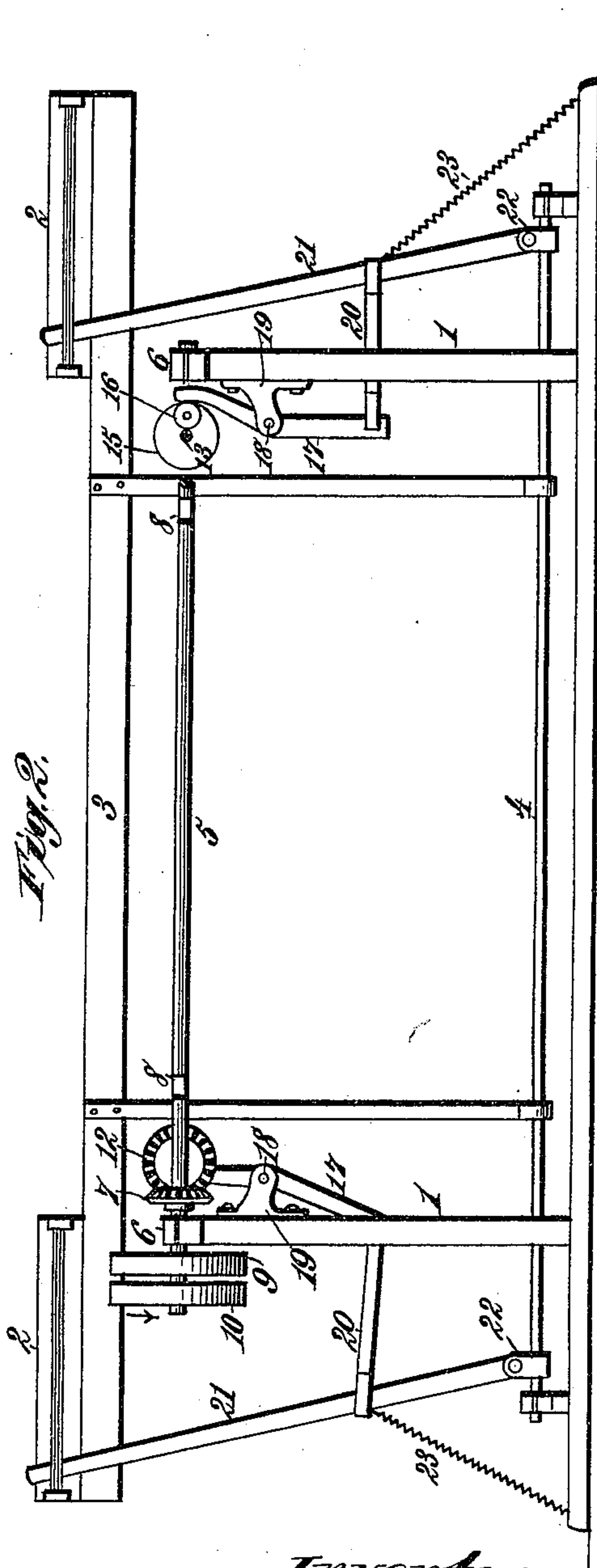
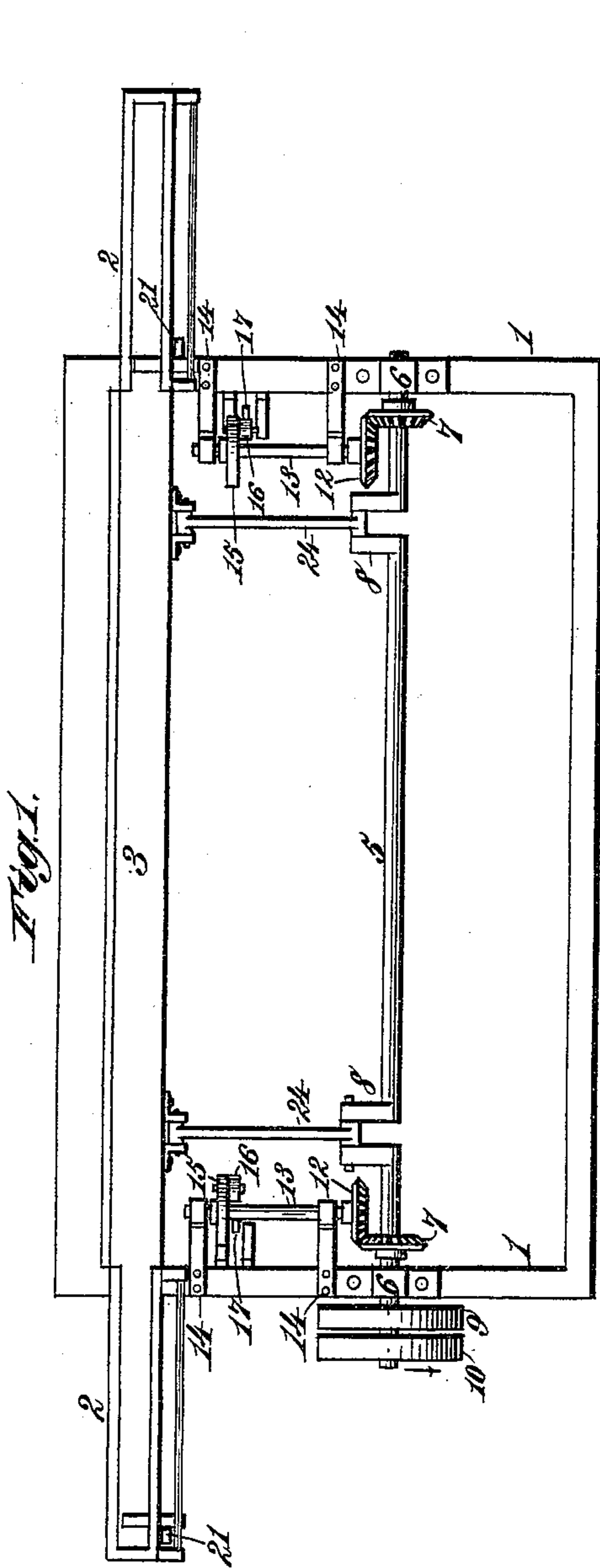


(No Model.)

F. E. FISHER.
SHUTTLE OPERATING MECHANISM FOR LOOMS.

No. 438,996.

Patented Oct. 21, 1890.



Witnesses:
Robert Corbett.
Lucy B. Hills.

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Atty.

UNITED STATES PATENT OFFICE.

FINIS E. FISHER, OF WACO, TEXAS.

SHUTTLE-OPERATING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 438,996, dated October 21, 1890.

Application filed April 10, 1890. Serial No. 347,371. (No model.)

To all whom it may concern:

Be it known that I, FINIS E. FISHER, a citizen of the United States, residing at Waco, in the county of McLennan and State of Texas, have invented new and useful Improvements in Shuttle-Operating Mechanism for Looms, of which the following is a specification.

This invention relates to looms, and has for its objects to provide novel, simple, and efficient mechanism for actuating the picking-sticks which effect the flight of the shuttles; to avoid the use of the ordinary lower picker-shaft; to avoid lateral angles in the picking-levers, which actuate the picking-sticks to throw the shuttles, and to otherwise improve the picking motion of looms for obtaining simplicity, strength, durability, power, and efficiency.

To accomplish all these objects, my invention involves the features of construction, the combination or arrangement of devices, and the principles of operation hereinafter specifically described, and recited in the claims, reference being made to the accompanying drawings, in which—

Figure 1 is a top plan view showing sufficient of a loom to exhibit my invention. Fig. 2 is an elevation of the same partially broken away at one side to show a picking-lever and a picking-cam acting thereupon.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates a portion of a loom-frame, 2 the shuttle-boxes, 3 the lay, and 4 the lay rock-shaft, all of which parts may be of any known construction, and therefore require no further explanation.

A horizontal duplex crank-shaft 5 is journaled in boxes 6 on the sides of the loom-frame, and is provided near each end with a miter-gear 7, between which gears the cranks 8 of the shaft are located. The shaft at one end is provided with a fast or driving pulley 9 and a loose or idler pulley 10, and the miter-gears respectively mesh with similar miter-gears 12, attached to picking or counter shafts 13, arranged at right angles to the axis of rotation of the crank-shaft and respectively placed near the sides of the loom-frame. The

counter-shafts are journaled upon supporting brackets or hangers 14, and each is provided with a picking-cam composed, as here shown, of a disk 15, attached to the shaft and provided with an eccentric roller-stud 16 to act upon the upper end of a picking-lever 17, which is supported intermediate its extremities by a rock-shaft or other pivotal support 18, carried by a bracket 19 on the side of the loom-frame. The picking-levers, one at each side, can oscillate, and they connect by lugging-sticks 20 with the picking-sticks 21, which are pivoted at their lower ends to bearings 22, carried by the lay rock-shaft. A spring 23, of any suitable type, is connected with each picking-stick to restore the same to its normal position after having been actuated by the picking cam and lever to throw the shuttle. The cranks 8 of the shaft 5 are connected by pitman 24 with the lay 3, and thus the shaft serves to impart the required swinging motion to the lay, in addition to revolving the picking or counter shafts.

In the drawings the parts are in the position occupied when one picking-stick is restored to its normal position and the other is at the limit of its stroke which throws the shuttle.

By the combination or arrangement described the two independent picking or counter shafts are arranged at right angles to the axis of the duplex crank-shaft, and the latter not only swings the lay, but operates through the miter or bevel gears to continuously revolve the picking or counter shafts, thereby causing the picking-cams on the latter to actuate the picking-levers for positively imparting the shuttle-throwing strokes to the picking-sticks.

By my invention I avoid the use of the usual lower picking-shaft and dispense with lateral bends in the picking-levers.

Having thus described my invention, what I claim is—

1. The combination of a loom-frame having brackets or hangers, a horizontal revolving main shaft, a pair of revolving picking or counter shafts geared to the main shaft, journaled in the brackets or hangers on the loom-frame at right angles to the main shaft, and each carrying a picking-cam, the picking-le-

vers pivoted intermediate their ends to the loom-frame and acted on at their upper end portions by the picking-cams, the picking-sticks, the lugging-sticks connecting the lower
5 ends of the picking-levers with the picking-sticks, and the springs connected to the picking-sticks, substantially as described.

2. The combination of the lay, the crank-shaft connected with the lay and having a
10 pair of miter-gears, the picking-shafts arranged at right angles to the axis of the crank-shaft, respectively geared to the miter-gears

thereon, and each having a picking-cam composed of a disk and an eccentric roller-stud, the pivoted picking-levers, the lugging-sticks, 15 the picking-sticks, and the springs, substantially as described.

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

FINIS E. FISHER.

Witnesses:

S. W. SLAYDEN,
S. F. KIRKESY.