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WISE.

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Fig. 1.

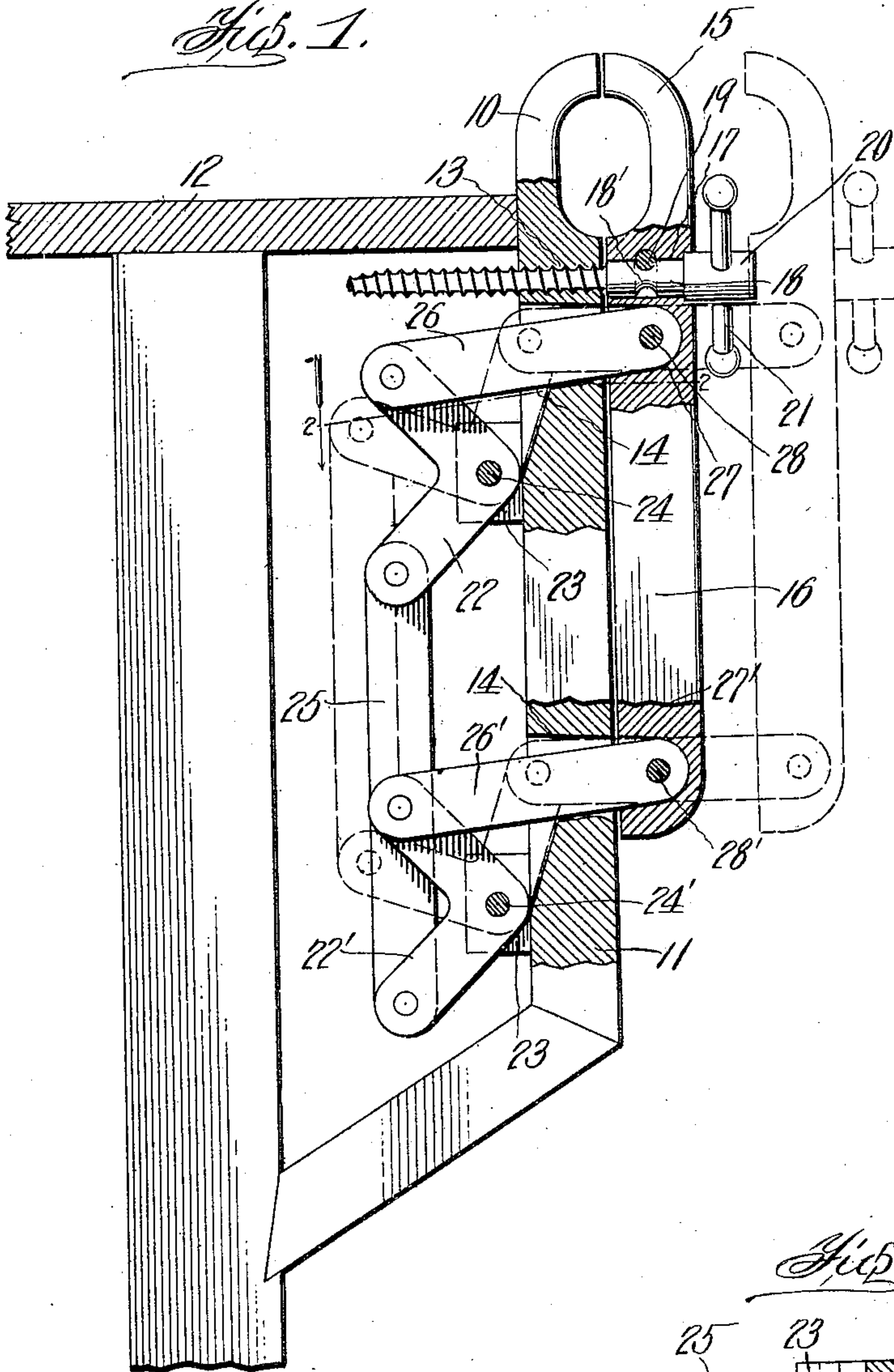
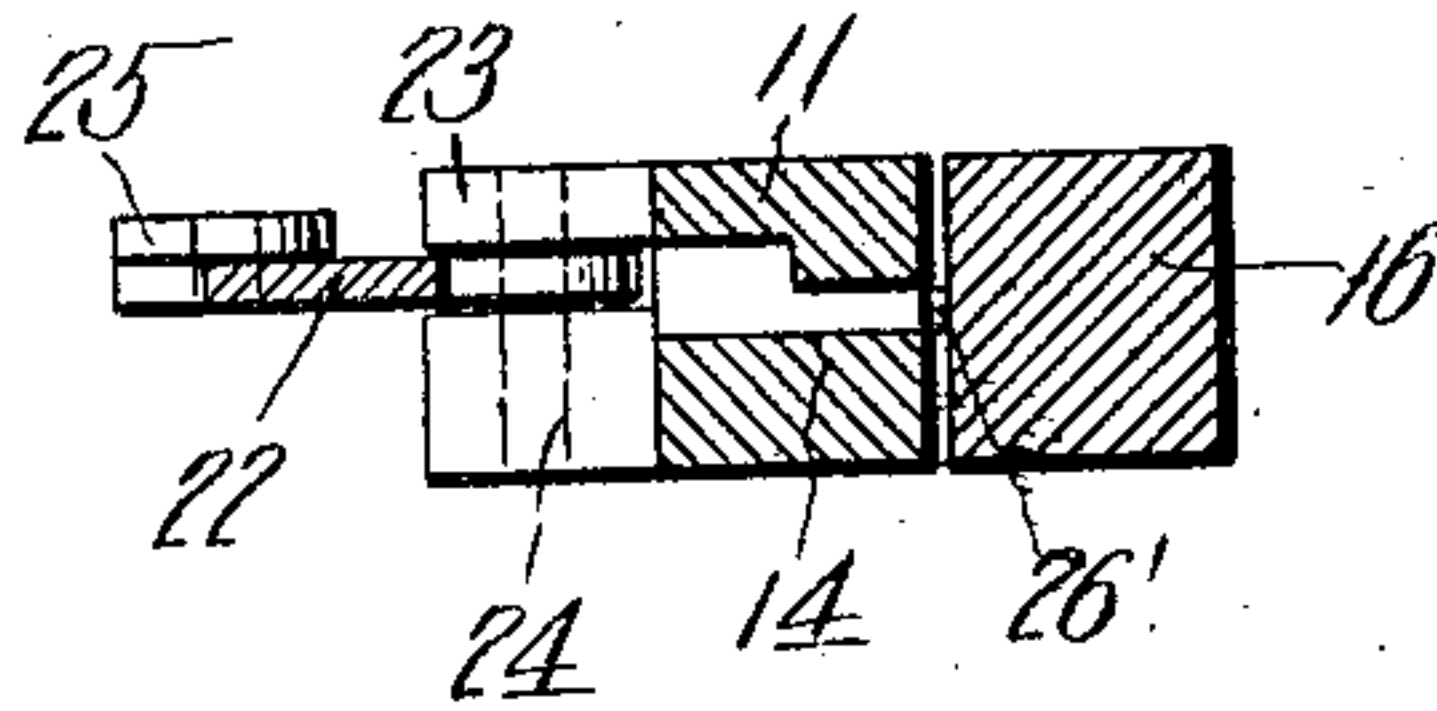


Fig. 2.



WITNESSES:

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WISE.

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To all whom it may concern:

Be it known that I, ROBERT ALLEN HORNING, a citizen of the United States, residing at Lanark, in the county of Carroll and State of Illinois, have invented certain new and useful Improvements in Parallel-Jaw Vises, of which the following is a specification.

This invention relates to power vises, and has particular reference to that class of devices which are designed for use in connection with work benches, or the like, and usually operated by hand.

Among the several objects aimed at in the present improvements are to economize space, secure easy manipulation of the movable portion of the vise throughout its compass, and to save time in operation.

For a full understanding of the invention, including its construction and characteristic advantages, reference is to be had to the following detail description and the accompanying drawings, in which,

Figure 1 is a side elevation, with certain parts broken away, showing in full lines the vise in a substantially closed position and in dotted lines, in its full open position, and Fig. 2 is a transverse sectional detail on the line 2--2 of Fig. 1, showing the manner in which the frame constitutes a stop for the bell crank levers in the position indicated for the parts in dotted lines in Fig. 1.

Throughout the following description and on the several figures of the drawings, similar parts are referred to by like reference characters.

This invention in its preferred embodiment comprises a stationary jaw 10 having a stationary leg 11. Said jaw and leg may be secured in any convenient manner to any suitable type of support such as a bench 12. At any convenient point, preferably near the upper end, the stationary leg is provided with an internally threaded hole 13, and below said hole are a plurality of transverse slots 14 extending through the leg. A movable jaw 15 has the leg 16 arranged parallel to and movable in close proximity to the stationary leg 11. The specific form of the jaws 10 and 15 as well as the legs 11 and 16 may be varied to a considerable extent within the scope of this invention. As a convenient power means for operating the movable jaw, I provide in the movable leg 16 a smooth hole 17 in alinement with the

threaded hole 13 aforesaid, and cooperating with said holes is a suitable screw 18 having threaded connection with the stationary jaw and loose rotary connection with the movable jaw. In order to prevent longitudinal displacement of the screw with relation to the movable jaw, the screw is provided with a groove 18' into which projects a transverse locking bolt 19, the bolt being secured in the movable jaw in any suitable manner. The head 20 of the screw cooperates with the outer face of the movable jaw in the customary manner and is operated by a handle 21.

The mechanism employed to cause parallel movement of the jaw 15 with relation to the jaw 10 comprises the following elements: A pair of bell cranks 22 and 22' pivoted in substantially the same plane within the stationary leg 11 and beneath the bench 12. As herein disclosed the means for supporting said bell cranks consists of fulcrum blocks 23 secured upon the inner face of the stationary leg and within which blocks the bell cranks are pivoted upon pivots 24 and 24'. One end of each of said bell cranks projects upwardly adjacent to its corresponding slot 14, and the other ends of the bell cranks are connected by a rigid bar 25, whereby the bell cranks are caused to operate simultaneously upon their pivots. A pair of guide links 26 and 26' are pivoted in sockets 27 and 27' on pivot pins 28 and 28' secured in the movable leg. Said links are guided through the slots 14, and their inner ends are pivoted to the adjacent ends of the bell cranks. It will be apparent that the screw 18, links 26 and 26', bell cranks 22 and 22' and bar 25 constitute the entire connecting means between the jaws and for this reason the ordinary fulcrum bar usually employed to support the lower end of the movable leg, and which requires frequent adjustment in accordance with the different sizes of work to be held, is dispensed with. In order to secure ease of operation of a vise it is desirable that the screw have a loose threaded connection, and for this reason auxiliary guiding and supporting means are necessary for the movable jaw. The links 26 and 26' serve therefore as such additional supporting and guiding means as well as to cause parallel movement thereof. Again, it is to be noted that the means herein employed to cause parallelism

of the movement of the movable jaw are practically all within the stationary leg, whereby a minimum amount of room is required for construction and manipulation of the vise. Heretofore parallel movements for vises have usually been disposed between the jaws, necessitating the use of a great deal more room than is contemplated by this invention.

10 The several parts of this invention may be constructed of any suitable materials and in various sizes and proportions, depending upon the exigencies in particular cases, without departing from the spirit of the invention
15 hereinafter claimed.

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

1. The herein described parallel jaw vise comprising, in combination, a stationary jaw
20 having a supporting leg, said leg having an internally threaded hole and a plurality of guide slots therethrough, a movable jaw having a supporting leg parallel to said stationary leg, said movable leg having a smooth
25 hole in alinement with said threaded hole and a plurality of sockets in alinement with said slots, a power screw cooperating with said jaw holes, means to prevent longitudinal movement of the screw in said smooth hole, a
30 plurality of guide links pivoted in said sockets and projecting through said slots, bell crank levers pivoted at their elbows adjacent to said stationary leg and at one end to the

respective guide links, and a bar connecting the other ends of said bell cranks. 35

2. In a device of the character set forth, the combination of a support, a stationary jaw and leg secured to the support, said leg having guide slots, a movable jaw and leg, power means to move the latter jaw toward
40 and from the former jaw, a pair of bell cranks pivoted within the stationary leg beneath said support, a bar connecting said bell cranks to cause simultaneous movement thereof, and a pair of links guided through
45 said slots and pivoted at their ends to said bell cranks and the movable leg.

3. A vise comprising, in combination, a stationary jaw and its leg having transverse slots therethrough, a pair of fulcrum blocks
50 secured on the inner face of said leg, a pair of bell cranks pivoted in the same plane to said blocks, a rigid bar connecting the bell cranks to cause simultaneous movement thereof on their pivots, a movable jaw and leg, power
55 means to cause parallel movement thereof in close proximity to the stationary leg, and a pair of links pivoted to the movable leg and bell cranks and guided through said slots, substantially as set forth. 60

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

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Witnesses:

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