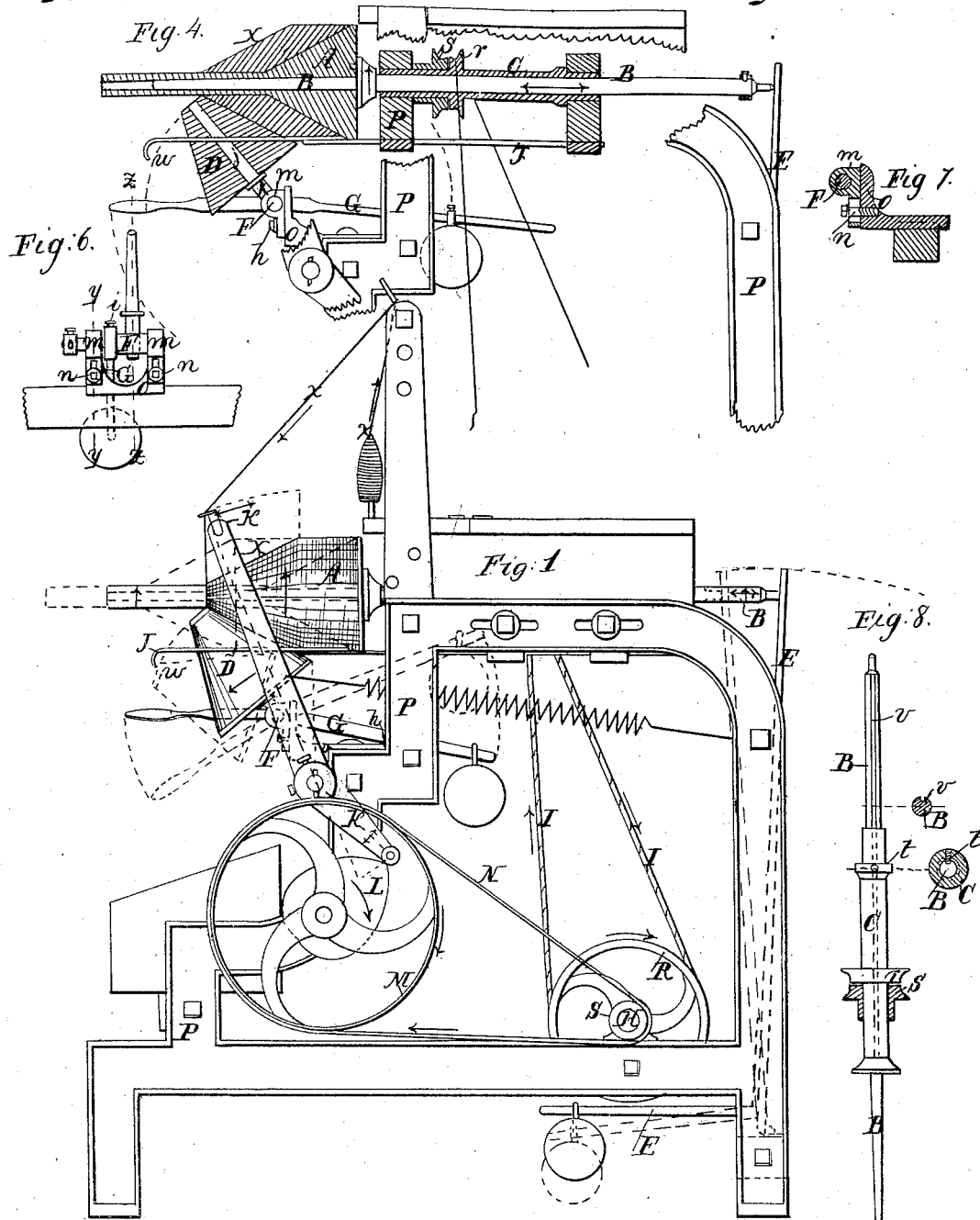


G. S. Bradford. *Sheet 1-2 Sheets.*
Winding Bobbin.

N^o 49,582.

Patented Aug. 22, 1865.



Witnesses;
John V. Hall
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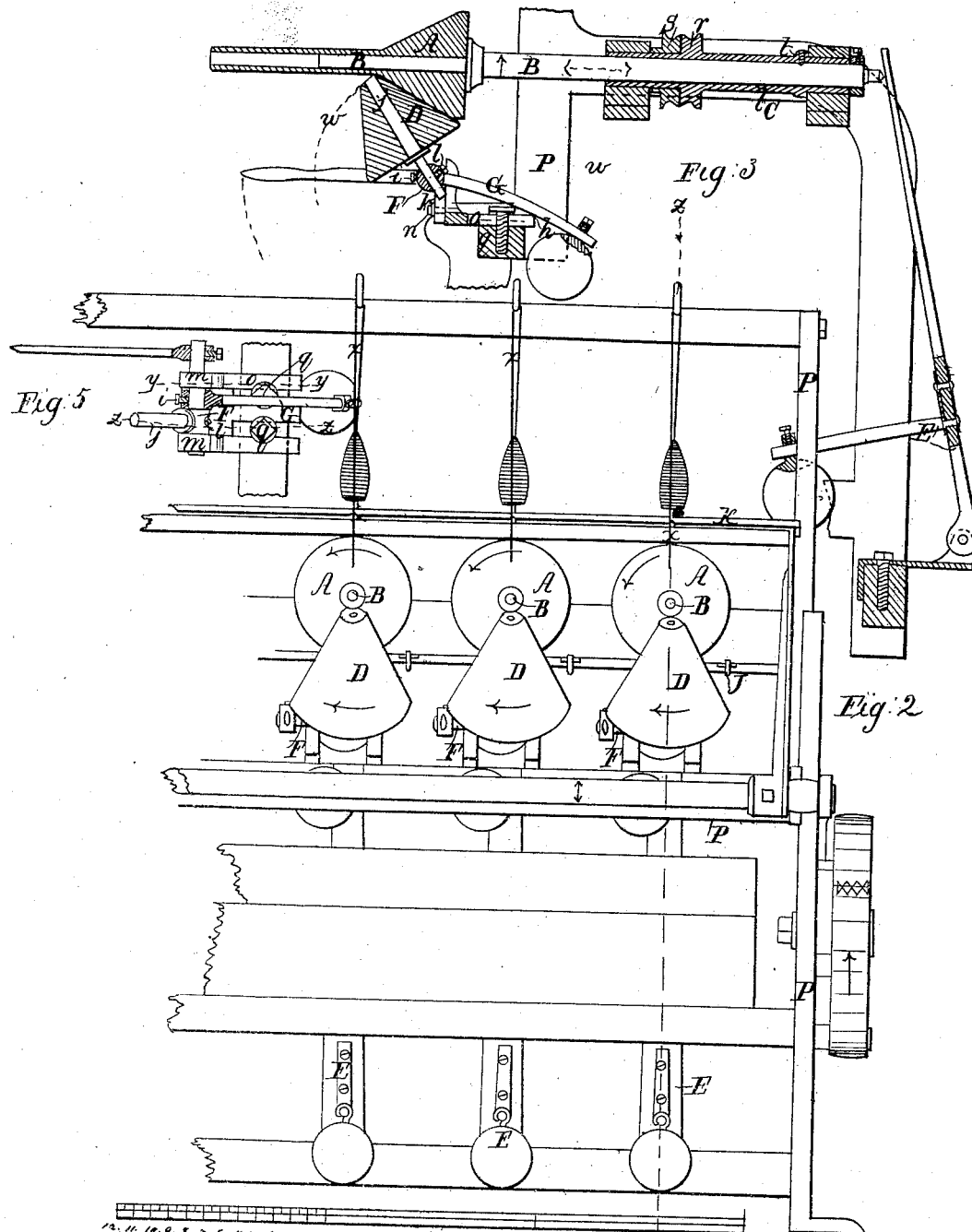
Inventor;
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UNITED STATES PATENT OFFICE.

GEORGE S. BRADFORD, OF BENNINGTON, VERMONT, ASSIGNOR TO HIMSELF
AND CLARK TOMPKINS, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR WINDING CONICAL BOBBINS.

Specification forming part of Letters Patent No. 49,582, dated August 22, 1865.

To all whom it may concern:

Be it known that I, GEORGE S. BRADFORD, of Bennington, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Machines for Winding Conical Bobbins, of which the following is a full and exact description, reference being had to the annexed drawings, in which—

Figure 1 is a side view, and Fig. 2 a partial front elevation, of a machine embodying my invention; Figs. 3 and 4, partial sections of a like machine at or near the line *z z* in Figs. 2, 5, and 6; Fig. 5 a plan, Fig. 6 a front elevation, and Fig. 7 a section at the line *y y* in Figs. 5 and 6, of a portion of the same machine; and Fig. 8, a plan and sections of another part thereof, like parts being marked by the same letters in all the figures, and the directions in which the parts move being indicated by arrows thereon.

My invention relates to that class of machines for winding yarn on conical bobbins in which the conical part of the bobbin or the yarn wound thereon is turned in contact with and pressed endwise by a yielding force toward or against a conical roller, so as to thereby revolve the latter and be pressed back endwise by the accumulation of yarn on the bobbin as the winding progresses; and one part of my invention consists in revolving the conical bobbin with its axis in a prostrate, horizontal, or nearly horizontal position by means of a bobbin-spindle, which is revolved by and with a rotary sleeve or collar thereon, and pressed endwise within the said rotary sleeve or collar and toward the conical roller by means of a weighted lever or its equivalent, substantially as shown by the annexed drawings, wherein *A* is the conical bobbin, *B* the bobbin-spindle, *C* the rotary sleeve or collar, *D* the conical roller, and *E* the weighted lever.

With my aforesaid improvement, the gradually-increasing weight of yarn on the bobbin as the winding progresses does not injuriously lessen the power of the device by which the bobbin-spindle or bobbin is pressed endwise toward or against the conical roller, as such increasing weight of yarn would do if the bobbin and bobbin-spindle were arranged with their common axis vertical, or nearly so, and pressed upward toward or against a conical

roller by a weighted lever or its equivalent, as in some bobbin-winders heretofore devised; and with my aforesaid improvement the bobbin is pressed endwise toward or against the conical roller by a force, which is not liable to be either increased or lessened injuriously by any variation in the width, or thickness, or flexibility, or tightness of the belt or band by which the sleeve or collar and bobbin-spindle are revolved, as it would be if the bobbin-spindle was revolved and also pressed endwise horizontally toward the conical roller by a quarter-twist belt running over a long pulley fast on the bobbin-spindle, as in some bobbin-winders heretofore used, wherein the said quarter-twist belts, even when of uniform width and thickness, are liable to press the bobbins against the conical rollers with either too great or too little force at different times, according to the temporary tightness or looseness with which the belts run, which conditions of tightness and looseness are generally subject to great variations, not only from the ordinary wearing and mechanical stretching of the belts in use, but also from the shrinking and stretching of the belts under changes in the temperature and moisture of the atmosphere to which the belts are exposed.

Another part of my invention consists in mounting the conical roller on a pivot, hinge, rock-shaft, or axis which is arranged in respect to the bobbin-spindle, and provided with a weighted lever or other suitable holding device in such a manner that the conical roller will be thereby supported and held stationary in a proper position to be pressed against by the conical part of a bobbin on the spindle in winding yarn on the bobbin, and that the conical roller can be turned bodily on or with the said pivot, hinge, axis, or rock-shaft as a center, entirely away from the bobbin on the bobbin-spindle, so as to allow a wound bobbin to be freely taken endwise off from and a naked bobbin put onto the bobbin-spindle, and then turned bodily back again to the proper stationary position to be pressed against and revolved by the bobbin on the bobbin-spindle in winding yarn on the bobbin. Thus, for example, in the annexed drawings, *F* is the axis or rock-shaft on which the conical roller *D* is mounted, and *G* a weighted lever, which is fastened to the

shaft F, and which, when resting on a stationary part of the machine, as at *h* in Figs. 1 and 2, then holds the conical roller in the proper stationary position to be pressed against by the conical part of the bobbin A or of the wound yarn X thereon, and which at the same time will allow the conical roller to be easily turned entirely away from the bobbin, as indicated by the dotted lines *w* in Figs. 1, 3, and 4. By thus mounting the conical roller on a pivot, hinge, or axis I the conical roller may also be easily made adjustable, so that it can be set and held in various directions in respect to the bobbin-spindle to fit variously-tapered conical bobbins when put onto the bobbin-spindle. As, for example, in the annexed drawings, the weighted lever G has a socket which fits on a round part of the shaft F, with a set-screw, *i*, Fig. 5, so that the lever can be thereby fastened to the shaft in various angular directions in respect to the roller D, and the latter consequently set in various directions in respect to the bobbin-spindle B when the weighted lever G rests on the same stationary part of the machine, as at *h* in Figs. 1 and 3; and by thus mounting the conical roller on a hinge, pivot, or rock-shaft the conical roller can also be made adjustable in various other ways of more or less practical importance, whatever may be the temporary working direction of the conical roller in respect to the bobbin-spindle. Thus, in the annexed drawings, the roller D is made adjustable in the direction of its axis of revolution by being made to revolve on a spindle, *j*, which has a shank, *k*, Fig. 3, which extends through a socket in the shaft F, and is fastened in different positions therein by a set-screw, *l*, and the roller D is also made adjustable to different distances from and in a direction perpendicular, or nearly so, to the axis of the bobbin-spindle, and also in a direction lengthwise and parallel, or nearly so, thereto, by having

the bearings *m m*, Figs. 4 and 6, of the shaft F movable in a vertical direction and fastened by clamp-screws *n n*, Figs. 6 and 7, to a stock, *o*, which is movable horizontally in the lengthwise direction of the bobbin-spindle and fastened to the frame-work P of the machine by clamp-screws *q q*, Figs. 3 and 5.

In the annexed drawings, H is the main driving-shaft, from which the bobbin-spindle is revolved by a belt or band, I, running around a pulley, R, fast on the shaft H, and over a fast pulley, *r*, on the sleeve C, which has also a loose pulley, *s*, Figs. 3, 4, and 8, to and from which the band I is changed by a belt-shifter, J, to stop and start the rotation of the bobbin-spindle.

Fig. 8 shows the rotary sleeve C, with an internal stud or feather, *t*, fitting into a longitudinal groove, *v*, in the spindle B, to make the sleeve revolve the spindle as the latter is slid endwise.

K is a yarn-carrier, which is vibrated so as to lay the thread *x* of yarn properly on the cone of the revolving bobbin by a cam, L, fast on a pulley, M, which is turned by a belt, N, from a pulley, S, fast on the driving-shaft H.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a conical roller, D, with a prostrate conical bobbin, A, and bobbin-spindle B, revolved by a rotary sleeve or collar, C, and pressed endwise toward the said conical roller by a weighted lever, E, or its equivalent, substantially as herein described.
2. Mounting the conical roller on a pivot or axis, F, substantially as and for the purpose herein set forth.

GEORGE S. BRADFORD.

Witnesses:

JOHN V. HALL,
D. W. C. FAY.