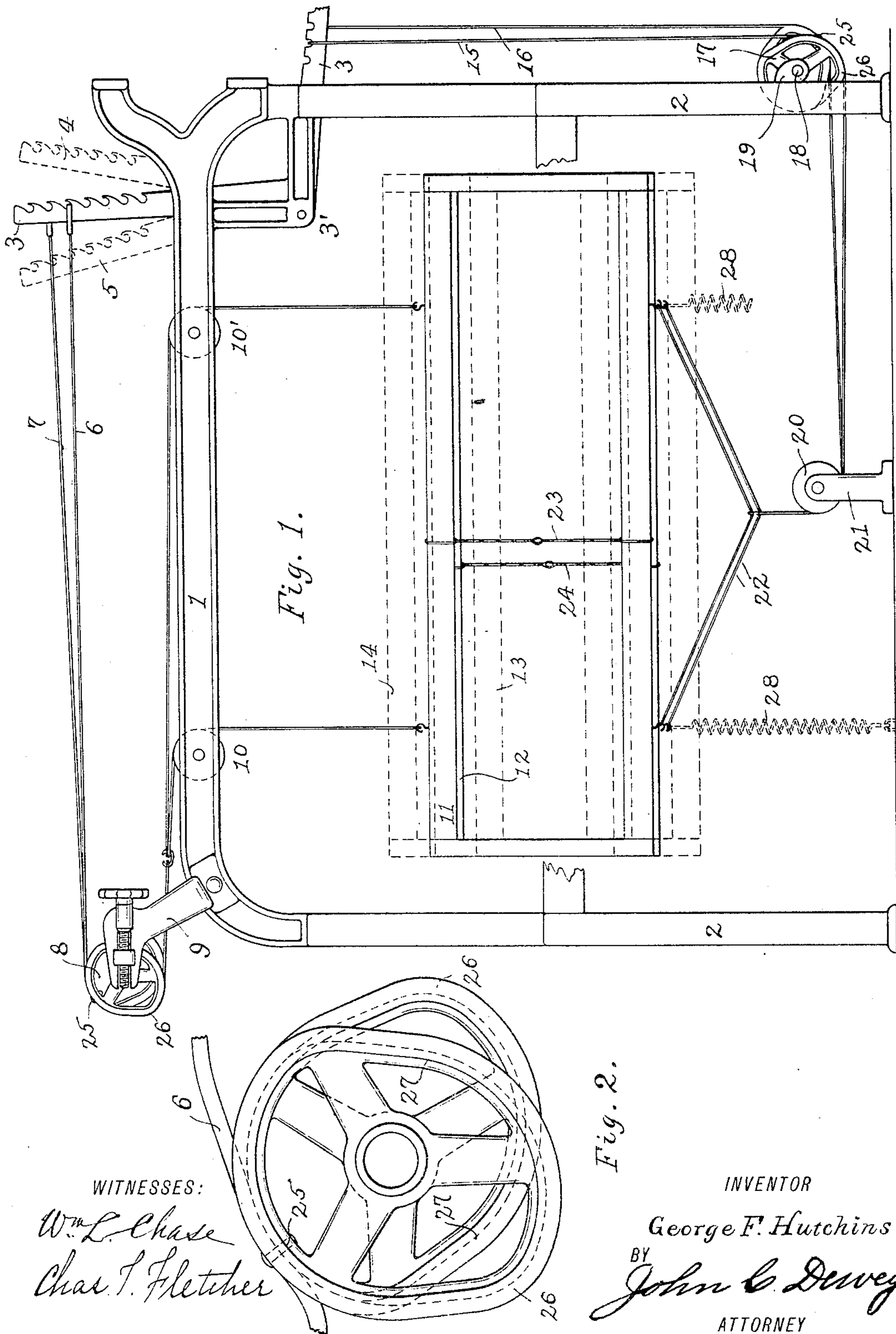


(No Model.)

G. F. HUTCHINS.
SHEDDING MECHANISM FOR LOOMS.

No. 410,734.

Patented Sept. 10, 1889.



UNITED STATES PATENT OFFICE.

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

SHEDDING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 410,734, dated September 10, 1889.

Application filed April 6, 1889. Serial No. 306,203. (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 Shedding Mechanism for Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings 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 the harness mechanism of looms; and the object of my invention is to so shift the harness-frames and heddles that the warp-threads in passing from one line of the shed to the other do not all pass the center at the same time, which object I attain by the use of eccentric or irregular-shaped sheaves over which the harness-cords pass between the harness-levers and harness-frames.

Referring to the drawings, Figure 1 represents a detached portion of a loom with my improvements applied thereto, and Fig. 2 is a detail of a pair of my improved sheaves.

In the accompanying drawings, 1 is the arch or elevated portion of a loom-frame, and 2 the loom-sides. The full lines 3 represent the harness-levers, pivoted at 3' and operated in any of the ordinary ways, said levers being in the position they occupy when half changed. The dotted lines 4 and 5 show the extreme positions of the harness-levers.

6 and 7 are the top harness-cords, leading from the harness-levers 3 over the eccentric or irregular-shaped sheaves 8, which are supported in the supplemental sheave-stand 9, which in this instance is of the same construction as the supplemental sheave-stand of my patent, No. 398,618, and as fully set forth in said patent. From the sheaves 8 the cords 6 and 7 pass over the ordinary arch-sheaves 10 and 10' to the harness-frames 11 and 12. (Shown by full lines in the positions they occupy when half changed.) The dotted lines 13 and 14 show the extreme positions of the harness-frames.

15 and 16 are the bottom harness-cords,

leading from the harness-levers 3 over the eccentric or irregular-shaped sheaves 17, corresponding to the sheaves 8, and pivoted at 18 on a stand 19, bolted to the loom-side, and thence over the ordinary sheaves 20, supported in a stand 21 under the harness-frames and to the yokes 22, attached to the harness-frames.

23 and 24 are ordinary heddles carried by the harness-frames.

A portion of the outline of the eccentric or irregular-shaped sheaves is circular with the center at the center of the bearing of the sheaves. The length of the circular arc is a little more than the extreme travel of the harness-frames, and usually embraces an angle of about one hundred and twenty degrees. The cords to the harness-levers lead off this circular part, and to prevent the sheaves getting out of place the cords are fastened to the sheaves by a rivet or screw 25, Fig. 2, in such a position as not to interfere at any part of the travel with the cords leading off tangentially toward the harness-levers.

Points 26 and 27, Fig. 2, on the outline of the sheaves are so taken that the length of the outline between them is equal to the travel of the harness-frames. The length of the radius of point 26 from the center of bearing is as much greater than the radius of a point central between 26 and 27 as the radius of point 27 is less than the said central radius.

In strapping up a loom my improved sheaves are put in in pairs in such a way that with the harness-frames at the extremity of their travel when the cord to one frame leads off tangentially at point 26 the cord to the companion frame leads off tangentially at point 27. The effect of this is, that when the harness-frames are half changed the frames whose cords at starting led off the high points 26 will be advanced farther than the frames whose cords led off the low points 27 by the difference in length of the outline of the high and low points of the eccentric or irregular-shaped sheaves. The pairs of eccentric or irregular-shaped sheaves are reversed in putting on, so that the frames which advance faster on the first half of the shift lose the same amount on the last half, and all the

frames reach the extreme of their travel at the same time. With ordinary sheaves all the harness-frames, part of which may be going up and part going down, meet in the center of their travel, thus making all the warp-threads which are going up on a given pick meet and pass in the center of the shed all the warp-threads which are going down. Each warp-thread in shifting has to pass not only its neighbor threads which are drawn into different harness, but also the heddle-eyes which carry its neighbor threads in all the different harness-frames. The effect of this is to cause friction on the warp-threads and consequent breakage, which is greatly augmented with tender yarn and in fine patterns. I have found that the advance which can be given to a part of the harness-frames and heddles by means of my improved sheaves is sufficient to greatly relieve this friction.

Instead of carrying the top harness-cords over the supplemental sheaves at the opposite ends of the arch or elevated loom-frame, as shown in the drawings and above described, I can place my eccentric or irregular-shaped sheaves in the arches in place of the

ordinary sheaves 10 and 10'; but in doing this it would be necessary, in order to have both ends of a given harness-frame travel alike, to keep its two sheaves always at the same point in their revolution.

In the arrangement shown in the drawings it is necessary to have the eccentric or irregular-shaped sheave at the top set opposite to the eccentric or irregular-shaped sheave for the same frame on the bottom, and to avoid the necessity of keeping these in proper adjustment I may dispense with the bottom cord connections and substitute the springs 28. (Shown by dotted lines, Fig. 1.)

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

The combination, with harness-levers, harness-frames, and cords connecting the same, of eccentric or irregular-shaped sheaves over which the cords pass, substantially as and for the purpose stated.

GEORGE F. HUTCHINS.

Witnesses:

JOHN C. DEWEY,
HENRY H. YOUNG.