No. 659,835. Patented Oct. 16, 1900.

L. B. THOMAS.

CALCULATOR.

(Application filed May 19, 1900.)

(No Model.) 2 Sheets—Sheet 1.

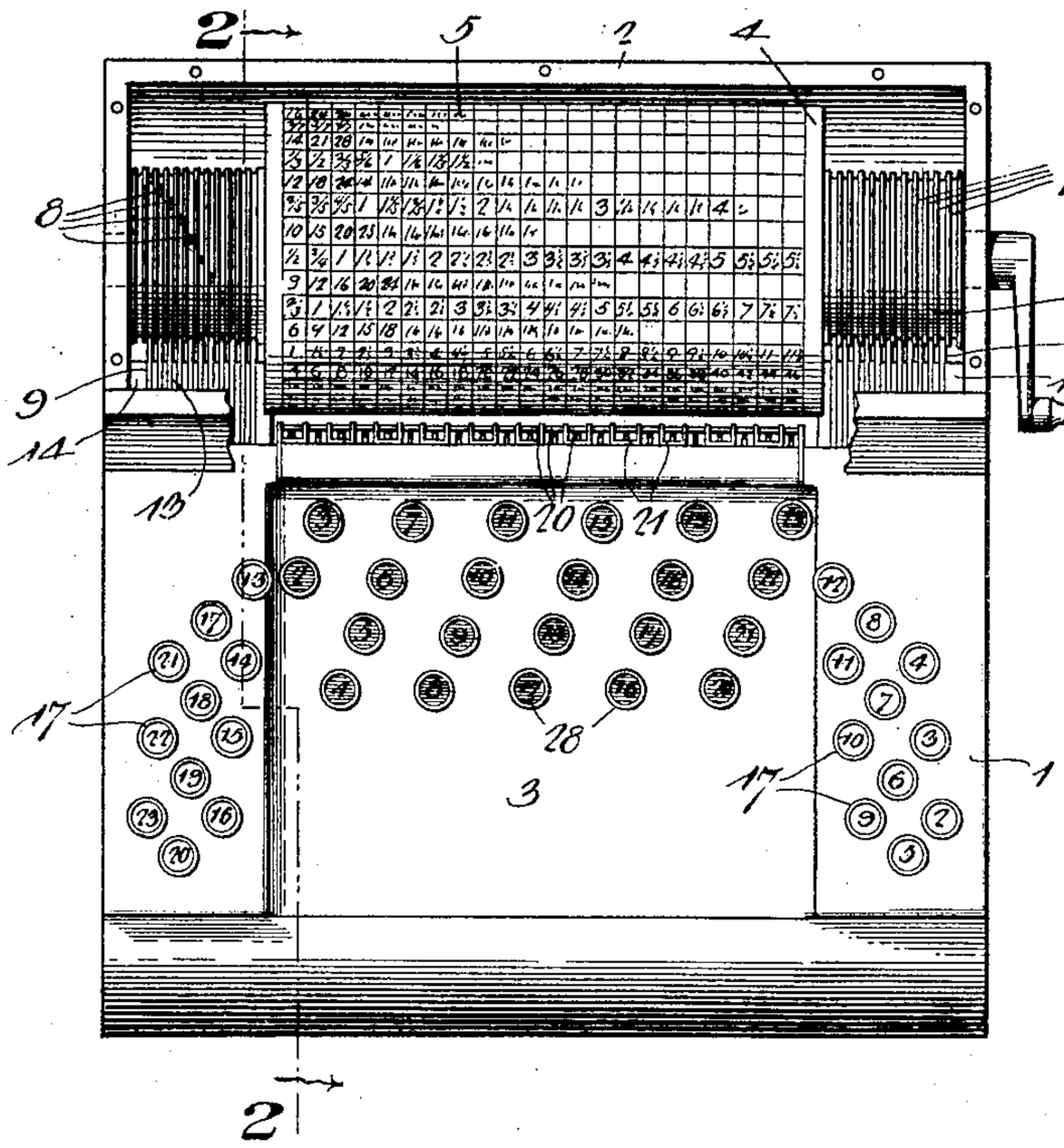
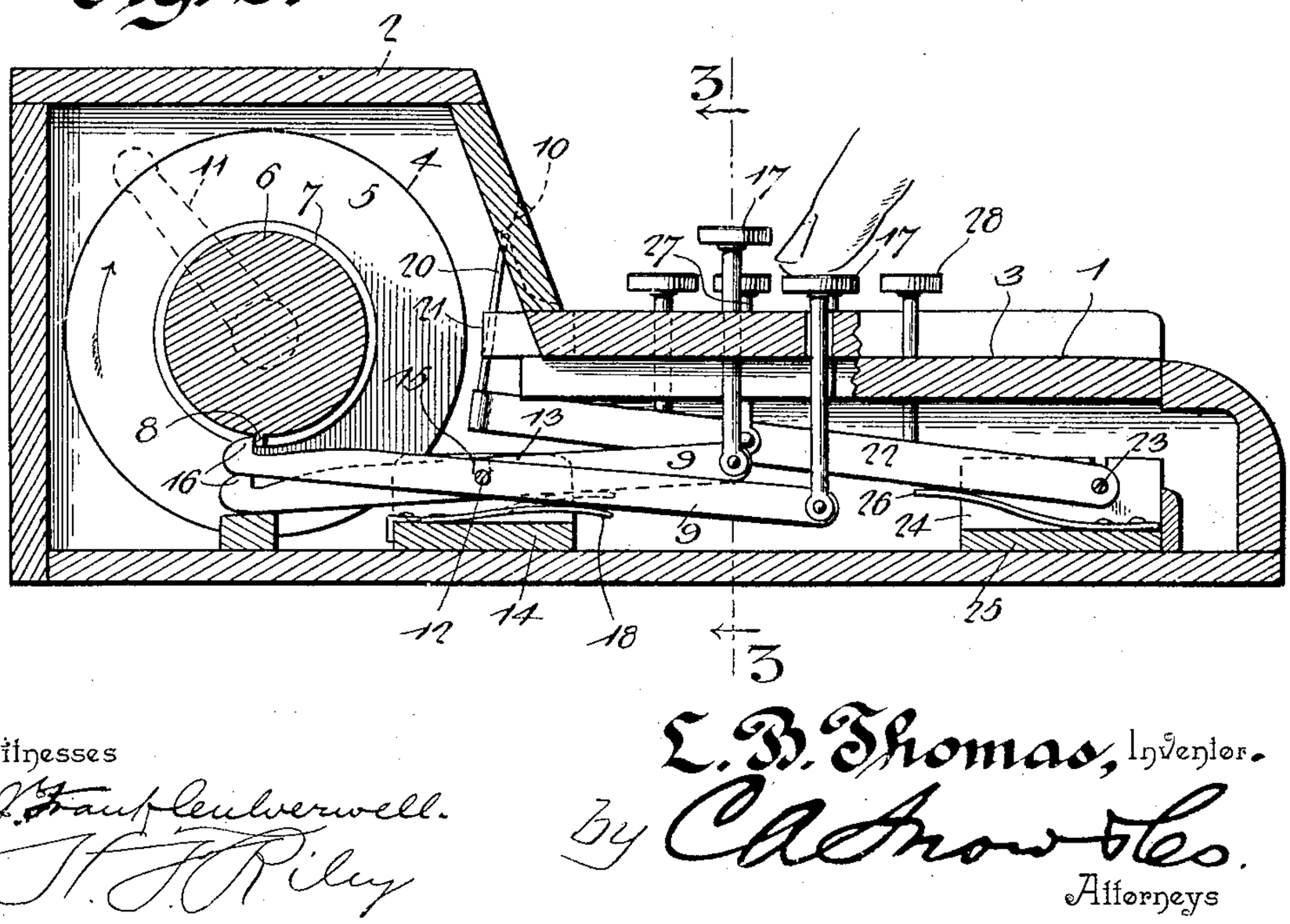


Fig. 1.

Fig. 2.



Witnesses
J. Stanfield Culverwell.
H. J. Riley

L. B. Thomas, Inventor.
By Church & Co.
Attorneys

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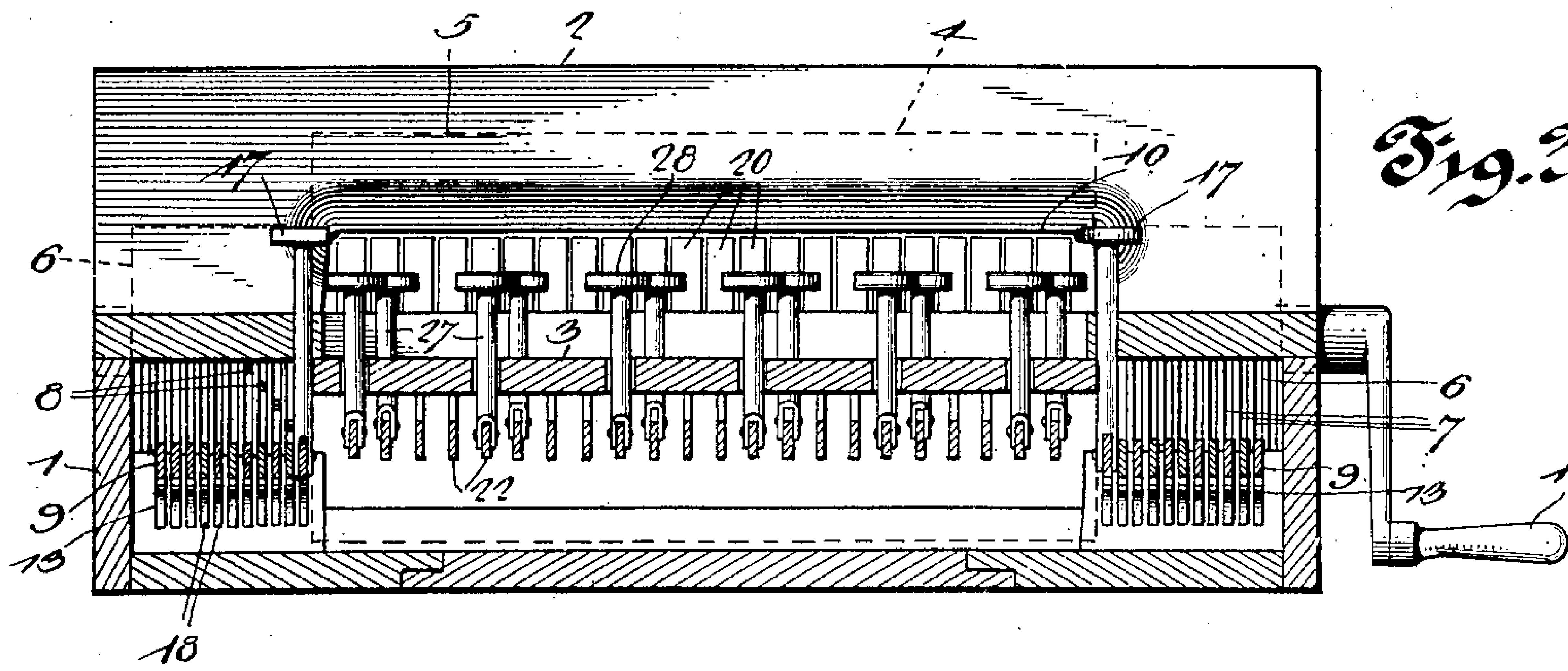

Fig.3.

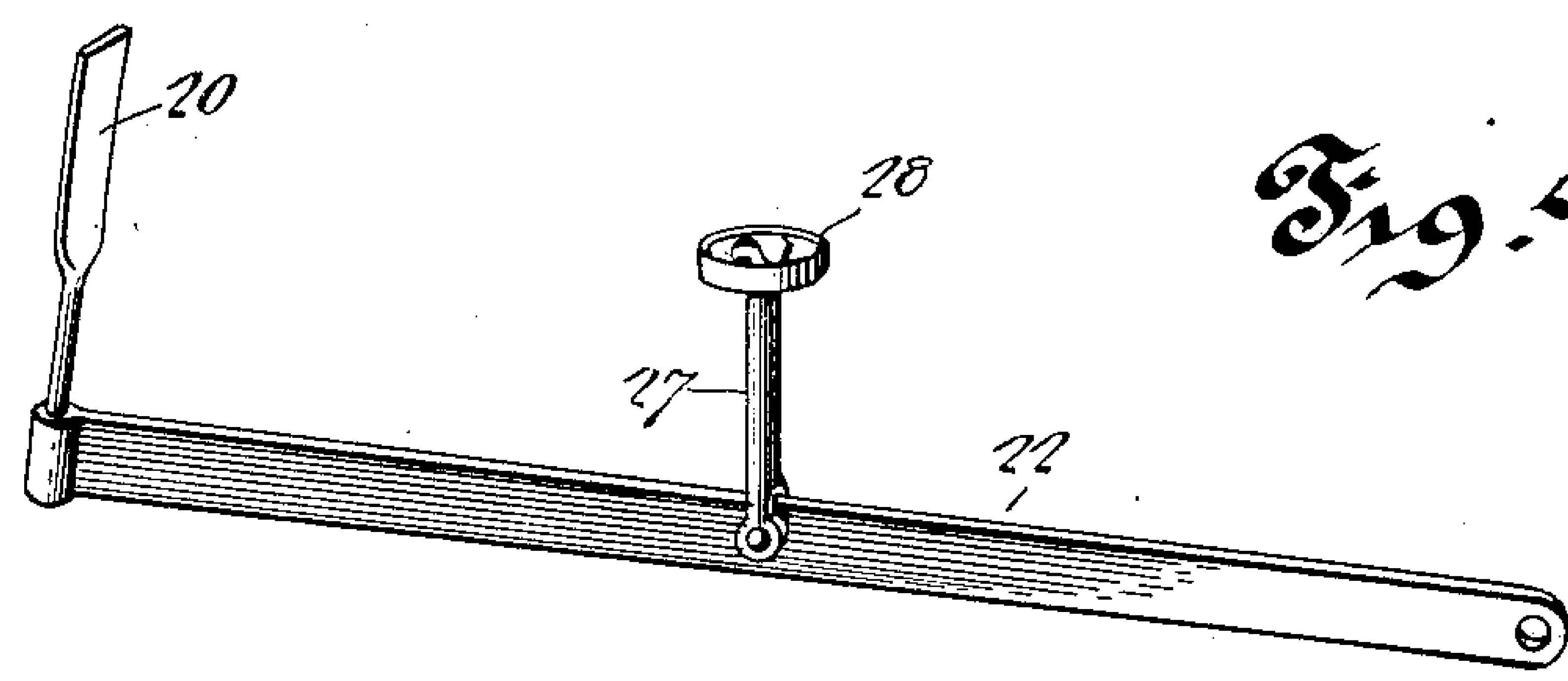

Fig.4.

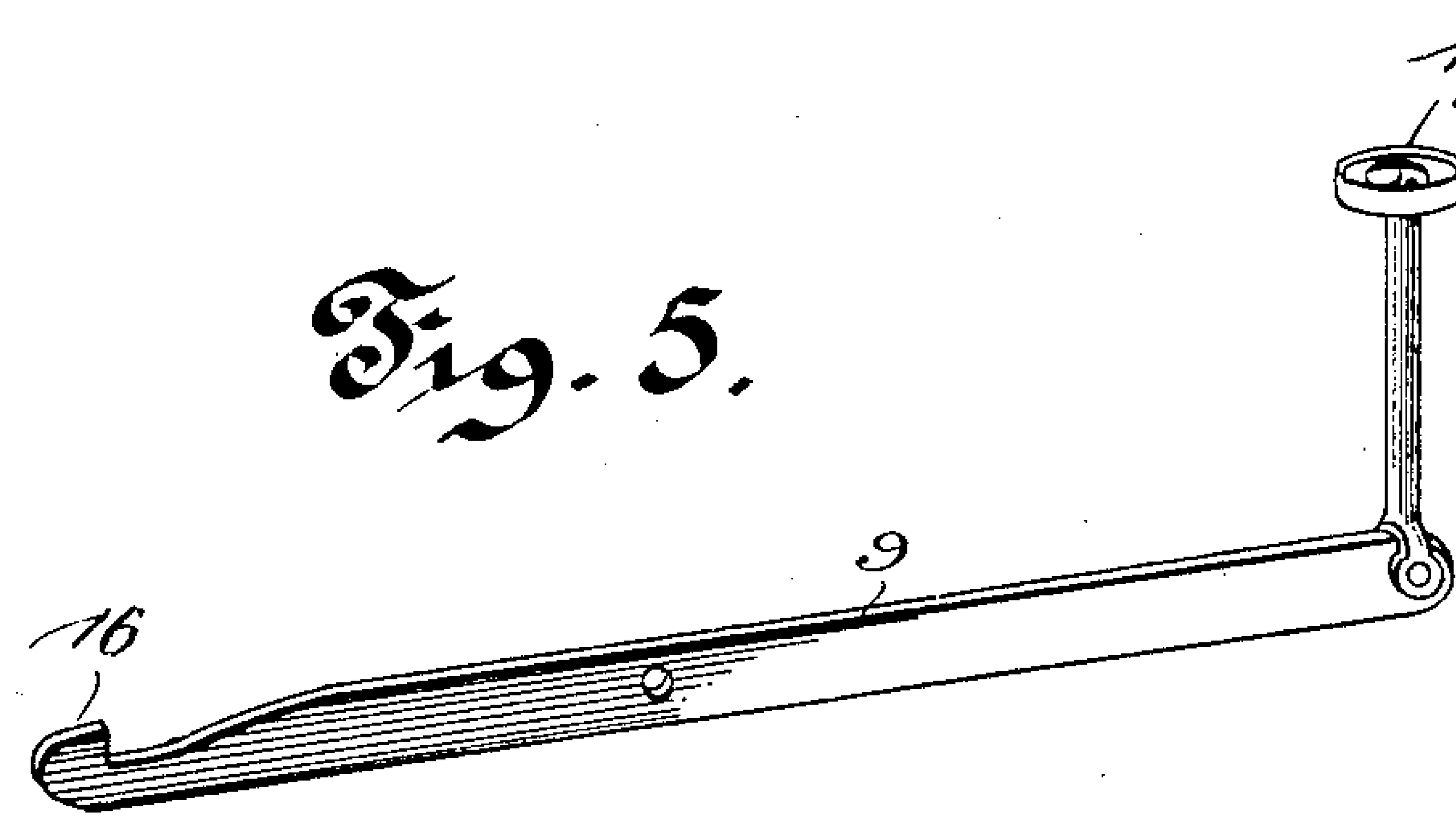

Fig. 5.

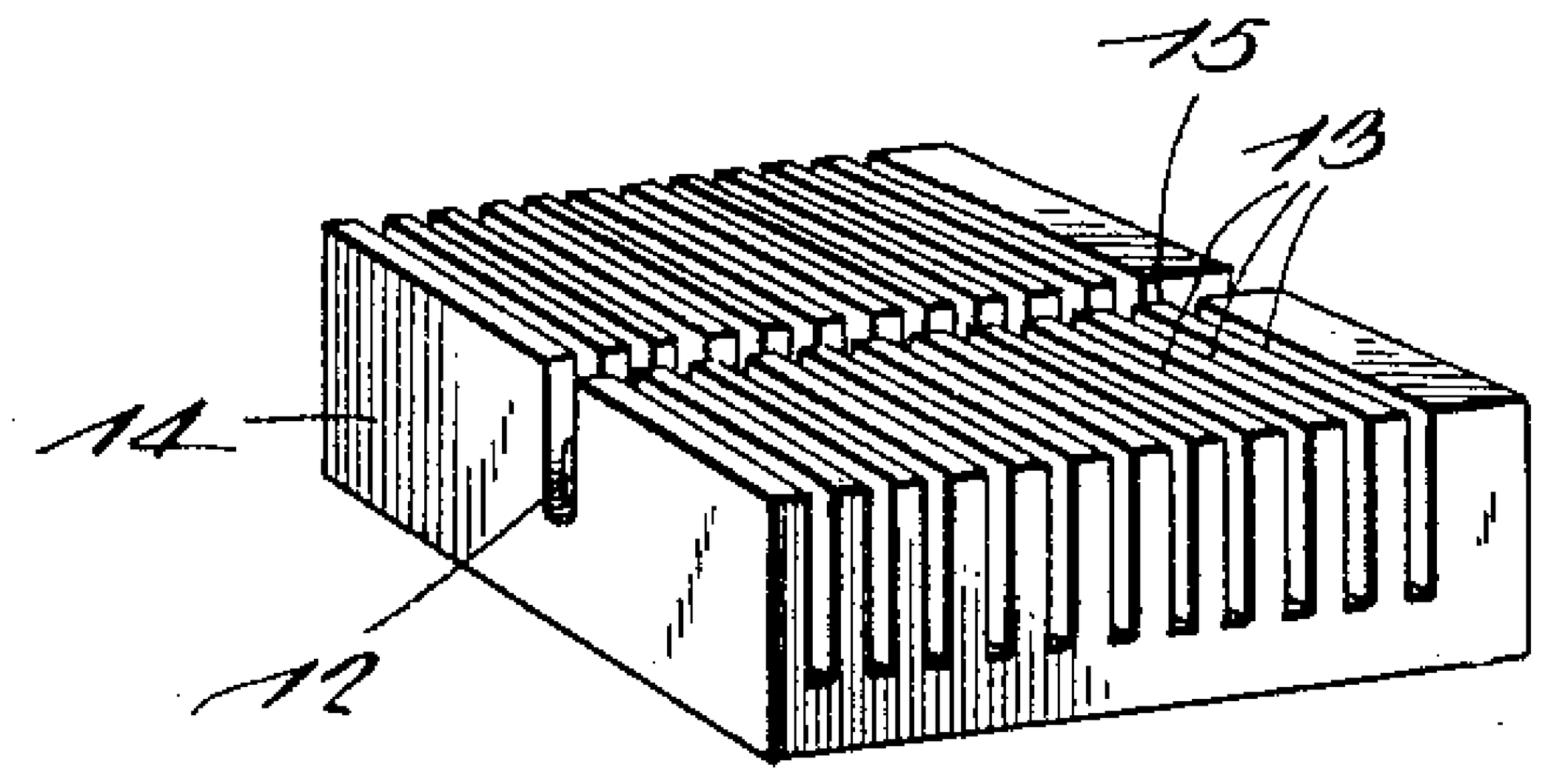

Fig.6.

Witnesses.
J. Frank Culverwell.
T. F. Riley

L. B. Thomas, Inventor
By C. A. Snow & Co. Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LUTHER B. THOMAS, OF RINGGOLD, LOUISIANA.

CALCULATOR.

SPECIFICATION forming part of Letters Patent No. 659,835, dated October 16, 1900.

Application filed May 19, 1900. Serial No. 17,286. (No model.)

To all whom it may concern:

Be it known that I, LUTHER B. THOMAS, a citizen of the United States, residing at Ringgold, in the parish of Bienville and State of Louisiana, have invented a new and useful Calculator, of which the following is a specification.

The invention relates to improvements in calculators.

The object of the present invention is to improve the construction of calculators and to provide a simple, inexpensive, and efficient one adapted to be readily operated to indicate the result of adding two numbers together, subtracting them, multiplying them, or dividing them, to obviate the necessity of the operator making such calculation.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a plan view of a calculator constructed in accordance with this invention, the top of the casing being removed. Fig. 2 is a vertical sectional view on line 2 2 of Fig. 1. Fig. 3 is a similar view on line 3 3 of Fig. 2. Figs. 4 and 5 are detail views of the key-levers. Fig. 6 is a detail perspective view of one of the grooved supports of the key-levers.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a casing having an enlarged or raised rear portion 2, extending above the front portion 3 and receiving a horizontal transversely-disposed roll 4, journaled in suitable bearings of the sides of the casing and having a large central portion 5 for bearing the calculations, as hereinafter explained, and provided with reduced end portions 6. The end portions or members 6 are provided with parallel annular grooves 7, and have stops 8, arranged within the grooves at different points around the periphery of the end portions or members 6 and corresponding with transverse rows of figures carried by the central portion of the roll, as clearly illustrated in Fig. 1 of the accompanying drawings, and these stops 8 are adapted to be engaged by setting-levers 9 to cause any set of the transverse rows of figures or other characters to be stopped opposite an aperture 10 of the casing.

The roll may be constructed of the desired diameter to suit the capacity of the calculator, and each set of transverse rows of figures corresponding with the stops may consist of numbers indicating addition, subtraction, multiplication, and division, or only one or more of such rows may be employed. The exposed portion of the roll is designed to bear all the information relating to two keys, whether such information consists only of the sum of two numbers or of the sum, the difference, the product, &c., and the size of the roll and the size of the numerals or other characters may be varied according to the amount of the information to be conveyed.

One of the journals of the transverse calculating-roll is provided with a crank-handle 11 for enabling it to be rotated in the direction of the arrow in Fig. 2 of the accompanying drawings to carry one of the stops 8 into engagement with one of the levers 9, as clearly shown in Fig. 2. The setting-levers are arranged at opposite sides of the casing, as clearly shown in Fig. 3, and they are fulcrumed between their ends on transverse rods 12 and are arranged within grooves 13 of supports 14, consisting of rectangular blocks grooved as shown in Fig. 6. The grooves 13 extend longitudinally of the casing, and the supports 14 are provided with centrally-arranged transverse grooves 15 for the reception of the rods upon which the setting-levers are fulcrumed. The rear ends of the setting-levers are provided with teeth 16, adapted to be thrown upward into the grooves of the roll by the depression of side keys 17, which bear numerals corresponding with the rows of figures of the roll. The levers 9 are normally held out of engagement with the annular grooves of the roll by springs 18, mounted within the grooves of the supports 14 and engaging the front portions of the levers, at the lower edges thereof, as clearly shown in Fig. 3. These springs 18 are secured at their rear ends to the supports 14 at the bottoms of the longitudinal grooves 13, and their front ends are free and bear against the said levers. The front ends of the levers are pivoted to the stems of the keys 17, and the casing is

provided at the top of the front portion with perforations for the reception of the said stems of the keys. The lower ends of the stems of the keys may be bifurcated, as illustrated in Fig. 5 of the accompanying drawings, or they may be constructed in any other suitable manner.

The sight-aperture 10 of the casing is normally closed or covered by a series of movable slides 20, consisting of arms mounted in suitable guides or ways 21 of the casing and carried by the rear ends of a set of centrally-arranged key-levers 22, fulcrumed at their front ends on a transverse rod 23. The front portions of the key-levers 22 are arranged in grooves 24 of a support 25 and are engaged by springs 26, which hold the slides normally in their closed position. The springs 26, which are arranged within the grooves of the support 25, are secured at their front ends to the bottoms of the grooves, and their rear ends, which are free, bear against the lower edges of the slide-operating levers, in rear of the pivots thereof. The slide-carrying levers are pivoted between their ends to the lower terminals of stems 27 of a series of centrally-arranged keys 28, located at the front portion of the casing between the side keys, as clearly illustrated in Fig. 1 of the accompanying drawings.

When it is desired to find the product of two numbers or their sum or their difference, or the number of times one number is contained within another, the setting-key bearing one of the numbers or elements of the calculation is depressed and the cylindrical roll is rotated to carry the corresponding stop into engagement with the tooth of the setting-lever, and thereby bring the set of transverse rows of numerals opposite the sight-aperture of the casing. The key of the slide-operating lever bearing the other number or element of the calculation is depressed to open the slide and expose a portion of the roll. The exposed portion of the roll is designed to bear all the calculations above explained, and these may be arranged in such order as to enable the operator to readily distinguish them. The slides and the movement thereof may be varied to suit the capacity of the roll.

The guides or ways 21, which are located at the bottom of the sight-aperture, are arranged in a transverse row and may consist of a series of flanged plates arranged at intervals and forming ways between them and between their flanges.

The capacity of the calculator may be increased by employing more than one roll, and a separate roll may be geared to the first roll and arranged above the same in conjunction with sight-apertures and keys for operating slides or plates for normally concealing said roll. Also instead of operating the roll by hand a spring-motor, electric motor, or any other suitable power may be employed for rotating it to set it preparatory to operating the keys for controlling the slides or plates of the sight-apertures.

It will be seen that the calculator is exceedingly simple and inexpensive in construction, that it is positive and reliable in operation, and that the roll and the annular-groove members may be varied in size to suit the capacity of the calculator. It will also be apparent that one or more rows of numerals may be provided to correspond with each of the stops and that such numerals may indicate the sum, difference, or products of two members or the quotient resulting from dividing one number by the other.

The capacity of the machine may be further increased by providing a movable sight-bar having a sight-aperture and by employing a shift-key for changing the position of the said sight-bar to admit of two numbers being placed on each of the keys, and when the sight-bar is in one position the corresponding numbers of the roll will be exposed by one set of numbers of the keys, and when the sight-bar is in its other position the exposed numbers of the roll will correspond with the other numbers of the keys.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention, such as varying the capacity of the calculator, printing the numerals in different colors for enabling the information to be readily ascertained at a glance, and the like.

What is claimed is—

1. In a calculator, the combination of a roll provided with a series of annular grooves and having stops arranged at different points, key-operated devices for engaging the stops for setting the roll, and a series of key-operated devices for exposing different portions of the roll, substantially as described.

2. In a calculator, the combination of a rotary roll provided with a series of annular grooves and having stops, key-operated levers arranged to engage the stops to set the roll, and key-operated devices for exposing different portions of the roll, substantially as described.

3. In a calculator, the combination of a casing having a sight-aperture, a rotary roll, stops carried by the roll and arranged at intervals, key-operated devices for engaging the stops to set the roll, a series of movable slides normally covering the sight-aperture, and keys connected with and adapted to actuate the slides to uncover portions of the roll, substantially as described.

4. In a calculator, the combination of a casing having a sight-aperture, a roll, means for engaging and holding the roll, a series of movable slides normally covering the sight-aperture, a series of levers connected with and adapted to move the slides to open and close the same, and keys connected with the levers, substantially as described.

5. In a calculator, the combination of a casing having a sight-aperture and provided thereat with ways or guides, a roll, means for operating the roll, a series of slides mounted in the guides or ways and normally covering the sight-aperture, spring-actuated keys connected with the slide, and key-operated devices for limiting the rotation of the roll to set the same, substantially as described.

6. In a calculator, the combination of a casing having a sight-aperture, a rotary roll provided with annular grooves and having stops therein, key-operated setting-levers arranged to extend into the groove for engaging the stops, a series of movable slides normally covering the sight-aperture and key-operated levers connected with the slides, substantially as described.

7. In a calculator, the combination of a casing having a sight-aperture, a roll provided with reduced portions having annular grooves, said reduced portions being also provided with slots located in the grooves, a device located at one end of the roll for rotating the same, setting-levers arranged adjacent to the reduced portions of the roll and provided with means for engaging the stops, a series of vertically-movable slides normally covering the sight-aperture and depressible key-operated levers carrying the slides, substantially as described.

8. In a calculator, the combination of a casing, a roll, setting-levers for engaging the roll, slides adapted to be operated to expose a portion of the roll, levers connected with the slides, and the grooved supports receiving the levers, substantially as described.

9. In a calculator, the combination of a casing having a central sight-aperture, a roll provided at its ends with annular grooves and having stops therein, the side supports provided with grooves, the setting-levers located at opposite sides of the casing and fulcrumed in the grooves of the said supports, the rear ends of the setting-levers being adapted to engage the said stops, keys connected with the front ends of the setting-levers, slides normally covering the aperture, a central support provided with grooves, levers connected with the slides and fulcrumed at their front ends in the grooves of the central support, keys connected with the central levers, at points between the ends thereof, and springs for engaging the levers, substantially as described.

10. In a calculator, the combination of a roll provided with a series of stops arranged at intervals, key-operated devices for engaging the stops for setting the roll, and a series of devices for exposing different portions of the roll, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LUTHER B. THOMAS.

Witnesses:

W. F. BOOTH,

Z. G. PAGE.