J. ADAMS & W. A. TOLMAN.

Improvement in Machines for Winding Bobbins.

No. 115,264. Patented May 30, 1871.

Fig. 1

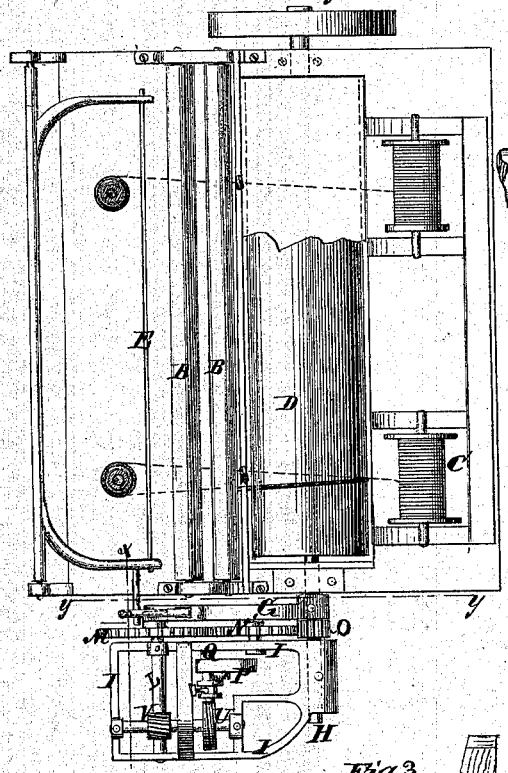


Fig. 2.

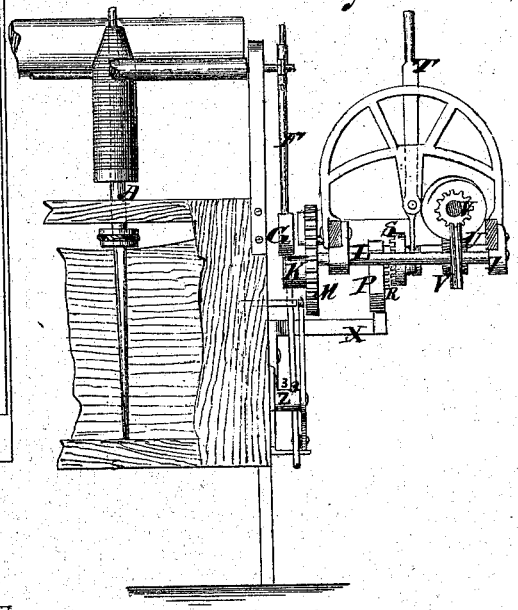


Fig. 3

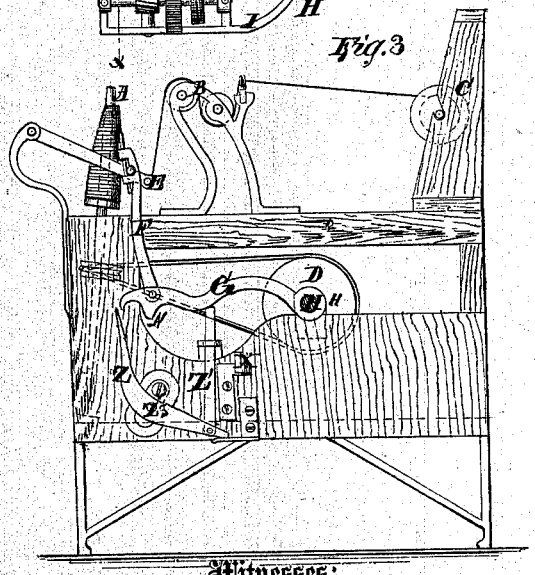
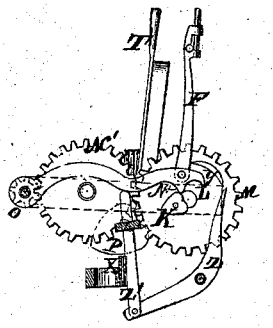


Fig. 4.



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UNITED STATES PATENT OFFICE.

JUDSON ADAMS AND WARREN A. TOLMAN, OF RICHMOND, INDIANA.

IMPROVEMENT IN MACHINES FOR WINDING BOBBINS.

Specification forming part of Letters Patent No. 115,264, dated May 30, 1871; antedated May 19, 1871.

To all whom it may concern:

Be it known that we, JUDSON ADAMS and WARREN A. TOLMAN, of Richmond, in the county of Wayne and State of Indiana, have invented a new and Improved Bobbin-Winding Machine; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in machinery for winding bobbins; and it consists in certain combinations and arrangements of devices with the faller-wire or guide and the driving mechanism for the band-cylinders, so that under one adjustment the yarn may be wound in the required conical form upon cylindrical bobbins, and by another it may be wound upon the bobbins having the conical bases.

Figure 1 is a plan view of a bobbin-winding machine constructed according to our improvements. Fig. 2 is a front view of part of the machine and a sectional elevation of another part, the latter being on the line *x x* of Fig. 1. Fig. 3 is a sectional elevation taken on the line *y y* of Fig. 1; and Fig. 4 is also a section on the line *y y*, but looking in the direction opposite to that of Fig. 3.

Similar letters of reference indicate corresponding parts.

The winding-spindles A, friction-rollers B, spool-rack C, spindle-driving cylinder D, and yarn guide or faller E are of the ordinary construction. The faller-wire, or one of the supporting-arms thereof, is connected by the rod F to the arm G, which is pivoted on the cylinder-shaft H so that it may rise and fall to work the said faller-guide. Alongside this arm G, and pivoted also to the shaft H so that it may vibrate in a vertical plane, is a frame, I, for supporting the working-gears which operate the faller. K is a heart-shaped cam mounted on the end of a shaft, L, borne in the said frame I, and arranged so that the free end of the arm G will rest on it for the cam to impart the motion to the said arm, which has a projection, N, for bearing on the cam. This cam is worked by means of the large cog-wheel M on the shaft L, the intermediate wheel N′ mounted on a stud on the frame I, and the pinion O fast on the driving-shaft H. P is a large heart-shaped cam mounted so as to turn loosely, when required, on a short shaft, Q, borne on frame I. Said cam is provided with a toothed hub, R, to be engaged and held as required by a sliding toothed collar, S, also on the shaft, and keyed to it so as to turn with it, and worked by a shifting-lever, T. This shaft Q is geared with shaft L by two pairs, U and V, of worm-wheels, and a shaft, W, so as to have a slow motion to raise the faller-wire along the bobbin from bottom to top while the bobbin is being wound, said raising being effected by the working of the cam P against an arm, X, projecting from the frame of the machine. The large wheel M carries a small cam, Y, which acts (when the frame I is down at the lowest position) on the lever Z, at each revolution, at the time when the cam K has allowed the arm G to fall, and causes said lever to lift the lever G a short distance, through the medium of the bar Z^1, and let it fall again. This lever Z is pivoted to the frame at Z^3 on a pivot capable of adjustment, so that the lever may be moved out of reach of the cam Y when required, which is done when winding the yarn on bobbins having the conical bases, in which case it is not needed. The arm X is also to be made adjustable on the frame for regulating the relation of the faller-wire to the bobbins.

Previous to setting the machine in motion the toothed collar S is moved out of connection with the hub of cam P, and the latter is turned so that the frame I is allowed to fall to its lowest position. It is then put in gear again, when the machine is ready for operation to wind on the conical bobbins, the lever Z being dropped out of the path of the cam Y. The machine being then set in motion, the winding will be effected in the ordinary conical form, the cam K, arm G, and rod F moving the faller for guiding the yarn in winding the cone, while the cam P causes the frame to gradually rise and the faller to move from bottom to top of the bobbins to wind the successive layers higher thereon. When the yarn is to be wound on the bobbins not having the conical base for beginning the winding on, the lever Z is adjusted so as to be acted upon by the cam Y, and the faller is thereby caused to have another rising-and-falling motion between each motion caused by cam K, but not

so great, by which a conical base is built up at the bottom of the bobbin, as will be clearly understood by inspection of the drawing. This motion so imparted to the faller-moving arm G, and thereby to the faller, by means of the cam Y, lever Z, and bar Z^1, being only required while the base is forming, is made to cease by the raising of the frame I and arm G by the cam P, which is so adjusted that the cam Y will be out of reach of the arm Z by the time the base is properly formed. The faller-wire arm is connected to the rod F, so as to be readily detached for dropping it out of the way when the completed bobbins are to be removed.

After the bobbins are completed the cam-wheel P is again shifted back, as above stated, to let the frame I and the faller down to the place of beginning.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with the driving-shaft H, the arm X, and the faller-guide, of the arm G and frame I pivoted on the said shaft, and the cams K and P mounted on the said frame and geared together and with the shaft, in the manner substantially as specified.

2. The combination, with faller-guide, moving-arm G, and its operating mechanism, of the lever Z, cam Y, and slide-bar Z^1, all arranged for operation substantially as specified.

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