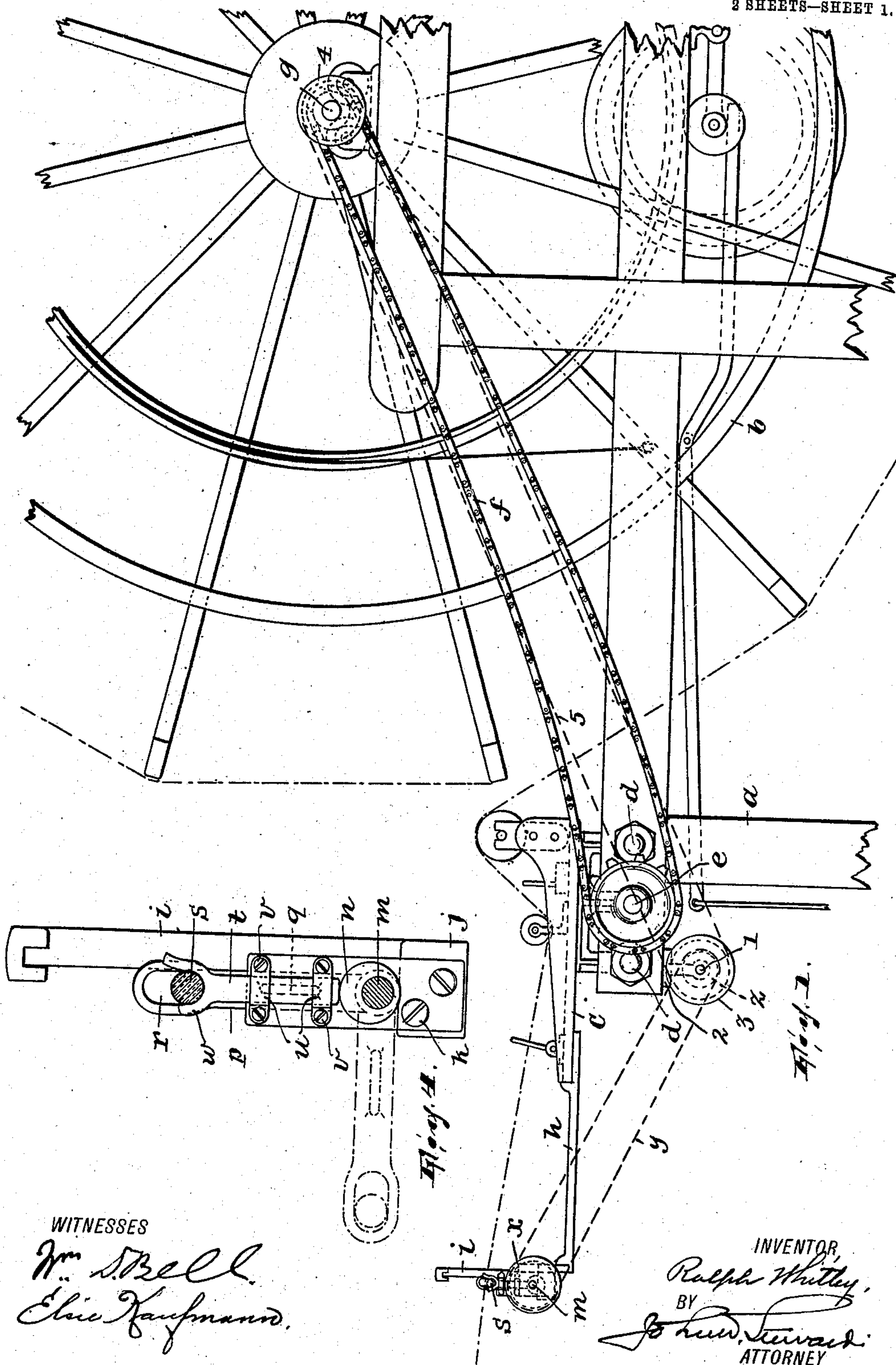


910,979.

R. WHITLEY.
WARPING MACHINE.
APPLICATION FILED JULY 28, 1908.

Patented Jan. 26, 1909.
2 SHEETS—SHEET 1.



WITNESSES

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2 SHEETS—SHEET 2.



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RALPH WHITLEY, OF PHILADELPHIA, PENNSYLVANIA.

WARPING-MACHINE.

No. 910,979.

Specification of Letters Patent.

Patented Jan. 26, 1909.

Application filed July 28, 1908. Serial No. 445,728.

To all whom it may concern:

Be it known that I, RALPH WHITLEY, a citizen of the United States, residing in Philadelphia, Philadelphia county, Pennsylvania, have invented certain new and useful Improvements in Warping-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

In the operation of warping machines it is well known that the continuous wiping contact of the threads of the warp against the dents of the cross reed, and particularly those dents more or less near the ends of the cross reed, soon wears nicks or depressions therein which are objectionable not only that they sooner or later render the reed unadapted for further use but act to catch knots or irregularities in the threads, with the result that the threads break under the pull exerted thereon by the reel of the machine; the warp turned out is thus poor in quality, to say nothing of the annoyance and loss of time which the warper has to cope with. Thus, whenever the threads run slightly uneven or large in size, or if the silk is slubby, the threads in running through the nicks are stripped, or several fibers are broken, and these stripped or half broken threads run into the warps, causing great loss of time in piecing up in passing through the harness and reed in the weaving process, as well as loss of production and imperfect merchandise. Again, when the warper is taking the leash cross, in moving the threads up and down in the cross reed past the nicks, the pressure of the threads against the nicks breaks many fibers in the threads and these half broken threads run through onto the warp, causing great loss of time and production in the weaving in forming split ends behind the weaver's reed, and making imperfect merchandise.

The object of this invention is to provide, in connection with the reed of a warping machine, means whereby the difficulty above referred to may be entirely overcome and this I accomplish, in such a way as not to interfere with the operator watching the threads as they pass through the reed, by providing a rising and falling bar which

keeps the threads constantly moving up and down, *i. e.*, in the direction of the length of each dent of the reed, so that they do not constantly wear in one place on the dents; in order, further, that said bar may, at the will of the operator, clear the warp so that the operator may form the sheds therein as occasion may require, I provide means for so mounting the said bar that it may be temporarily swung out of contact with the threads.

My invention will be found fully illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of a warping machine provided with my improvement; Fig. 2 is an enlarged plan view of my improvement and so much of the warping machine as is directly related to it; Fig. 3 is a front view of what is shown in Fig. 2; and, Fig. 4 is an enlarged detail view in side elevation.

In the drawings, *a* is the frame of the machine, *b* the reel; *c* the reed carriage, *d* guide-rods on which the carriage moves laterally of the frame *a*, *e* a rotating screw with which the carriage is disconnectively connected so that, at the will of the warper it may partake of the desired traverse movement or be moved by hand from point to point along the guide-rods in setting it for the laying-on of each section of warp on the reel, and *f* the usual sprocket-and-chain drive for rotating the screw from the reel shaft *g*.

On the end of the usual arm *h* forming a part of the carriage *c* is arranged the cross reed *i*; to the ends of the base or lower rail *j* of the frame of the reed I attach, by means of screws *k* or otherwise, the vertical brackets *l*. The rail *j* being somewhat thicker than the reed proper and projecting forward of the front face of the reed, the uprights *l* are so arranged that they stand slightly forward of the plane of said front face of the reed, as best seen in Fig. 4. In said brackets is journaled a horizontal shaft *m* on which, close to the outer sides of the brackets, are fixed cams *n*, the same serving to prevent incidentally endwise movement of the shaft in its bearings. On said shaft *m* is fulcrumed a frame *o* comprising the uprights *p*, the lower end-ports of which said shaft penetrates, and the flat connecting bar *q*, the upper end-ports of said uprights being provided with the slots *r* extending longitudinally thereof; the slots *r* receive the ends of a glass-bar *s*.

Cams *n* are set on the shaft (*m*) so that their

highest parts are in the same radius from the shaft and against them bear the lower ends of the glass-bar carrying forks *t* arranged to move in guides *u* secured to the outer face of each bracket *l* one above the other by means of screws *v*; the front arm *w* of the bifurcated portion of each fork is made somewhat shorter than the rear arm so as to allow the glass-bar to be raised in the uprights *p* sufficiently to clear the fork, whereupon the frame *o* with the glass-bar may be depressed to the position indicated by broken lines in Fig. 4, in which position the frame rests against the bottom rail *j* of the reed-frame, the glass-bar being then temporarily out of contact with the warp.

It will be understood that when the parts are in the position indicated in Fig. 4 in full lines the rotation of the cams will cause an intermittent rise and fall of the glass bar which will raise and lower the warp so that the threads thereof will be prevented from continually wearing on the same points of the reed dents and so forming nicks in them. The shaft carrying the cams is rotated as follows: Said shaft carries at one end a pulley *x* over which is extended an endless belt *y* which passes around a roller *z* having its trunnions *l* journaled in the brackets *2* secured to the frame *a*, the roller being arranged parallel with the path of traverse of the carriage *c*; on the right-hand trunnion of the roller is fixed another pulley *3* over which and another pulley *4* on the shaft *g* of the reel extends an endless belt *5*. Thus as the reel rotates it causes the rotation of the shaft *m* carrying the cams *n*, the roller *z* allowing meanwhile the unimpeded traverse of the carriage.

I do not wish to be limited to the details of construction herein set forth, but,

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

1. The combination, with the reed, of means for moving the threads in the reed transversely of their length comprising a thread-engaging member extending transversely of the reed-dents, cams, a rotary shaft carrying said cams and also extending transversely of the reed-dents, brackets carried by the reed and forming bearings for said shaft, and devices, bearing against the cams and engaged by said member, for transmitting a reciprocatory motion from the cams to said member, said devices being guided in said brackets, substantially as described.

2. The combination, with the reed, of a

thread-engaging member extending transversely of the reed-dents, means for effecting a vibratory movement of said member in the direction of the length of the reed-dents, said member being movable out of position to engage the threads, and means, movable with said member out of position to engage the threads, for supporting the same when out of said position, substantially as described.

3. The combination, with the reed, of a thread-engaging member extending transversely of the reed-dents, means for effecting a vibratory movement of said member in the direction of the length of the reed-dents, and means for guiding said member in its vibratory movement, said last-named means being movable toward and from the thread plane and said member being movable with said means, substantially as described.

4. The combination, with the reed, of a thread-engaging member extending transversely of the reed-dents, means for effecting a vibratory movement of said member in the direction of the length of the reed-dents, and a frame fulcrumed on an axis also extending transversely of the reed-dents and having slots extending radially with reference to its fulcrum and receiving said member, substantially as described.

5. The combination, with the reed, of a thread-engaging member extending transversely of the reed-dents, means for effecting a vibratory movement of said member in the direction of the length of the reed-dents comprising vertically reciprocating forks having their forked portions uppermost and receiving said member, means for guiding said forks, and a frame fulcrumed on an axis also extending transversely of the reed-dents and having slots extending radially with reference to its fulcrum and receiving said member, substantially as described.

6. The combination, with the reed, of a thread-engaging member extending transversely of the reed-dents, brackets carried by the reed, a shaft journaled in said brackets, cams arranged on said shaft, forks guided in said brackets and having their forked portions uppermost, said forks being engaged with the cams, and a frame fulcrumed on said shaft and having slots extending radially with reference to the shaft and receiving said member, substantially as described.

In testimony whereof, I have hereunto set my hand this 23rd. day of July, 1908.

RALPH WHITLEY.

Witnesses:

WILLIAM J. LINDLEY,
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