of the jaw and provided with a socket for receiving the upper pin of the slip, substantially as described.

12. In combination, in a well casing elevator, a jaw having a lower integral socketed flange and an upper removable socketed bracket and a slip having projections extending into said sockets to allow the slip to have self adjustment relative to the jaw on contacting with the well casing, substantially as described.

13. In combination, in a well casing elevator, a base, jaws, links connecting the jaws with the base, a plurality of slips for each jaw, and a bracket removably connected with each jaw, each bracket having a vertical pivoted connection with each of the slips belonging to said jaw, substantially as described.

14. In combination, a base, a jaw linked to the base, a slip on the inner face of the jaw, a bracket removably secured to the jaw at the upper end thereof, a pivot connection between said bracket and the slip, and lifting mechanism for the jaw connected to the said bracket, substantially as described.

In testimony whereof, I affix my signature.

CLARENCE E. REED.