No. 883,794. PATENTED APR. 7, 1908.

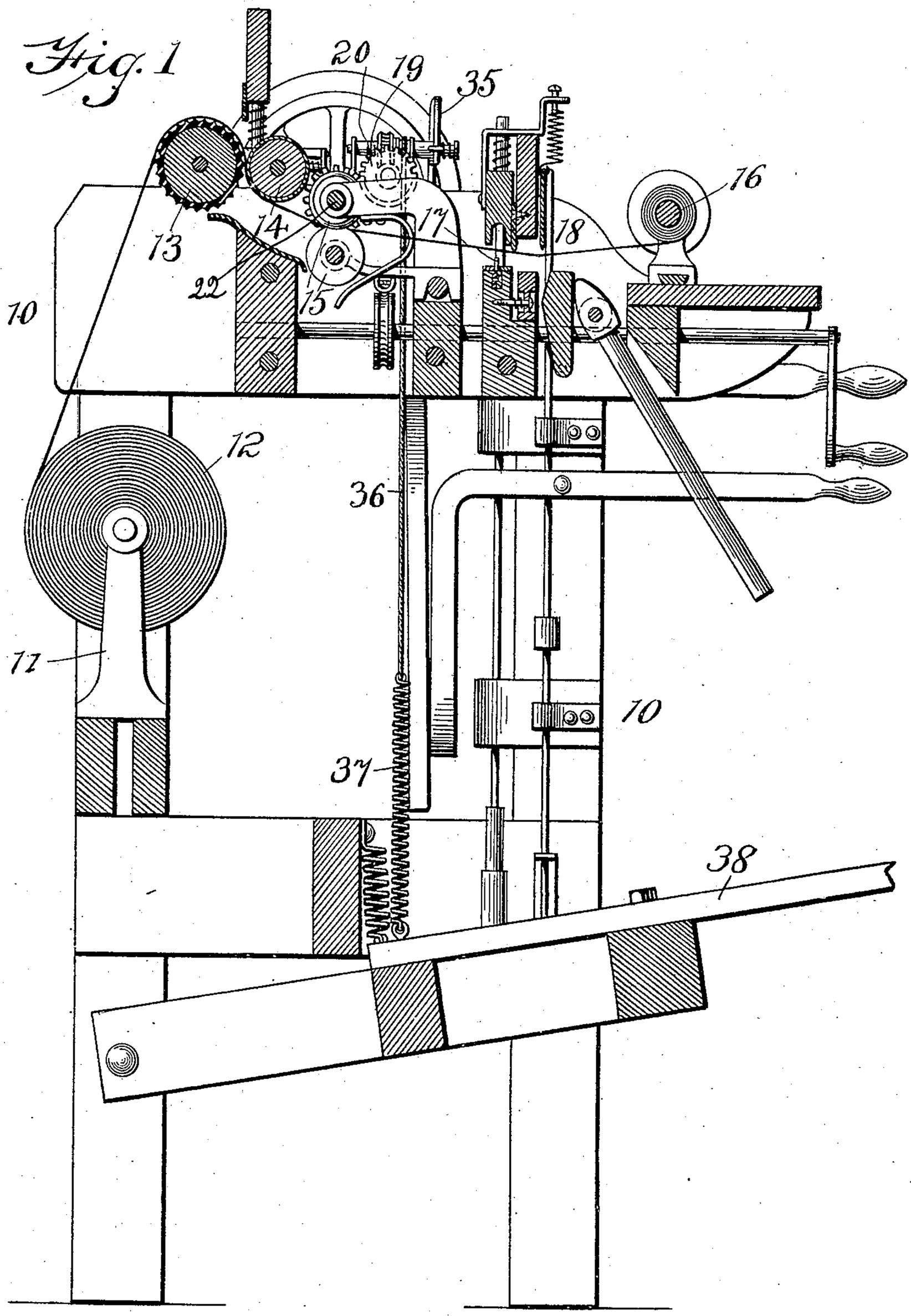
E. O. ENGBERG.

MEASURING DEVICE.

APPLICATION FILED AUG. 16, 1907.

2 SHEETS—SHEET 1.

Fig. 1



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2 SHEETS—SHEET 2.

Fig. 2.

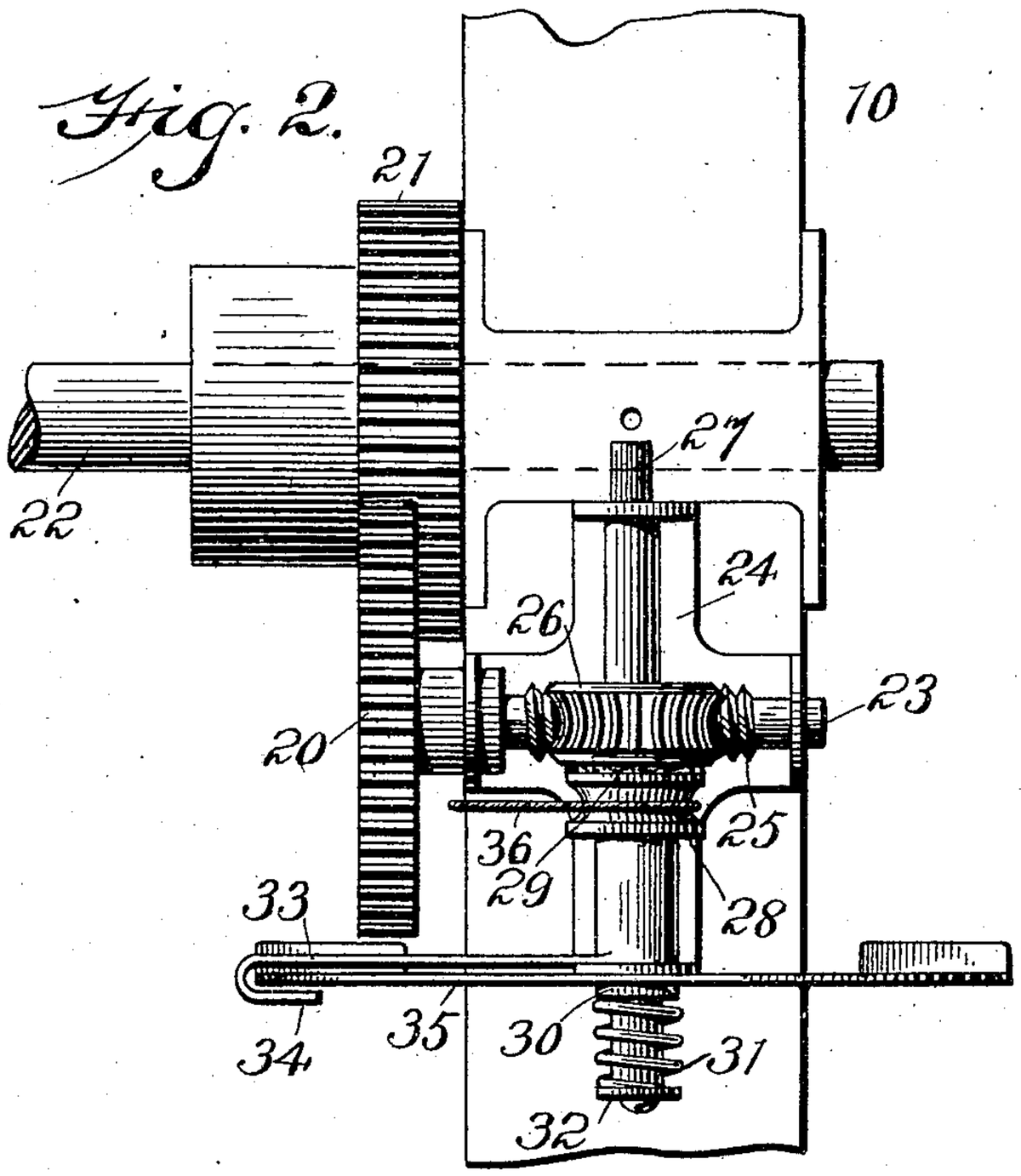


Fig. 3.

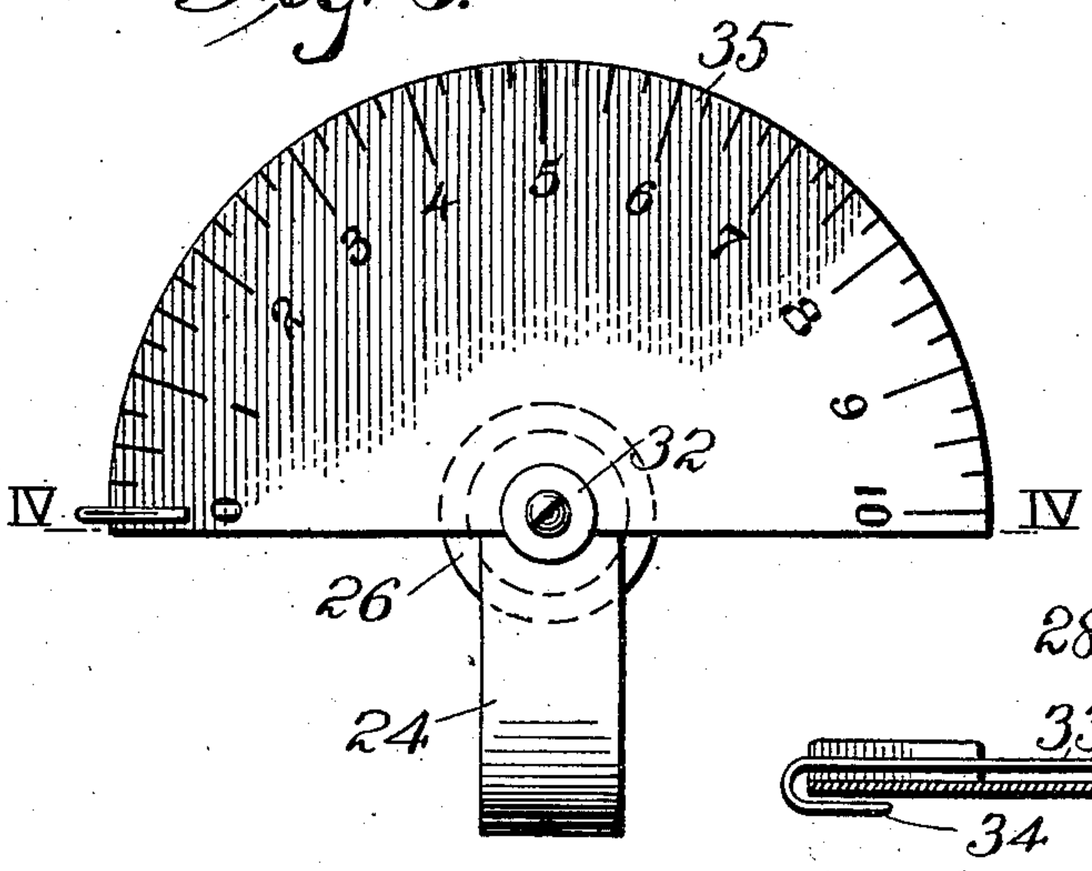


Fig. 4.

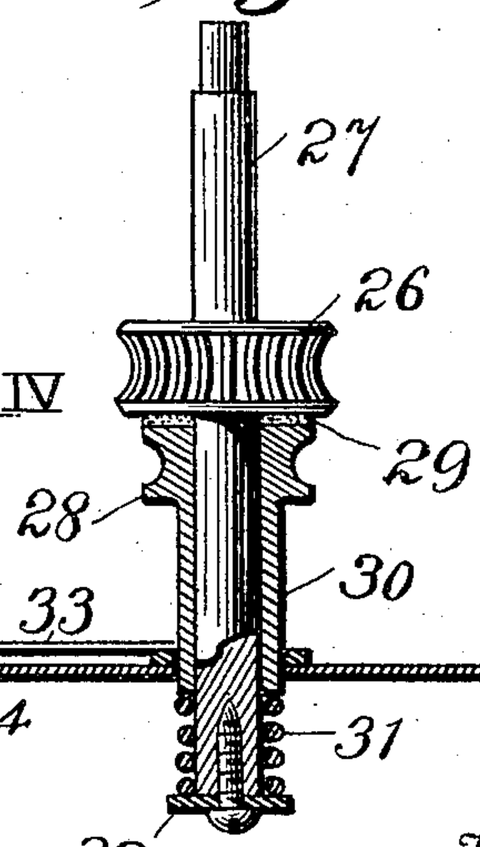
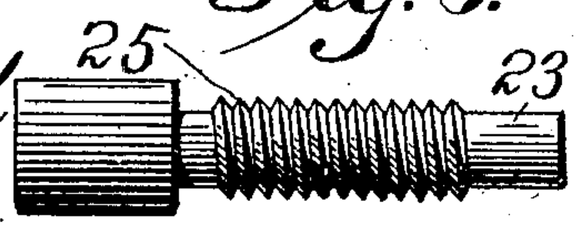


Fig. 5.



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UNITED STATES PATENT OFFICE.

EPHRAIM O. ENGBERG, OF SALT LAKE CITY, UTAH, ASSIGNOR TO JOHN BEECHER PATTON, OF KENT, OHIO.

MEASURING DEVICE.

No. 883,794. Specification of Letters Patent. Patented April 7, 1908.

Application filed August 16, 1907. Serial No. 388,867.

To all whom it may concern:

Be it known that I, EPHRAIM O. ENGBERG, a citizen of the United States, and a resident of Salt Lake City, county of Salt Lake, and State of Utah, have invented a certain new and useful Improvement in Measuring Devices, of which the following is a full, clear, and exact description.

This invention relates more particularly to a measuring device for machines for making window shades.

The primary object of the invention is to provide simple and efficient means whereby the length of a window shade may be accurately measured as it is wound upon the usual shade roller.

A further object of the invention is to provide a simple and efficient measuring device which may be readily placed on a machine frame, and which may be used for various purposes as a registering and measuring device.

The invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a transverse section of one form of shade machine with the measuring device or attachment applied thereto. Fig. 2 is an enlarged plan of the measuring device. Fig. 3 is a detail front elevation. Fig. 4 is a sectional plan, partly in elevation, taken on the line IV—IV of Fig. 3; and Fig. 5 is a detail of the operating screw or worm.

While I have shown the measuring device or attachment applied to a window shade machine, it will be understood that the said attachment or device may be used in other connections where it may be employed as a registering means. The frame 10 of the shade machine has suitable supports 11 which carry a roll 12 of shade material or fabric and from the roll the material passes between the feed rolls 13 and 14. From the feed rolls the material passes between the edge-trimming knives 15 to cut the material the proper width, and the forward end is fastened by tacks or otherwise to the usual shade roller 16, which may be operated in any suitable manner to wind the material thereon. When the proper length of the shade is wound on the roller, a knife 17 is made to cut the material transversely and the loop for the usual shade slat is then formed by the folding and creasing devices 18. No claim is made herein to the shade machine, as such machine forms subject matter for a separate application filed of even date herewith.

The shade must be of a certain length, and as the length of different shades vary, it is desirable that provision be made to properly measure or register the length of the shade preparatory to having the web of material cut transversely. As one means I employ a device 19. A gear 20 of the device meshes with the gear 21 on the main drive and cutter shaft 22, and said gear has its shaft 23 suitably journaled in a bracket 24 held to the machine frame. The shaft 23 is provided with threads forming a worm 25, and this worm engages the teeth of the worm gear 26, which is held to a shaft 27, and this shaft extends transversely or at right angles to the shaft 23, and is also journaled to rotate in the bracket 24. A pulley 28 is arranged to rotate on the shaft 27, and on the face of the pulley is a friction disk 29, which is carried by the pulley and is adapted to engage the face of the worm gear 26. The pulley 28 has a sleeve 30, which is normally forced along the shaft 27 by means of a spring 31 arranged on one end of the shaft 27, between a washer 32 secured to the end of said shaft and the end of the sleeve 30. This spring 31 normally forces the disk 29 into engagement with the face of the worm gear 26 so that the pulley will normally rotate with the worm gear 26. To the sleeve 30 is secured an arm 33, and this arm has its end bent inward and downward to form a pointer 34, and this pointer is adapted to move around or along a semi-circular dial or indicator plate 35. This dial plate or register is provided with a scale to indicate the number of feet and parts of a foot, according to the length of shade which is to be made. As shown the dial is made to indicate ten feet, though this may be varied as desired. The pulley 28 has a flexible connection, as a cord or wire 36, secured thereto and this cord or wire is connected by a spring 37 to the treadle 38.

When the main drive shaft 22 is rotated the gears 20 and 21 will impart motion to the worm 25, and through the worm to the worm gear 26, and by reason of the friction disk 29 will cause the pointer 34 to move around the dial plate 35 to measure the length of shade. As the treadle 38 is forced downward to form

the loop for the shade slat, the flexible connection 36 and spring 37 will cause the pulley 28 to rotate in the opposite direction to restore the pointer to its normal position, the spring 31 and friction disk 29 permitting this movement and sufficient slack in the cord or connection 36 being provided to permit the parts to operate properly.

From the foregoing it will be seen that a simple and efficient device is provided whereby shade or other material may be accurately measured and which device is so constructed that it may be readily applied to various forms of machines and adapted for use for various purposes.

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

1. In a measuring device, the combination with a rotary shaft, of a gear fixed to said shaft, a second gear in mesh with the first-mentioned gear, a worm rotatable with the second gear, a worm gear engaged by the worm to rotate the former, a shaft to which the worm gear is secured extending transversely of the worm shaft, a sleeve rotatable on the worm wheel shaft, a pointer carried by the sleeve, a register dial arranged adjacent to the pointer, means for causing the pointer to move with the worm gear, and independent means for restoring the pointer and sleeve to its former position.

2. In a measuring device, the combination with a rotary shaft, of a gear fixed to said shaft, a second gear in mesh with the first-mentioned gear, a worm rotatable with the second gear, a worm gear engaged by the worm to rotate the former, a shaft to which the worm gear is secured, a sleeve rotatable on the worm gear shaft, a pointer carried by the sleeve, a register dial arranged adjacent to the pointer, and means for causing the pointer to move along the dial in both directions.

3. A measuring device, comprising a shaft, a worm gear secured to said shaft, a sleeve carrying a pulley rotatably held on the shaft, a friction disk carried by the pulley and arranged adjacent to the face of the worm gear, a stationary register dial arranged convenient to the sleeve, a pointer carried by the sleeve and adapted to move along the dial as the sleeve is rotated, and means for forcing the sleeve and friction disk into engagement with the worm gear.

4. A measuring device, comprising a shaft, a worm gear secured to said shaft, a sleeve carrying a pulley rotatably held on the shaft, means connected to the pulley for rotating the latter in one direction, a friction disk carried by the pulley and arranged adjacent to the face of the worm gear, a dial arranged adjacent to the sleeve, a pointer carried by the sleeve and adapted to move along the dial as the sleeve is rotated, and a spring for forcing the sleeve and friction disk into engagement with the worm gear.

5. A measuring device, comprising a shaft, a worm gear secured to said shaft, a sleeve rotatably held on the shaft adjacent to the worm gear, a dial arranged adjacent to the sleeve, a pointer carried by the sleeve and adapted to move along the dial as the sleeve is rotated, and means for rotating the sleeve with, and independent of the worm gear.

6. A measuring device, comprising a bracket, a shaft journaled in said bracket, a worm gear fixed to said shaft, a sleeve rotatably held on the shaft and provided with a pulley, a friction disk interposed between the pulley and the face of the worm gear, a spring arranged at one end of the shaft and normally forcing the sleeve toward the worm gear to cause the disk to frictionally engage the worm gear and to normally rotate with the same, means for rotating the sleeve independent of the worm gear, a semi-circular and stationary dial plate in which one end of the sleeve is rotatably held, a pointer carried by the sleeve and movable along the dial plate as the sleeve is rotated, a worm shaft also journaled in the bracket and carrying a worm normally engaging the teeth of the worm gear, and means for rotating the worm.

7. A measuring device, comprising a bracket, a shaft journaled in said bracket, a worm gear fixed to said shaft, a sleeve rotatably held on the shaft, a friction disk interposed between the sleeve and the face of the worm gear, a spring arranged at one end of the shaft and normally forcing the sleeve toward the worm gear to cause the disk to frictionally engage the worm and to normally rotate with the same, means for rotating the sleeve independent of the worm gear and in an opposite direction, a dial plate in which one end of the sleeve is rotatably held, a pointer carried by the sleeve and movable along the dial plate as the sleeve is rotated, a worm shaft also journaled in the bracket and carrying a worm normally engaging the teeth of the worm gear, and means for rotating the worm.

8. A measuring device, comprising a shaft, a sleeve rotatably held on the shaft, means for rotating the sleeve in one direction, a stationary dial in which one end of the sleeve is rotatably held, a pointer carried by the sleeve and movable along the dial plate as the sleeve is rotated, and means for rotating the sleeve in the opposite direction.

9. A measuring device, comprising a shaft, a sleeve rotatably held on the shaft and provided with a pulley, independent means for rotating the pulley in opposite directions, a dial plate in which one end of the sleeve is rotatably held, and a pointer carried by the sleeve and movable along the dial plates a the sleeve is rotated.

10. The combination with a frame, of a cutter shaft, a gear held to the cutter shaft, a gear in mesh with the cutter shaft gear, a bracket, a worm having its shaft journaled in the bracket and rotatable with the second gear, a shaft also journaled in the bracket and extending at right angles to the worm shaft, a worm gear secured to the former shaft, a sleeve rotatably held on the worm gear shaft, a pulley movable with the sleeve, a flexible connection attached to the pulley and adapted to rotate the same in one direction, means for causing the sleeve to rotate in the opposite direction as the worm gear is rotated, a spring arranged on one end of the shaft and normally forcing the sleeve and pulley toward the worm gear, a semi-circular and stationary dial plate arranged on the frame in which the end of the sleeve is journaled, an arm projecting outward from the sleeve, and a pointer on the arm which moves along the dial as the sleeve is rotated.

This specification signed and witnessed this 9th day of August A. D. 1907.

EPHRAIM O. ENGBERG.

Witnesses:

R. L. DECKER,

AXEL JOHNSON.