No. 654,376. Patented July 24, 1900.

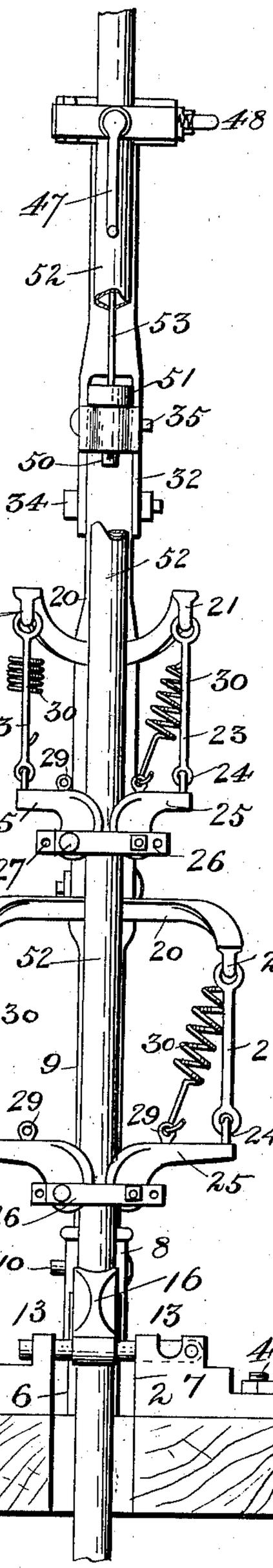
G. ZINK.

APPARATUS FOR RAISING OR LOWERING PUMP PIPES.

(Application filed Oct. 25, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1



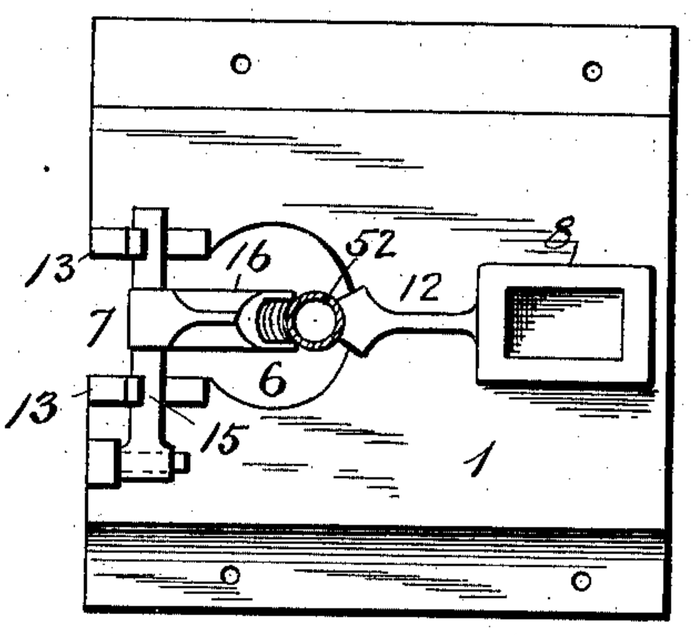


Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

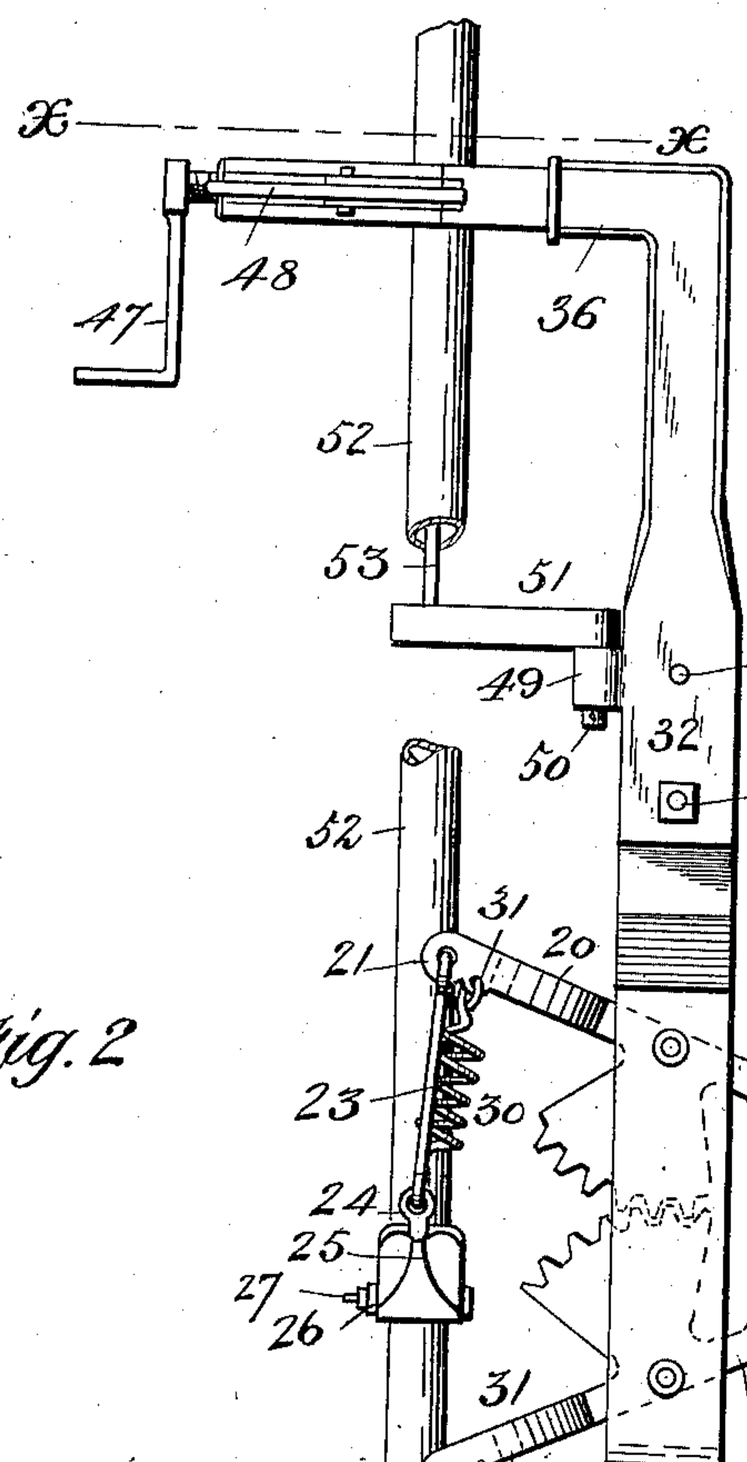

Fig. 2

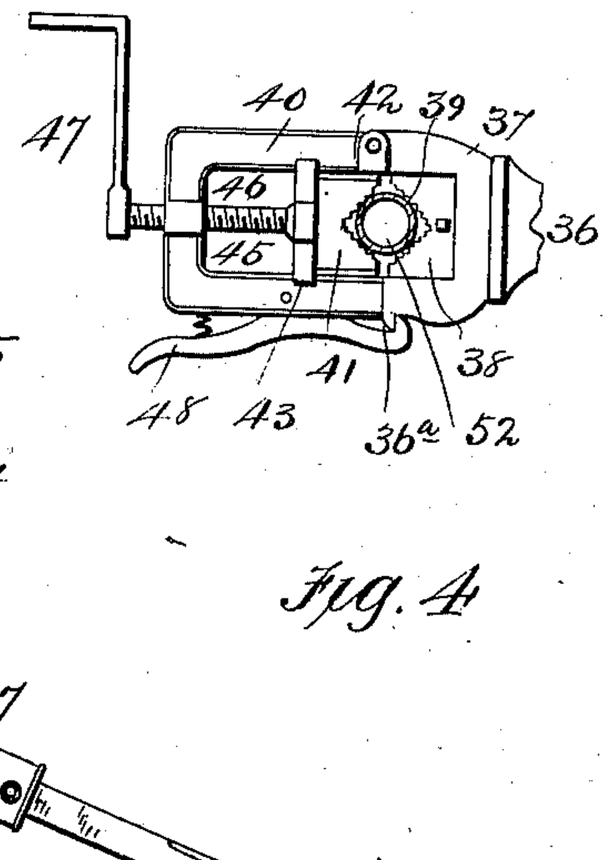

Fig. 4

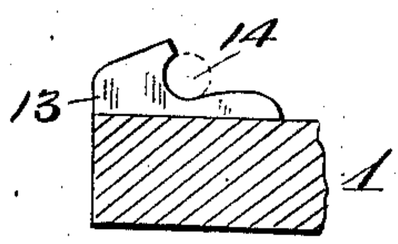

Fig. 5

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UNITED STATES PATENT OFFICE.

GEORGE ZINK, OF SHADY BOWER, MARYLAND.

APPARATUS FOR RAISING OR LOWERING PUMP-PIPES.

SPECIFICATION forming part of Letters Patent No. 654,376, dated July 24, 1900.

Application filed October 25, 1899. Serial No. 734,723. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ZINK, a citizen of the United States, residing at Shady Bower, in the county of Washington and State of Maryland, have invented new and useful Improvements in Apparatus for Raising or Lowering Pump-Pipes, of which the following is a specification.

My invention relates to apparatus for raising and lowering pump-pipes and sucker-rods from wells, and is more particularly intended to be used in connection with drilled wells. These wells, as is well understood by those skilled in the art, are lined or cased with tubing within which are located the pump-pipes which contain the sucker-rod. These pipes and sucker-rods are made of suitable lengths and are connected at the ends by screw-couplings.

The object of the invention is to provide an improved construction of apparatus by which the pump-pipes and sucker-rods can be raised and lowered in a rapid and efficient manner.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of an apparatus for raising and lowering well-pipes made in accordance my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail plan view. Fig. 4 is a horizontal section on the line *x x*, Fig. 2. Fig. 5 is a detail section, showing the bearing for the clamp at the bottom of the apparatus.

In the said drawings the reference-numeral 1 designates a casting formed with a base 2, having side flanges 3, formed with holes for the passage of bolts 4, by which the apparatus is secured to the well floor or platform. This base is provided with a hole 6 for the passage of the pipe to be raised or lowered and with a slot 7 for allowing the pump-pipe to enter the hole 6. At one end the said base is formed with a short standard 8, having a rectangular socket therein within which fits the lower end of a vertical post 9, which is held in place by a pin 10, passing therethrough and through the standard. This standard is also formed with an arm 12, having a curved recess at the inner end, which engages with the pump-pipe. At the opposite end the base is formed with two lugs 13, formed with open bearings 14, with which engage the journals 15 of a clamp 16, having a curved corrugated or serrated recess in the free end, which is adapted to engage with the pump-pipe when the latter is being raised from the well. Passing through a slot or opening in the said post are two levers 17 and 18, which are pivoted to said post and each of which is formed with a segmental cog-gear which mesh with each other. The outer ends of these levers are provided with sockets to receive a handle 19, by which they are operated. The inner ends of these levers are bifurcated, forming two curved arms 20, each having an eye 21 at the end. Connected with these eyes are links 23, which in turn are pivotally connected with eyes 24 of clamps 25, the inner ends of which are formed with curved corrugated or serrated recesses adapted to engage with the pump-pipe. These clamps are pivotally connected with vertically slidable or movable plates 26, which are connected together by the pivots 27 of the clamps. These plates are formed with two bolt-holes at one end, so that the clamps may be adjusted to pump-pipes of different sizes or diameters. It will be noticed that the end of one plate projects beyond the end of the other plate when used in connection with a small pipe, but are flush when a larger pipe is engaged by the clamps. Each of said clamps is formed with an eye 29 intermediate the ends with which engages the lower end of a coiled spring 30. The upper ends of these springs are connected with eyes 31 in the said levers back of the links 23. These springs are only used when a pipe is being lowered, as will be hereinafter described, being detached or disconnected with the clamps when the pipe is being raised. The said levers 17 and 18 alternately operate in opposite directions, so that the clamps alternately move toward and away from each other. The curved arms and clamps of the lower lever are somewhat larger than those of the upper one, so that as said clamps approach the arms can slip past each other.

The numeral 32 designates a standard the lower end of which is slotted and pivotally connected with the upper end of the post 9 by a pivot 34. A pin 35, passing through said standard and post, holds the former in a ver-

tical position. The upper end of said standards is formed with a horizontal arm 36, formed with a lug 37 at the end. This arm is provided with a stationary jaw 38, having an angular serrated recess 39 in the end adapted to engage with the pump-pipe. Hinged to this arm is a slotted plate 40, provided with a movable jaw 41, having a similar recess 42. This movable jaw is carried by a cross-head 43, working in the sides of the slot 45. Connected with this cross-head is a screw 46, which passes through a correspondingly-threaded hole in the end of the said plate and is provided with a crank 47. By turning this crank the jaw 41 can be moved toward the stationary jaw, so as to clamp the pipe therebetween. The object of hinging the said plate to the arm 36 is to facilitate the engagement of the pipe by the jaws, the said plate being turned on its hinge and thrown away from the arm when the jaws are to engage with the pipe and then pushed back or closed. A pivoted spring-actuated catch or lever 48 engages with the lugs 36 for holding said plate in its closed position.

The numeral 49 designates a lug carried by the standard 32, formed with a vertical hole with which pivotally engages a pin 50, provided with a plate 51, which is adapted to support a sucker-rod, as hereinafter described.

The numeral 52 designates the pump-pipe, and 53 the sucker-rod.

The operation is as follows for raising a pipe: The pump-casing is disconnected from the upper end of the pump-pipe and the clamp 16 removed from its bearings. The clamps 25 are also disconnected. The slot in the base 1 is now slipped past the pump-pipe and the apparatus bolted to a board which rests on the well-platform and the spring 30 disconnected from the clamps 25. By now moving one of the levers 17 or 18 up and down the clamps will be alternately moved toward and away from each other, the clamps gripping the pipe in the upward movement and releasing their grip on the downward movement. When one length of pipe has been raised to the upper end of the apparatus, it is unscrewed from the next length and then clamped between the jaws 38 and 41. The sucker-rod is also uncoupled and raised slightly, so that the plate 51 can be swung underneath the same, so as to hold and support it. The standard 32 is then turned downwardly on its pivot, thus lowering said pipe and sucker-rod to the ground. Said pipe and rod are then removed and the standard again turned up to a vertical position and the operation repeated.

In lowering the pipe into the well the coiled springs 30 are connected with the clamps 25, the tendency of which when the clamps are raised is to raise the plates 26, throwing the links 23 outward, so that said clamps will not grip the pipe on their upward movement until they about reach the limit thereof, when they will grab and grip the pipe. Upon the downward movement of the clamps the weight of the pipe will overcome the tension of the springs, so that the clamps will grip the pipe and thus lower the same.

The clamp at the base of the machine or apparatus is only used when raising the pipe and is for the purpose of engaging with and holding the pipe in case of breakage of the apparatus. This clamp when the pipe is being lowered is swung backward on its journals, so as to be out of engagement with the pipe.

Having thus fully described my invention, what I claim is—

1. In an apparatus for raising and lowering pump-pipes, the combination with the base, the post, the levers pivoted to said post, the intermeshing cog-segments, the curved arms at the inner ends of said levers, of the links pivotally connected therewith, the clamps to which said links are pivoted and the plates to which said clamps are pivoted, substantially as described.

2. In an apparatus for raising and lowering pump-pipes, the combination with the base, the post, the levers pivoted to said posts, the intermeshing cogged segments, and the curved arms at the inner ends of said levers, of the links pivotally connected with said arms, the clamps to which said links are pivoted, the coiled springs connected with said curved arms and clamps, and the vertically-movable plates to which said clamps are pivoted, substantially as described.

3. In an apparatus of the character described, the combination with the base, the post, the alternately-operating levers and the clamps and connections, of the standard pivotally connected with the upper end of the post, and the stationary and movable jaws connected therewith, substantially as specified.

4. In an apparatus of the character described, the combination with the base, the post, the alternately-reciprocating clamps and means for operating the same, of the standard pivoted to said post, the stationary and movable jaws connected therewith and the swinging plate pivotally connected with said standard, substantially as specified.

5. In an apparatus of the character described, the combination with the base, the post, the alternately-reciprocating clamps and means for operating the same, of the standard pivotally connected with the said post, provided with a stationary jaw, the slotted plate hinged thereto, the movable jaw, the cross-head carrying the same, the screw connected with said cross-head, the pivoted catch and the lug with which said catch is adapted to engage, substantially as specified.

6. In an apparatus of the character described, the combination with the base, the post, the alternately-reciprocating clamps and means for operating the same, of the standard pivoted to said post, the swinging

plate pivotally connected therewith, the slotted plate hinged to said standard, the stationary jaw carried by said standard, the movable jaw carried by said slotted plate, the cross-head and the screw, substantially as specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE ZINK.

Witnesses:
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SAML. A. DRURY.