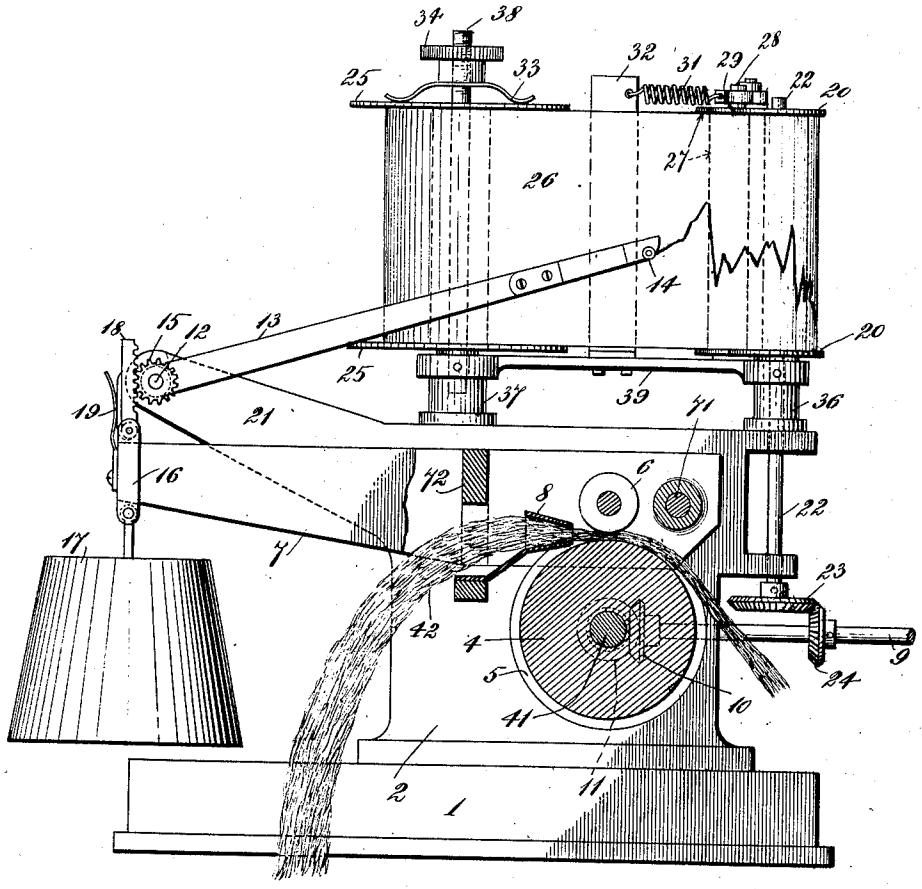
June 9, 1925. E. D. WALEN ET AL 1,540,969

MACHINE FOR INDICATING VARIATIONS IN SLIVER THICKNESS

Filed Sept. 15, 1922 2 Sheets-Sheet 1

Fig. 1.




INVENTOR=
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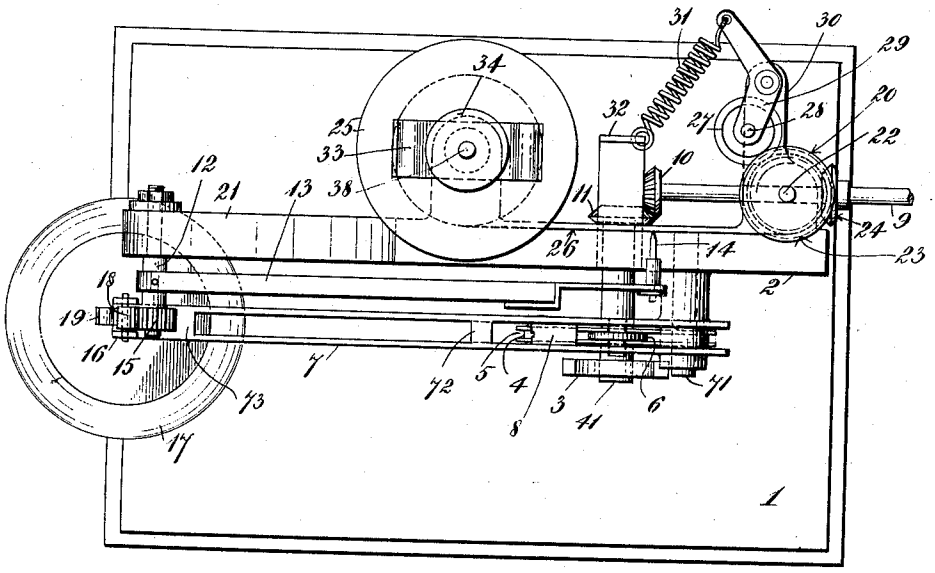
June 9, 1925. 1,540,969

E. D. WALEN ET AL

MACHINE FOR INDICATING VARIATIONS IN SLIVER THICKNESS

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Fig. 2.




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Patented June 9, 1925. 1,540,969

# UNITED STATES PATENT OFFICE.

ERNEST D. WALEN, OF WATERTOWN, AND ARTHUR H. PARSONS, OF GLOUCESTER, MASSACHUSETTS.

## MACHINE FOR INDICATING VARIATIONS IN SLIVER THICKNESS.

Application filed September 15, 1922. Serial No. 588,508.

*To all whom it may concern:*

Be it known that we, ERNEST D. WALEN, of Watertown, in the county of Middlesex and State of Massachusetts, and ARTHUR H. PARSONS, of Gloucester, in the county of Essex and said State, both citizens of the United States, have invented a new and useful Improvement in Machines for Indicating Variations in Sliver Thickness, of which the following is a specification.

It is desirable to know whether a sliver or roving is substantially uniform or not, and our invention consists in a machine adapted to make a record of the variations in thickness or density of a sliver. It consists in a machine having rolls between which the sliver is passed, one of the rolls being movable according to the thickness of the sliver and connected with recording means whereby the varying thickness of the sliver will be recorded.

Our invention will be understood by reference to the drawings, in which—

Figure 1 is a side elevation of a machine embodying the invention, a portion thereof being in section, and

Fig. 2 is a plan thereof.

On a base 1 is mounted a standard 2 between which and a support 3 is a shaft 41 on which is mounted a feed roller 4. This roller 4 is provided with flanges 5 and between the flanges runs a measuring roll 6 mounted to turn on a stud mounted between the sides of a pivoted magnifying beam 7, and near the pivoted end thereof.

The flanges 5 on roller 4 provide a rectangular groove and the roll 6 fits snugly in the groove in the roller 4.

The magnifying beam 7 is made preferably in skeleton form, its parts being connected by crossbars 72, 73, and it is pivotally mounted at one end on a stud 71 carried by the standard 2 near the roll 6 so that any vertical movement given to the roll 6 due to a variation in thickness of the material 42 running between the roller 4 and the roll 6 will be communicated to the magnifying beam 7 and cause its free end to rise or fall as the case may be.

8 is a trumpet preferably of rectangular shape in cross section mounted on the standard 2 to fit between the flanges 5 of the roller 4 so that the sliver which is drawn by the roller 4 may be fed without any undue strain upon it and will be laid between the flanges so that it will not spill out laterally and be cut by the roller 6. Motion is given to the roller 4 from a source of power by the shaft 9 and bevel gears 10 and 11, gear 11 being on shaft 41. On an arm 21 projecting from the standard 2 is carried a stud 12 on which is mounted one end of a stylus arm 13 carrying at its free end a stylus 14 of any desired character. On the stud 12 is also mounted a pinion 15 attached to the arm 13.

The free end of the magnifying arm 7 sets into or is otherwise attached to a bar or link 16 to the lower end of which is attached a weight 17 which holds the arm 7 and roll 6 to their work. On top of the link 16 is pivotally mounted a rack 18 adapted to engage the pinion 15, the rack being held against the pinion by a spring 19 attached to the outer end of bar 7.

This construction is such that as the free end of the bar 7 is caused to rise and fall by the variations in the thickness or density of the sliver or other material 42 running between the roller 4 and the roll 6, the free end of the stylus arm 13 will be caused to rise and fall.

To record this rise and fall due to these variations in the sliver I provide a drum 20 and spool 25. On the standard 2 are mounted two bearings 36, 37, through one of which 36 passes the vertical shaft 22 suitably supported and carrying a bevel gear 23 at its lower end which meshes with a bevel gear 24 on shaft 9. A stud 38 mounted in bearing 37 carries a spool 25 in line with the drum 20. A paper strip 26 drawn from the spool 25 is carried over to the drum 20 and as the drum 20 is constantly rotated by shaft 9 the paper strip is fed from the spool 25 to drum 20. The drum and spool are so located on the standard that the stylus 14 will rest against the paper strip and record thereon the rise and fall of the free end of the stylus arm caused by the varying thickness of the sliver as it passes under the roller 4. A crossbar 39 connects the bearings 36 and 37.

To cause the paper strip 26 to wind smoothly on drum 20 I provide a tension roll 27 mounted on a vertical shaft 28 carried by arms 29 pivotally mounted in brackets 30 mounted on the support 7. A spring 31, one end of which is attached to an extension of one of the arms 29 and the other end to an upright 32 on the bar 39, keeps

the tension roll 27 in contact with the paper on drum 20.

A spring 33 mounted on top of the stud carrying the spool 25 and adjusted by a nut 34 gives desirable tension to the spool 25.

It will be seen that a minute variation in the thickness or density of the sliver will be magnified by the lever recording system 7, 13, co-operating with the sliver support, which may be otherwise shaped than as shown. And it will also be evident that if the weight 17 be sufficient the measurements are convertible into the weight per unit of length of sliver so that the device can be used to measure the variations of weight for small distances. We have used the word "sliver" as illustrative of any form of strand, whether twisted or not, the variations in the thickness of which it is desired to measure. In certain cases the use of the trumpet is unnecessary.

What we claim as our invention is:—

1. In a device of the kind described, a feed roller adapted to support and feed a sliver, a measuring roll located to run on said sliver, means adapted to support said measuring roll whereby said measuring roll may be vibrated toward and from the axis of said feeding roller by the varying thickness of said sliver, and means for measuring the extent of such vibrations.

2. In a device of the kind described, a feed roller adapted to support and feed, a sliver, a measuring roll located to rest on a sliver carried by said support, and means for supporting said measuring roll whereby the varying thickness of said sliver will cause a movement of said measuring roll.

3. A device of the kind described comprising a sliver-supporting and feeding means, a measuring roll located to rest on the supported sliver, a yielding support for said measuring roll comprising a lever, said measuring roll being mounted near the fulcrum of said lever, and means for measuring the vibrations of said measuring roll operated by said lever and connected thereto at a greater distance from said fulcrum than said measuring roll.

4. In a device of the kind described a grooved feed roller adapted to feed and support a sliver, a measuring roll located to run in said groove on said sliver, means to support said measuring roll whereby said measuring roll may vibrate by gravity towards and from the axis of said feed roller by the varying thickness of said sliver and means for measuring the extent of said vibrations, the sides of the groove in said feed roller serving to prevent lateral spreading of said sliver under the pressure of said measuring roll.

5. A device of the kind described comprising a sliver-supporting means, a measuring roll adapted to rest on the supported sliver, a yielding support for said measuring roll comprising a lever, said measuring roll being mounted near the fulcrum of said lever, and means for measuring the vibrations of said measuring roll operated by said lever and connected thereto at a greater distance from said fulcrum than said measuring roll, said measuring means comprising a pivoted arm.

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