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G. L. BEALS

WEB GUIDE FOR PAPER ROLLS

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Fig. 1.

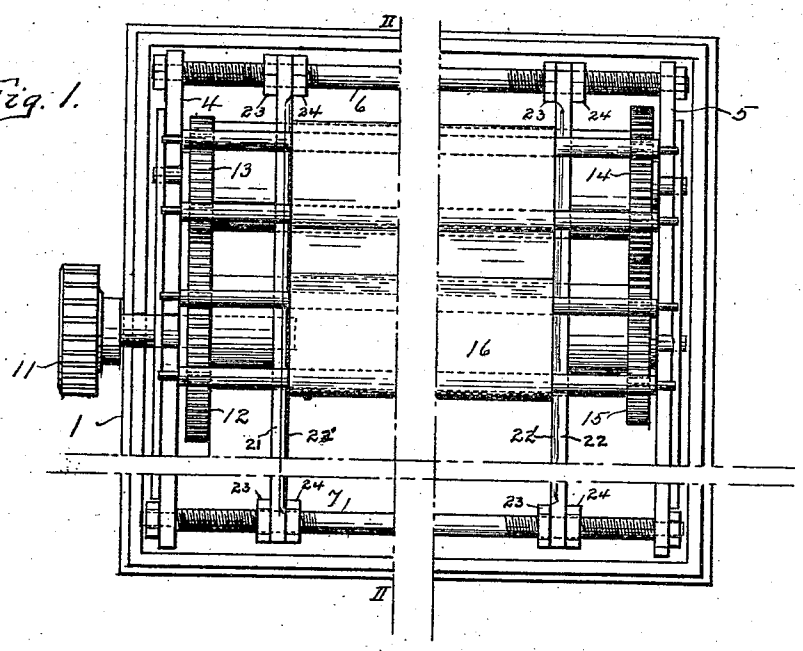


Fig. 2.

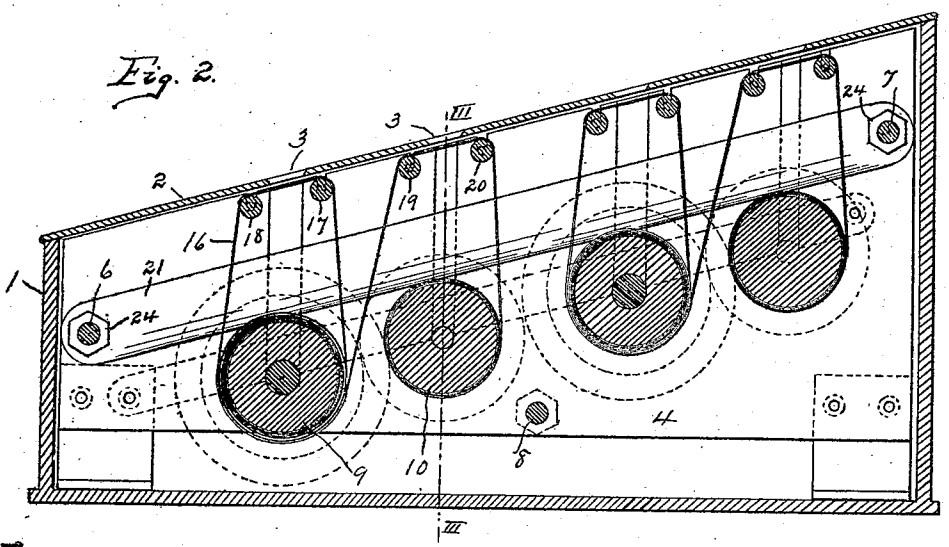
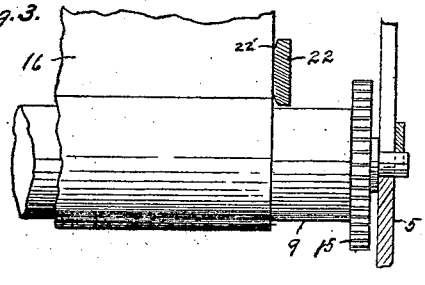


Fig. 3.



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UNITED STATES PATENT OFFICE.

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WEB GUIDE FOR PAPER ROLLS.

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To all whom it may concern:

Be it known that I, GENEVIEVE L. BEALS, a citizen of the United States, residing in the town of West Orange, county of Essex, and State of New Jersey, have invented a new and useful Improvement in Web Guides for Paper Rolls, as set forth in the following specification.

It is common practice to coil long strips or webs of paper into rolls of considerable size for shipment, and the edges of the strips are found to be quite even, having been kept so by means of flanged guide rollers, or by means of flanges upon the mandrel upon which the strips are first wound. This process answers very well where a single winding is made; but when it is required that the strip be wound repeatedly back and forth from one roll to another at different times and under varying hygrometric conditions, it is found that the paper has a tendency to creep one way or the other, and the edge of the strip will "climb" the adjacent flange. The result is that in a short time the edges of the strip become frayed and torn, and must be replaced by new strips.

My improvement is designed to correct this difficulty, and it finds its best and most extensive use in a form of calculating machine, as set forth in the following description; it is also well adapted for use in any relation where strips of paper are to be repeatedly wound from one mandrel to another, as, for example: perforated music rolls; master strips for automatic printing machines; strips used in tabulating machines, etc.

In the accompanying drawing, I have shown my improvement as applied to the form of calculating machine, wherein tables of figures or numbers are arranged in printed lines and columns upon the strip or web of paper, which is wound from one mandrel to another so as to present the lines of figures beneath a window opening in the cover of the machine, in registry with appropriate indices upon the margin of the window opening; the web guides are designed to accurately guide the web or strip so that the columns of figures will register accurately with the indices.

In the drawing,

Fig. 1 is a broken plan view of a calculating machine with the cover removed to show the location of the guides.

Fig. 2 is a section on line II—II of Fig. 1.

Fig. 3 is a section on line III—III of Fig. 2.

Similar reference numerals refer to like parts throughout the specification and drawing.

The calculating machine for which my improvement is especially adapted consists of a box-like case 1, having an inclined cover 2, provided with long slot-like window openings 3; within the case is a frame made up of the end plates 4, 5, rigidly connected by spacing rods 6, 7, 8; mandrels 9, 10 are mounted to rotate in bearings in the end plates, being driven by an external knob 11 through a train of gears 12, 13, 14, 15. A calculating unit comprises a pair of these mandrels with their driving mechanism as thus briefly described, two of such units being shown in Fig. 2. Larger machines are constructed with more units arranged in a manner similar to that shown in Fig. 2.

A strip or web of specially prepared paper is attached at one end to one of the mandrels, as 9, thence it is carried over a pair of guide rollers 17, 18, which are located in bearings in the end plates 4, 5, and contiguous to one of the windows 3, in order that the lines of figures on the strip may be exposed thereat; thence the strip 16 is carried beneath the mandrel 9 and up over a second pair of guide rollers 19, 20, just beneath another of the windows 3, thence down to and around the other mandrel 10, to which the end of the strip is connected. The construction and operation is such that as the knob 11 is turned, the strip 16 is drawn from one mandrel to the other and the lines of figures upon both sides of the strip are exposed to the windows 3.

It may be stated at this point that the tables of figures or numbers printed upon the strip 16 may be of any character or kind; for example, interest and discount; wages or payrolls; logarithms; traverse or surveyor's; in fact any kind of table now printed in book form.

Indices of appropriate form or kind are printed along the margins of the window openings 3, to register with the columns of figures upon the strip 16, and it is obvious

that such registry must be accurate, otherwise the readings will not be correct. This necessitates the accurate winding of the strip 16 upon the mandrels 9, 10, and it is to this accurate winding that my invention relates.

The improvement comprises a pair of guides 21, 22, apertured at their ends and mounted upon the screw-threaded ends of the spacing rods 6, 7 between adjusting nuts 23, 24 thereon. The guides are located immediately above and closely contiguous to the peripheries of the mandrels 9, 10, so that their rounded faces 22′ may contact with the edges of the strip 16 as it is wound upon or from the mandrels. The guides may be adjusted along the rods 6, 7, so as to adjust the running of the strip 16 with the columns of figures thereon in accurate registry with the indices upon the window margins, and thus overcome the tendency of the strip to run "out of true." The use of the guides as described has overcome another very serious difficulty—that of fraying and tearing the edges of the strip when flanges upon the mandrels were used, as well as other types of guides. While very simple in construction and operation, yet that very simplicity is by no means commensurate with the results accomplished.

As above indicated, the improvement is useful in other relations where the accurate laying of strips of paper or of any fabric is desirable or necessary; as for example, with perforated music rolls; in web printing presses, etc. Other uses will readily suggest themselves to those skilled in the art.

Changes in construction or operation coming within the scope of my invention are intended to be covered by the appended claims.

I claim:—

1. In a web guide for paper rolls, the combination of a pair of mandrels having means for winding a strip of paper from one mandrel to the other, with a stationary guide located immediately adjacent to the peripheries of both of said mandrels and at right angles to their axes.

2. In a guide mechanism for web paper rolls, the combination of a pair of mandrels having means for winding a strip of paper from one mandrel to the other and vice versa, with means for guiding said strip comprising a pair of metal bars located closely contiguous to the peripheries of said mandrels and at right angles to their axes, and means for adjusting said bars in a direction parallel to said axes.

3. In a guide mechanism for paper rolls, the combination of a pair of rotating mandrels having means for winding a strip of paper from one mandrel to the other, with a pair of guiding bars rigidly supported immediately adjacent to the peripheries of said mandrels, and means for adjustably spacing said bars apart for contact with the edges of said strip of paper.

4. In a guide mechanism for paper rolls, the combination of a pair of mandrels with means for guiding a strip of paper from one of said mandrels to the other comprising a pair of guide bars located immediately above said mandrels and spaced apart for contact with the respective edges of said strip of paper, and means for laterally adjusting each of said bars in a direction parallel with the axes of said mandrels.

5. In a guide for paper rolls, the combination of a frame comprising a pair of end plates, spacing rods rigidly connecting said plates together, a pair of mandrels mounted in said end plates, means for rotating said mandrels to wind a strip of paper from one to the other, with means for accurately guiding said strip of paper, comprising a pair of guide bars mounted upon said spacing rods and located closely contiguous to the peripheries of said mandrels, and means for adjusting said bars along said rods into contact with the respective edges of said strip of paper, whereby to accurately guide the same as it is wound from one mandrel to the other and vice versa.

GENEVIEVE L. BEALS.