June 19, 1928. 1,673,905

P. ERIKSSON

REGISTER

Filed Dec. 23, 1926 3 Sheets-Sheet 1

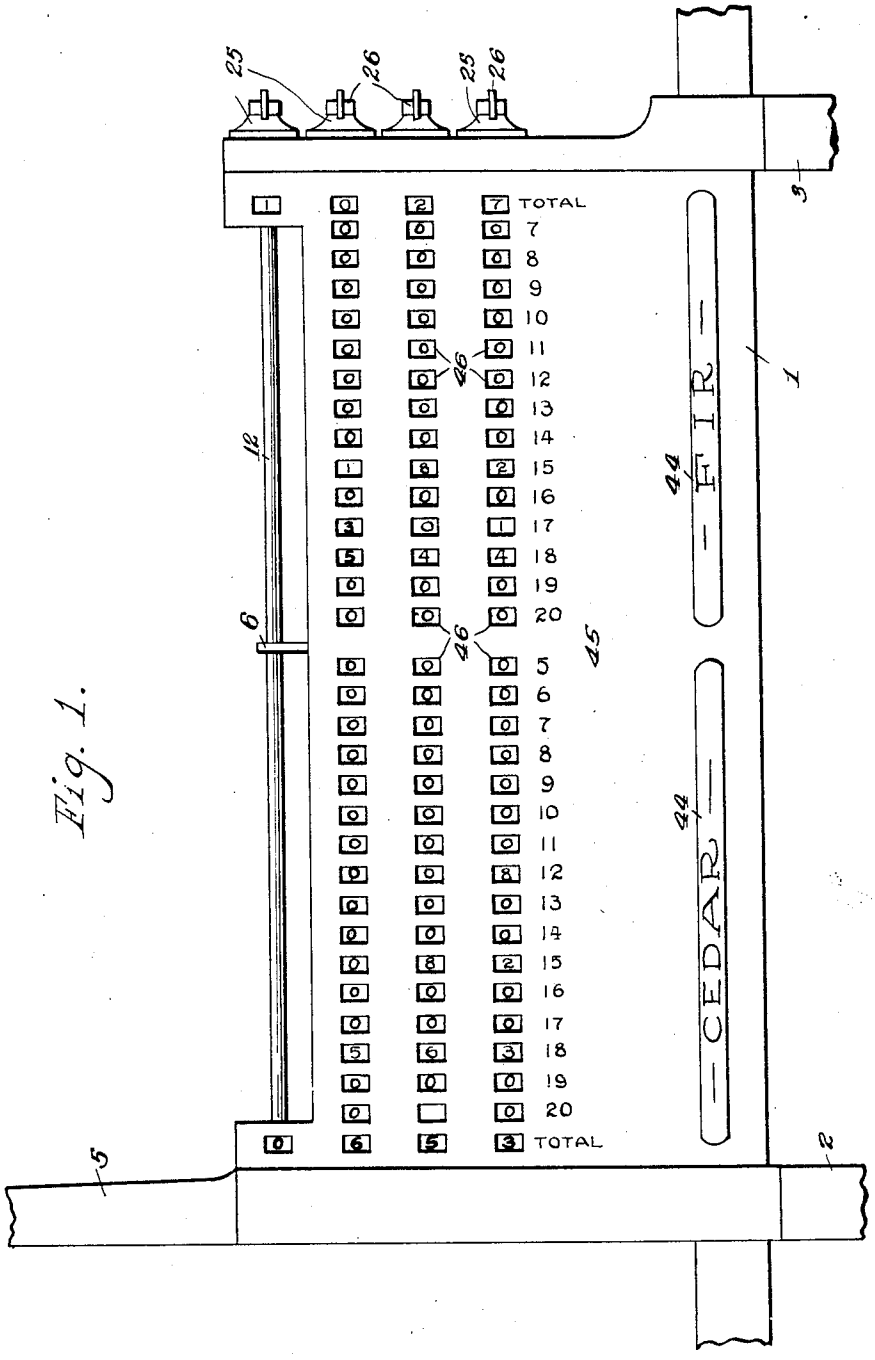


Fig. 1.

Inventor
P. Eriksson
By H. J. Sanders atty.

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REGISTER

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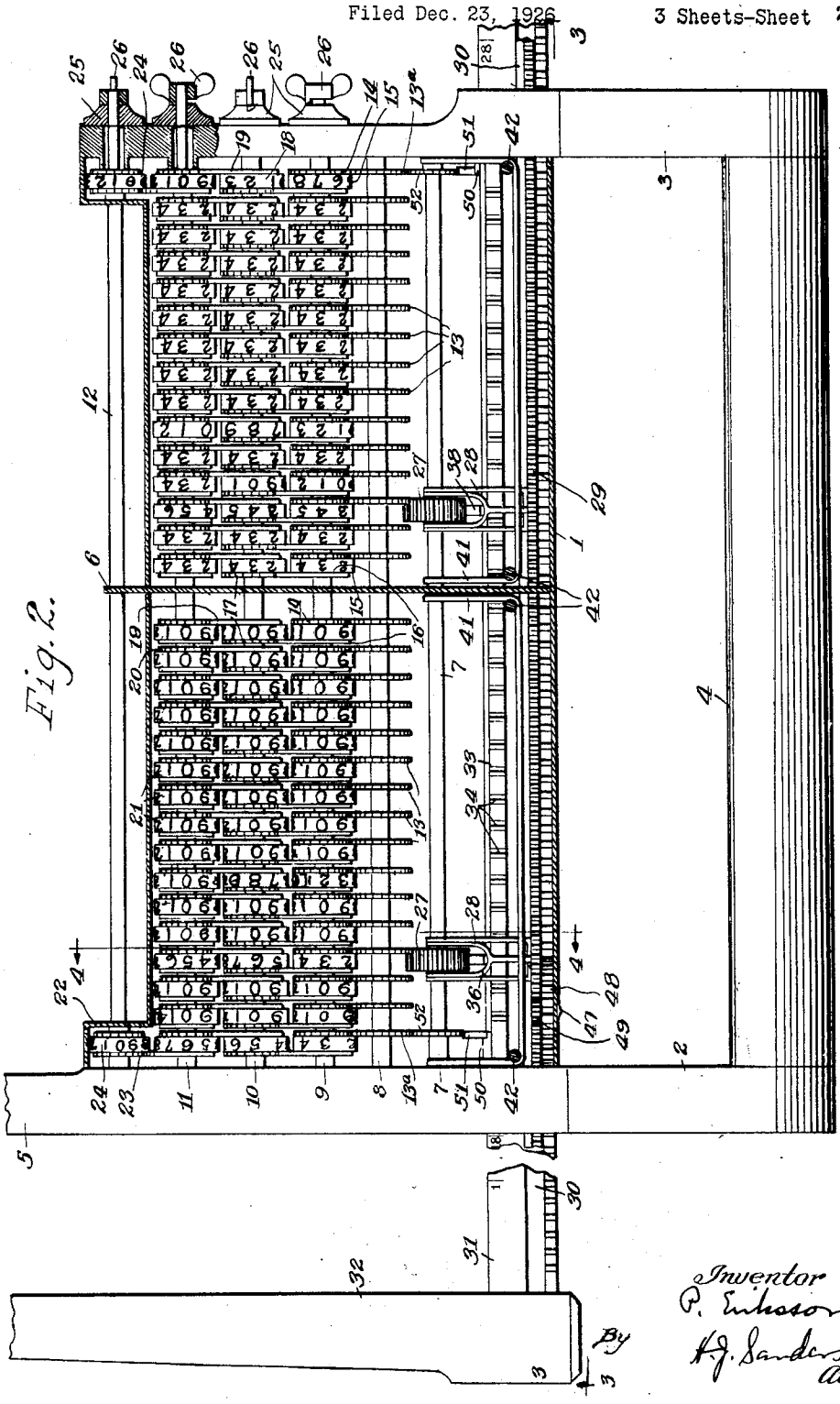


Fig. 2.

Inventor
P. Eriksson
By K. J. Sanders
Atty.

June 19, 1928.

1,673,905

P. ERIKSSON

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3 Sheets-Sheet 3

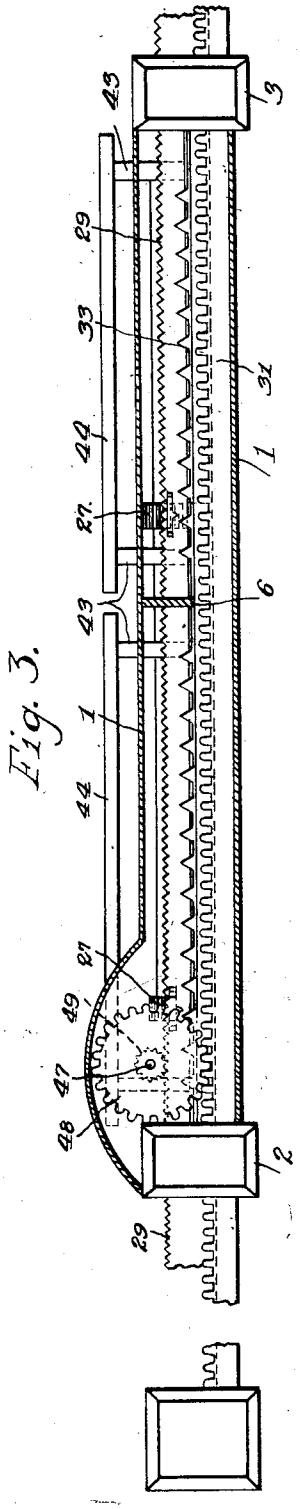


Fig. 3.

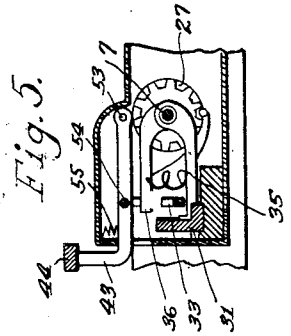


Fig. 5.

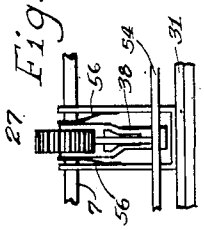


Fig. 7.

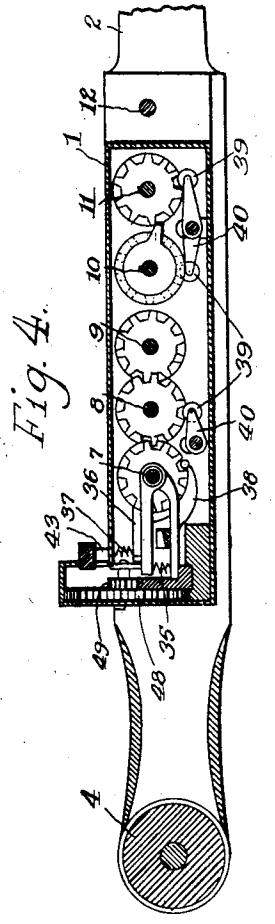


Fig. 4.

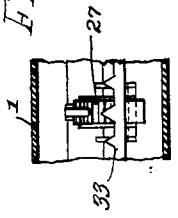


Fig. 6.

Inventor
P. Eriksson
By H. J. Sanders
Atty.

Patented June 19, 1928. 1,673,905

UNITED STATES PATENT OFFICE.

PER ERIKSSON, OF EVANSTON, ILLINOIS.

REGISTER.

Application filed December 23, 1926. Serial No. 156,598.

This invention relates to improvements in registers and more particularly to a device designed primarily for registering the number and diameter of standing or un-cut trees on timber land. With the foregoing and other objects in view the invention consists in the combination and arrangement of parts to be hereinafter fully described, pointed out in the appended claims and illustrated in the accompanying drawings which form a part of this application and in which—

Fig. 1 is a plan view of the register.

Fig. 2 is a top plan view of the register with the cover removed and partly in section to afford a view of the interior mechanism.

Fig. 3 is a longitudinal sectional view on line 3—3 of Fig. 2.

Fig. 4 is a view in cross section on line 4—4 of Fig. 2.

Fig. 5 is a cross section showing a slightly modified form.

Figs. 6 and 7 are detail views of the modified form shown in Fig. 5.

Like reference characters denote corresponding parts throughout the several views.

On timber land it is usually desirable to know the exact number of standing trees, their kind and their diameters. The present invention provides means for ascertaining this information quickly and accurately with the minimum labor, the results being conveniently registered and retained until copied or other use made thereof as desired.

The machine comprises a casing provided with an extensible scale or rack for measuring the tree diameters and one or more tabulating units whereon the number of trees of a certain diameter is displayed in units, tens or hundreds columns and also in a sum total at a point beyond said columns.

The reference numeral 1 denotes a housing integral with or supported by the spaced lateral bars 2, 3 which extend beyond said housing and are connected by the hand grip or handle 4, the bar 2 being extended at one end beyond the housing to form the free shank 5. A partition 6 extends transversely of the housing and divides it into two similar compartments that extend from said partition to the bars 2, 3.

Extending longitudinally of the housing 1 and through the partition 6 with their ends arranged in the bars 2, 3 are the spaced parallel shafts 7, 8, 9, 10 and 11. A similar shaft 12 lies mostly outside the housing but extends through the said partition 6 which is projected beyond the housing. Loose upon the shaft 8 upon each side of the partition 6 are the gears 13 spaced equidistant one from the other and each of said gears being in mesh with a gear 14 loose upon the shaft 9, each gear 14 being fast to a disc 15 which is marked peripherally with the numerals from zero to nine and is loose upon said shaft.

Secured to one lateral face of each disc 15 upon the side remote from the gear 14 is a lug 16 that extends, at one end, beyond the disc periphery for intermittent engagement with the teeth of a gear 17 loose upon the shaft 10 but fast to one face of a disc 18, also loose upon shaft 10, said disc being numbered peripherally identically with the disc 15. A lug 19 fast to one face of each disc 18, remote from the gear 17 is adapted, as said gear rotates, for intermittent engagement with the teeth of a gear 20 fast to one face of a numbered disc 21, said disc and gear being loose upon the shaft 11. In corner extensions 22 of the housing 1 upon the shaft 12 that extends through said extensions are the gears 23 fast to the numbered discs 24, the discs 24 being known as the "totals discs" as they show the total number of trees counted by the units of the register. The shafts 9, 10, 11 and 12 are projected, at one end, beyond the housing and provided with the caps 25 and thumb nuts 26.

Slidable longitudinally of the shaft 7 and keyed thereto in each unit of the housing is a counter gear 27 adapted to register with any one of the gears 13 of the shaft 8 except the extreme outer gears of that shaft which will be denoted by character 13^a. Each counter gear 27 is engaged by an elongated substantially U-shaped yoke 28 the base of which is secured to a rack 29 that extends through and beyond the housing 1 and bars 2, 3, said rack 29 being slidably secured in a longitudinal groove 30 formed in the stationary toothed rack 31 upon which the housing is adapted to slide, both racks 29 and 31 being graduated in inches and the rack 31 being terminally provided with a shank or handle 32.

A positioning rack 33 formed with teeth 34 spaced a distance slightly greater than one-half the width of the yoke 28 is secured

to the bars 2, 3 and extends longitudinally of the housing and through the partition 6 and has its ends imbedded in the bars 2, 3, said rack being spaced slightly above the rack 31 to permit one side of the U-shaped yoke 28 to slide therebeneath, the upper side of said yoke passing over said rack and said yoke sides being connected by the spacer spring 35 to yieldingly space them. A fork 36 has its prong end secured to the axle of the counter gear 27 and its shank passing across the upper side of the base of the yoke 28.

The fork 36 is connected by an expansion coil spring 37 to the housing while a pawl 38 passing down through the yoke 28 connects the fork 36 and the teeth of the counter gear 27. Within the housing are the friction rollers 39 carried by the arms 40, said rollers bearing against certain of the numbered discs to yieldingly restrain their movement so that they will not move any through vibration or play from wear of the parts etc.

An angular trigger 41 has its ends pivotally connected to the shaft 7, each of said triggers passing about posts 42, one such post being located adjacent each bar 2 and 3 and one upon each side of the partition 6; each trigger passes over one fork 36 and its associated yoke 28 and is connected by links 43 that extend through perforations in the housing top to the finger bars 44 located outside the housing. One bar 44 may bear the word "Cedar" and one the word "Fir" if the device is used to compute diameters and numbers of these trees. The cover 45 of the housing is formed with a plurality of perforations 46, one for each numbered disc, located directly above the discs so that the uppermost numbers of said disc may be read as shown in Fig. 1.

Arranged within the housing upon a pin shaft 47 is a large gear 48 that travels over the teeth of the rack 31 and arranged also upon said pin shaft is a pinion 49 that travels over the teeth of the rack 29. When the housing and contents are manually moved over the rack 31 by means of the handle 4 the gear 48 rotates the pin shaft and causes the pinion 49 traveling over the teeth of the rack 29 to slowly move this rack, relative to the rack 31, in one or the other direction.

Connected to one end of each trigger 41 by link 50 is a pawl 51 that registers with a toothed wheel 52, upon opposite ends of shaft 7, that is in mesh with the gears 13^a at the relatively remote ends of the shaft 8. When the machine is so adjusted that the distance between shanks 5 and 32 is eighteen inches, as in Fig. 2, the counter gear 27 is in mesh with one gear 13. The space between the said shanks 5 and 32 is the diameter in inches of certain trees. For each tree found with a diameter of eighteen inches one or the other spacer bar 44 is manually depressed, depending upon whether the tree is a cedar or fir, and this will cause the counter gear to advance, rotate one gear 13 for each tree of this diameter. Gears 13 drive the "units" shaft and when ten trees have been registered by this gear 13 it will have made one complete revolution and the gear 14 in mesh with it on shaft 9, the "units" shaft, will have made one complete revolution together with its numbered disc 15 and its lug 16 which will now have moved a gear 17 of "tens" shaft 10 one-tenth revolution about its shaft. One hundred revolutions of the unit gear will have caused ten revolutions of the gear 17 readable on its numbered disc 18 and this through the medium of lug 19 will have caused one revolution of a gear 20 on the hundreds shaft 11. This total will have been registered by the pawls 51 movable with each trigger movement thus causing the wheels 52 to rotate the train 13^a, 17, 20, 23. The gear 23 in each section of the housing denotes the total number of trees of any kind, cedar or fir, regardless of their diameters while the various numbered discs of the shafts 9, 10, 11 show, through the housing perforations 46 the number of trees of a given diameter.

The teeth of the racks 29 and 31 are of such relative distance apart and the gear 48 and pinion 49 of such relative size that one inch variation in the distance between the shanks 5, 32 will cause a corresponding movement of the counter gear from one to an adjacent gear 13. If certain trees measured are of such diameter that the relative adjustment of the shanks is such as to throw the counter gear between two adjacent gears 13, and not in mesh with either, a light stroke upon a finger bar 44 will cause the yoke to engage with one of the high bevelled teeth 34 of the rack 33 and move the counter gear and connections laterally into position to mesh with one or the other of said gears 13. The teeth 34 are staggered relative to the gears 13 to permit them to function as described.

Any tree measurement is very easily and readily taken by simply applying the instrument to the tree trunk, one shank 5 upon one side and the other shank 32 upon the opposite side. The distance between the shanks so spaces the operating and registering mechanism described that manual depression of either bar 44 will cause the numbered discs to visibly register the diameters and number of all trees measured and their totals.

On the housing cover 45 two terminal rows of discs, one in each compartment, are denoted by the word "Total" and the remaining rows in each compartment are numbered.

The compartment intended for cedar trees has its transverse rows of numbered discs numbered from five to twenty. These figures denote inches. Trees five inches in diameter, cedars, will be shown in row five; trees of seven inch diameter will appear, properly classified, in row seven, and the totals will appear in their rows. When one job is completed and it is desired to set all discs at zero again the cover 45 is removed from the housing and the discs manually positioned.

In Figs. 5, 6 and 7 a modified form is shown. The links 43 extend through a perforation in the housing and at their inner ends are fulcrumed upon a pin 53 and a rod 54 extending lengthwise of the housing depresses forks 36; a return spring 55 for links 43 yieldingly retaining them in raised position. The forks are spaced from the yokes by springs 56 and the pawls 38 engage the counter gears from the top, or overhead, but the mechanism functions in the same manner as in the form shown in the first four figures.

What is claimed is:

1. In a register, a housing, terminal bars therefor, a graduated rack slidably associated with said housing, a shank carried by said rack, a second graduated rack slidably associated with said housing and slidable upon said first rack, connection between said racks for regulating their relative movement as said shank is adjusted relative to said housing, a counter gear carried by said second rack and movable within said housing, spaced register gears adapted to be actuated singly by said counter gear, a trigger for said counter gear, and positioning mechanism for correcting the relation of said counter gear relative to a particular register gear.

2. In a register, a housing, terminal bars therefor, a graduated rack slidably associated with said housing, a shank carried by said rack, a second graduated rack slidably associated with said housing and slidable upon said first named rack, connection between said racks for regulating their relative movement as said shank is adjusted relative to said housing, a counter gear carried by said second rack and movable within said housing, spaced register gears adapted to be actuated singly by said counter gear, a trigger for said counter gear, a positioning rack, and a yoke connecting said counter gear and second rack for engagement with the teeth of said positioning rack.

3. In a register, a housing, terminal bars therefor, a graduated rack slidably associated with said housing, a shank carried by said rack, a second graduated rack slidably associated with said housing and slidable upon said first rack, connection between said racks for regulating their relative movement as said shank is adjusted relative to said housing, a counter gear carried by said second rack and movable within said housing, spaced register gears adapted to be actuated singly by said counter gear, a trigger for said counter gear, a positioning rack, the teeth of said rack being staggered with relation to said register gears, and a yoke connecting said counter gear and second rack for engagement with the teeth of said positioning rack.

4. In a register, a housing, terminal bars therefor, a graduated rack slidably associated with said housing and slidable upon said first rack, large and small gears operating respectively over the teeth of said first named and said second racks, a counter gear carried by said second rack and movable within said housing, spaced register gears adapted to be actuated singly by said counter gear, a trigger for said counter gear, and positioning mechanism for correcting the relation of said counter gear relative to a particular register gear.

In testimony that the foregoing is my own I have hereto affixed my signature.

PER ERIKSSON.