

No. 627,405.

Patented June 20, 1899.

F. D. FOSTER.
COMPUTING SCALE.

(Application filed Mar. 23, 1898.)

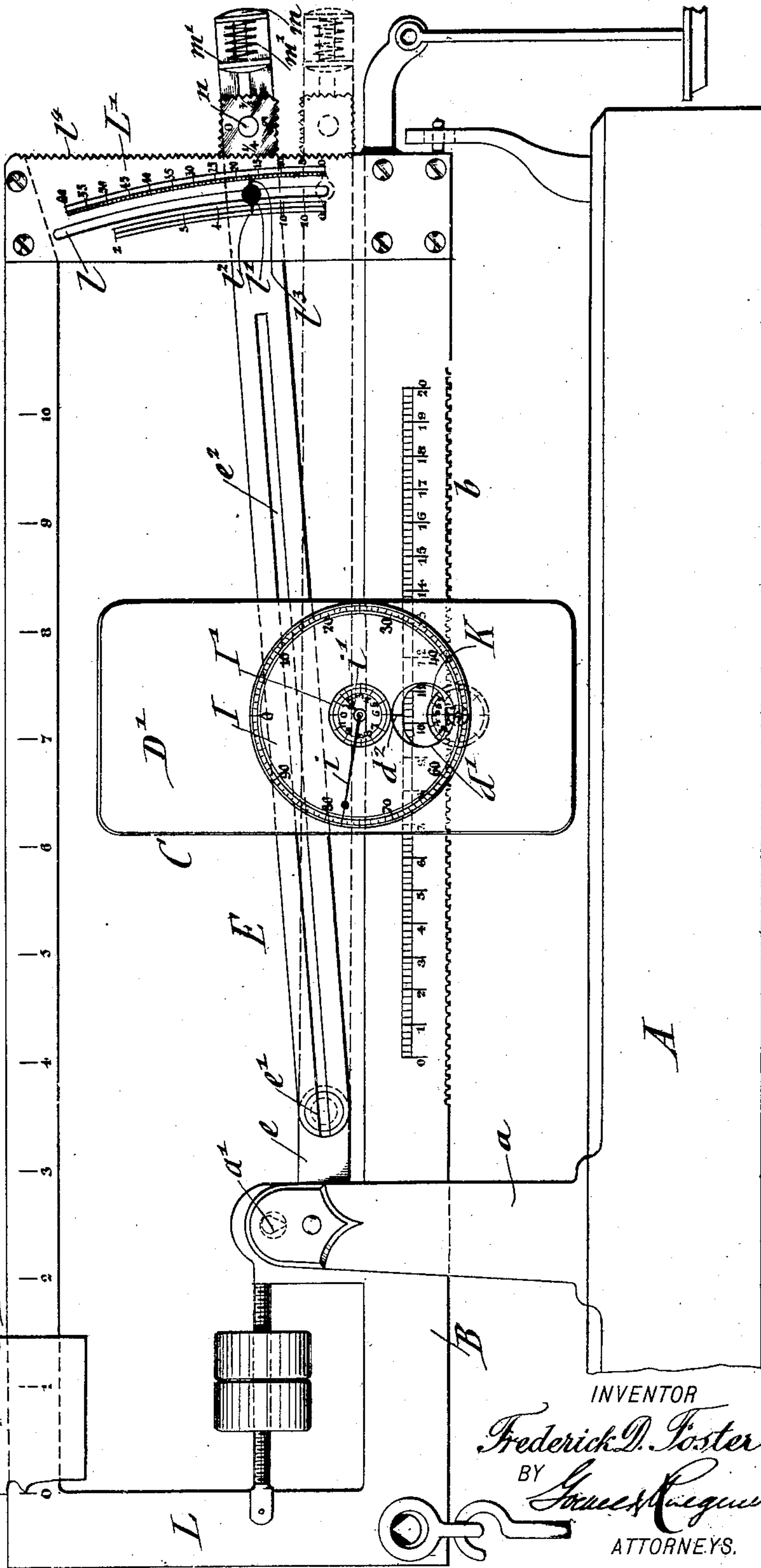
(No Model.)

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Fig. 1.

L^2

L^3



WITNESSES
Carl Kaible
Gerard Wheeler

INVENTOR
Frederick D. Foster
BY *James C. Regan*
ATTORNEYS.

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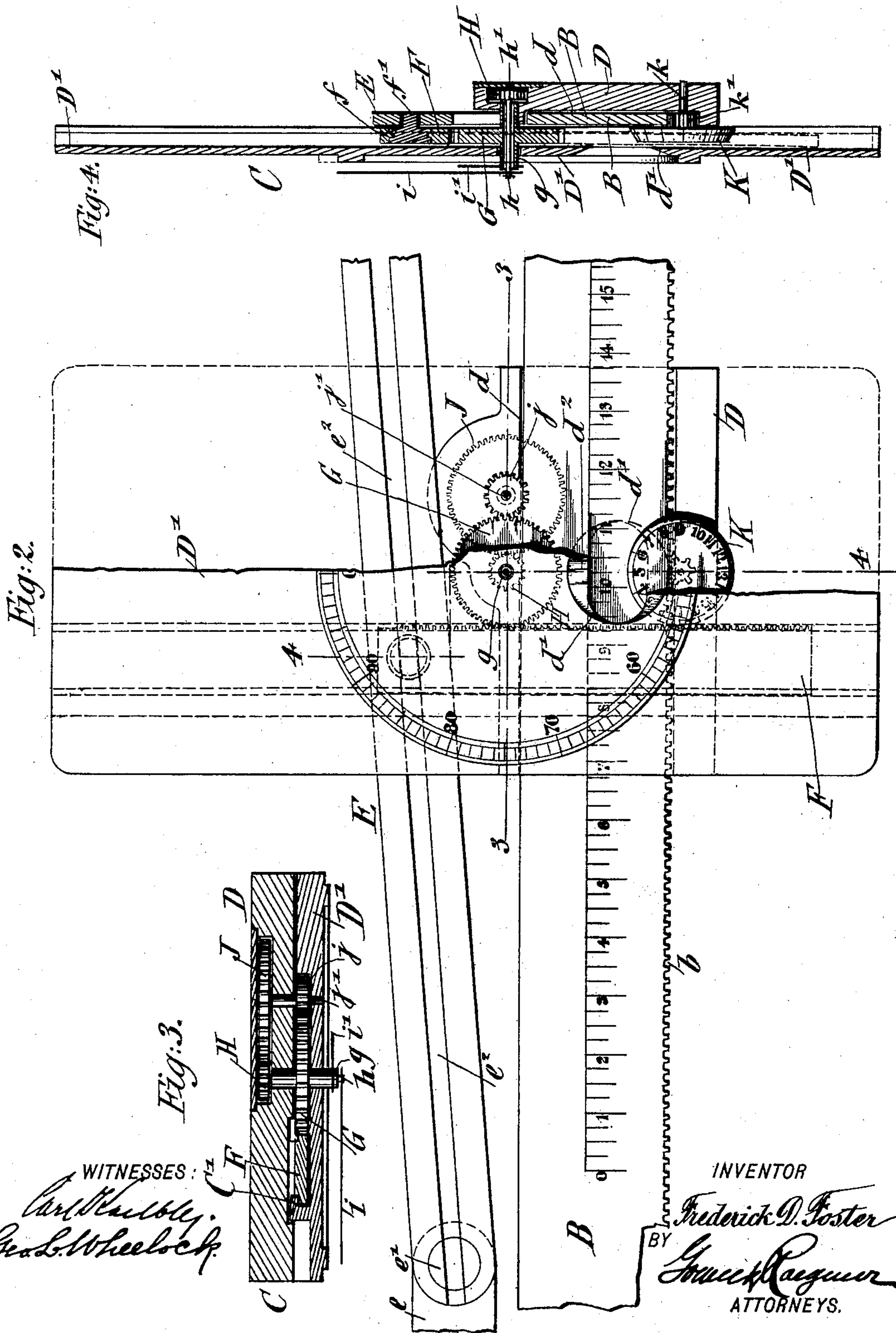
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(No Model.)

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WITNESSES:
Charles W. Kinsley.
Geo. L. Wheelock.

INVENTOR

Frederick D. Foster

BY *James H. Ragsdale*
ATTORNEYS.

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Fig. 6.

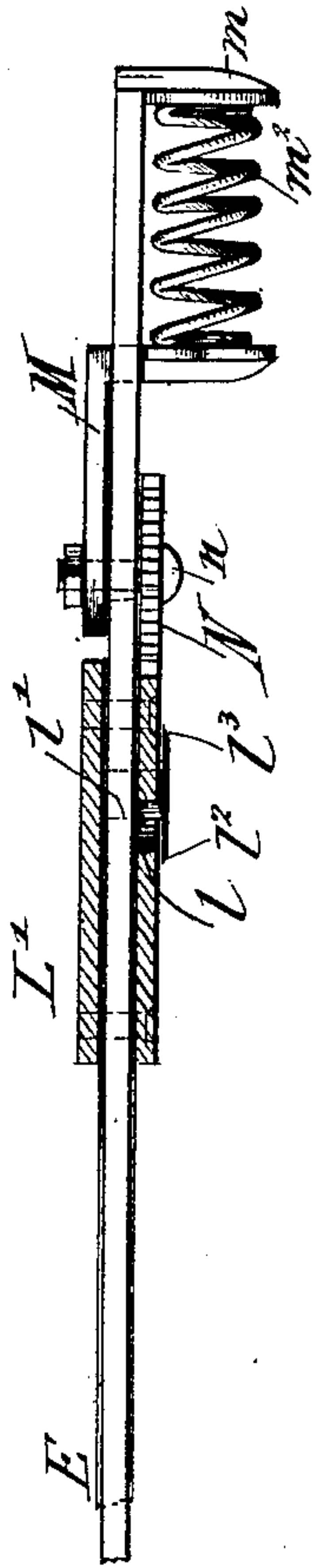


Fig. 7.

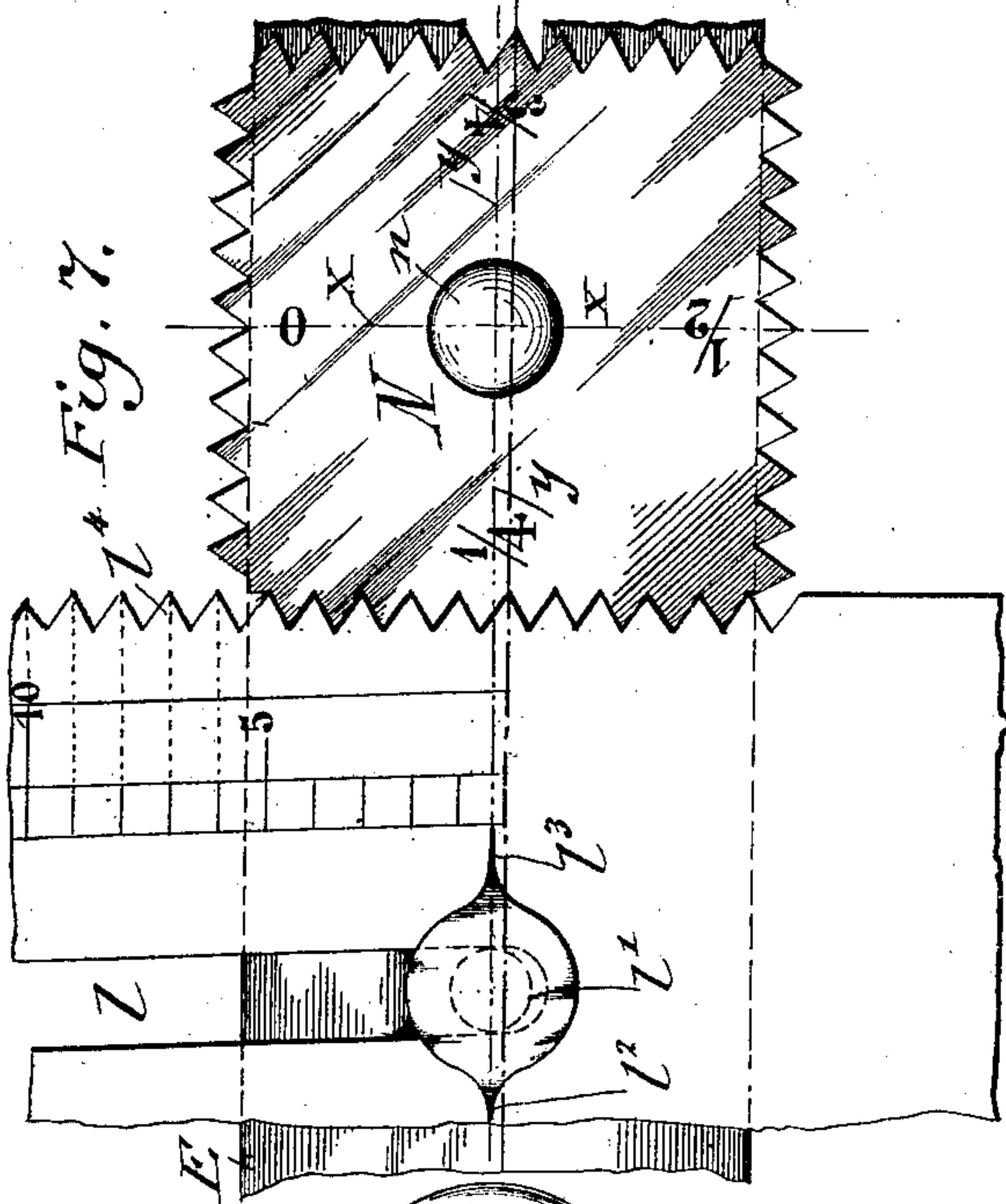
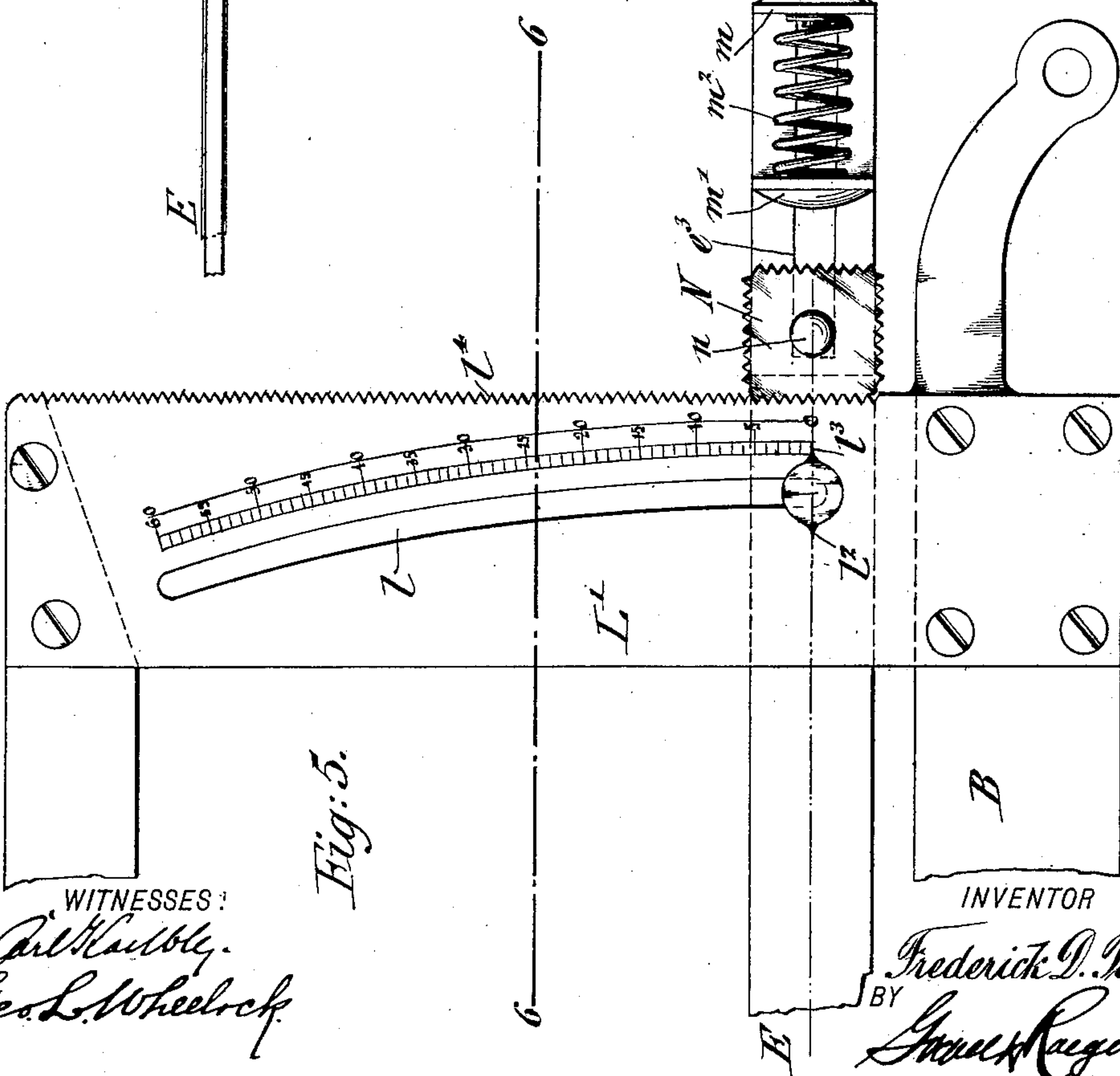


Fig. 5.



WITNESSES:
Carl H. H. H. H.
Geo. L. Wheelock

INVENTOR

Frederick D. Foster
BY *Samuel R. R.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

FREDERICK D. FOSTER, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE
AMERICAN COMPUTING SCALE COMPANY, OF NEW YORK, N. Y.

COMPUTING-SCALE.

SPECIFICATION forming part of Letters Patent No. 627,405, dated June 20, 1899.

Application filed March 23, 1898. Serial No. 674,859. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK D. FOSTER, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Computing-Scales, of which the following is a specification.

This invention relates to computing-scales for use by storekeepers or others whereby a practically accurate computation of the price of the material weighed out can be ascertained; and the object of the invention is to render this class of scales more reliable by the provision of means for their accurate and ready adjustment; and a further object is to simplify and improve the construction of the poise.

The invention consists of certain details of construction and combinations of parts, to be fully described hereinafter and then particularly claimed.

In the accompanying drawings, Figure 1 is a side elevation of a computing-scale embodying my invention. Fig. 2 is an enlarged detail side elevation showing the construction and arrangement of the poise mechanism in connection with the scale-beam and the angular member. Fig. 3 is a transverse section through the poise on line 3 3, Fig. 2. Fig. 4 is a vertical section on the line 4 4, Fig. 2. Fig. 5 is a detail view of the arm at the end of the scale-beam and the devices for adjusting the angular arm thereon. Fig. 6 is a transverse section on the line 6 6, Fig. 5; and Fig. 7 is an enlarged detail view of the adjustable mechanism of the angular arm, showing more clearly the construction of the setting member.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A indicates a bracket-arm extending from the usual standard of ordinary weighing-scales. (Not necessary to be shown in detail.)

a indicates an upright extending from the bracket-arm A and to which is fulcrumed at a' the scale-beam B.

C indicates the poise, which slides along the scale-beam and acts on an angular member, such as shown and claimed in the patent of F. L. Fuller, No. 580,783, dated April 13, 1897.

The poise C is composed of a back plate D and an elongated front plate D', which is secured to the back plate in any suitable manner, said back plate D being provided with a transverse guideway d, which receives the scale-beam B, so that the poise is guided along the same.

E indicates the angular member, which is pivoted at e' to a lug e on the scale-beam and is provided with a longitudinal slot e², said angular member being adjusted at its opposite end by mechanism to be hereinafter described, so that the indicating mechanism arranged on the poise may indicate the price of the material weighed out.

The indicating mechanism consists of a rack-bar F, which is swiveled at f on a slide f', guided in the longitudinal slot e² of the angular member, so that the rack-bar F hangs freely from the angular member and may move in a vertical path in the vertical guideway C', (shown in dotted lines in Fig. 2 and in full lines, Fig. 3,) such guideway being formed in the front plate D' of the poise. By this construction no matter at what angle the angular member E may be placed the rack-bar F will always be moved vertically. This rack-bar F acts on a gear-wheel G, the sleeve g of which turns on a pin or arbor h, which is journaled in the back plate D at h' and which is provided at its front end with a hand i, which is adapted to sweep around the dial I on the front of the plate D', while the sleeve g is provided at its front end with a hand i', which is adapted to sweep around a smaller and interior dial I', arranged also on the front plate D'. The gear-wheel G meshes with a pinion j, which is mounted on an arbor j', which is journaled in the back plate and front plate of the poise and on which is mounted a gear-wheel J, which meshes with a pinion H, fixed to the inner end of the arbor h. The teeth of the described gearing are so arranged as that while the large hand i sweeps twelve times around its dial I the smaller hand i' will sweep once around its dial I'.

In the lower part of the front plate D' is formed an observation-opening d', vertically above which, at the edge of the opening, is formed an indication mark or nick d². The

observation-opening d' is large enough so as to clear and bring to view the scale of pounds arranged on the scale-beam, and also so that the upper part of an ounce-disk K, which is journaled below said opening, can be seen. The ounce-disk K is graduated around its periphery and the graduations run from "1" to "16", indicating sixteen ounces to the pound, and the same is mounted on a pin k , which also carries a pinion k' , the teeth of which mesh with a series of rack-teeth b , formed on the lower edge of the scale-beam B, below the pounds-scale thereon. The movement of the ounce-disk K is so timed that when the indication-mark d^2 on the poise is shifted from one pound to the next said disk will complete one rotation, while when the disk has rotated to the fifth graduation, as seen in Fig. 2, five ounces will be thereby indicated in connection with the pounds indication on the pounds-scale shown through said observation-opening. In this manner the scale-readings are rendered accurate and can be quickly read off, as it is not necessary to so closely examine the pounds-scale, and, in fact, the graduations on the pounds-scale will not accurately show the weight in ounces.

In computing the price of articles per pound the multiplier is the pounds, together with the ounces, and the multiplicand is the price per pound, whether a whole number or a whole number and a fraction. The multiplier in the present instance is shown as ten pounds five ounces, the poise being set to that point and the adjusting mechanism of the angular member, which is influenced by the poise according to its distance to or from the pivot of said angular member, is set for a certain price per pound for example only, this price per pound being the multiplicand, while the product is indicated by the hands i i' in connection with the graduations of the indicator-disks. The scale-beam B is provided at the ends with upright arms or plates L L', the same being connected above the scale-beam by the tare-beam L², on which the weight L³ slides. Formed in the outer or end plate or arm L' is an arc-shaped slot l , in which is guided a stud l' , on the angular member from which extend in diametrically opposite directions, in line with the axis of the angular member E, two pointers l^2 l^3 . At the outer side of the arc-shaped slot l are a series of price-per-pound graduations, and at the inner side of the arc-shaped slot are a series of graduations which indicate the pounds a dollar will buy at any price per pound on the scale at the outer side of said slot.

At the outer end of the angular arm E is a fixed finger-piece m , between which and a movable finger-piece m' is located an expansion-spring m^2 , the tendency of which is to push the finger-piece m' inwardly toward the angular member. Said movable finger-piece m' extends from a short neck of a shank M, which is guided along the back of the angular member E, said neck passing through a lon-

gitudinal slot e^3 in the outer end of the same. Also passing through the slot e^3 and fixed to the shank M is a headed journal-pin n , on which is journaled what may be termed a "setting" member N, which is here shown of rectangular form; but it will be evident from the description which follows that the said setting member is not necessarily four-sided, as it may be hexagonal, octagonal, &c. For practical and ordinary purposes, however, it is only essential that the setting member be in the form of a square. The journal-pin n is arranged on the same axis as the pointers l^2 l^3 , and they should be accurately adjusted relatively to each other. The setting member N is provided on its four edges with teeth which are adapted to engage a series of teeth l^4 , which are formed on the outer edge of the upright arm L'.

Referring now more particularly to Fig. 7, it will be seen that the bases of the teeth l^4 are of the same width as the distance from one graduation to the next on the price-per-pound series of graduations, while also the width of the bases of the teeth on the setting member N are of equal dimensions, so that the graduations and the bases of the teeth all correspond and are methodically exact. The setting member is provided near its respective edges with indications denoting zero, one-quarter, one-half, and three-quarters, the fractions denoting one-quarter, one-half, and three-quarters of a cent, respectively. Heretofore the angular member has had no provision for its accurate setting with reference to fractions of a cent, nor has it had means for quickly adjusting and positively locking and setting the angular member when the price per pound is to be indicated. The present invention overcomes this deficiency by the described adjustment.

The peculiarity of the setting member resides in the fact that the center line x , which corresponds with its diameter and passes through the center of the journal n , passes or cuts through the teeth on the zero side of the setting member at a point midway between the teeth, as clearly indicated, while at the opposite or half-cent side the said center line coincides with the altitude of the triangular tooth at the center of the said half-cent side. This is by reason of the fact that the teeth at the half-cent side are shifted or offset relatively to each other for a distance corresponding to half of the width of the base of any one tooth. The other diameter y of the square setting member N cuts through the central teeth at the one-quarter-cent and three-quarter-cent side; but it strikes, preferably, the center tooth of each of said sides at opposite sides of the teeth at a point about half-way up the inclined sides. The teeth at the one-quarter-cent, half-cent, and three-quarter-cent sides are thus offset from the diameter of the setting member, one-quarter, one-half, and three-quarters, respectively, of the width of the base of any one tooth, or, in

other words, of the distance between the adjacent graduations of the price-per-pound scale. It will be seen from this arrangement of the teeth on the setting member that the center of the same will be shifted relatively to the center line, with which the pointers l^2 l^3 coincide, depending upon which side of the setting member is set against the series of teeth l^4 .

In Fig. 6 the series of teeth at the one-quarter-cent side are set against the teeth l^4 so that the pointer l^3 will be set opposite the corresponding one-quarter-cent point of the proper graduation. When the teeth at the zero side are set against the teeth l^4 , the pointer l^3 will coincide with any one of the graduations of the price-per-pound series. When the teeth at the one-half-cent or at the three-quarter-cent side are set against the teeth l^4 , the pointer l^3 will respectively and accurately indicate and be set to position at distances between the adjacent graduations corresponding with the one-half and three-quarter cent points of the graduations. This avoids the necessity of taking extreme care in setting the pointer l^3 opposite the proper intermediate point between the graduations or opposite a graduation, inasmuch as the pointer l^3 will be automatically set opposite the proper point, providing, of course, that the pointer be moved to any point between two graduations. To set the angular arm and the setting-disk N, the finger-pieces m' and m are grasped, the finger-piece m' pressed toward the finger-piece m , and the setting member turned according to the fractional part of a cent to which it is desired to be set.

The operation is as follows: It will be assumed that the weight of the article which is being weighed is ten pounds five ounces, in which event the poise C will have been moved to a corresponding point on the scale-beam B, (see Figs. 1 and 2,) so that the weight of the article—namely, ten pounds five ounces—will be exhibited through the observation-opening d' . Assuming that the price per pound of the article is seventeen and one-quarter cents, the angular member will be adjusted to the position shown, the setting member N having been adjusted for one-quarter of a cent, as previously described. In moving the angular member to its inclined position the same will act, by means of the rack-bar F and the train of gearing of the indicator mechanism, on the hands i i' of the same and cause them to sweep around the faces of the dials on the poise, so that the product of the multiplier—namely, the pounds—and the multiplicand—namely, the price per pound—will be exhibited and indicated by the hands in connection with the dials, such product being one dollar and seventy-eight cents. The dial I indicates up to one hundred cents, while the dial I' indicates up to twelve dollars; but it is evident that by the proper construction and slight additional cal-

culatation any amount can be computed and additional weights suspended from the scale-beam.

Having thus described my invention, what I claim is—

1. The combination, with a scale-beam provided with a pound-scale, of a poise provided with an observation-opening disclosing the graduations on the scale-beam, substantially as set forth.

2. The combination of a scale-beam, a poise, an angular member, indicating mechanism influenced by the position of the angular bar and poise, and a setting member carried by and constructed to set the angular member for accurately indicating the fractions of a cent, substantially as set forth.

3. The combination of a scale-beam, a poise, an angular member movable relatively to the scale-beam, indicating mechanism arranged on the poise and influenced by said angular member, a rotatable setting member carried by said angular member for adjusting to fractions of a cent, and means carried by the scale-beam against which said setting member may be set, substantially as set forth.

4. The combination of a scale-beam, a poise, an angular member movable relatively to the scale-beam, indicating mechanism carried by the poise and acted on by said angular member, and a shiftable and rotatable setting member provided with sides indicating fractions of a cent, any one of said sides being adapted to be set relatively to the longitudinal axis of the angular member, substantially as set forth.

5. The combination of a scale-beam, a poise, an angular member, indicating mechanism mounted on the poise and influenced by the movement of said angular member, a plate or arm carried by the scale-beam, and provided with a series of price-per-pound graduations, a pointer carried by the angular member and adapted to be set opposite any of said graduations, and a rotatable setting member adapted to be set at any one of its sides against the said arm or plate on the scale-beam, the axis of said setting member being coincident with the pointer on the angular member, substantially as set forth.

6. The combination of a scale-beam, a poise, an angular member, indicating mechanism arranged on the poise and influenced by said angular member, an arm projecting from the scale-beam and provided with a series of teeth, and having a series of price-per-pound graduations, a pointer on the angular member, and a rotatable toothed setting member adapted to be set in contact with the series of teeth on the arm of the scale-beam, substantially as set forth.

7. The combination of a scale-beam, a poise, an angular member, indicating mechanism carried by the poise and influenced by the angular member, a rotatable setting member adapted to be set against an arm attached to

the scale-beam, and a spring-pressed finger-piece for shifting said setting member, substantially as set forth.

8. The herein-described setting member
5 having sides arranged at an angle to each other, each side being provided with a series of teeth, one series being offset or shifted from the center of the setting member, relatively to the other series, substantially as set
10 forth.

9. The herein-described rectangular setting member having a series of teeth on each of its four sides, each series of teeth being off-

set or shifted from the center of the setting member relatively to each other, so that the
15 series of teeth on the four sides are shifted at determined and differing distances from the diameters of the setting member, substantially as set forth.

In testimony that I claim the foregoing as
20 my invention I have signed my name in presence of two subscribing witnesses.

FREDERICK D. FOSTER.

Witnesses:

GEO. L. WHEELOCK,
JAMES BEVERIDGE.