No. 721,169. PATENTED FEB. 24, 1903.

H. M. ETTER.

PUMP HEAD.

APPLICATION FILED MAR. 22, 1902.

NO MODEL.

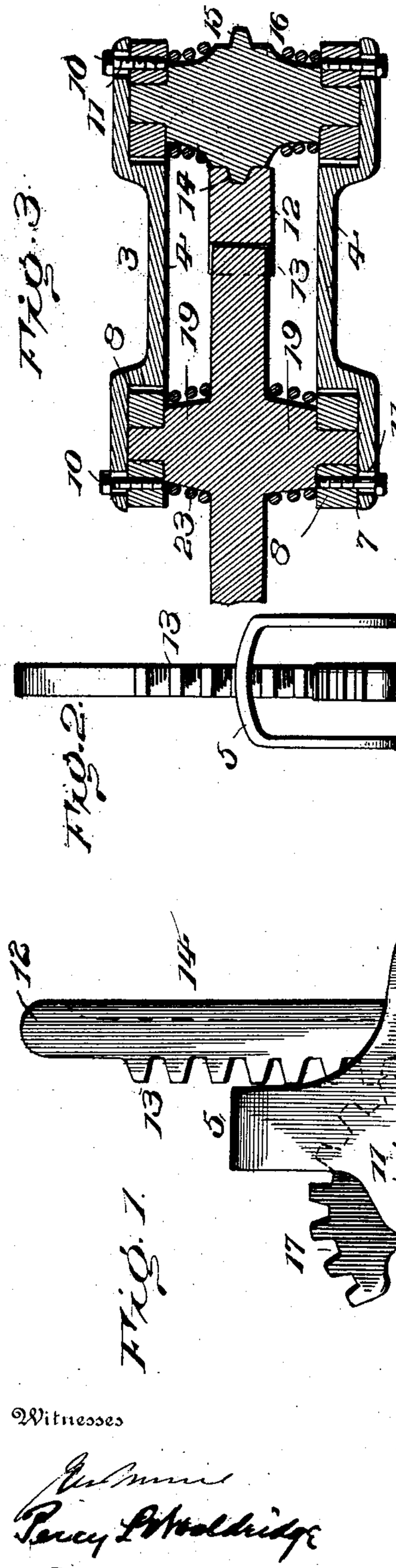

Fig. 3.

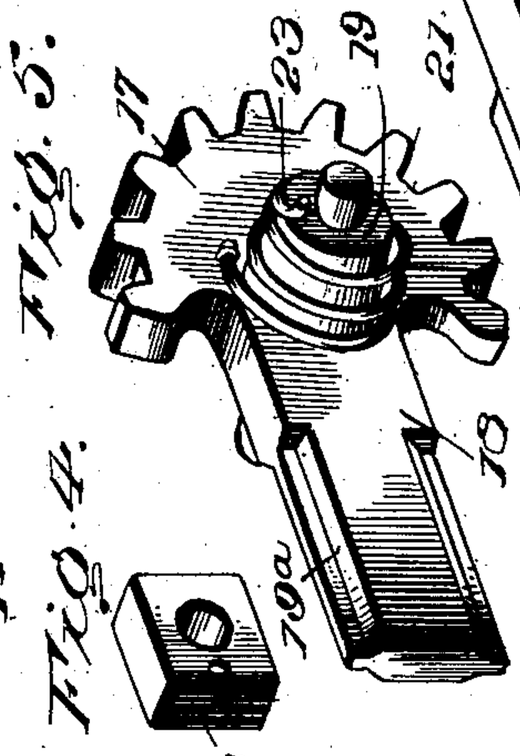

Fig. 5.

Fig. 4.

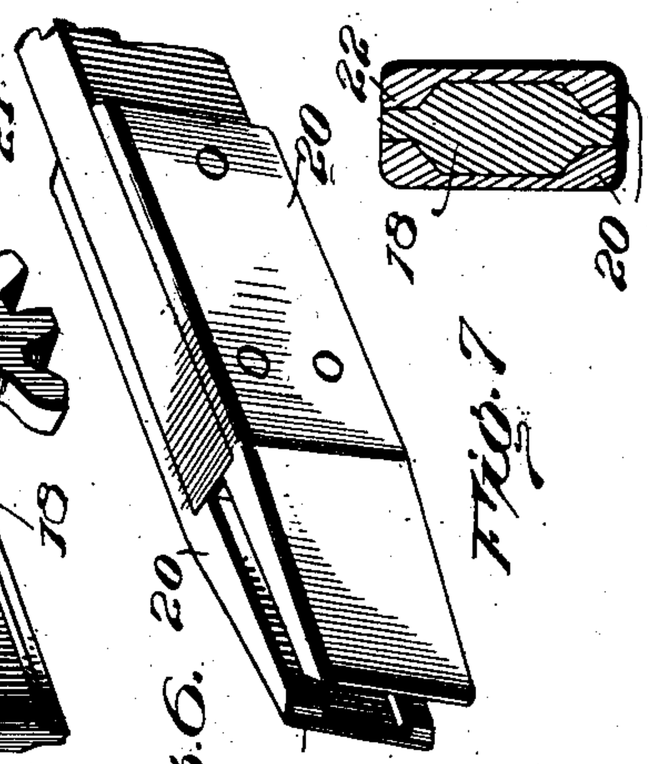

Fig. 6.

Fig. 7.

Fig. 2.

Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

HENRY M. ETTER, OF MARION, PENNSYLVANIA.

PUMP-HEAD.

SPECIFICATION forming part of Letters Patent No. 721,169, dated February 24, 1903.

Application filed March 22, 1902. Serial No. 99,536. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. ETTER, a citizen of the United States, residing at Marion, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Pump-Heads; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The primary object of this invention is to improve the construction of pump-heads and the pump-actuating mechanism of the type of pumps operated by means of cog-gearing, such as a rack-bar and toothed segment. The frame of the pump-head is an integral structure, thereby obviating the cost incident to assembling parts and the provision of fastening means and also overcoming the objection experienced by loosening of the joints after the pump has been in operation.

A further purpose of the invention is to provide for directing the rack-bar in its vertical movements and to compensate for wear between the cog-gearing and the journals of the moving parts.

The invention also has for its object to counterbalance the load and ease the work attendant upon oscillating the lever when the pump is in operation, the counterbalancing means consisting of coil-springs located upon the hubs of the toothed segment and connected with the latter at one end and with the head at the opposite end.

The improvement also consists of the novel features, details of construction, and combination of the parts, which hereinafter will be more particularly set forth, illustrated, and finally claimed.

In the drawings, Figure 1 is a side elevation of a pump-head embodying the invention. Fig. 2 is a front view thereof. Fig. 3 is a plan section on the line X X of Fig. 1. Fig. 4 is a detail perspective view of one of the blocks in which a journal of the toothed segment obtains a bearing. Fig. 5 is a perspective view of the toothed segment, the coil-spring being in place. Fig. 6 is a perspective view of the inner end of the lever, showing the side plates in position. Fig. 7 is a cross-section on the line Y Y of Fig. 1.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The pump may be of any variety, and its barrel is provided at its upper end with the usual flange 1, to which the base 2 of the pump-head 3 is bolted or otherwise secured in any way found most advantageous. The pump-head comprises the base 2, spaced standards 4, and a yoke 5, connecting the standards 4 at their upper ends, the parts 2, 4, and 5 being integrally formed in any selected way. The standards 4 are widened near their upper ends and have lateral offsets 6, in which pockets 7 are formed to receive blocks 8 and 9, the pockets 7 being open at the outer edges of the standards to admit of sliding the blocks 8 and 9 into place. The blocks 8 and 9 are of similar formation and are apertured to receive the journals of the toothed segment and the combined guide and supporting wheel. The bearing-blocks 8 and 9 are adjustable in and out and are secured in an adjusted position by means of clamp-screws 10, passed through slots 11 in the lateral offsets 6. The rack-bar 12 is toothed along one edge, as shown at 13, and its opposite edge has a groove 14 to receive a flange or annular rib 15, provided medially of the wheel 16, which supports the rack-bar 12 against the action of the toothed segment and directs said rack-bar in its vertical movements. The rack-bar 12 is connected with the pump-rod in any substantial way. The toothed segment 17 has its teeth in meshing relation with the teeth 13 of the rack-bar 12 and is formed with a shank 18 and hub extensions 19, terminating in journals which are mounted in the bearing-blocks 8. The shank 18 has its corner portions cut away for a short distance from its outer end, as shown at 19^a, the inner walls adjacent to the sides of the shank being correspondingly beveled, as shown most clearly in Figs. 5 and 7. By having the toothed segment and the wheel 16 mounted in blocks adjustable in and out the rack-bar may be positioned so as to cause the pump-rod to move in direct vertical lines, thereby avoiding any lateral stress. Moreover, the toothed segment and rack-bar may

be relatively adjusted, so as to cause the cog-teeth to take up any wear, thereby obviating any lost motion and resultant jar and noise.

Plates 20 are secured to opposite sides of the inner end of the lever or operating-handle 21 and project beyond said lever a distance corresponding approximately to the length of the cut-away corner portions 19ª of the shank 18. The edge portions of the projecting ends of the plates 20 are thickened to form ribs 22, which project inward and conform to the cut-away parts 19ª of the shank 18, so as to snugly fit the same. When the handle or operating-lever 21 is in place upon the shank 18 of the toothed segment 17, the inner ribs or thickened portions 22 of the plates 20 fit the cut-away corner portions 19ª of said shank and sustain the strain incident to operation of the pump by oscillating the lever or handle 21.

The load is counterbalanced and the work of operating the pump rendered comparatively easy by means of coil-springs 23, mounted upon the hubs 19 of the toothed segments and having their inner ends secured to the segment 17 and their outer ends connected with the bearing-blocks 8. Upon elevating the lower or outer end of the lever 21 the springs 23 have their tension increased, and upon pressing the outer end of the lever 21 downward to lift the column of water the springs 23, regaining themselves, materially assist in lifting the load and lightening the work of operating the pump, as will be readily comprehended. By having the annular flange or rib 15 enter the groove 14 of the rack-bar the latter is prevented from lateral displacement and is caused to move in vertical lines. The lever is limited in its upward movement and the pump-rod in its downward movement by means of said lever striking the yoke 5 when the outer end of the lever is thrown upward and forward.

Having thus described the invention, what is claimed as new is—

1. In a pump-head comprising spaced standards provided with corresponding sets of pockets upon the inner sides and approximately at the edge portions thereof, bearing-blocks adapted for adjustment in the said pockets, the latter constituting housings and guides for the said bearing-blocks, a toothed segment journaled in openings in the blocks of one of the sets of pockets, means for securing the aforesaid blocks in an adjusted position, a wheel journaled in blocks in the other set of pockets, clamp-screws for holding the blocks in their adjusted position, a rack-bar arranged to operate with the toothed segment and the aforesaid wheel, the sets of blocks being adjustable either toward or from each other in the aforesaid pockets, thereby permitting exact vertical alinement of the rack-bar, substantially as described.

2. In a pump, and in combination with the rack-bar connected with the pump-rod, and a toothed segment in mesh with said rack-bar and having a shank whose corner portions are cut away for a short distance from the outer end thereof, an operating-lever, plates secured to opposite sides of the lever, said plates having projecting end portions grooved upon their inner faces intermediate the edges to receive the wide portion of the shank of the segment and ribs along the inner edges of the plates, the latter adapted to snugly fit the cut-away corner portions of the shank of the toothed segment, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY M. ETTER. [L. S.]

Witnesses:
JOHN F. METZ,
DANIEL C. CROFT.