

(Model.)

J. N. GEE.  
SURVEYING INSTRUMENT.

No. 445,886.

Patented Feb. 3, 1891.

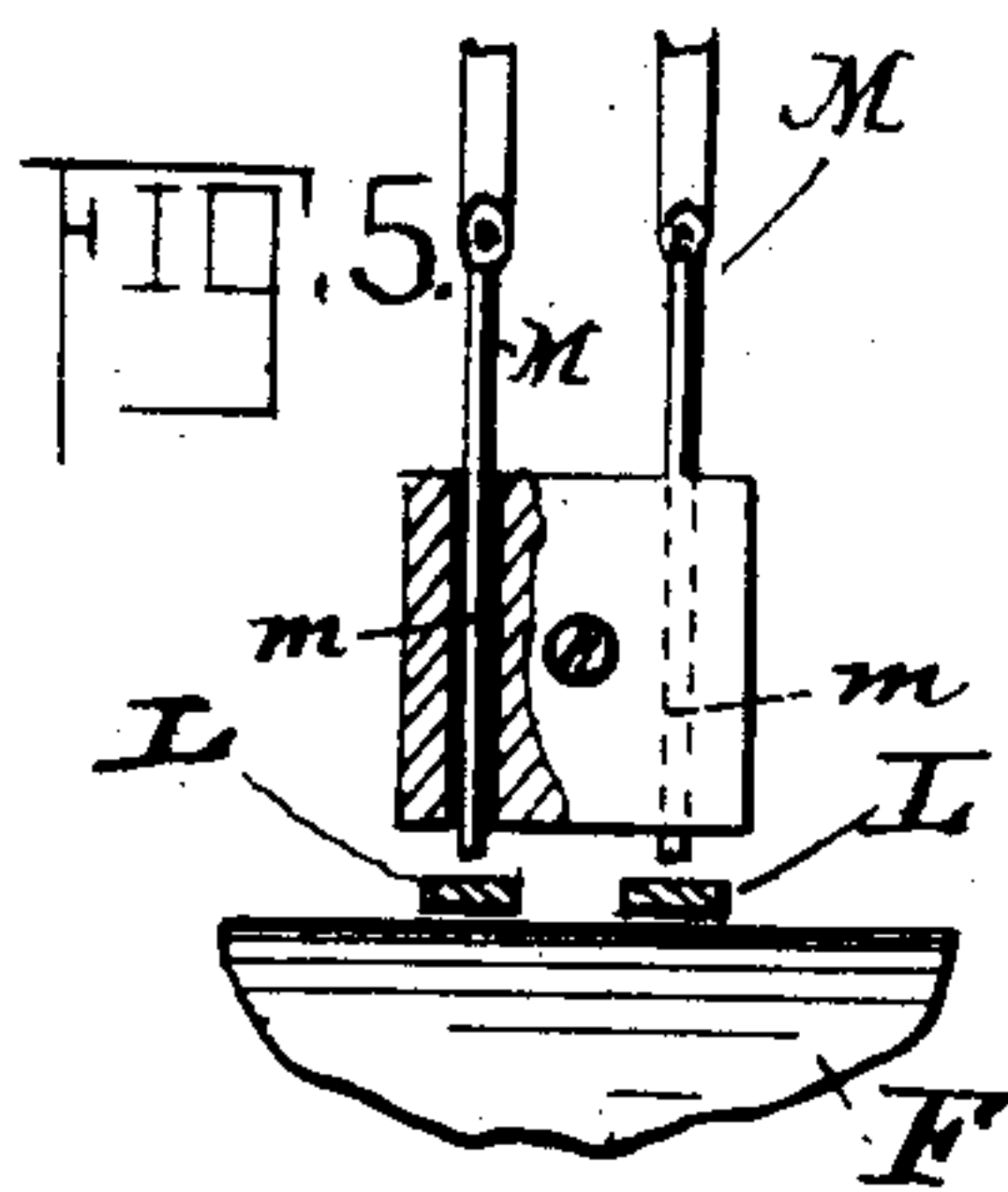


FIG. 1.

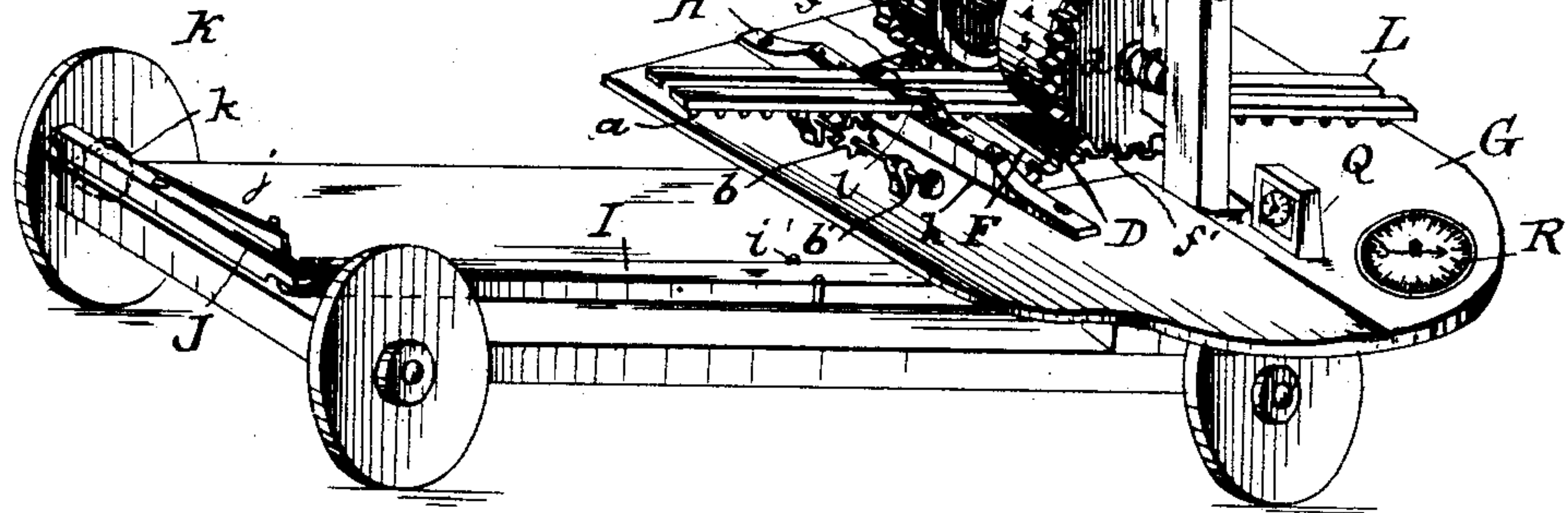


FIG. 2.

FIG. 3.

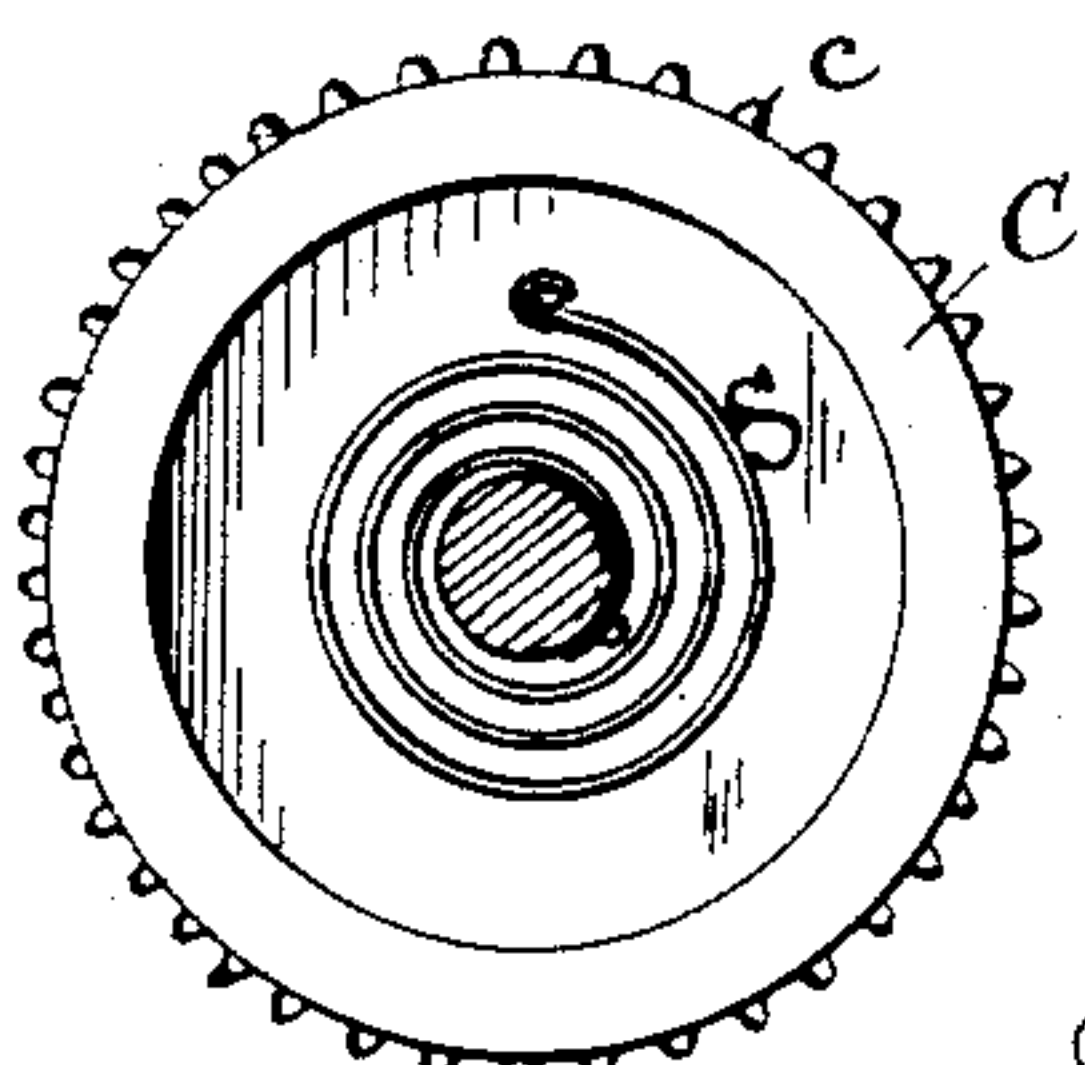


Fig. 4.

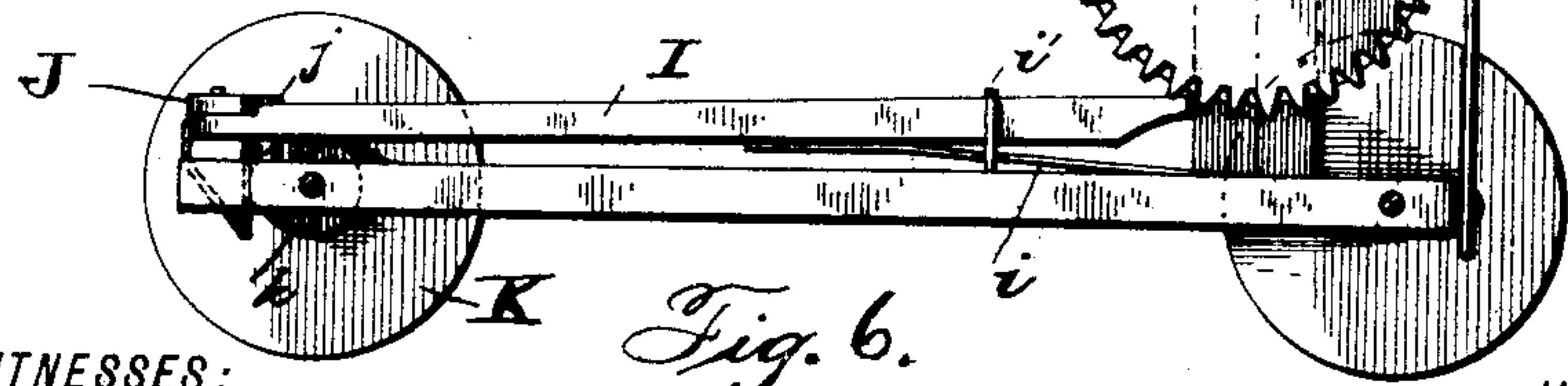
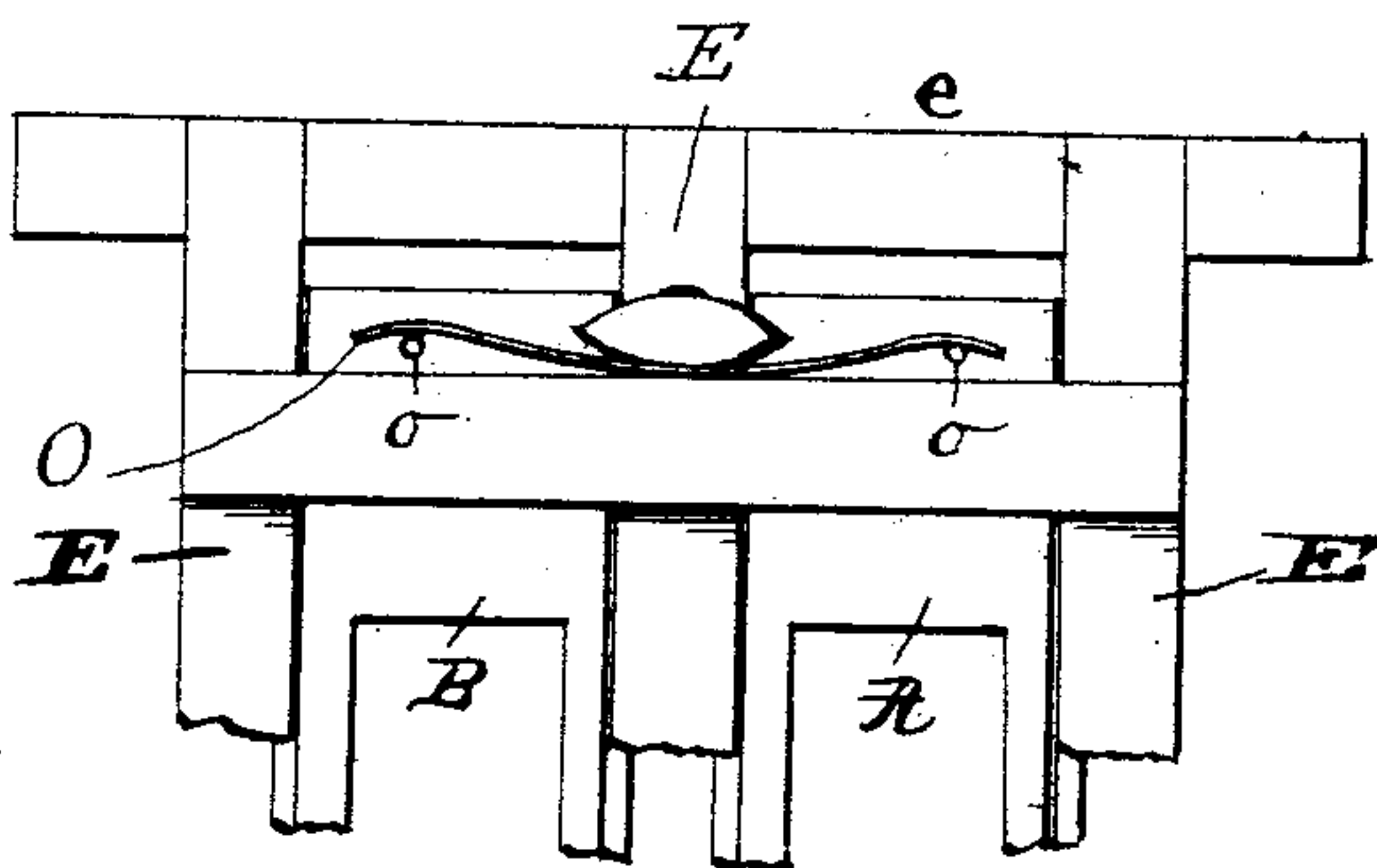


Fig. 6.

WITNESSES:

Sam<sup>l</sup> R. Turner.  
Van Buren Hillyard.

INVENTOR

Joshua Nevel Gee.

BY *R. A. Blaney*  
his ATTORNEYS



# UNITED STATES PATENT OFFICE.

JOSHUA NEVEL GEE, OF PLEASANT GROVE, VIRGINIA.

## SURVEYING-INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 445,886, dated February 3, 1891.

Application filed July 3, 1890. Serial No. 357,844. (Model.)

*To all whom it may concern:*

Be it known that I, JOSHUA NEVEL GEE, a citizen of the United States, residing at Pleasant Grove, in the county of Lunenburg and State of Virginia, have invented certain new and useful Improvements in Surveying-Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to measuring-machines for surveying roads, farms, lands, &c., and which will record the measurements, the degrees, and the level above the sea.

The improvement consists of the novel features and the combination and peculiar construction of the parts, which hereinafter will be more fully described and claimed, and which are shown in the annexed drawings, in which—

Figure 1 is a perspective view, parts being broken away, of a machine embodying my invention. Fig. 2 is a detail view showing the means for returning the printing-rollers to the starting-point. Fig. 3 is a detail view showing the spring for holding the printing-roller frames down. Fig. 4 is a detail view through type-bar. Fig. 5 is a detail view of a portion of the printing-roller, showing the relative positions of the plungers and the type-bars thereto. Fig. 6 is a detail side view of the lower portion of the machine, showing the appliances for operating the printing-roller from a wheel of the vehicle.

The vertically-sliding frames A B, which carry the printing-rollers C and D, are mounted in the frame, which is composed of the vertical standards E and the cross-bar *e*, which unites the standards E at their upper ends. Each of the printing-rollers C and D is provided with a series of numbers around its periphery from one to any required number. These rollers have gear-wheels *c* and *d*, respectively, which mesh with corresponding gear-wheels *f* *f'* on the printing-roller F, which is arranged beneath the printing-rollers C and D and is journaled in the standard E. The table G, arranged about on a

level with the meeting faces of the rollers C, D, and F, is provided with a suitable opening to permit the upper portion of the printing-roller F to project therethrough. The guide H is secured at its ends to the table, and a recess *h* is provided between its under side and the top of the table for the passage of the strip (not shown) on which the record is kept. The operating-bar I is adapted to engage with one of the gear-wheels at the end of the roller F, as *f'*, and move the said roller forward the space of one tooth or more at each forward movement thereof. The end of the bar I is held in engagement with the gear-wheel *f* by the spring *i*. The bar I is guided in its movement by working between the stops *i'*.

The lever J for transmitting motion from a suitable part of the vehicle to which the device is applied is connected at one end with the bar I and is returned to a normal or starting position by the spring *j*. The opposite end of lever J in the present instance is arranged to be engaged by the eccentric *k* on the wheel K of the vehicle.

The type-bars L, held in suitable guides on the table, are arranged to be moved over the printing-roller F in the direction of motion of the vehicle, and are provided at regular intervals with spring-actuated type *r*, ranging from one to sixty, more or less, as required. The springs *l* are arranged to press on the type-bars L and prevent them from moving too rapidly or going past points when moved forward or backward to the required position. The vertical bars M have plungers *m* at their lower ends, which when said bars M are actuated engage with the type *r*.

The type-bars may be moved over the printing-roller in any convenient manner; but the preferable way is indicated in Fig. 1, which shows them provided with a rack-bar *a*, which meshes with a pinion *b* on the shaft *b'*, that is journaled in suitable bearings on the table G.

The type-bars will be provided in sufficient number to contain all the degrees of the compass and the fractional parts thereof, and the numbers from 1 up to the highest peak in the world. Obviously the more numbers on



each bar the fewer will be the number of the bars and the changing of the same will be the less frequent.

The type *r* are set in apertures in the bars and the spring *r'* is fastened at one end to the bar and its other end is constructed to engage with the type *r*, so as to hold the same in an operative position and return it to a normal position after being depressed, as will be readily comprehended, in the type-bars L and cause the same to press upon the strip and print thereon. Each of these bars M is connected with the frames A and B by means of the levers N and the links *n*. The frames are held at their lower position by the spring O, which is fastened between its ends to the middle standard E, and which has its free ends engaging with pins *o* that extend from the frames A and B.

P represents a leveling telescope, which is the representative of an instrument of any desired construction in being used in this capacity to sight a distant object.

Q indicates a barometer for indicating the sea-level.

R is a mariner's compass, and is provided to determine the degrees.

The operation of the invention is as follows: The sea-level being determined by reference to the instrument Q is recorded on the strip by moving one of the type-bars L until the proper type comes beneath the plunger *m*, when the bar M is depressed and prints the level on the strip that may be indicated by the instrument Q. Reference is had to the compass for determining the degree when the same is printed on the strip by moving the type-bar L to the proper position and depressing the bar M in the manner hereinbefore stated. The vehicle is propelled over the ground, and at each revolution of the driving-wheel K the bar I will be moved forward and turn the printing-rollers C, D, and F a proper distance, so as to effect a printing of the numerals thereon on the strip which passes between the rollers C, D, and F. When the direction of the vehicle is changed, the degree will be indicated on the compass and will be printed on the strip by moving the bar L and depressing the bar M, as hereinbefore stated. Should the level change, the same will be made known by the instrument Q, when the height may be printed on the strip by placing the type-bar L in proper position and depressing the bar M, as previously described. Each of the printing-rollers C and D is provided with a spring S, one end of which is attached to the journal or other portion of the roller, and the other end being connected with the frame in which the said roller is journaled. Obviously as the roller is turned forward the tension on the spring is increased. When the frame to which the roller is journaled is elevated by depressing the bar M, the gear-wheel on said roller will be disengaged from the gear-wheel on the

printing-roller F, the spring will return the said roller to the zero or starting-point, the roller being limited in its motion by the stop *f*.

As hereinbefore stated, the type *r* are acted on by a spring *r'*, the parts being so constructed that the spring will return the type to a normal position after being depressed. In the preferred form the type *r* is fitted loosely in the opening in the type-bar, and is recessed in its sides near its printing end to receive the free end of the spring *r'*, which latter is constructed to enter the said recesses in the sides of the type. When the plunger is depressed, it projects the type directly beneath it, and after the plunger is released the spring *r'* returns the type to a normal position.

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

1. In a surveying-instrument, the combination, with the printing-roller F and means for operating the same, of a second printing-roller actuated from the printing-roller F, and a sliding frame for the said second printing-roller, substantially as and for the purpose described.

2. In a measuring-instrument, the combination, with the printing-roller F and the type-bars, of a second printing-roller actuated from the printing-roller F, a sliding frame for the second printing-roller, and a bar, as M, connected with the sliding frame and adapted to engage with and depress the type in said type-bars, and at the same time disengage the said second printing-roller from the roller F, substantially as set forth.

3. In a measuring-instrument, the combination, with the printing-roller F, having gear-wheels *f* and *f'*, of the independent printing-rollers C and D, each provided with gear-wheels which mesh with the gear-wheels *f* and *f'*, sliding frames for the printing-rollers C and D, and means for operating said frame to effect a disengagement between the printing-rollers carried thereby and the gear-wheel on the printing-roller F, substantially as and for the purpose specified.

4. The combination, with the printing-roller F, of a second printing-roller adapted to be operated from the printing-roller F, a sliding frame, and a spring having one end connected with said second printing-roller and having its other end connected with said sliding frame, substantially as set forth.

5. The hereinbefore-specified measuring-instrument, comprising the elements, the printing-roller F, having gear-wheels *f* and *f'* at its ends, the printing-rollers C and D, each having gear-wheels which are in mesh with the gear-wheel on the printing-roller F, the sliding frames having the printing-rollers C and D journaled thereto, the spring for returning the printing-rollers C and D to a normal position when disengaged from the printing-roller F, a spring for holding the sliding



frames down under normal position, the type-  
bars L, the bars M, connected with the slid-  
ing frames and having plungers at their  
lower ends, which are adapted to engage with  
5 the type in the type-bars, means for operat-  
ing the said printing-roller from a moving  
part of the vehicle, an instrument for deter-  
mining the sea-level, and an instrument for

determining the degrees, substantially as set  
forth.

In testimony whereof I affix my signature in  
presence of two witnesses.

JOSHUA NEVEL GEE.

Witnesses:

C. M. CHEATHAM,

J. W. MORTON.