(No Model.)

N. ABARE.

PICKING MECHANISM FOR LOOMS.

No. 352,905. Patented Nov. 23, 1886.

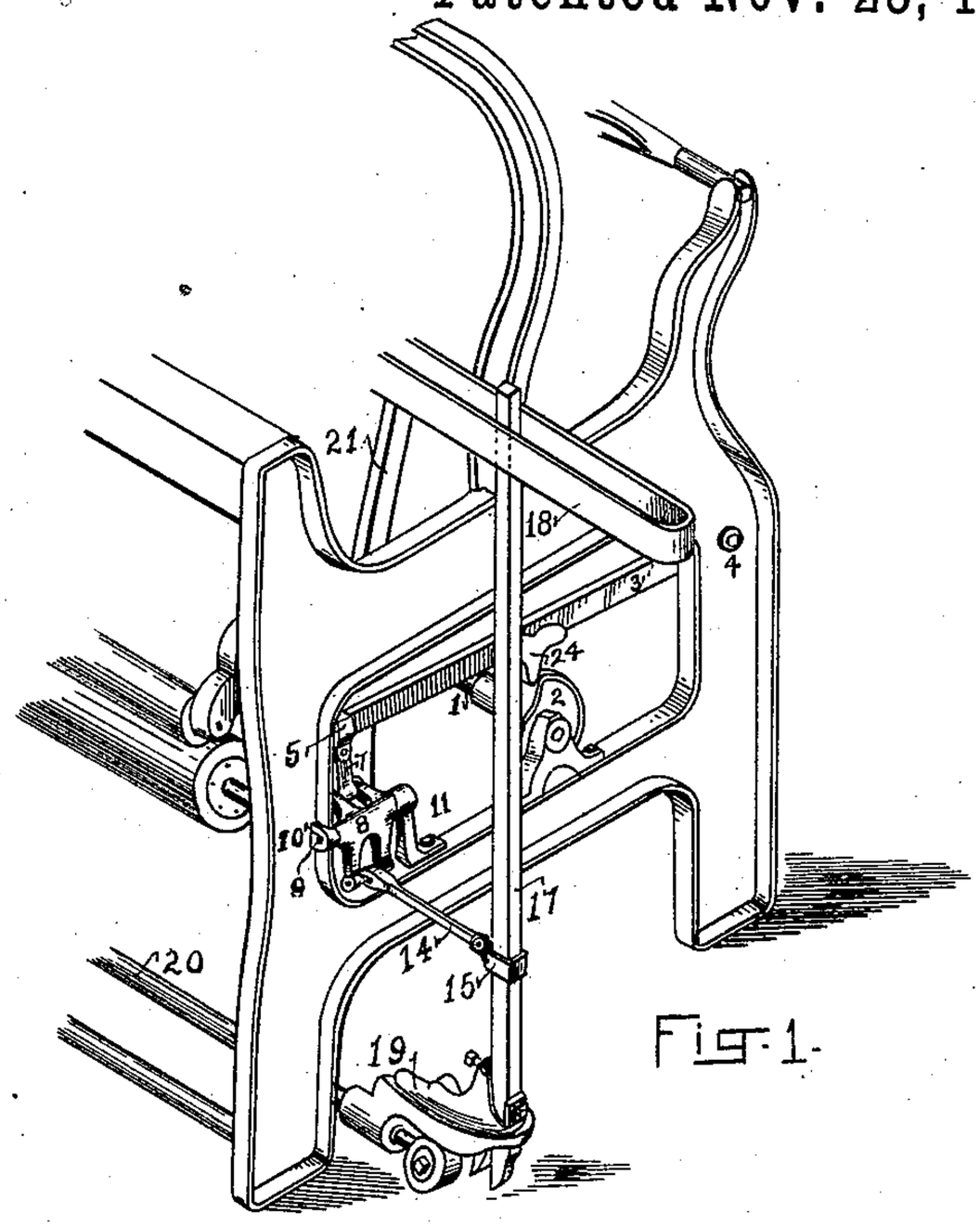

Fig. 1.

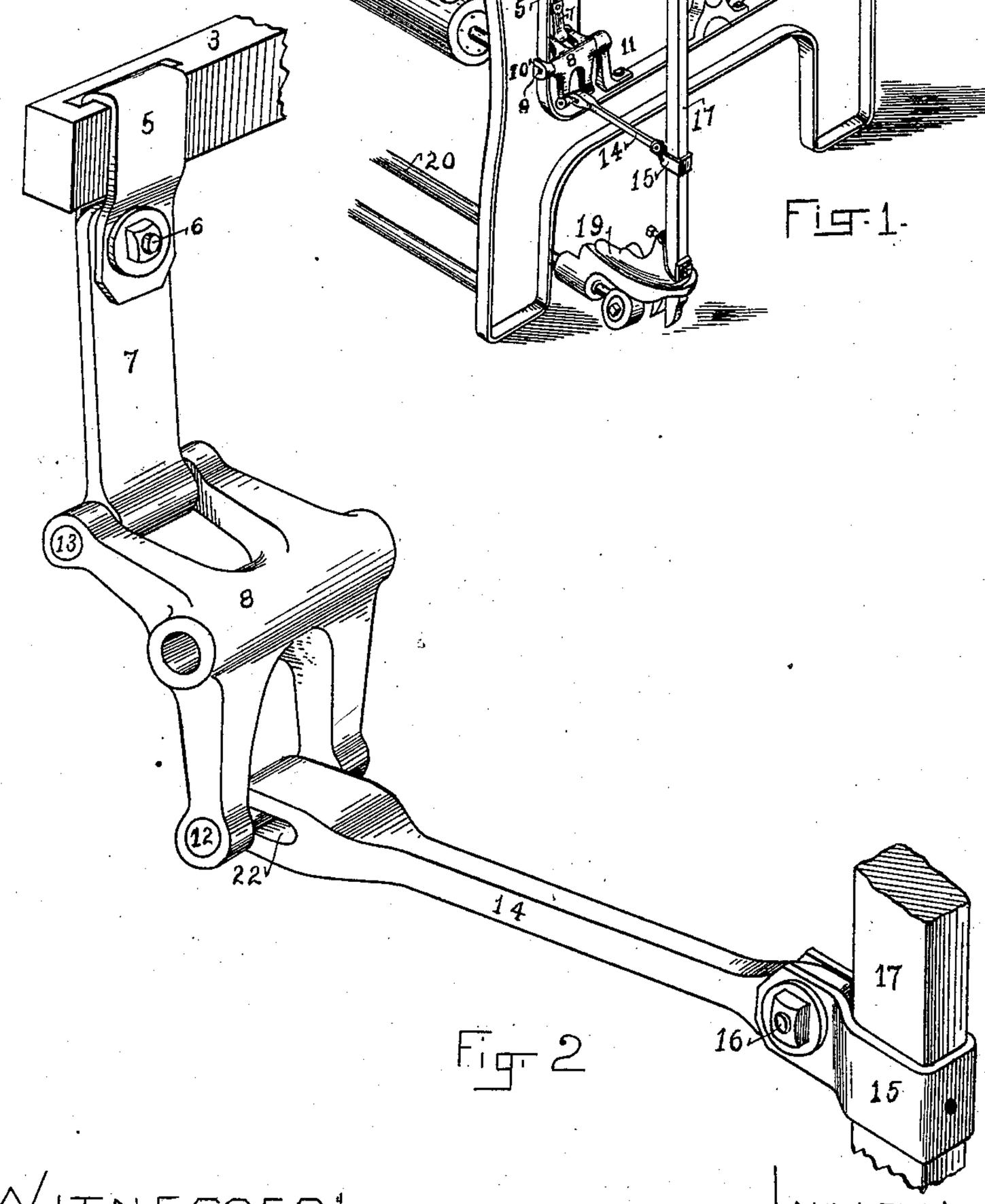

Fig. 2

WITNESSES:
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INVENTOR:
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UNITED STATES PATENT OFFICE.

NEWELL ABARE, OF LOWELL, MASSACHUSETTS.

PICKING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 352,905, dated November 23, 1886.

Application filed February 25, 1886. Serial No. 193,218. (No model.)

To all whom it may concern:

Be it known that I, NEWELL ABARE, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Picking Mechanisms for Looms, of which the following is a specification.

My invention relates to that mechanism of a loom which throws the shuttle from one side of the loom to the other, and which is commonly known as the "picking mechanism."

The object of my invention is to provide a more effectual and less expensive form of mechanism than is now generally employed for this purpose, and one which will cost less for its proper maintenance than those forms which are now in use.

My invention is illustrated in the accompanying drawings, in which Figure 1 is a perspective view of portions of one end of a loom that is provided with the improved picking mechanism. Fig. 2 is an enlarged view of certain of the important parts of the said picking mechanism.

Similar reference-numbers refer to similar parts throughout the several views.

In the drawings, 1 represents the cam-shaft of a loom, upon which is supported the picking-cam 2, both of which may be of any ordinary construction.

3 represents a lever, which is pivoted at one end upon a stud, 4, which is fastened into the frame of the loom. Upon the lever 3 is the shoe 24, which rests upon the edge of the cam 2, and serves to actuate the said lever from the said cam. To the free end of the lever 3 is fastened, by means of the flexible band 5, the bolt 6 and the connecting-rod 7, or by equivalent means the bell-crank lever 8, which is supported upon the pin 9, that is supported by the frame of the machine by means of the ear 10 and the stand 11. I prefer to make each arm of the bell-crank lever 8 bifurcated, as shown in Fig. 2, and to provide the pins 12 and 13, by which this lever may be connected with other parts of the mechanism. This construction of the bell-crank lever 8 enables me to make the parts lighter and less expensive than I could otherwise make them, although a plain bell-crank lever in this place that is provided with studs, instead of the pins 12 and 13, will enable the shuttle to be properly driven by this picking mechanism.

The connecting-rod 14 and the flexible band 15 and bolt 16 serve to connect the bell-crank lever 8 with the picker-staff 17, the band 15 being usually prevented by a screw which fastens it to the picker-staff from slipping up and down thereon. The picker-staff 17 is guided at its upper end, in an ordinary way, by a slot in the bottom of the shuttle-box 18, and is supported at its lower end upon the mechanism 19, which serves to cause the top of the picker-staff to move in a line which is parallel to the floor. This mechanism 19 is also furnished with a spring, which serves to draw back the picker-staff after it has driven out the shuttle from the box 18, and is fully described in Letters Patent No. 24,688, granted to William Stearns July 5, 1859. This special mechanism 19 is not an essential feature of my invention, since other well-known means of drawing back the picker-staff 17 after it has driven out the shuttle from the box 18 may be used.

The mechanism 19 is supported upon the rocking rod 20, to which is fastened the sword 21, and its mate at the opposite end of the loom. To these swords are attached the lay of the loom, and to the lay is attached the shuttle-box 18, and its mate at the opposite end of the loom.

The mechanisms for actuating the lay, the cam-shaft 1, and the harnesses, and for letting off the warp and taking up the woven cloth, may be of any ordinary construction, and the loom is, as usually made, provided with a picking mechanism at each end, in order that the shuttle may be alternately driven from one end of the loom to the other and back again.

I prefer to make the horizontal arm of the bell-crank lever 8 shorter than the vertical arm of the same, so that the projection upon the cam 2 which actuates the picker-staff may be made less abrupt in its shape, and a more satisfactory motion of the picker-staff attained.

The connecting-rod 14 is provided with a slot in one of its ends, as is shown by 22 in Fig. 2, and I prefer to so adjust the spring which is in the mechanism 19 as not to fully draw back the picker-staff 17 to its extreme backward position. The lever 3 and the bell-crank lever 8 will, however, when the loom is

in operation, be brought to the position corresponding to the extreme backward position of the picker-staff by the weight of the lever 3 and of the shoe 24 as soon as the driving projection of the cam 2 has passed the shoe 24, the pin 12 under such conditions slipping back in the slot 22 toward the picker-staff. It will be seen that when the shuttle is driven from the opposite end of the loom it will drive back the picker-staff to its extreme backward position, the inertia of the picker-staff and of the connecting-rod 14 partially absorbing the energy of the flying shuttle before it arrives at the extreme limit of its travel. This action may be controlled with great certainty, and serves, like other forms of shuttle-checks which have recently come into use, to prevent the cop which is in the shuttle from being broken by the otherwise sudden stoppages of the shuttle at each end of its travel.

I prefer to place the slot 22, which allows the picker-staff 17 to move with respect to the lever 3, in the position shown in the rod 14, although I am aware that other positions of the said slot between the lever 3 and the picker-staff may be equivalently selected.

I prefer to make the fit of the lever 14 in the fork of the bell-crank lever 8, and upon the pin 12, so loose that the slight angular motion of the picker-staff, due to the rocking of the lay and the rod 20, to which the lay and the picker-staff are attached, may be allowed to take place without straining any part of the mechanism. I am thus enabled to dispense with any expensive means of connecting the bell-crank lever 8, which rocks upon a fixed axis, with the picker-staff, which rocks upon a fixed axis at right angles to that of the lever 8, and am enabled to secure the lever 8 to the fixed frame of the loom, instead of upon the rocking sword, as has sometimes been the practice.

I prefer to make the bands 5 and 15 of leather, since that material is flexible and quite elastic, and the violent shocks which usually take place when the shuttle is started from the shuttle-box are in a measure prevented by its use.

I am aware that picking mechanisms have hitherto been used where a cam similar to the cam 2 acted upon a shoe fixed upon a lever similar to the lever 3, and where the free end of the said lever was connected by means of a leather strap which passed under a horizontal wooden drum that was supported by the frame of the loom, and upon which the strap lay flatwise to the picker-staff, where it passed around the staff flatwise, and was secured by a bolt in a way similar to the way that the flexible band 15 is secured to the picker-staff, as is shown in Fig. 2. This method of construction caused the flat strap to make a quarter-turn between the said drum and the picker-staff, and in consequence of this quarter-turn, and of the great strain that was put upon the strap when the picker began to move the shuttle, the strap very frequently broke, which caused a heavy annual loss to the manufacturer, both in the cost of the straps and in the incidental damage to the cloth.

I do not broadly claim any part of this hitherto well-known picking mechanism; nor do I broadly claim the use of a slotted link in a picking mechanism; but

What I do claim as new, and desire to secure by Letters Patent, is—

The picking mechanism of a loom which consists of the combination of the cam 2, and a means of supporting and rotating the same, with the rocking lever 3, a fixed pivot for supporting one end of the said lever, and a means of actuating the said lever from the said cam, the bell-crank lever 8, a pivot upon which the said bell-crank lever rocks, and a fixed support for the said pivot, a rod pivoted to one end of the said bell-crank lever, and a flexible band and a bolt connecting the said rod to the free end of the lever 3, the pin 12 in the said bell-crank lever, a rod, 14, provided with a slot in one end, which works upon the pin 12, the picker-staff, and the flexible band and bolt connecting the said picker-staff to the rod 14, substantially as described, and for the purposes set forth.

NEWELL ABARE.

Witnesses:

CHANNING WHITAKER,

HARRY D. CARTER.