Sheet 1-2 Sheets.

T. B. Stevenson.

Lumber Measure.

No. 68,911. Patented Sept. 17, 1867.

Witnesses:
H. P. K. Peck
H. H. Peck

Inventor:
T. B. Stevenson

Sheet 2 - 2 Sheets.

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Fig. 4.

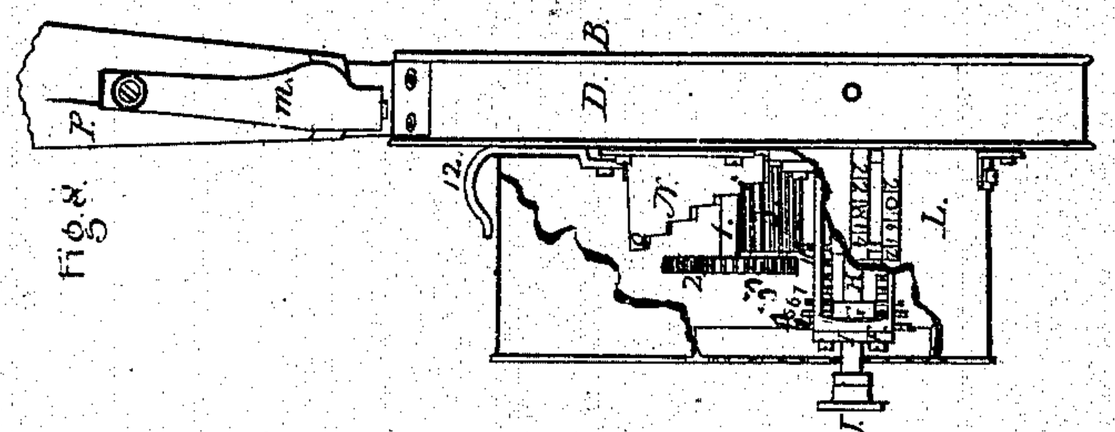


Fig. 7.

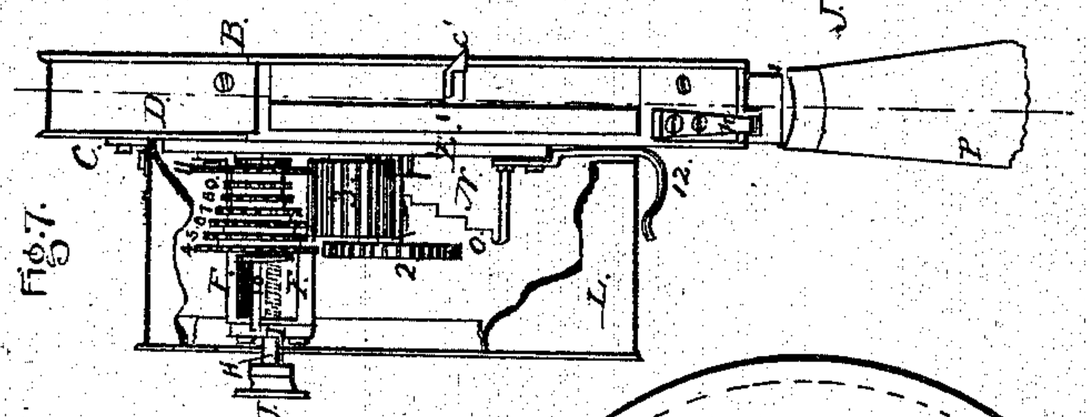


Fig. 6.

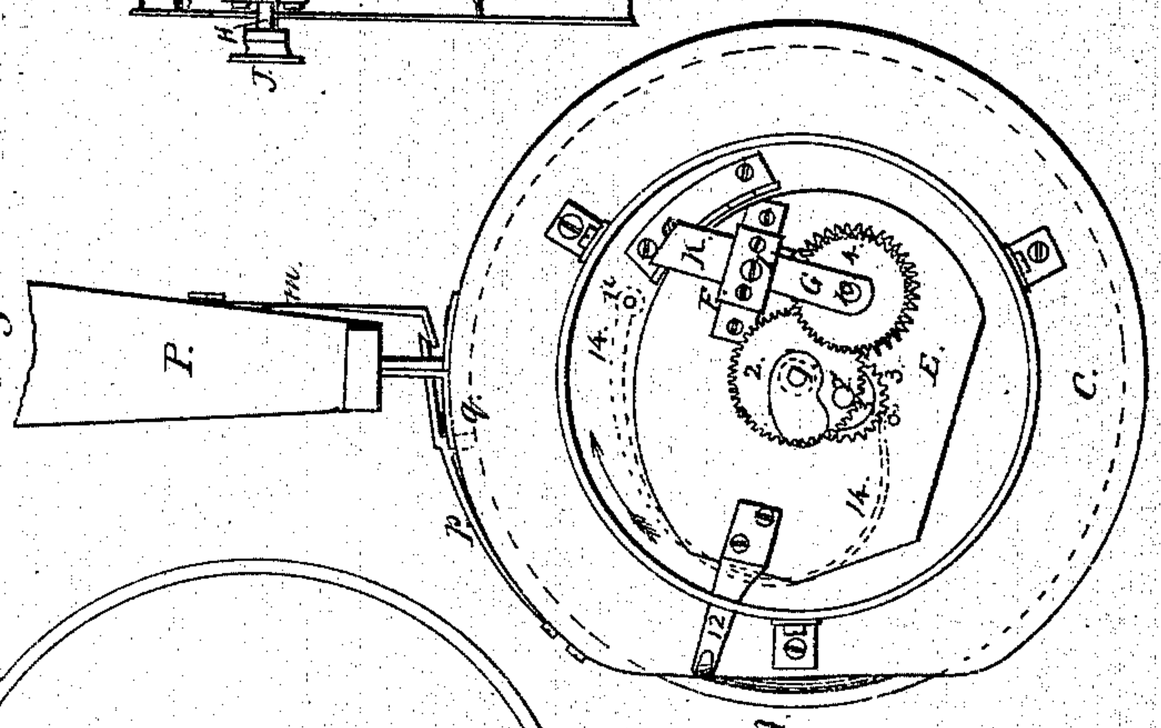


Fig. 5.

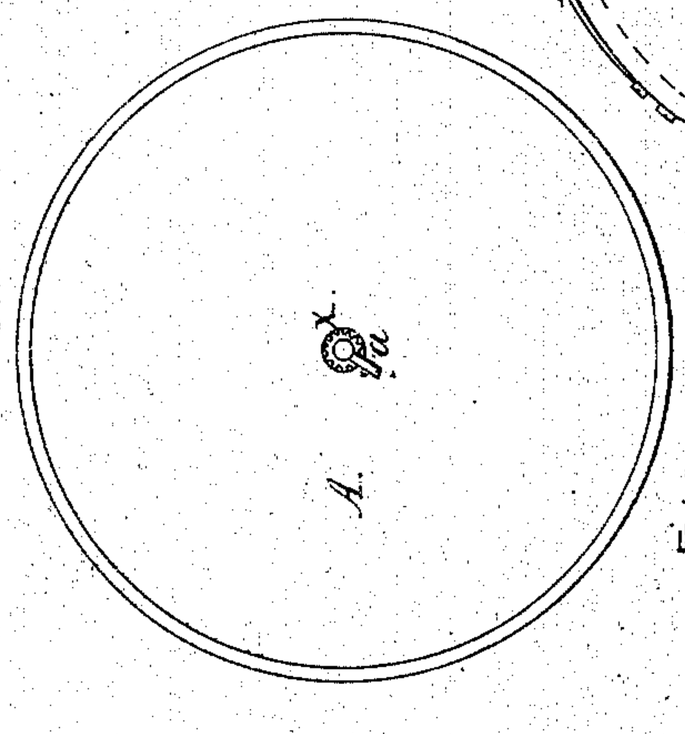
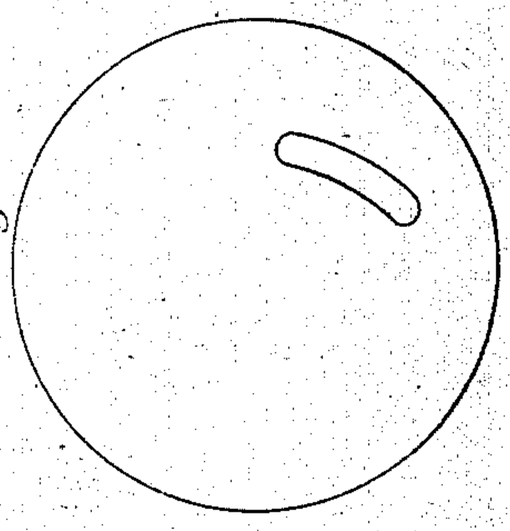


Fig. 9.



Witnesses:

H. P. K. Peck

M. M. Peck

Inventor:

T. B. Stevenson

United States Patent Office.

THOMAS B. STEVENSON, OF DAYTON, OHIO.

Letters Patent No. 68,911, *dated September* 17, 1867.

IMPROVEMENT IN INSTRUMENT FOR MEASURING LUMBER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS B. STEVENSON, of Dayton, in Montgomery county, in the State of Ohio, have invented a new and useful Improvement in Instruments for Measuring, and particularly designed for measuring lumber; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a front view of my measuring instrument.

Figure 2 represents the dial-plate, partly broken away to exhibit the auxiliary disks or registering dials.

Figure 3 is an inside view of the dial-plate and registering disks or dials.

Figure 4 is a sectional view of same, taken at the line 1 1 of fig. 3.

Figure 5 represents the measuring-wheel, with its fixed pinion and arm.

Figure 6 represents the back of the instrument, with the cover of the adjustable mechanism removed.

Figure 7 is an edge view of the same, with a portion of the drum-shield broken away.

Figure 8 is a similar view of the opposite edge of the instrument, and

Figure 9 is a representation of the cover of the shield or drum.

My invention consists in an organization of mechanism by which superficial measurements may be taken by traversing the surface to be measured by a revolving wheel, which transfers movement to registering mechanism, indicating the quantity measured upon dials, as will be herein fully explained.

In the accompanying drawings, A denotes the measuring-wheel, which is made with a flange at its periphery, and it is enclosed, excepting the portion at A′, by the dial-plate B, base-plate C, and rim D, which is fastened to the latter. A hub formed in the centre of the wheel A has in it a hollow pinion, *x*, rigidly fixed as seen in fig. 5. The shaft 1, to the end of which gear-wheel 2 is fixed, extends through the pinion *x* and the measuring-wheel A at its centre, and is kept therein by the end of arm *a*, which passes through a hole in the end of the shaft 1. This shaft has a shoulder turned upon it, which rests against the projecting end of pinion *x*. E is an eccentric shipping-plate, pivoted on or at the base of the fixed shaft 2′, on which the long spur-wheel 3 works. The shipping-plate E serves as the base for the adjustable mechanism, by which the instrument may be readily adapted to measure the superficies of the different lengths of lumber or other materials. The mechanism consists of the frame F, which is secured by screws to the plate E, and the series of different-sized pinions 4, 5, 6, 7, 8, 9, forming a cone of pinions, working on the shaft 10, which is fastened, like frame F, to plate E. At the apex of the inverted cone of pinions, and on the same shaft, there is a large gear-wheel, 11, which always retains its mesh with the long spur-wheel 3. The shaft or stud 2′, upon which the spur-wheel works, is fixed upon the base-plate C, and extends through the eccentric plate E, and serves as a pivot on which the plate E moves in shipping the gearing. An adjustable bracket or yoke, G, has two perforated arms, through the perforations of which the shaft 10 passes, and a third arm, K, extending between the side pieces of frame F, through which the adjusting-screw H works, and as the two arms of the yoke upon shaft 10 embrace the cone of gears, together with the larger gear 11, they may all be adjusted up and down on shaft 10 by means of the screw H, which extends down through the cap-piece I of frame F. The milled head J is made separate from the screw H, and is recessed so as to fit upon its upper end; and in order to adhere with sufficient friction to the end of the screw H the latter is bifurcated, so as to cause the branches to serve as springs pressing outwardly against the recessed cap J, and thereby produce sufficient friction to cause the screw H to revolve by revolving the milled head J, to adjust the gearing embraced in the bracket or yoke G. By this means of connecting the milled head with the adjusting screw the liability of breaking the mechanism adjusted is avoided when it arrives at either termination of its adjustment. The eccentric plate E may be turned upon its pivot the base of stud 2′ by means of its handle 12, which will cause the mechanism, consisting of the frame F and yoke G, with the series of gears 4, 5, 6, 7, 8, 9, and 11, to be moved with it around the long spur-wheel 3, and out of contact with the transmitting gear-wheel 2, and while the eccentric plate is held in that position the cone of gears may be adjusted up or down upon their shaft, as has been described; and when so held, the bevelled end of the projecting arm K of yoke G will be brought in apposition with the slot in the drum L, which slot has the scale 12, 14, 16, 18, 20 and 22 marked at its margins. This scale will indicate the proper adjustment of the series of gears or pinions for the measurement of boards or lumber of different lengths. When the yo

with its gearing, is adjusted, so as to bring the end of the arm K in line with the figure 12 on the scale, the centric shipping-plate E will be allowed to return to its normal condition, so far as the arm K will permit; ıe arm K in the mean time will rest against the upper shoulder *o* of the notched segmental plate N.) And measuring the quantity of square feet of lumber of different lengths, the gearing actuated by the set-screw will be adjusted, as has been described above, to bring the different pinions 4, 5, 6, 7, 8, and 9 into mesh with nsmitting gear 2. The gear 2, as will be seen, remains fixed in respect to the movable eccentric plate and gearing, as a slot in the eccentric plate E is formed around the shaft 1 of that gear, as represented in black ıes in fig. 6. A retracting-spring, 14, seen in dotted lines in fig. 6, serves to bring the eccentric plate E back its proper position when released from the hand of the operator or person using the instrument, as herein ecified. The spring 14 is fastened by the rivet *n* on the inner face of base-plate C, and acts against a detent tending through a slot in the base-plate, the detent being connected with the under side of the eccentric plate.

Screwed fast to the handle P there is a thumb-spring, *m*, which, when depressed, will raise the brake-spring which is secured by screws to the rim D. The detent or brake *q*, represented in dotted lines in fig. 6, bears ainst the periphery of the wheel A, to retain the wheel when the instrument is not in actual use; but by pressing the thumb-spring *m*, the spring *p*, with its brake *q*, will be raised from contact with wheel A, which ll be necessary while the wheel A is being revolved upon the surface of the materials being measured. Notches serrations may be formed in the periphery or flange of wheel A, into which the detent would enter to retain wheel A in a fixed position. The arm *a*, seen in fig. 5, occupies the groove *r*, in the small central disk *s*, 3, and to the disk *s* the hand *t* is screwed, and the two revolve together. The screw *u* passes through the ntre of dial-plate B. Disk *s* is provided with arm *v*, which at each revolution of hand *t*, strikes one of the ns *w* of the disk or rotary dial R, and causes it to move around one-tenth of a revolution; and when dial R s made an entire revolution, its arm *z* will strike one of the ten pins, *y*, of rotary dial T, causing it to move ound one-tenth of a revolution, and these movements are in like manner communicated to disks or dials I′ I″. will therefore be seen that ten revolutions of disk *s* and the pointer-hand *t* will give one revolution to dial , and ten revolutions of dial R give one revolution to dial T; ten revolutions of dial T give one revolution dial I′, and ten revolutions of dial I′ give one revolution to dial I″. These four revolving dials are secured ıon studs, connected with the inner side of dial-plate B. The revolving dials are chambered, to receive a iral spring around each of their studs, and a pin through the end of each stud retains the spring, together th the dial, with sufficient degree of pressure upon the inner face of dial B, so as to prevent the rotating als from moving upon their axes, except as they are propelled by the arms *v*, *z*, 17, and 18. The holes *o′* in e face of dial B are of the proper size for the presentation of one figure at a time of the four rotary dials ıich register the number of revolutions of the hand *t*, and each entire revolution of hand *t* will measure one ındred feet, superficial measurement. The metal point *c′* projecting from the dial-plate B serves to mark the ace of beginning and ending the measurement of a board or other piece of lumber.

To use my improved measuring instrument, the operator will first turn the eccentric plate E around in the rection of the arrow in fig. 6, to move the adjustable pinions 4, 5, 6, 7, 8, and 9 out of contact with transitting gear-wheel 2, by pressing the thumb against the lever 12, (which lever works in a slot at the edge of m or drum L,) when he may adjust the revolving dials by turning around the hand *t*. By this means the 0 on ch of the rotary dials will be brought opposite to its respective opening *o′* in the face of dial B, and the hand will be placed so as to point to the figures "$\frac{1}{0}\frac{0}{0}$." The instrument being now adjusted to commence work, e operator will, by means of screw H, bring that one of the series of adjustable pinions 4, 5, 6, 7, 8, and 9 mesh with transmitting wheel 2, which will be indicated by the length of the lumber to be measured. In ginning to measure across the lumber, the point *c′* will be placed directly over the edge of the lumber to be easured, and the protruding portion of the wheel A, marked A′, will rest upon the face of the board or lumber; hen the operation of measuring (by revolving the wheel A across the material to be measured) will begin, and ıring the rotation of the wheel A the thumb-spring *m* will be depressed to relieve the wheel of brake *q*; but hen the wheel has traversed across the board or piece of lumber, and the point *c′* arrives directly over the lge, the thumb-spring *m* will be released, which will permit the brake *q* to retain the wheel from further rotaon or change of position until the next operation of measuring begins, when the thumb-spring *m* must be gain depressed to allow the wheel A to revolve freely over the surface being measured. The rotation of wheel drives the mechanism with which it is connected, and causes the registry of its revolutions to be made by the al B and rotary dials R T I′ I″. Wheel A communicates its movement through the pinion *x* in its hub to the ng spur-gear 3; thence through pinion 11 to the cone of pinions 4, 5, 6, 7, 8, and 9; thence through that one the series of the cone of pinions which may be in mesh with wheel 2 to the latter, which, being fixed upon s shaft, causes it to revolve and actuate the small disk *s*, in the groove *r* of which the arm *a* works. The rotaons of disk *s* will cause the pointer *t* to move with it, the latter being secured to the disk *s* by the screw *u*. It ill be observed that the connection of the gearing described above transmits the movement of wheel A, as it otates in measuring lumber, to the pointer-hand *t* and disk *s*, and that the rotations of disk *s*, with its arm *v*, ives motion at regular intervals to the four registering dials, as hereinbefore described. The face of dial-plate has marked thereon a scale, representing one hundred divisions, each representing one foot, superficial measrement, and when the hand *t* has made one entire rotation, beginning its circuit at zero, it indicates that the heel A has measured one hundred superficial feet, which number will be registered by rotary dial R, which will resent the figure 1 at the right-hand hole *o′* in the dial-plate B; and when ten revolutions of hand *t* are accomlished, rotary dial R will present at its opening in dial B zero, and at the same time rotary dial T will present t its opening in dial B the figure 1, which will indicate the measurement of one thousand feet; and by the like rocess of operation all four of the rotary dials are brought into action until one million feet are measured and he quantity recorded, as has been explained. The operation is the same, of recording correctly the quantity

measured, whatever may be the adjustment of the series of the six adjustable pinions 4, 5, 6, 7, 8, and 9. The same principle of construction may be readily carried to any necessary degree to effect the measurement, and registering of the quantity contained, when the articles measured are of different lengths from those which can be measured by the machine as now organized. It should be observed that the frame F, and screw H, for adjusting the cone-shaped series of pinions, may be dispensed with, and the yoke G, which embraces the adjustable pinions 4, 5, 6, 7, 8, and 9, may be moved up and down upon the shaft 10 by means of the projecting arm K; and the arm K may be made to extend through an opening in drum L, which would be so formed and notched as to serve to perform the functions of the notched segmental plate N. Small curved slots may be made through the face of dial B, through which a pin or other sharp instrument may be inserted, to set the rotary dials at the beginning of each several measurement of different lots of lumber. In that case, the disks or dials R T I′ I″ would have small indentations formed around their faces, into which the point of the sharp instrument would enter, to revolve them to set each at zero.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. Registering the quantity of material measured by a traversing rotary wheel, upon rotary and fixed dials, by an organization of mechanism substantially as described.

2. The combination of the shipping mechanism with an adjustable series of different-sized pinions for changing speed, substantially as specified.

3. The combination of the adjusting-screw H, arm K, retracting-spring 14, and segmental notched plate N, or their equivalents, operating conjointly in the manner and for the purpose described.

4. The measuring-wheel A, in combination with the thumb-spring *m* and detent *q*, operating in the manner and for the purpose specified.

5. The disk *s*, in combination with arm *a* and rotary dials R T I′ I″, for recording the quantity measured, substantially as described.

6. The shipping and adjustable mechanism represented in figs. 6 and 7, in combination with the recording mechanism represented in figs. 2 and 3, operating in the manner substantially as and for the purpose specified.

In testimony whereof I have hereto set my hand this 12th day of April, 1867.

T. B. STEVENSON

Witnesses:

H. P. K. PECK,

M. H. PECK.