No. 646,472. Patented Apr. 3, 1900.

W. B. SMITH.

CLOTH MEASURING MACHINE.

(Application filed Mar. 17, 1899.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

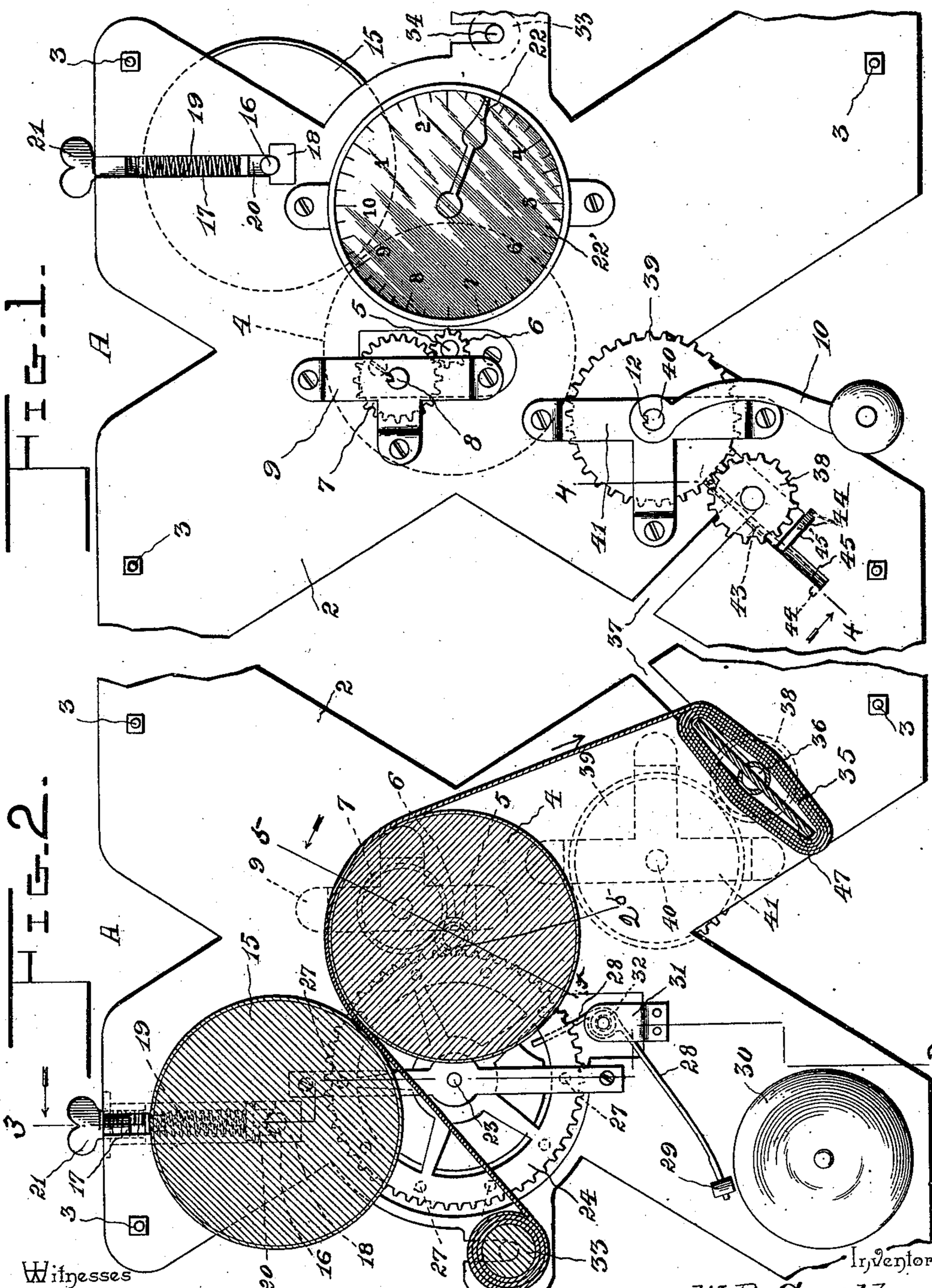

FIG. 2.

Witnesses
John T. Dewkerwiel
Heath Sutherland

By his Attorneys,

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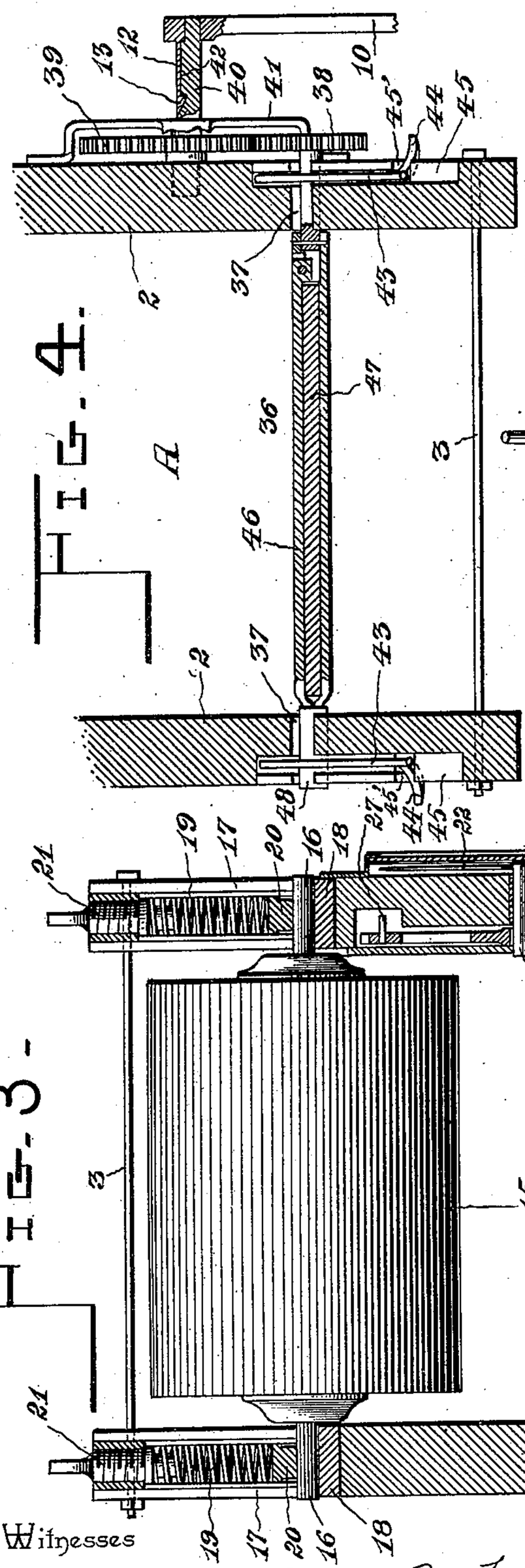

FIG. 4.

FIG. 7.

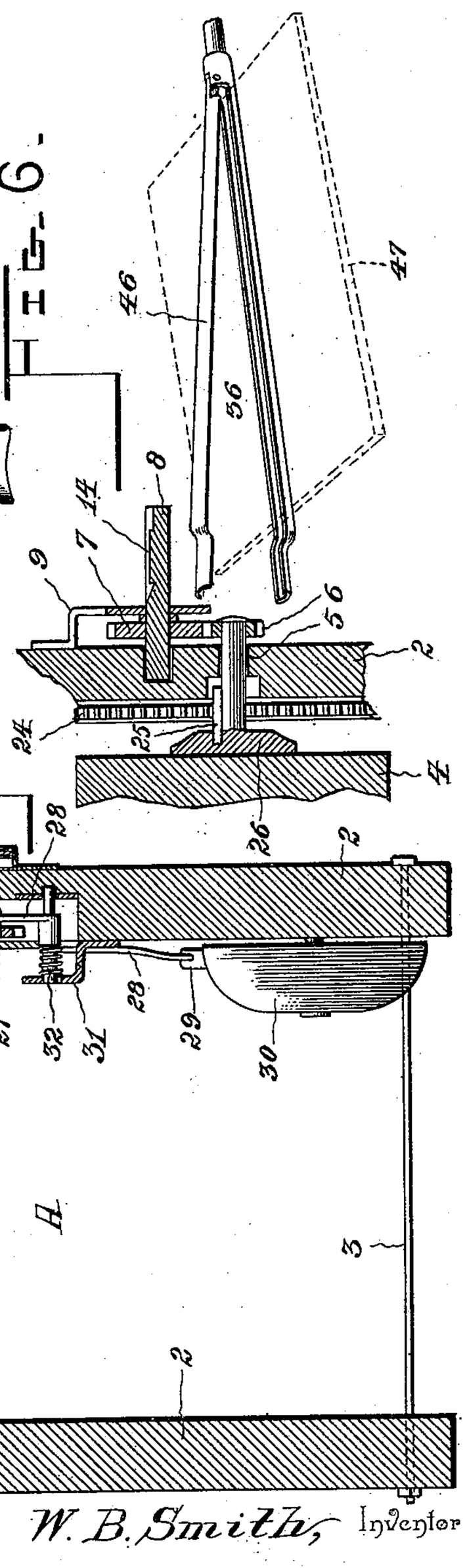

FIG. 5.

FIG. 3.

Witnesses

John T. Dewkerwiel

Heath Sutherland

W. B. Smith, Inventor

By his Attorneys,

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UNITED STATES PATENT OFFICE.

WILLIAM B. SMITH, OF MURRAY, ALABAMA, ASSIGNOR OF ONE-HALF TO JAMES D. LANDRAM, OF SAME PLACE.

CLOTH-MEASURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 646,472, dated April 3, 1900.

Application filed March 17, 1899. Serial No. 709,505. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. SMITH, a citizen of the United States, residing at Murray, in the county of Jefferson and State of Alabama, have invented a new and useful Measuring-Machine, of which the following is a specification.

This invention relates to measuring-machines; and the object of the invention is to provide a simple and efficient device of the character specified for supporting a roll or bolt of cloth, carpet, bagging, ribbons, and lace or other fabrics or material and for automatically and correctly registering the amount of material unwound from the bolt or roll, either for aid in making a sale or for taking stock in a store or like establishment. In the present case the apparatus involves a frame, which may be of any suitable construction, which is adapted to support a bolt or roll of cloth or fabric or other material to be measured and two coöperating rollers between which the leading end of the cloth is passed, and one of these rollers serves as a measuring-roller, its surface or periphery equaling a predetermined standard of measure, thereby to automatically indicate the quantity of cloth reeled off or unwound from the bolt. The measuring-roller is also connected with and serves to operate a resister or analogous device, so as to indicate visually to a purchaser or storekeeper the amount of cloth measured off, and I prefer to employ in connection with the measuring-roller and register a bell or similar signal, which will be sounded as each yard or other measure passes the measuring-roll. In making sales I prefer to employ the organization of parts just set forth; but when taking stock or inventories the cloth unwound from the bolt or primary roll will be rolled upon a secondary roll or support, which is removably supported by the framing of the apparatus.

With these ends in view the invention consists in the novel combination of elements and in the construction and arrangement of parts which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of a measuring-machine constructed in accordance with my invention. Fig. 2 is a vertical longitudinal sectional view thereof looking in the opposite direction. Fig. 3 is a transverse section on the line *x x* of Fig. 2. Fig. 4 is a detail sectional view taken on the line *y y* of Fig. 1. Fig. 5 is a detail sectional view taken on the line *z z*, Fig. 2. Fig. 6 is a detail perspective view illustrating the manner of mounting the core upon which the material being measured is to be wound. Fig. 7 is a detail perspective view of one of the sliding keepers for removably holding in place the shaft of the bolt of cloth or other material.

Like characters denote like and corresponding parts in each of the several figures of the drawings.

The framing for sustaining the different parts of the machine may be of any suitable construction; but I prefer to employ that illustrated in the drawings, and the same is denoted by A, consisting of two substantially X-shaped side pieces or standards 2, connected at suitable places by tie-bolts 3, furnished with the usual holding-nuts.

The measuring-roller is indicated by 4, and it consists, preferably, of a wooden core provided with a leather or similar facing and having projecting journals or trunnions 5, supported by suitable bearings in the standards 2, and one of said journals is provided with a pinion 6, meshing with the larger gear 7, secured to the stub or short shaft 8, supported in part by the framework and by the bracket or bearing 9, secured to said framing. The stub-shaft 8 extends beyond the supporting-bracket 9, Figs. 4 and 5, and is adapted to carry the crank-arm 10, the hub of which is furnished with a spring-key 12, having a shoulder or catch 13 at its free end, and this spring-key is adapted to fit in the correspondingly-shaped keyway 14 upon said shaft 8. By raising the key out of the keyway the crank-arm can be slid off the shaft for a purpose which will hereinafter appear. By turning the crank-arm 10 the gear 7, the pinion 6, and consequently the measuring-roller 4, will be rotated in unison, thereby to

measure off cloth received from a bolt or roll supported by the framing.

The pressure-roller 15 coöperates with the measuring-roller 4 and is of substantially the same construction and size as said roller 4, the periphery of which is contiguous to said measuring-roller. The pressure-roller is provided with projecting journals 16, adapted to pass through the longitudinal slots 17 and the bearing-blocks 18, fitted in recesses in the standards 2. The pressure-roller is held in proper position by means of coiled springs 19, located in the longitudinal slots 17 and acting against the slides 20, which fit against the journals 16, and the opposite ends of said springs fit against the set-screws 21, by turning which the tension of the coiled springs can be properly regulated to secure the pressure-roller in its correct position relative to the measuring-roller.

The circumference of the measuring-roller may be any standard of measure, and I have adapted one yard as the standard, and it will be apparent that each rotation of the measuring-roller indicates the reeling off of one yard from the primary bolt, the cloth from which extends between the measuring and pressure rollers, and as a means for indicating the amount of cloth removed from the primary bolt I connect the measuring-roller with a register of suitable construction, which includes, preferably, a dial 22′ and a pointer 22, secured to the shaft or arbor 23. The dial and pointer will of course be inclosed within a casing which is secured to the framing of the apparatus.

The arbor or shaft 23 is secured at its inner end to the large gear 24, constituting a part of the registering mechanism, and which is operated by the pallet 25, secured to the hub 26 of the measuring-roller 4, the construction being such that the pallet will engage the teeth of the master-gear 24 and will rotate said master-gear a distance equal to one yard upon the complete rotation of the measuring-wheel, and a corresponding indication will be made by the pointer or index-finger 22. The dial 22′ will be graduated, yards being the standard, as hereinbefore set forth.

The rim of the master-gear is provided with the projections or trip-fingers 27, spaced at equal distances apart in correspondence with the graduations upon the indicator-dial 22′, and these are adapted to successively come in contact with the bell-hammer 28, having a striker 29 at the end of its long arm, which is adapted to strike the bell 30. The bell-hammer is in the nature of a lever supported by the bracket 31 and having its hub encircled by the coiled actuating-spring 32, which serves to actuate the hammer. As the master-wheel rotates a trip-finger 27 will engage the bell-hammer, and thereby lift the striking end of the same, and when said finger passes out of contact with the hammer the latter will be released, so that the coiled spring 32 can force the striker 29 against the bell 30.

The cloth is unwound from the primary bolt 33, having a shaft 34, supported by bearings in the framework, near one upper corner thereof, and the leading end of the cloth is passed between the peripheries of the rollers 4 and 15, so that by turning the crank 10 the cloth or fabric can be mechanically measured and the measurement indicated upon the register, and at the same time the alarm will be sounded as each yard is reeled off. The construction described is advantageous in making sales, obviating the necessity of employing yard-sticks and also the taking down of bolts of cloth from shelves or other supports, and the cloth can be displayed to advantage when supported by the framework of the machine.

In reeling off the cloth during the taking of an inventory I wind the same upon the secondary bolt 35, including in its construction the cross-shaft 36, supported at the lower ends of the longitudinal slots 37, which are diagonally disposed and which are open at their upper ends, so that the shaft 36 can be removed from the longitudinal slots. The shaft 36 is provided at one end with a pinion 38, meshing with the gear 39, secured to the shaft 40, which is supported by the frame and also by the bracket 41, secured thereto, and this shaft is adapted to receive the crank 10, whereby the gear 39 can be rotated for the purpose of rotating the secondary bolt, thereby to wind the cloth upon the latter which is received from the primary bolt 33 and which cloth passes the measuring-roller 4 and is registered in the manner hereinbefore indicated. The shaft 40 has at one end a keyway 42, shaped to agree with the spring-key 12 and adapted to receive said key when the crank 10 is on said shaft 40. The shaft 36 is held in place by means of the slide bolts or keepers 43, slidable transversely of the longitudinal slots 37 and longitudinally in suitable grooves 45, formed in the outer face of the framework, and these bolts are provided with laterally-extending finger-pieces 44, adapted to fit in the sockets 45′, formed in the outer face of the framework and intersecting the respective grooves 45 when the bolts are in their normal position or when said bolts extend entirely across the longitudinal slots 37. When it is desired to remove the shaft 36, constituting a part of the secondary bolt 35, the finger-pieces 44 will be lifted out of their sockets 45, whereby the bolts 43 can be slid downward to accomplish the result desired.

The shaft 36 is in the nature of a clamp including a pivoted clamping member 46, between which and the main part of the shaft the core 47 of the bolt is received, and the two sections of the shaft are held in clamping relation with the core between them by the sleeve 48, in sliding engagement with an end of said shaft-section. This sleeve rotates in one of the longitudinal slots 37, before described, and forms a part of and is removed with the shaft 36. When the latter

is removed, the sleeve will be slid off the end of the same, so that the clamping member 46 can be lifted to permit the removal of the core 47 with the cloth wound thereon and which has been unwound from the primary bolt.

From the foregoing it is thought that the operation of the machine will be apparent. After placing a bolt of cloth on the machine the leading end of the cloth is unwound from the bolt or roller 33 and inserted and frictionally engaged between the pressure and measuring rollers. The machine is now operated so as to turn the measuring-roller, whereupon the registering mechanism is brought into action and indicates visually the length of material drawn from the primary bolt, and at the same time the alarm indicates the number of yards taken from said primary bolt. In invoicing or taking stock the end of the cloth is secured to the secondary bolt on the winding-shaft 36, and the latter shaft is operated by means of the interchangeable crank, which has the effect of drawing the cloth between the measuring and pressure rollers, the operation of the registering mechanism and the alarm being the same as hereinabove described. In this manner the cloth may be rapidly removed from the primary bolt and wound neatly upon the secondary bolt, the number of yards contained in the piece being automatically indicated upon the register without requiring any attention whatever on the part of the operator.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what I claim is—

1. In a machine of the class specified, a winding-shaft, having a clamping member hinged thereto, and adapted to engage a suitable core, and a sleeve removably fitted over the end of the shaft and the free end of the clamping member, said sleeve when in place, forming one of the journals of the shaft, substantially as described.

2. In a machine of the class specified, the combination of a plurality of shafts, one controlling the measuring-roller and the other controlling the winding device, and each provided with a shouldered keyway, and an interchangeable crank adapted for either shaft, and having a spring-key to fit either keyway, and provided with a catch to engage shoulders in the keyways, substantially as described.

3. In an apparatus of the class specified, the combination with a measuring-roller and with a pressure-roller, of a primary bolt, a secondary bolt including a shaft having a hinged clamping member and also having a core, and provided with a sleeve fitted over the free ends of the sections of the shaft and forming a direct bearing therefor, and cloth-feeding means, substantially as described.

4. In an apparatus of the class specified, the combination with a measuring-roller and its shaft, and with a counter-shaft geared thereto, and provided with a shouldered keyway, of register and alarm mechanism both controlled by the measuring-roller, primary and secondary bolts, a counter-shaft geared to the secondary bolt and having a shouldered keyway, and an interchangeable crank adapted to fit either shaft, and having a spring-key to fit within either of said keyways and provided with a catch to engage the shoulders in the keyway, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM B. SMITH.

Witnesses:
J. E. ELLIS,
W. A. WALLS.