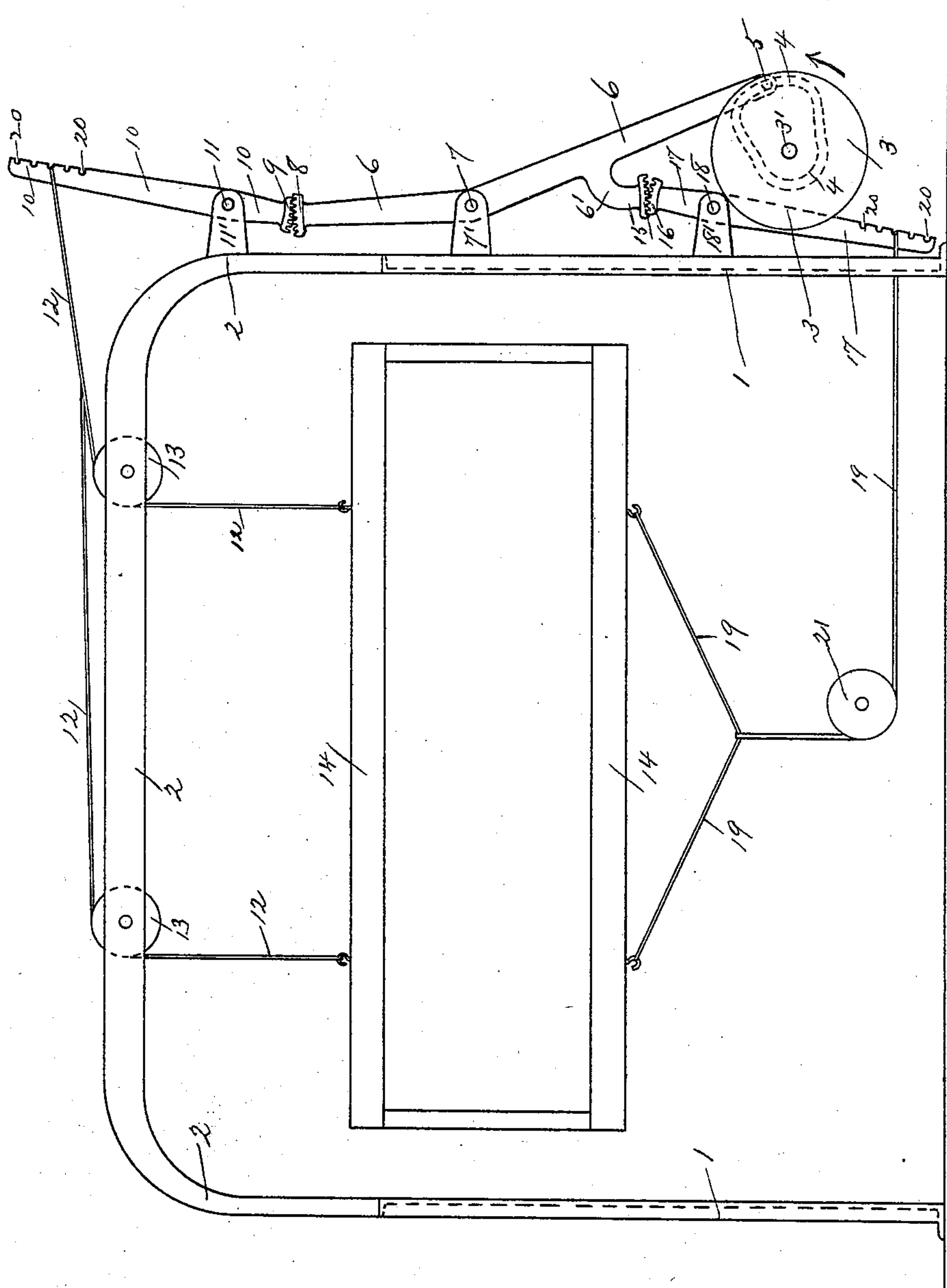


(No Model.)

G. F. HUTCHINS.
HARNESS LEVER FOR LOOMS.

No. 453,302.

Patented June 2, 1891.



2 Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE F. HUTCHINS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE
KNOWLES LOOM WORKS, OF SAME PLACE.

HARNESS-LEVER FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 453,302, dated June 2, 1891.

Application filed October 25, 1890. Serial No. 369,299. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. HUTCHINS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Harness-Levers for Looms; and I do hereby declare that the following is a full, clear, and exact description of the invention, which, in connection with the drawing making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to looms, and more particularly to the harness-motion in that class of looms in which the harnesses are raised and lowered by a set of upright jacks or levers operated by a corresponding set of cams.

The object of my invention is to obtain a harness-lever that will give greater variation of shed between the two extreme notches, and I obtain this result by making my harness-lever in three parts and operating the same in the manner to be hereinafter fully described.

My invention consists in certain novel features of construction and operation of the harness-levers of a loom of the class above referred to, as will be hereinafter fully described.

The drawing represents a front elevation of a portion of a loom with my improvements applied thereto.

I have only shown in the drawing sufficient parts of a loom with my invention applied thereto to clearly illustrate the nature of my invention and the operation thereof.

In the accompanying drawing, the numeral 1 represents the loom-sides, and 2 the arches of ordinary construction, and 3 is a cam operating a harness-lever and supported on a shaft 3' and driven in the direction of the arrow. In the groove 4 in said cam runs a pin 5 on the lower end of the lever 6, pivoted at 7 on a bracket 7' on the loom-side. The upper end of the lever 6 is provided with the segment-gear 8, which meshes with the segment-gear 9 on the lower end of the lever 10, pivoted at 11 on the bracket 11' on the loom-

side. From the upper end of the lever 10 extend the cords 12 in the ordinary way, passing over pulleys 13 and secured to the upper side of the harness-frame 14. Upon the lever 6, below its pivot-point 7, is a segment-gear 15, in this instance formed on the end of an arm 6', projecting out from the lever 6. Said segment-gear 15 meshes with segment-gear 16 on the upper end of the lever 17, pivoted at 18 on bracket 18' on the loom-side. From the lower end of the lever 17 extends the cord 19, passing over the pulley 21 to the lower side of the harness-frame 14.

From the above, in connection with the drawing, it will be seen that the harness-lever is made in three parts, each part supported on a separate pivot-point, and the parts connected together by segment-gears. The revolution of the cam 3 will cause the lever 6 to move in and out on its pivot-point, and through the segment-gears 8 and 9 will cause the lever 10 to be moved in and out on its pivot-point, and through the segment-gears 15 and 16 will cause the lever 17 to be moved in and out on its pivot-point, according to the conformation of the cam 3. As the levers 10 and 17 are moved in opposite directions by the intermediate lever 6, the harnesses connected with said levers by the cords 12 and 19 will be moved up and down in the usual manner.

By dividing the harness-lever into three separate levers and connecting them together and operating them, as above described, it is obvious that there is a much greater variation of shed between the two extreme notches of lever 10 than there would be if said lever were moved from the pivot-point of the intermediary lever 6 instead of its own pivot-point. The same is true of the lower lever 17.

It will be understood that there is an operating-cam and a set of levers like those shown in the drawing for each harness-frame.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a loom, the combination, with a harness and connections to a harness-lever, of a harness-lever made in three parts, consisting of an intermediary lever and a lever above

and a lever below said intermediary lever, said levers having segments of gears on their contiguous ends, substantially as set forth.

2. In a loom, the combination, with a harness and connections to a harness-lever, of a harness-lever made in three parts and consisting of an intermediary lever provided with two segments of gears and operated by a cam, and said cam and two levers, one above and

the other below the intermediary lever, and each provided with a segment of a gear meshing with the segment of gears on the intermediary lever and operated thereby, for the purpose stated, substantially as set forth.

GEORGE F. HUTCHINS.

Witnesses:

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