

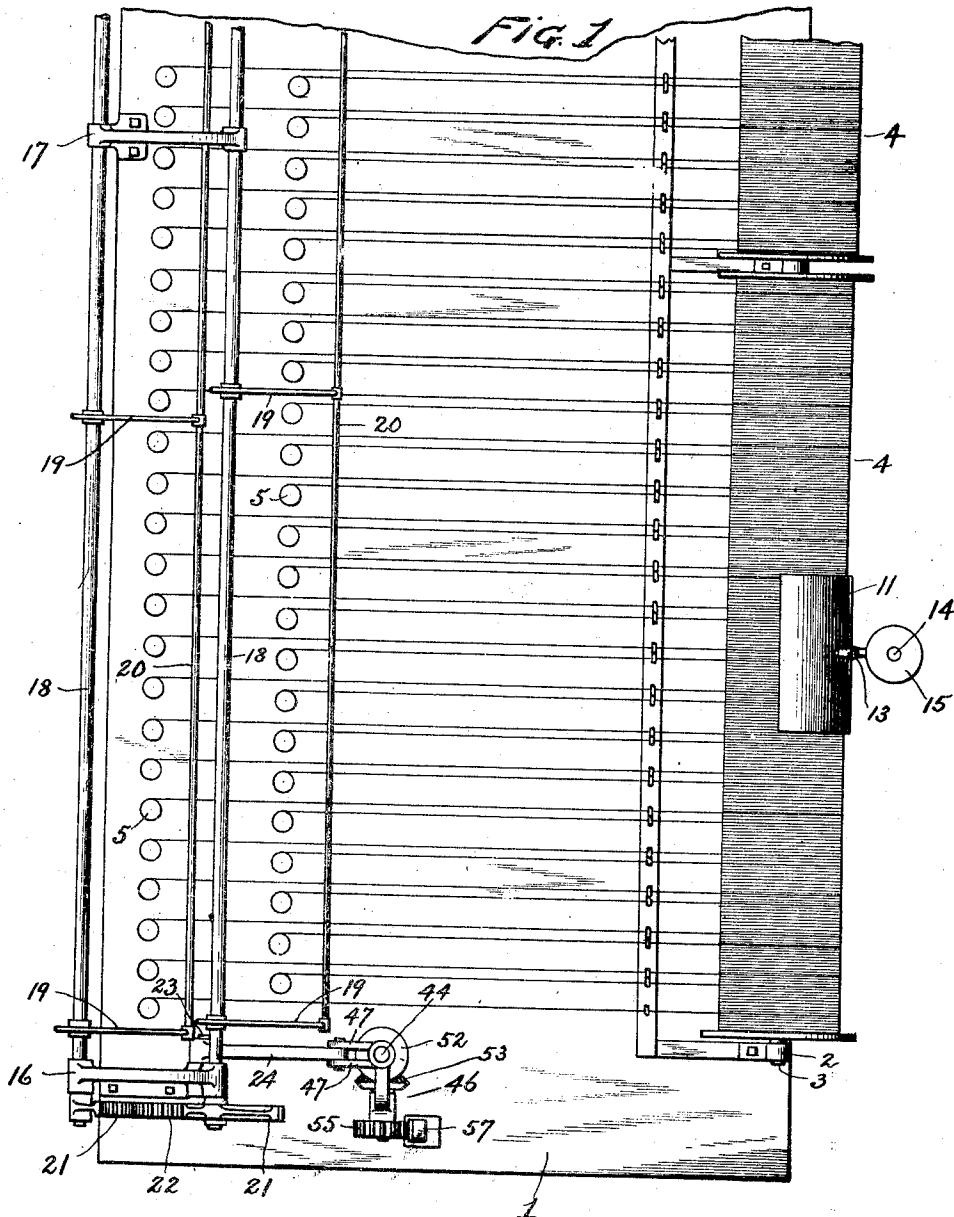
No. 851,144.

PATENTED APR. 23, 1907.

G. P. J. STIVERS.
WINDING FRAME.

APPLICATION FILED SEPT. 12, 1906.

4 SHEETS—SHEET 1.



WITNESSES:

C. Jan. Webster
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INVENTOR

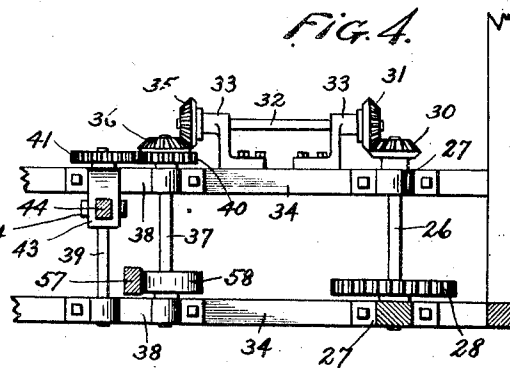
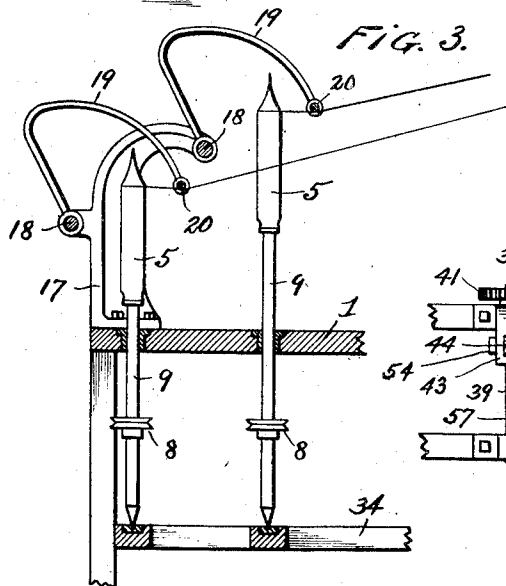
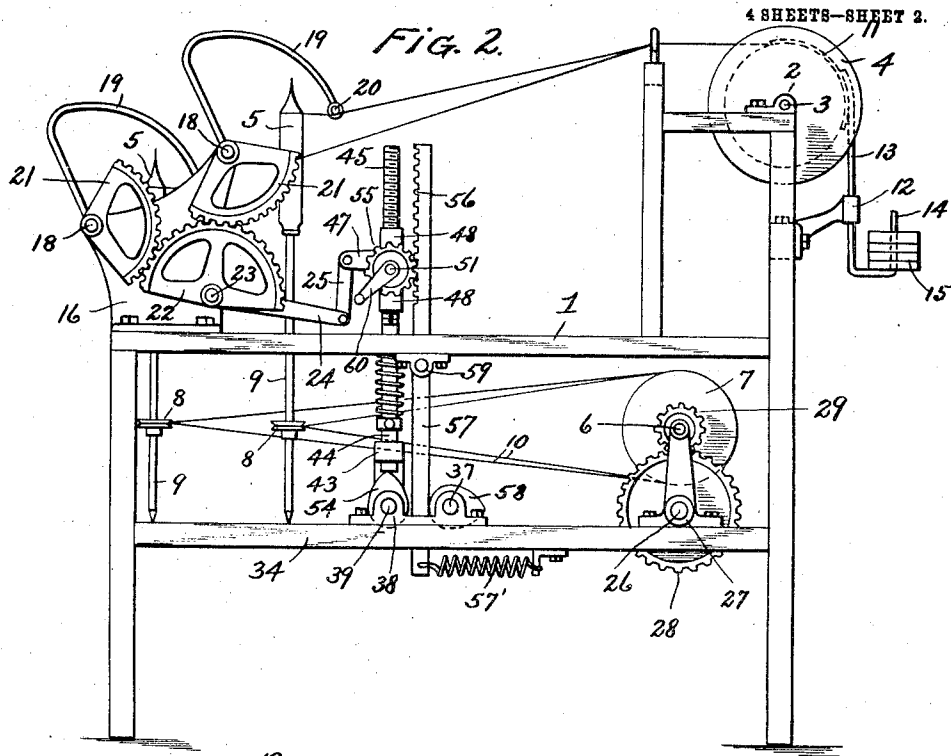
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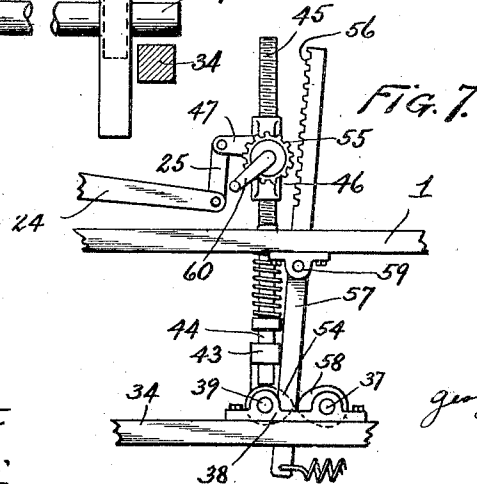
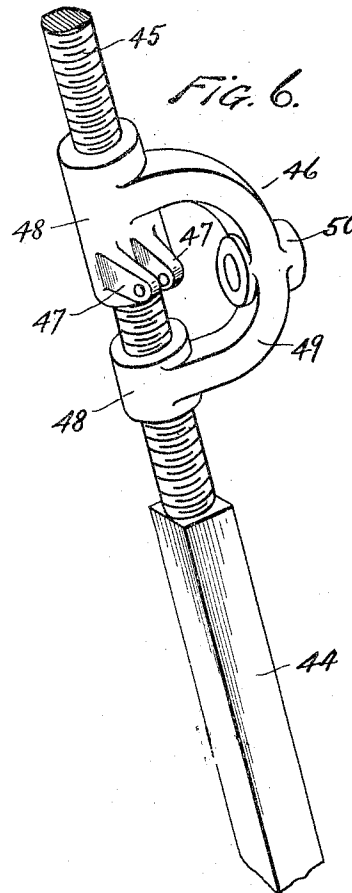
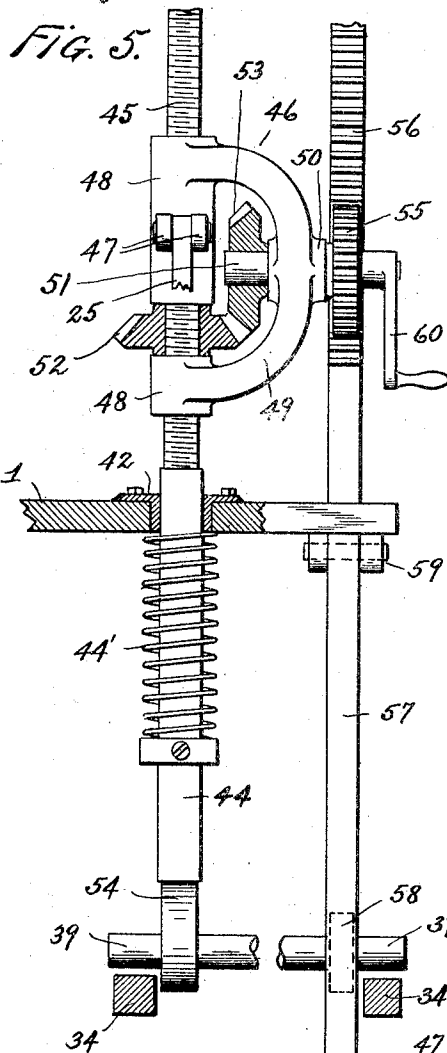
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WINDING FRAME.

APPLICATION FILED SEPT. 12, 1906.

4 SHEETS—SHEET 3.



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No. 851,144.

PATENTED APR. 23, 1907.

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4 SHEETS—SHEET 4.

Fig. 8.

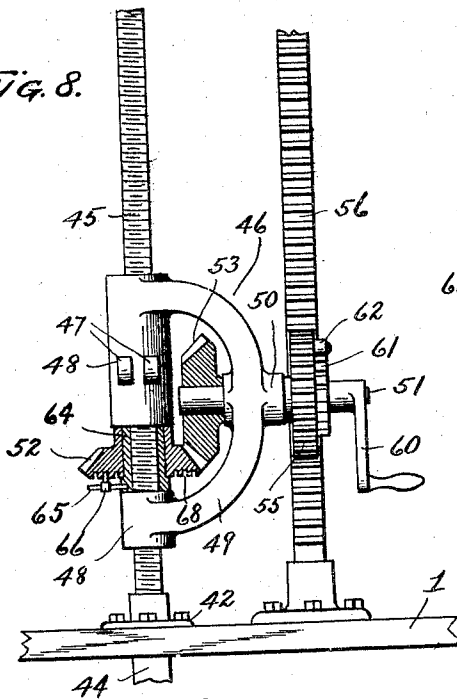


Fig. 9.

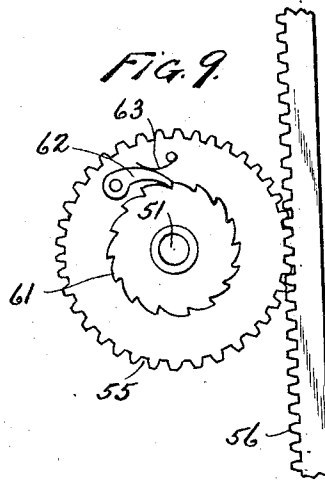


Fig. 10.

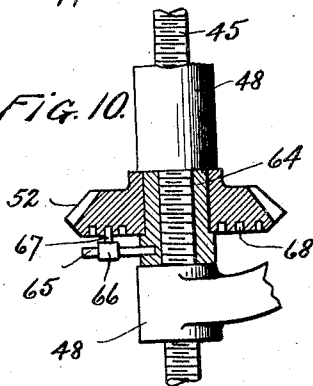


Fig. 11.

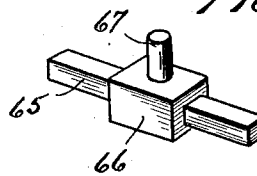
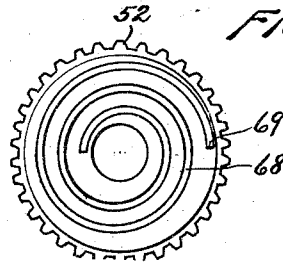


Fig. 12.



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UNITED STATES PATENT OFFICE.

GEORGE PEIFFER JOSEPH STIVERS, OF PHILADELPHIA, PENNSYLVANIA.

WINDING-FRAME.

No. 851,144.

Specification of Letters Patent.

Patented April 23, 1907.

Application filed September 12, 1906. Serial No. 334,228.

To all whom it may concern:

Be it known that I, GEORGE PEIFFER JOSEPH STIVERS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Winding-Frames; and I do 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 the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a winding frame or "jack winder," and has for its object to provide a construction, whereby I am enabled to increase the number of spindles or bobbins, and consequently the output of the machine without increasing the amount of floor space occupied by the machine.

A further object is to provide novel mechanism for feeding the yarn upon the bobbins. Heretofore in the branch of the art to which my invention pertains, winding frames have been provided having spools, the "ends" of yarn upon the spools leading to the bobbins arranged in a single row along the front of the machine, the capacity of the machine being limited to the number of bobbins contained in the row. By my construction and arrangement of mechanism, I am enabled to increase the number of rows of bobbins, and at the same time automatically and simultaneously feed the yarn to each row by my improved feeding mechanism, designed for this purpose.

The invention therefore consists in the parts and combination of parts shown in the drawings, described in the specification, and more particularly pointed out in the claims.

In the drawings:—Figure 1 is a plan view of enough of a winding frame to illustrate the application of my invention thereto. Figure 2 is a side elevation of the same. Figure 3 is a detail view showing two rows of bobbins and the means for feeding the yarn thereto. Figure 4 is a partial plan view of the means for operating the feeding mechanism. Figure 5 is a detail view of the feeding mechanism. Figure 6 is a perspective view of the vertically reciprocating screw shaft and the bearing carried thereby. Figure 7 is a side elevation of the feeding mechanism. Figure 8 is a detail view of a modified form of feeding mechanism.

Figure 9 is a detail view of the mechanism shown in Figure 8. Figure 10 is a partial sectional detail view of the means for imparting an initial winding upon the bobbins, and, Figures 11 & 12 are detail views of the same.

In the several views similar figures of reference indicates corresponding parts.

The numeral 1 indicates the table, upon which is mounted in suitable bearings 2, the gudgeons 3 carried by each spool 4, that contains the yarn to be wound upon the bobbins 5, there being as many bobbins 5 as there are ends of the yarn upon the spools 4.

6 designates the main driving shaft of the machine, which receives power from any preferred source of supply in the usual or in any preferred manner, and upon this shaft is carried a drum 7, over which, and a pulley 8 upon the spindles 9 which carries the bobbins 5, runs the cords 10, consequently as the shaft 6 is revolved, motion is imparted to the drum 7 and to the spindles and bobbins, and the yarn is unwound from the spool 4 and wound upon the bobbins.

To secure the requisite tension upon the yarn so as to wind evenly upon the bobbins, I have provided a tension plate 11, which bears upon the yarn upon the spool with sufficient pressure to insure the proper tension. To accomplish this end, I have provided a bearing 12, which guides a rod 13, that carries upon its upper end the plate 11, the lower end being bent to form a support 14 for a plurality of weights 15, consequently by the employment of more or less weights I am enabled to regulate the tension of the yarn to a nicety. Secured upon the table 1 is an end bearing 16 and inner bearings 17, in which are journaled a plurality of shafts 18, which carry at intervals along their length arms 19, the shafts being located in front of the bobbins and the arms extending at their free ends to a point in rear of the bobbins and carry a rod or wire 20, under which the yarn runs and by which as the rod is moved the yarn is fed upon the bobbins.

In feeding the yarn it is necessary that an initial winding of several layers be wound upon the lower end of the bobbins, after which the yarn is fed to the bobbins in layers for a short distance, the layers being advanced gradually until the entire bobbins are filled, this operation being accomplished by rocking the shafts 18 slightly, and after each

movement of the rods 20 advancing the rods slightly to feed a succeeding layer slightly in advance of the previous layer. To accomplish this end, upon one end of shafts 18 is secured similar segments 21, which mesh with a segment 22 secured upon a stub shaft 23, and upon the opposite end of shaft 23 I secure a lever 24, which is connected by a link 25 with the feeding mechanism.

The feeding mechanism comprises a shaft 26 journaled in bearings 27, and upon said shaft is a gear-wheel 28 which meshes with a gear 29, secured upon the driving shaft 6. Upon the opposite end of shaft 26 is secured a mitre wheel 30, which meshes with a mitre wheel 31, secured upon a shaft 32 journaled in suitable bearings 33, carried by the under frame 34 of the machine, and upon the opposite end of shaft 32 is a mitre wheel 35, which in turn meshes with a mitre wheel 36 carried by a shaft 37, journaled in bearings 38 secured upon the under frame 34. Also journaled in the bearings 38 is a shaft 39, there being similar gear wheels 40-41 secured upon shafts 37 & 39 respectively, whereby motion imparted to shaft 37 is imparted to shaft 39, the shafts moving in opposite directions but with the same speed.

Arranged in the table 1 is a bearing 42, and projecting from the inner bearing 38 for shafts 37 & 39 is a bearing 43, for a vertically reciprocating feed screw 44, the lower end of which passes through the bearings 42 & 43, being square in cross section, whereby the screw is held from turning, the upper end being threaded as shown at 45 and carried by the upper end of the feed bearing 46 having lugs 47, between which passes the upper end of the link 25 heretofore described, and by which the bearing 46 is held from turning.

Bearing 46 comprises two hubs 48 joined by the arm 49, which in turn carries a hub 50 for a shaft 51, and secured upon the screw is a bevel gear 52 having its bore threaded. said bevel gear meshing with a bevel gear 53 secured upon shaft 51, whereby as shaft 51 is revolved motion is imparted to gears 53 & 52 and the bearing 46 is fed along the screw 44, but as screw 44 is reciprocated, as will be hereinafter described, the gear 52 carries the bearing and the arm 24 is moved through the medium of link 25. Secured upon shaft 39 in vertical alinement with screw 44 is a cam 54, whereby as shaft 39 is revolved reciprocatory movement is imparted to screw 44 and through the medium of segments 22 and 21, a rocking motion to shafts 18 and a vertical motion to rods 20, whereby a layer of yarn is fed to the bobbins for a short distance along their length.

In order to advance the feed along the length of the bobbins, I provide means for revolving the gear 52 and feeding the bearing 46, this operation being accomplished by securing a gear 55 upon shaft 51, which meshes

with a rack 56, upon a rod 57, as the screw 44 reciprocates in one direction and releasing the rack from engagement as the screw and mechanism carried thereby reciprocates in the opposite direction. To accomplish this end the lower end of rod 57 extends in alinement with a cam 58 whereby as the screw is lowered by cam 54, cam 58 forces the lower end of rod 57 forward and disengages the rack from gear 55, the rod being pivoted at 59 to the table 1. Secured upon shaft 51 is a hand lever 60 by which means the bearing may be returned to its original position by hand.

In Figs. 8 & 9, I have illustrated a modified construction in which I provide a rack 56 rigidly secured to the table and at all times in mesh with gear 55, the gear in this construction being loosely mounted upon shaft 51. Secured upon shaft 51 in close proximity to gear 55 is a ratchet wheel 61 with which ratchet 62 engages, the ratchet being held in engagement by spring 63. Consequently as bearing 46 is raised the ratchet will carry the ratchet wheel and consequently revolve shaft 51 and feed the bearing and when the bearing is lowered the ratchet will slip into the next tooth or teeth of the ratchet wheel, the number of teeth can be regulated according to size of the cam, ready for the next operation.

In Figs. 8-10-11 & 12, I have shown the means for securing an initial winding or series of layers upon the bobbin heretofore mentioned, said arrangement comprising a means whereby several reciprocations can be imparted to the screw 44 and bearing 46 before the bearing is fed along the screw. To accomplish this end, I secure gear 52 upon a sleeve 64, the bore of the sleeve being threaded, said sleeve carrying an arm 65 upon which is a sliding sleeve 66 which carries a pin 67, said pin projecting into a spiral groove 68 in the under side of gear 52, as shown in Figs. 10 & 12, consequently gear 52 will revolve until the pin 67 contacts with the end of groove 68, at 69, at which time the pin will carry the sleeve along with it and feed the bearing 46, as has been heretofore described.

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

1. In a winding frame, spools, a plurality of rows of spindles containing bobbins fed from said spools, a rock shaft adjacent to each row of spindles and connections between the shafts so that they move in unison, feed rods carried by each rock shaft, a feeding mechanism for rocking the shafts and imparting a uniform degree of angular movement to the feed rods during one portion of each operation of the feeding mechanism, and for revolving the shafts so as to advance the movement heretofore mentioned during the remaining portion of the operation of the

feeding mechanism, whereby the spindles are fed and the feed is advanced during each complete operation of the feeding mechanism.

2. In a winding frame, a feeding mechanism, a segment operated thereby, similar segments meshing therewith, rock shafts upon which said latter segments are secured, and guide rods carried by the rock shafts.

3. In a winding frame, a reciprocating screw, a bearing carried thereby through the medium of a revoluble part, means for revolving the said part upon one reciprocation of the screw and in advancing the bearing, in combination with rock shafts carrying guide rods, an arm for rocking the shafts, and connections between the bearing and the arm.

4. In a winding frame, rock shafts carrying guide rods and means for rocking said shafts comprising segments and an arm for

moving the segments a reciprocating screw and means for reciprocating the same a bearing carried by the screw and a link connecting the bearing and the aforesaid arm.

5. In a winding frame, rock shafts carrying guide rods and means for rocking said shafts comprising segments and an arm for moving the segment, a reciprocating screw and means for reciprocating the same, a bearing carried by the screw connected to the aforesaid arm, and means for advancing the bearing upon the screw during alternate reciprocations thereof.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE PEIFFER JOSEPH STIVERS.

Witnesses:

C. JAS. WEBSTER,
AGNES M. HILL.