No. 682,910. Patented Sept. 17, 1901.

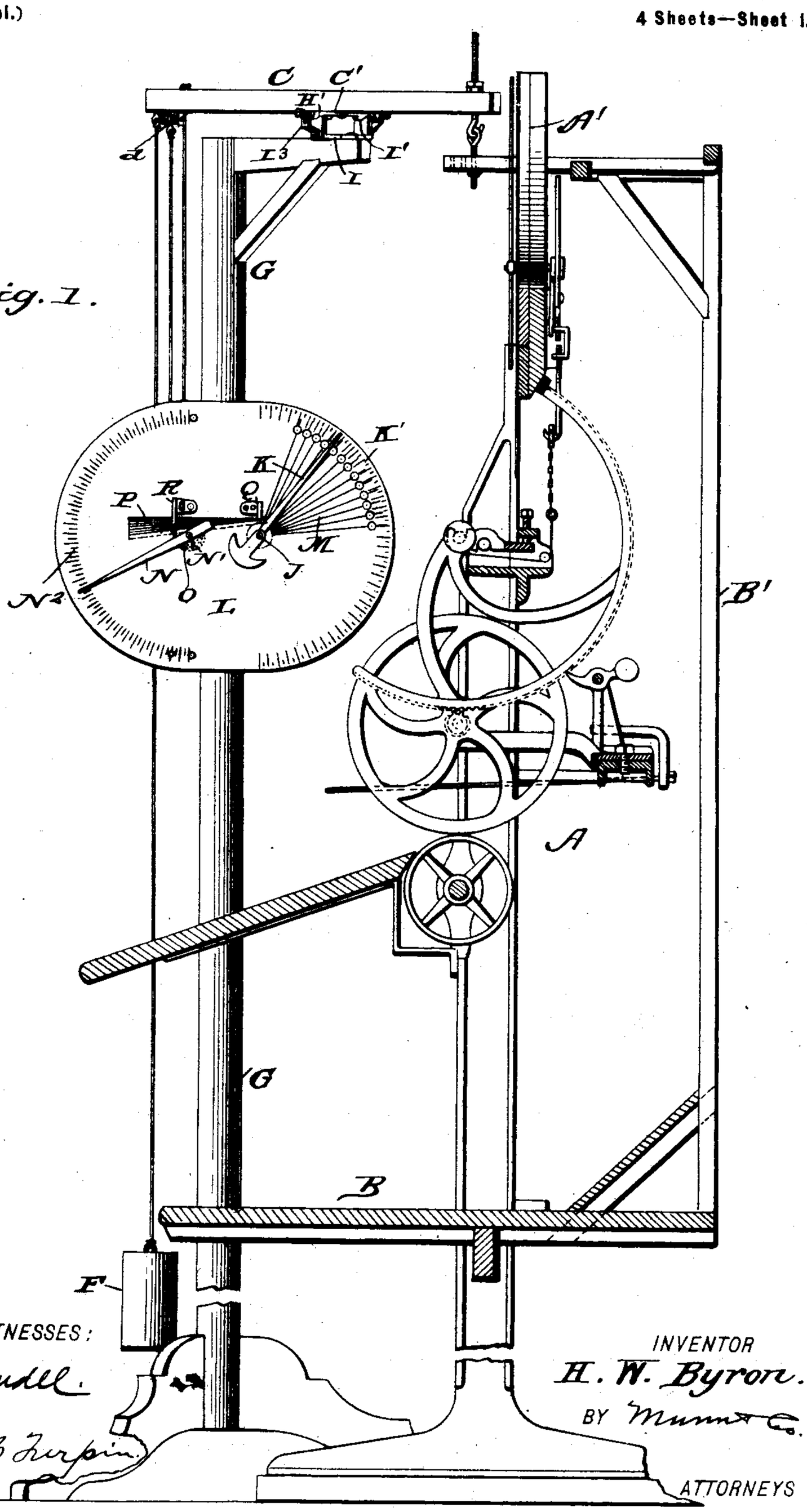
H. W. BYRON.

COMPUTING APPARATUS.

(Application filed May 15, 1900.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

M. D. Blondell.

Percy B. Turpin.

INVENTOR

H. W. Byron.

BY Munn & Co.

ATTORNEYS

No. 682,910. Patented Sept. 17, 1901.

H. W. BYRON.

COMPUTING APPARATUS.

(Application filed May 15, 1900.)

(No Model.) 4 Sheets—Sheet 2.

Fig. 2.

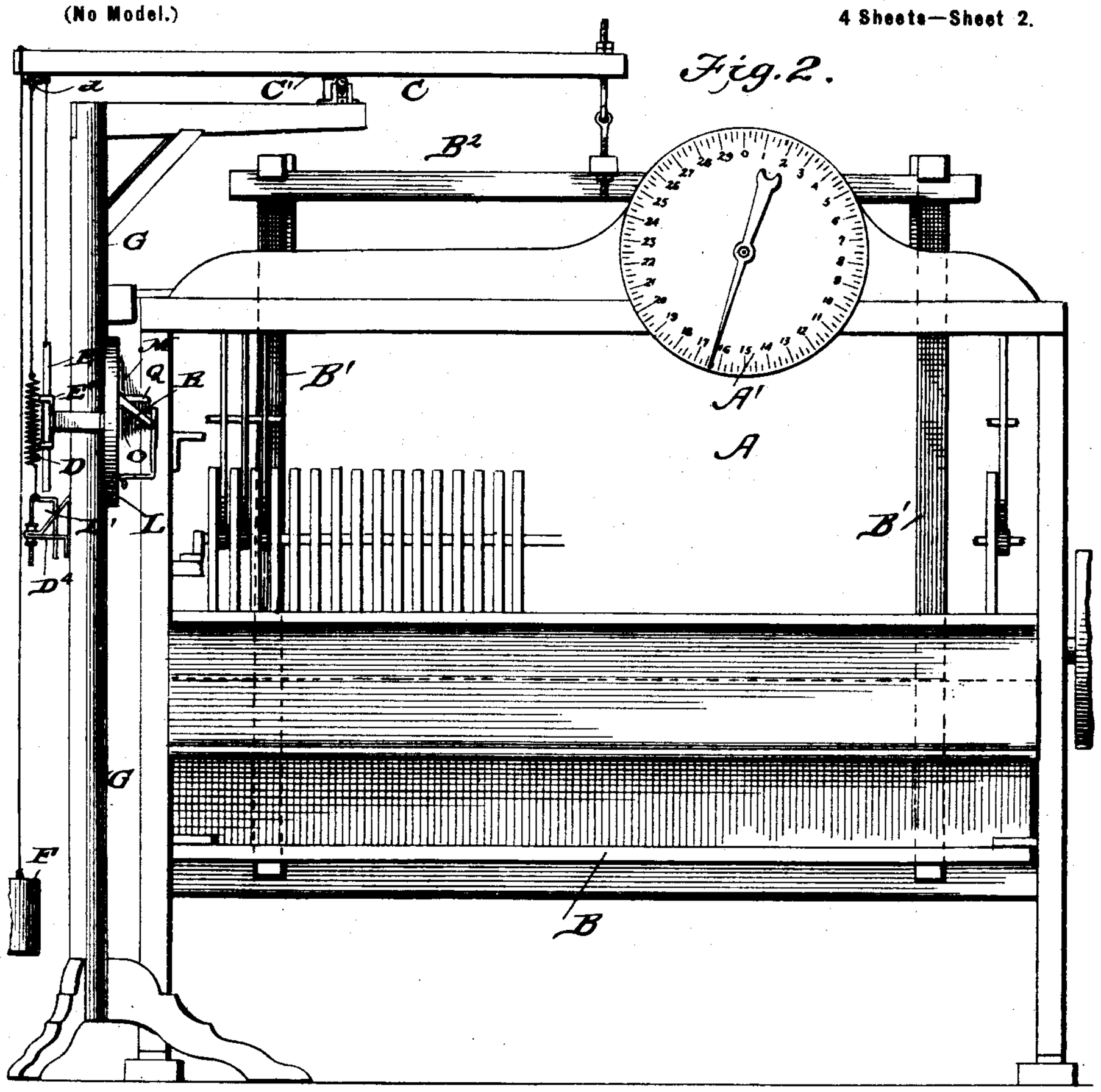
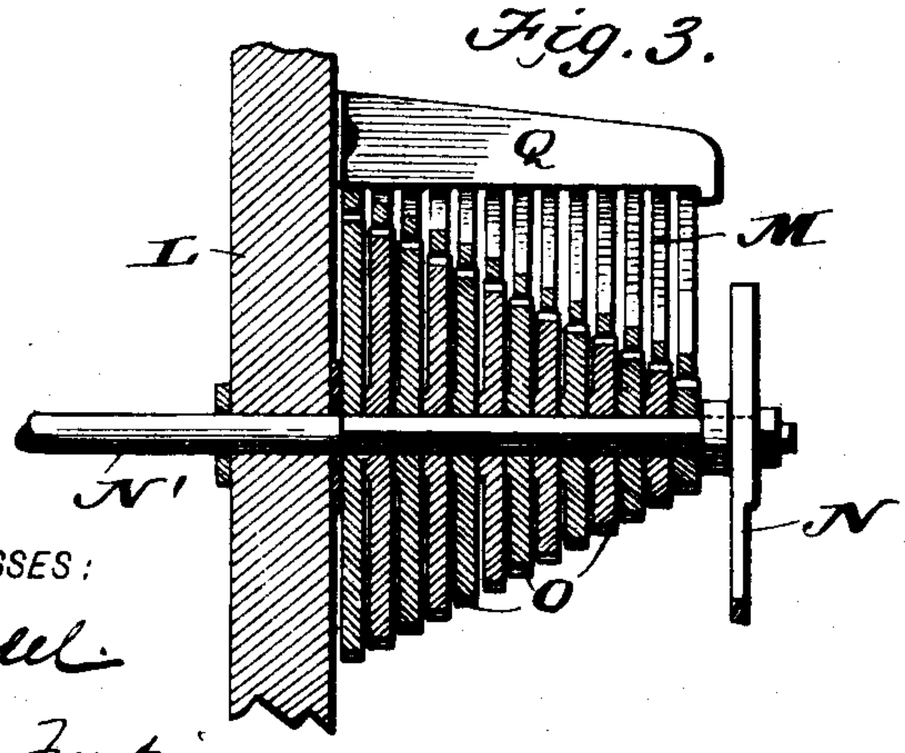


Fig. 3.



WITNESSES:

M. A. Blondel

Percy B. Turpin

INVENTOR

H. W. Byron.

BY Munn & Co.

ATTORNEYS

No. 682,910. Patented Sept. 17, 1901.

H. W. BYRON.

COMPUTING APPARATUS.

(Application filed May 15, 1900.)

(No Model.) 4 Sheets—Sheet 3.

Fig. 4

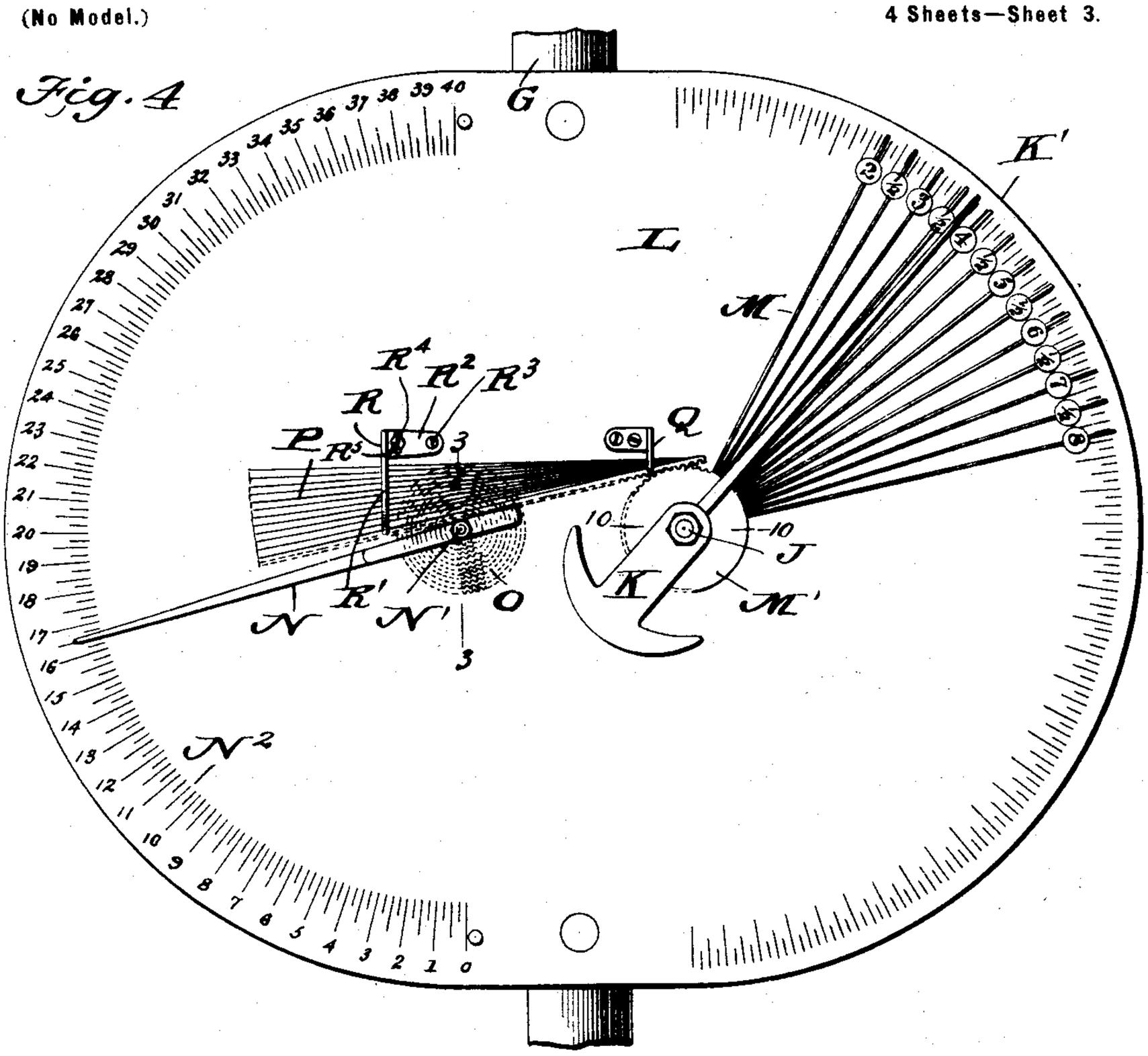
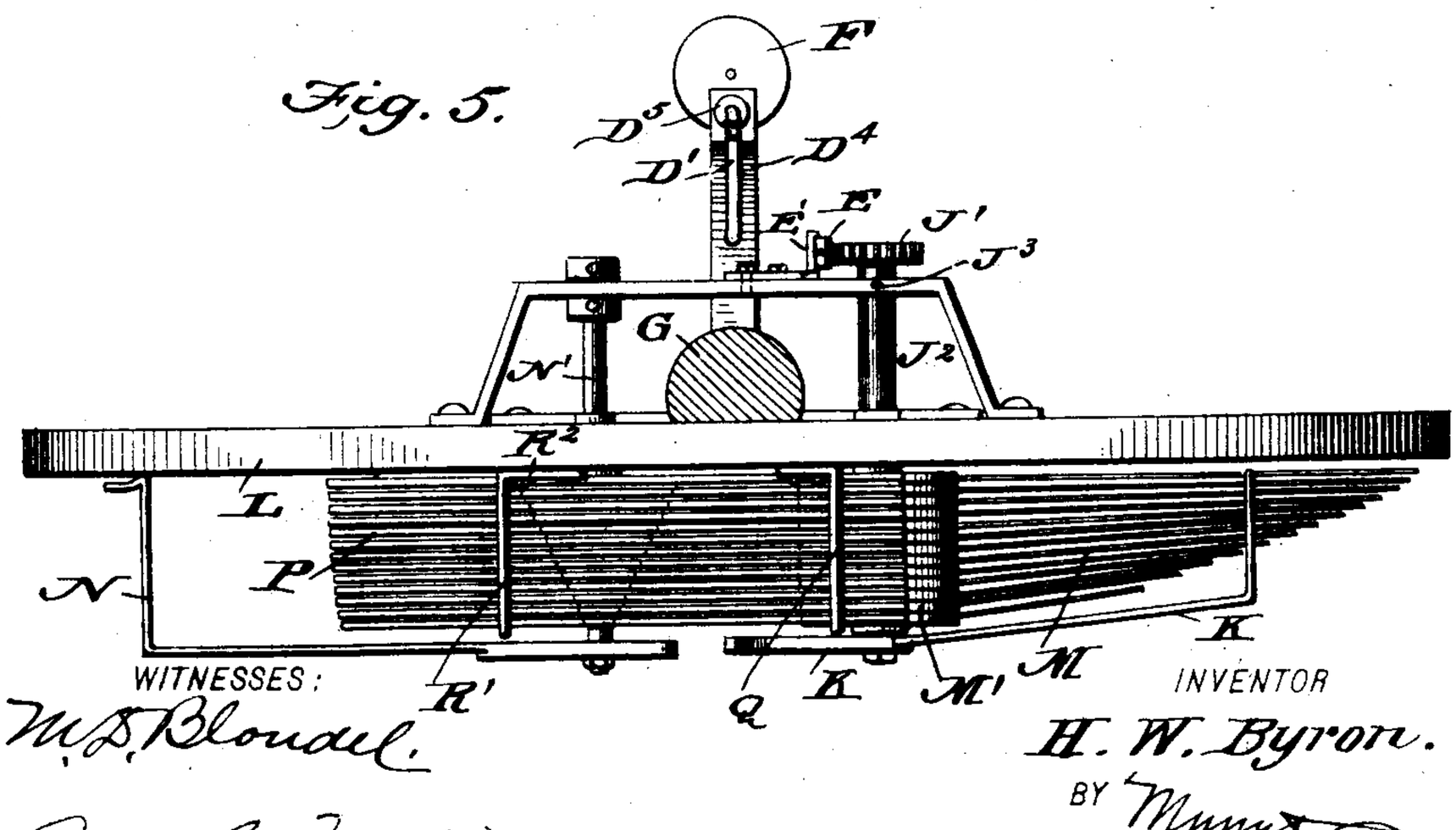


Fig. 5.



WITNESSES:
W. D. Bloundel.
Percy B. Turpin

INVENTOR
H. W. Byron.
BY Munn & Co.
ATTORNEYS

No. 682,910. Patented Sept. 17, 1901.

H. W. BYRON.

COMPUTING APPARATUS.

(Application filed May 15, 1900.)

(No Model.) 4 Sheets—Sheet 4.

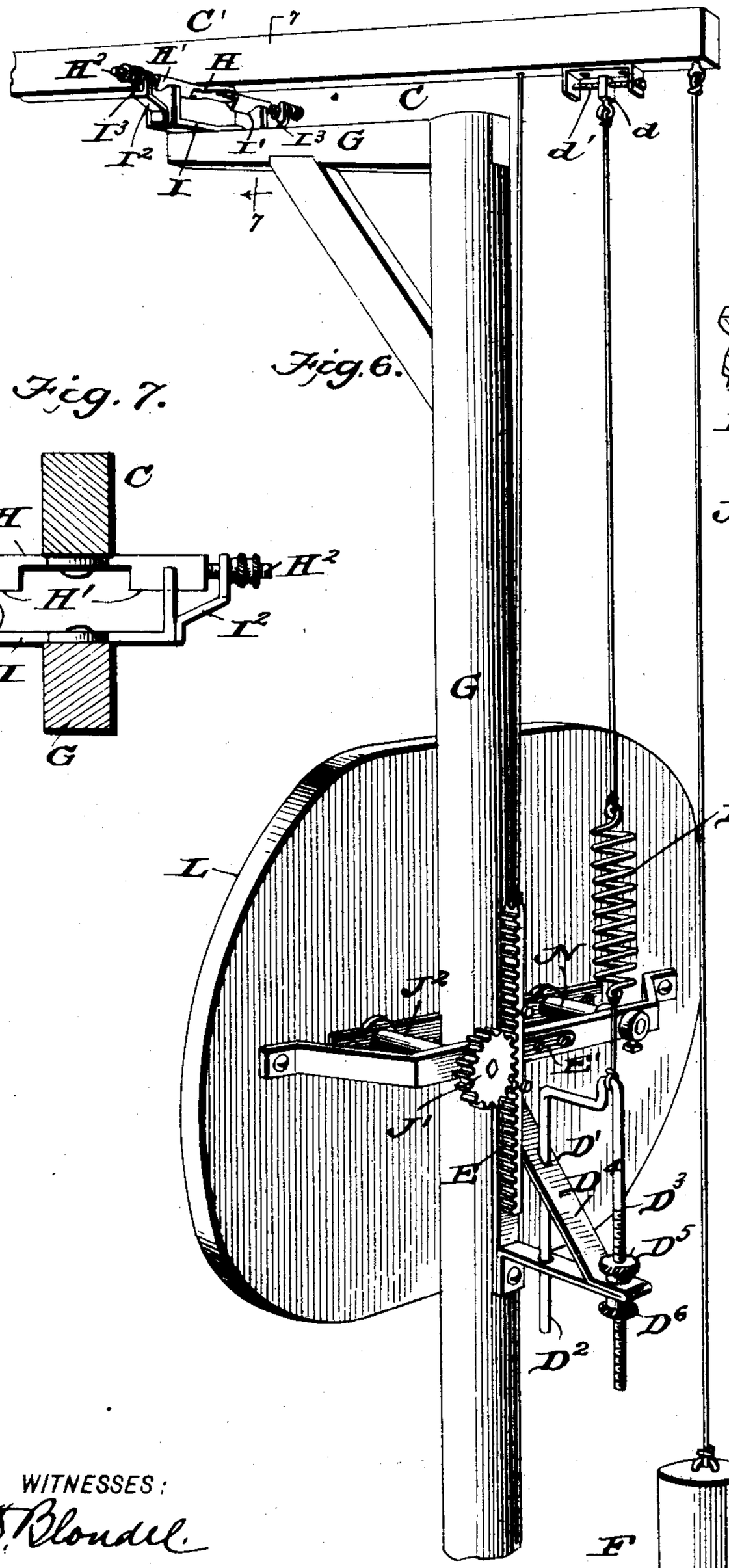


Fig. 6.

Fig. 7.

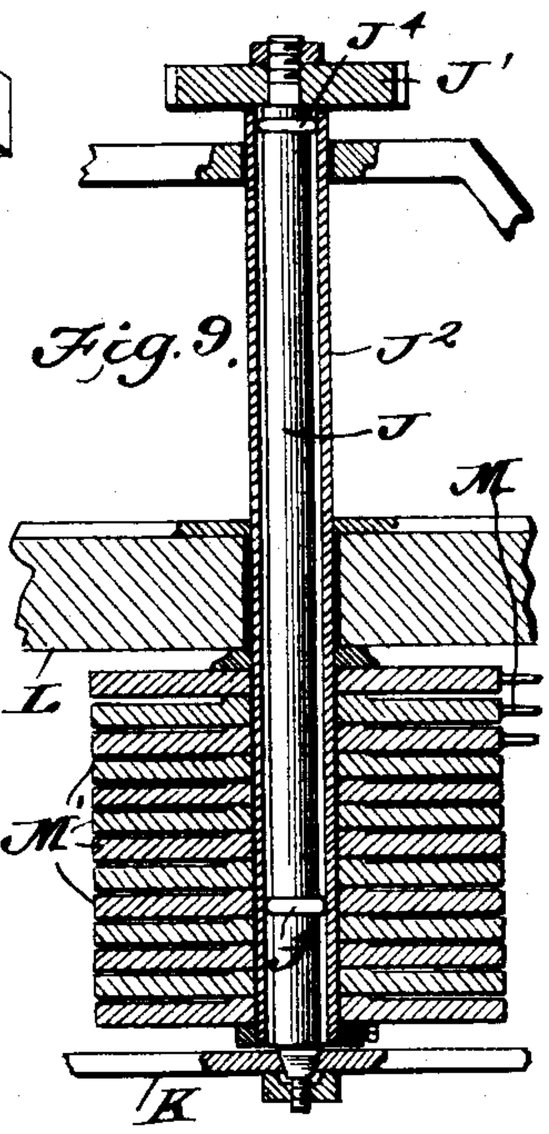


Fig. 9.

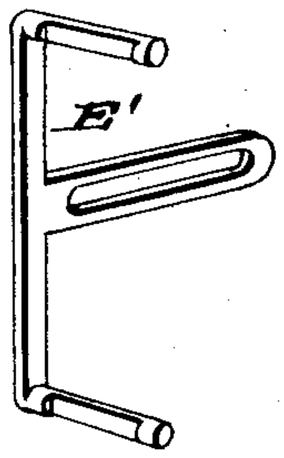


Fig. 8.

WITNESSES:

M. S. Blondell.

Percy B. Turpin.

INVENTOR

H. W. Byron.

BY Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

HAROLD W. BYRON, OF WILLIAMSPORT, MARYLAND.

COMPUTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 682,910, dated September 17, 1901.

Application filed May 15, 1900. Serial No. 16,733. (No model.)

To all whom it may concern:

Be it known that I, HAROLD W. BYRON, residing at Williamsport, in the county of Washington and State of Maryland, have invented a new and Improved Computing Apparatus, of which the following is a specification.

My invention is an apparatus designed especially for computing the weight per foot of leather, and has for an object, among others, to so combine a device for measuring the total area of the leather with a weighing-platform arranged in position to receive the leather discharged from such device and a computing device having means operated by such platform and hand-operated means arranged for coöperation with the platform-operating means that the computation may be quickly, accurately, and practically automatically effected.

The invention consists in certain novel constructions and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a vertical cross-section of an apparatus embodying my invention. Fig. 2 is a front view thereof, parts of the measuring device being broken away and others being omitted. Fig. 3 is a detail cross-section on about line 3 3 of Fig. 4. Fig. 4 is a detail face view of the computing device. Fig. 5 is a plan view of the same. Fig. 6 is a rear perspective view of the computing device and part of the scale-beam. Fig. 7 is a detail view of the bearing of the scale-beam, and Fig. 8 is a detail view of the guide for the rack-bar. Fig. 9 is a cross-section on about line 9 9 of Fig. 5.

My apparatus, as shown, includes a machine or measuring device A for determining the area of a sheet of leather or the like. The machine A, as shown, is of the type commonly known as the "Sawyer" measuring-machine and is shown and described in Patent No. 286,078, granted to W. A. Sawyer, dated October 2, 1883, and such machine need not be described in detail herein. It may be said that the machine includes a dial A′, on which is represented the area, by feet, of the piece of leather which has been passed through the machine. After being measured by the machine A the leather is discharged onto the platform B, which is arranged below the discharge of the machine A, so the leather will be delivered automatically to the platform B from the machine A and will not require any separate handling. This platform B is a scale-platform and operates weighing devices which coöperate in effecting the computation, as presently described. In the construction shown the platform B is supported at its rear edge by posts or hangers B′ from a top bar B^2, which is supened from one arm of a scale-beam C, which pivots between its ends at C′, and has its other arm connected with a spring D and with a rack E and suitably counterpoised by a weight F, the latter serving to relieve the spring D of most of the weight of the scale-beam. The spring D resists the tilting of the beam C by the weight on the platform B, and the spring is secured to an adjustable connection D′, which has arms D^2 and D^3 passed through a suitable guide-bracket D^4 on the standard G and secured by nuts D^5 and D^6, so the spring can be conveniently adjusted without twisting the same. By this means the spring can be adjusted to secure the accurate weighing by the scale devices, which will be more fully described hereinafter. In connecting the spring D with the beam C, I prefer to provide for a further adjustment by connecting the spring with a nut or threaded block *d* on a screw-shaft *d′*, journaled on a suitable support and extended lengthwise the beam, so it can be turned to set the connection of the spring toward or from the pivot of the beam.

In pivoting the beam C at C′, I prefer to secure to its under side a cross-bar H, having knife-edges H′ and laterally-extending threaded studs H^2. The knife-edges H′ rest in bearings I′ in a bracket I, suitably supported from the standard G, and such bracket has arms I^2, slotted at I^3 for the passage of the studs H^2. This construction is shown in Figs. 6 and 7 and permits the convenient adjustment of the beam C from side to side, as may be desired.

The rack E is toothed and meshed with a pinion J′ on a shaft J, which carries at its front end an indicator K, whose point may register along a graduation K′, and thus indicate the total weight of the leather discharged from the measuring device A onto the platform B. In addition to this the indicator K, which is automatically operated by the discharge of the leather onto the platform B, coöperates with hand-operated devices in

effecting a computation of the weight per ounces per square foot of the leather whose area has previously been determined by the measuring device A. To this end I provide a dial-plate L, through which the shaft J passes, and support on said shaft J in advance of the plate L a series of hands M, corresponding to the hands 18 of my former patent, No. 584,458, and these hands are fixed to gears M′, which are supported on a sleeve J^2, encircling on the shaft J, preferably in advance of the plate L, and are movable independently of each other and of the shaft J, so the hands M can be spread in the manner and for the purpose described in my former patent, No. 584,458, before referred to. In my present apparatus I employ a somewhat-different mechanism for spreading the hands M. This includes an indicator or hand N, fixed to a shaft N′ and registering along the scale N^2, numbered to represent the area of the leather sheet which has been previously determined by the measuring device A. On the shaft N′ of the indicator N, I secure a conical series of gears O, which are meshed by rack-bars P, suitably guided, and which also mesh with the several gears M′ of the hands M. The rack-bars P overlie the gears N′ and M′, so the movement of the hand M upward will throw the rack-bars P to the right and will thus operate to spread the hands M downward. To prevent the weight of the hand N from throwing the bars P back when such hand has been raised and released, I arrange the guide devices for the rack-bars P so they can be adjusted to bind frictionally upon the said bars to prevent any accidental movement thereof. This is effected by making one of the guides Q or R, preferably the latter, with a bar R′, which overlies the bars P and has a plate R^2 pivoted at R^3 and slotted at R^4 to receive a screw R^5, so the guide R can be tilted on its pivot R^3 to cause it to bind to any desired extent on the bars P and then be secured in such adjustment.

The operation of my invention is quite simple. The leather is discharged from the measuring device A onto the platform B, and the area of the leather is determined and indicated on the indicator A′ of the said device A. At the same time the weight of the leather operated through the means before described upon the indicator or hand K will move the latter downward to an extent corresponding with the total weight of the leather, which weight may be determined, if desired, by means of a suitable graduation at K′ upon the plate L. If now the hand N be moved along its graduations N^2 to the point corresponding with the area indicated on the dial A′, it will operate to spread the hands M to an extent corresponding to the area of the leather. Then the hand M nearest to the hand K will indicate the weight per ounces of the leather which has been measured in the device A. It will be noticed there is a relation between the total weight of the leather, the area thereof, and the weight per square foot of same and that the hand N through the gears O and racks P tends to spread the hands M according to the area of the leather while the total weight of the leather sets the hand K along the spread hands M to the desired point. I usually mark the hands M in halves from "2" up to "8" and employ thirteen of such hands, as leather usually ranges from two ounces to eight ounces per square foot, and I am thereby able to determine the weight per square foot by half-ounces.

While the machine is especially designed for computing the weight per ounce of leather per square foot, it is manifest that it may be employed for measuring other commodities in sheets and for determining the weight of any other fractional portion of such sheet when the apparatus is properly proportioned for such purpose. Therefore in referring to the fractional portions as "square feet" I wish to be understood that such term is used in a measure for purposes of description and that a variation thereof would not involve any departure from the principles of my invention.

The rack-bar E is guided vertically by a guide-bracket E′, (shown in Fig. 5 and in detail in Fig. 8,) and in operation the bar E will be drawn upward by the action of the article being weighed upon the scale-platform and will drop by reason of its own gravity when such article is removed.

The sleeve J^2 encircles the shaft J and forms an axle on which the gears M′ turn, as will be understood from Fig. 9. The sleeve is held from turning by a screw J^3, (see Fig. 5,) and the shaft J turns within the sleeve J^2 and has upon it annular beads J^4 for reducing the friction.

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

1. In a computing apparatus substantially as described, the combination of a series of spreading devices, gear-wheels in connection with each of said devices, a series of gears corresponding to said gear-wheels, means for operating said gears, rack-bars meshed with and connecting the said gears and gear-wheels, and brake devices operating upon the rack-bars.

2. In a computing apparatus substantially as described, the combination of a series of spreading-hands provided with gear-wheels, an indicating-hand registering along said spreading-hands, a series of gear-wheels opposite those of the spreading-hands, a series of rack-bars meshing with and connecting the opposite sets of gear-wheels, and a guide arranged to operate frictionally upon said bars whereby to prevent the accidental movement thereof, substantially as set forth.

HAROLD W. BYRON.

Witnesses:
C. R. McKINSTRY,
R. B. RITCHEY.