(No Model.)

J. E. PREST.

BEAM DOFFER FOR WARPERS.

No. 485,225. Patented Nov. 1, 1892.

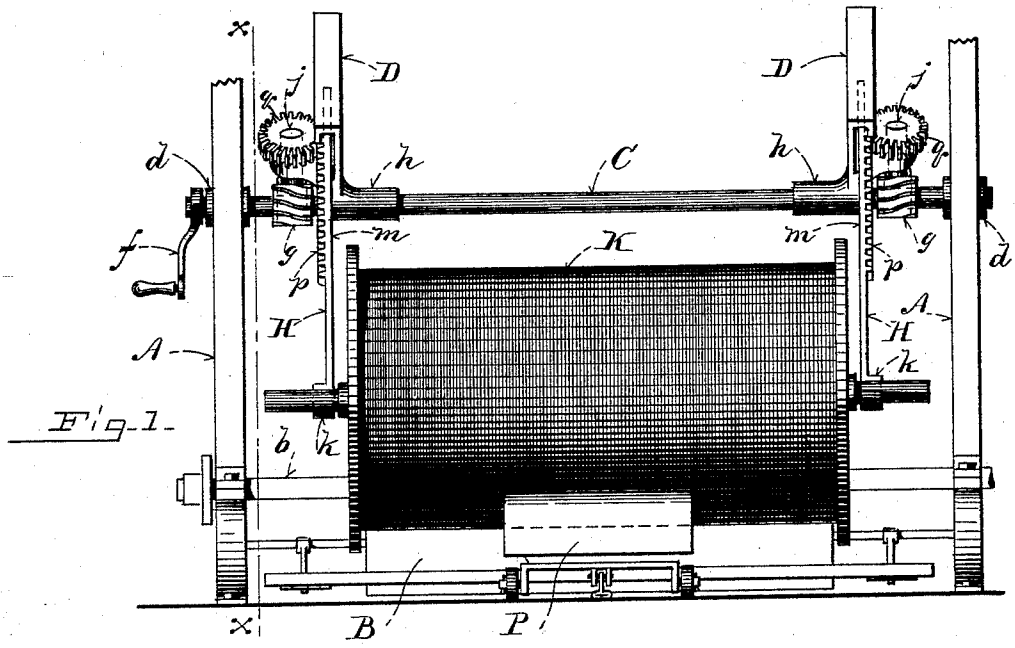

Fig. 1.

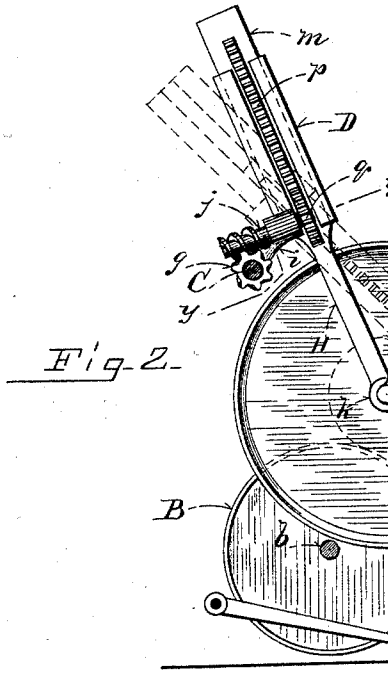

Fig. 2.

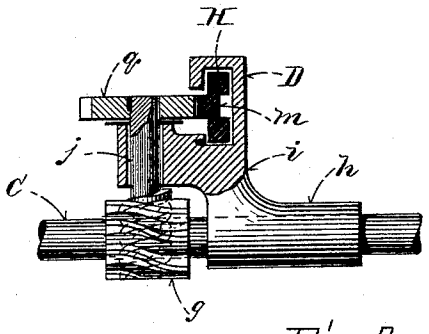

Fig. 3.

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UNITED STATES PATENT OFFICE.

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BEAM-DOFFER FOR WARPERS.

SPECIFICATION forming part of Letters Patent No. 485,225, dated November 1, 1892.

Application filed June 6, 1892. Serial No. 435,637. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. PREST, of Whitinsville, in the county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Beam-Doffers for Warpers, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a portion of a warping-machine frame, showing the beam filled and doffed on the truck; Fig. 2, an end elevation, partly in section, on line *x x* in Fig. 1, showing the parts in position for running and supporting an empty beam; and Fig. 3, a sectional view, enlarged, taken on line *y y* in Fig. 2.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to mechanism applicable to warping-machines of ordinary construction for supporting and doffing the beam when filled, it being designed particularly to obviate the necessity of dismounting the beam by hand. As the main portions of the warping-machine are all of the ordinary form and construction it is not deemed essential for the purposes of describing my invention to fully illustrate such machine.

In the drawings, A A represent the end standards of the ordinary warping-machine, near the feet of which the ordinary roller B, upon which the beam rests while winding, is journaled on the shaft *b*. The usual beam-supporting shaft C is journaled in the standards A in suitable boxes *d*, it being customary to suspend the beam from arms on said shaft.

In my improvement I extend the shaft C beyond one of the standards and mount a crank-handle *f* thereon. Adjacent each standard I secure on the shaft a worm *g*, and near each worm a loose sleeve *h* is mounted on said shaft. From these sleeves a bracket-arm *i* projects rearwardly and laterally, a vertical worm-shaft *j* being journaled therein and meshing with the worm *g* on the shaft C. Projecting rearwardly at a tangent to the shaft and formed integral with the sleeve or its arm *i* there are ways D, in which the beam-supporting arms H are fitted to slide longitudinally. These arms are hooked at *k* on their lower ends to receive the journals of the beam K, the upper ends *m* of said arms being broadened to slide in said ways. A rack *p* is formed centrally and longitudinally of the broadened ends *m*, and a pinion *q*, mounted on the upper end of the worm-shaft *j*, meshes with said rack. The sleeve *h* and its arm *i* form brackets for supporting the holder-arms for the beam, the tension of which holds the worm-shaft *j* in engagement with the worm *g* on the shaft C, said arms acting substantially as a counter-balance to prevent the rearward tilting of the brackets.

In the use of my improvement, the empty beam K being mounted in the hooks *k* of the beams H, by rotating the shaft C and revolving the worms *g* thereon the beam can be drawn into the proper position on the roll B and supported therein, as shown in Fig. 2. When the beam is filled, the shaft C may be rotated in the opposite direction, driving the arms H outward by means of their racks and lowering the beam K onto a truck P, disposed in a position to receive it. The rack and pinion actuated by the worm, as described, so proportion the power that very little is required to control the motion of lowering the beam, it being far less than that necessary to balance the dead-load.

Having thus explained my invention, what I claim is—

1. A beam-doffing mechanism for warping-machines, comprising a crank-shaft journaled in the machine-frame, a worm on said shaft, a bracket loose on said shaft, a beam-supporting rack fitted to slide in said bracket, a pinion journaled on the bracket and meshing with said rack, and a worm on the pinion-journal meshing with said shaft-worm, substantially as described.

2. The beam-supporting shaft and mechanism for rotating the same, in combination with two worms on said shaft, brackets loose on said shaft adjacent said worms, racks fitted to slide longitudinally in said brackets and adapted to support the beams, pinions on said brackets meshing with said rack, and connecting mechanism for driving said pinion from said worm, substantially as described.

3. A beam-doffing mechanism comprising the shaft supported in the warper-frame, brackets loose on said shaft, beam-supporting arms fitted to slide longitudinally in said brackets, and mechanism actuated by the rotation of the shaft for moving said arms, substantially as described.

4. The combination, with the frame, crank-shaft C, and worms *g* thereon, of the loose sleeves *h* on said shaft, provided with ways *d*, rack-arms H, fitted to slide in said ways and support the beam, the worm-shafts *j*, journaled on said sleeves and meshing with the worms *g*, and the pinion *q* on said shaft, meshing with said rack, all being arranged to operate substantially as described.

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