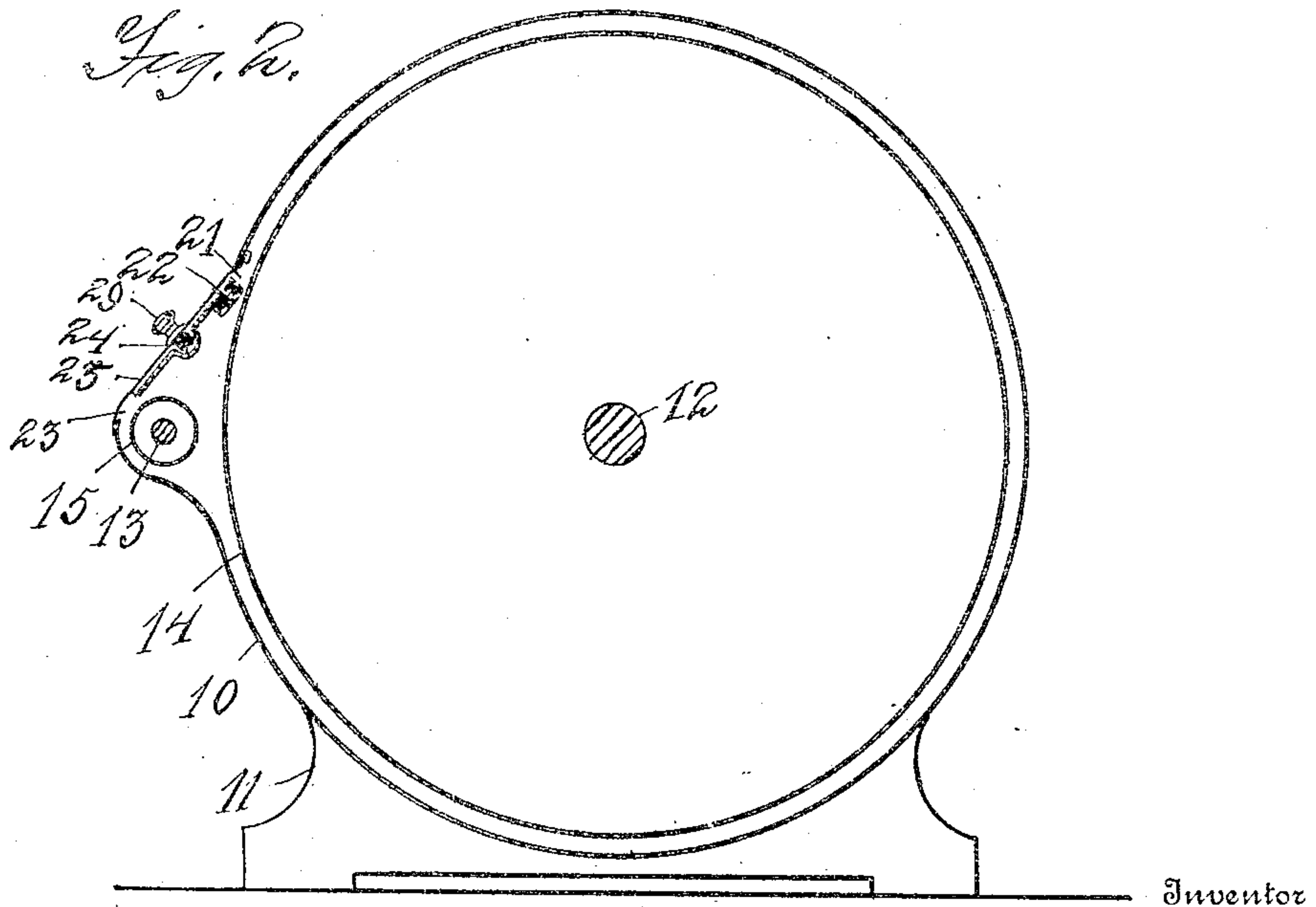
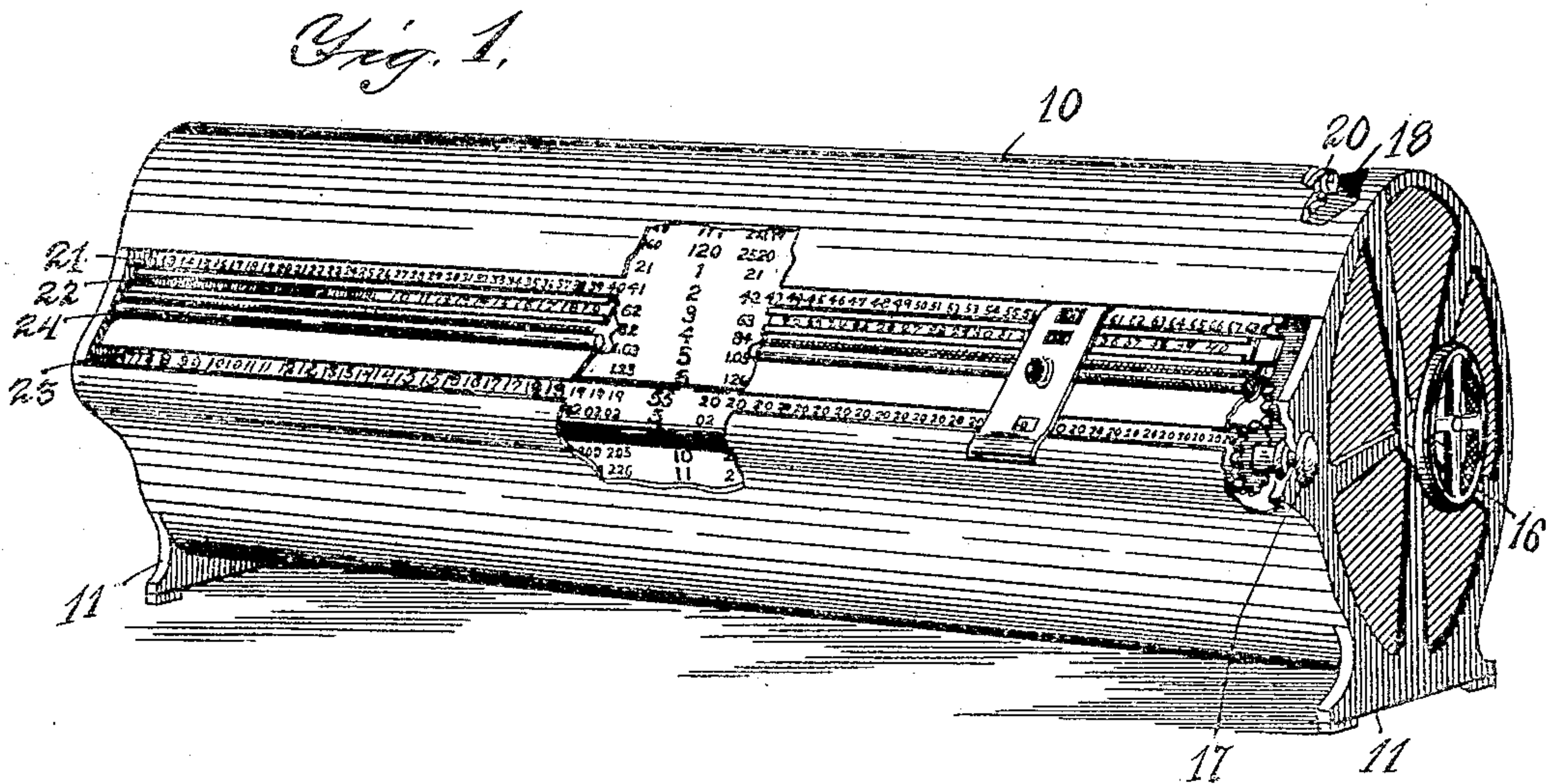


No. 879,204.

PATENTED FEB. 18, 1908.

C. J. SMITH.
CALCULATING MACHINE.
APPLICATION FILED APR. 1, 1907.

2 SHEETS—SHEET 1.



Inventor

Chester J. Smith

Witnesses

J. A. Ellsworth,
Att. (Hill)

By *S. Arthur Baldwin*

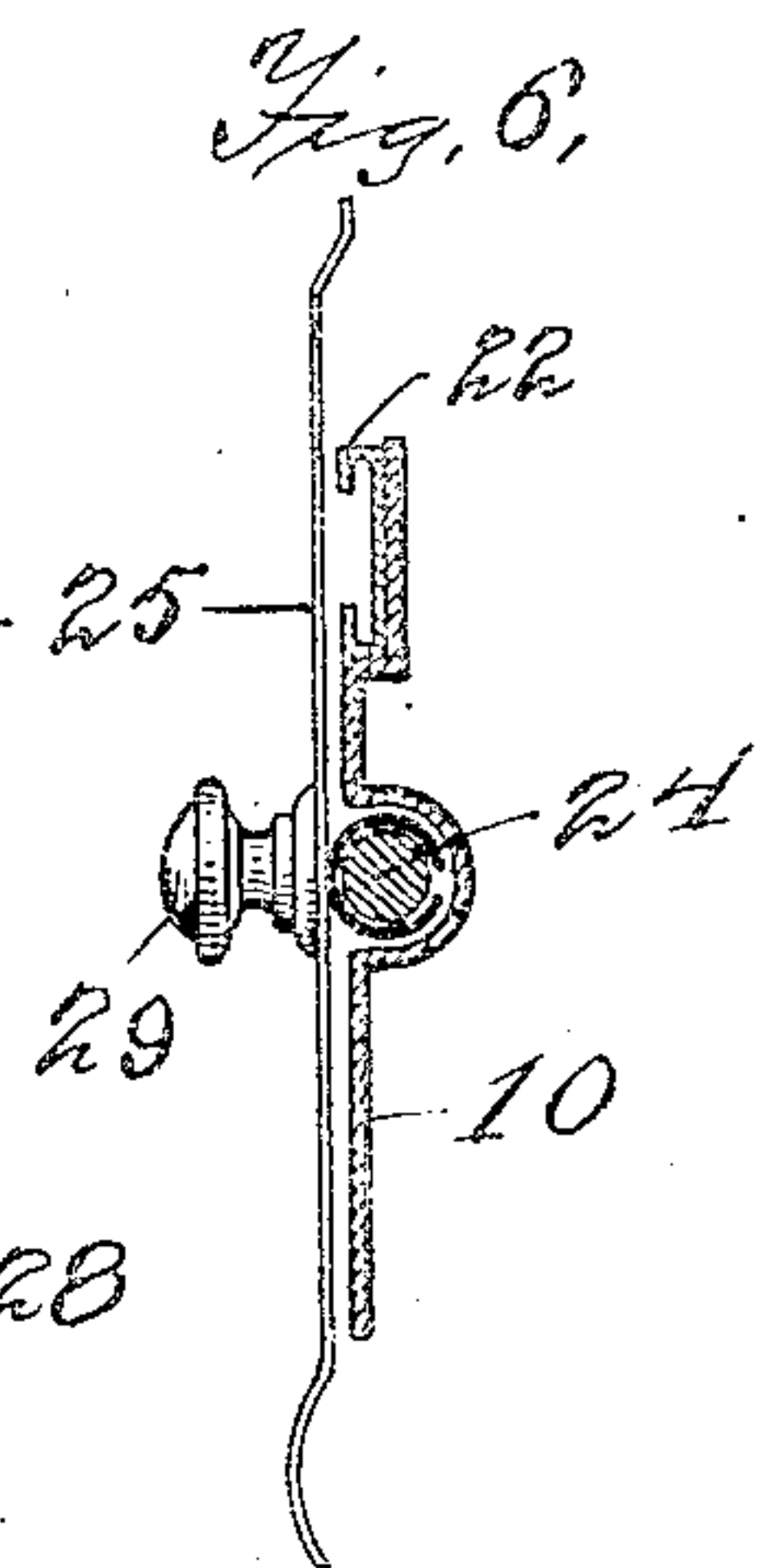
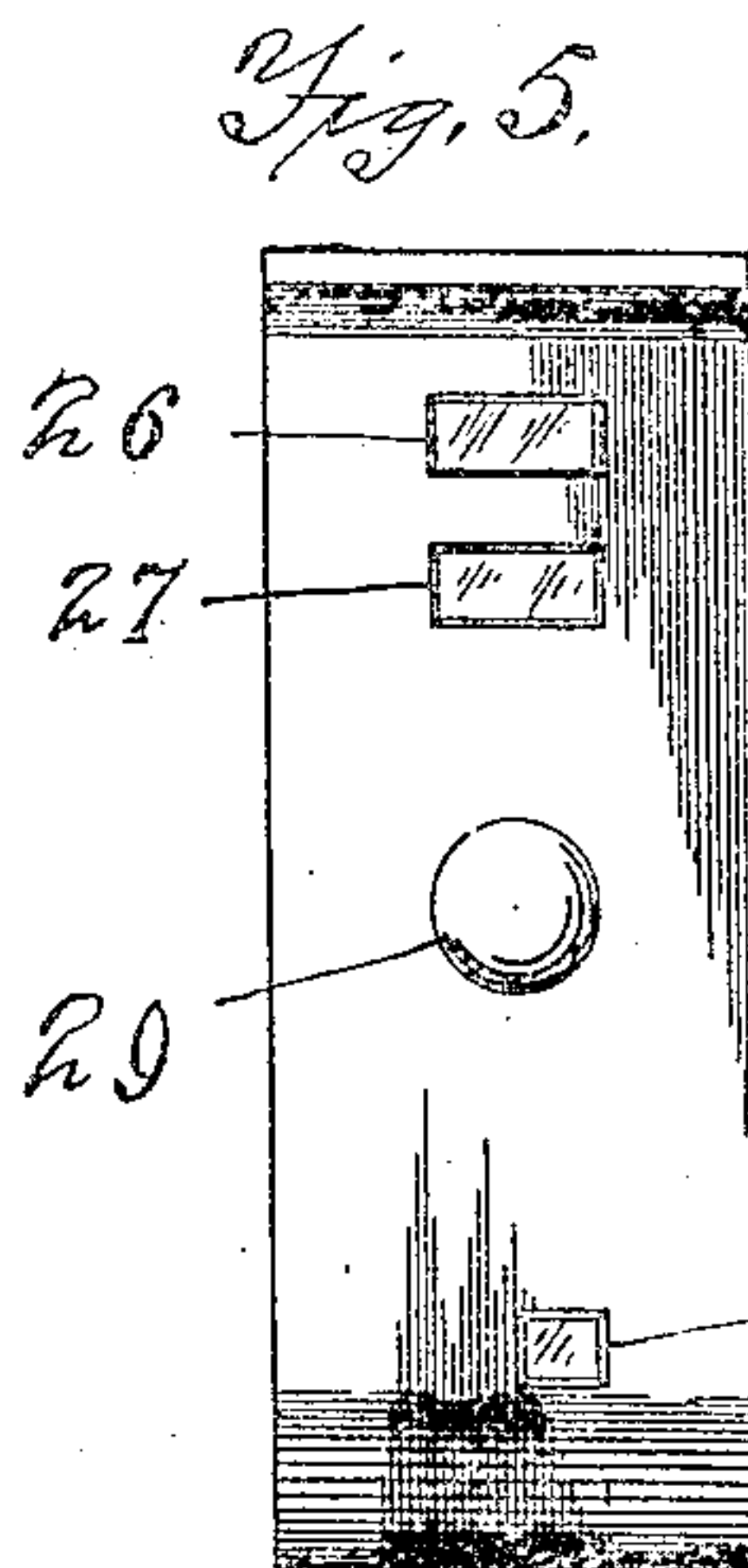
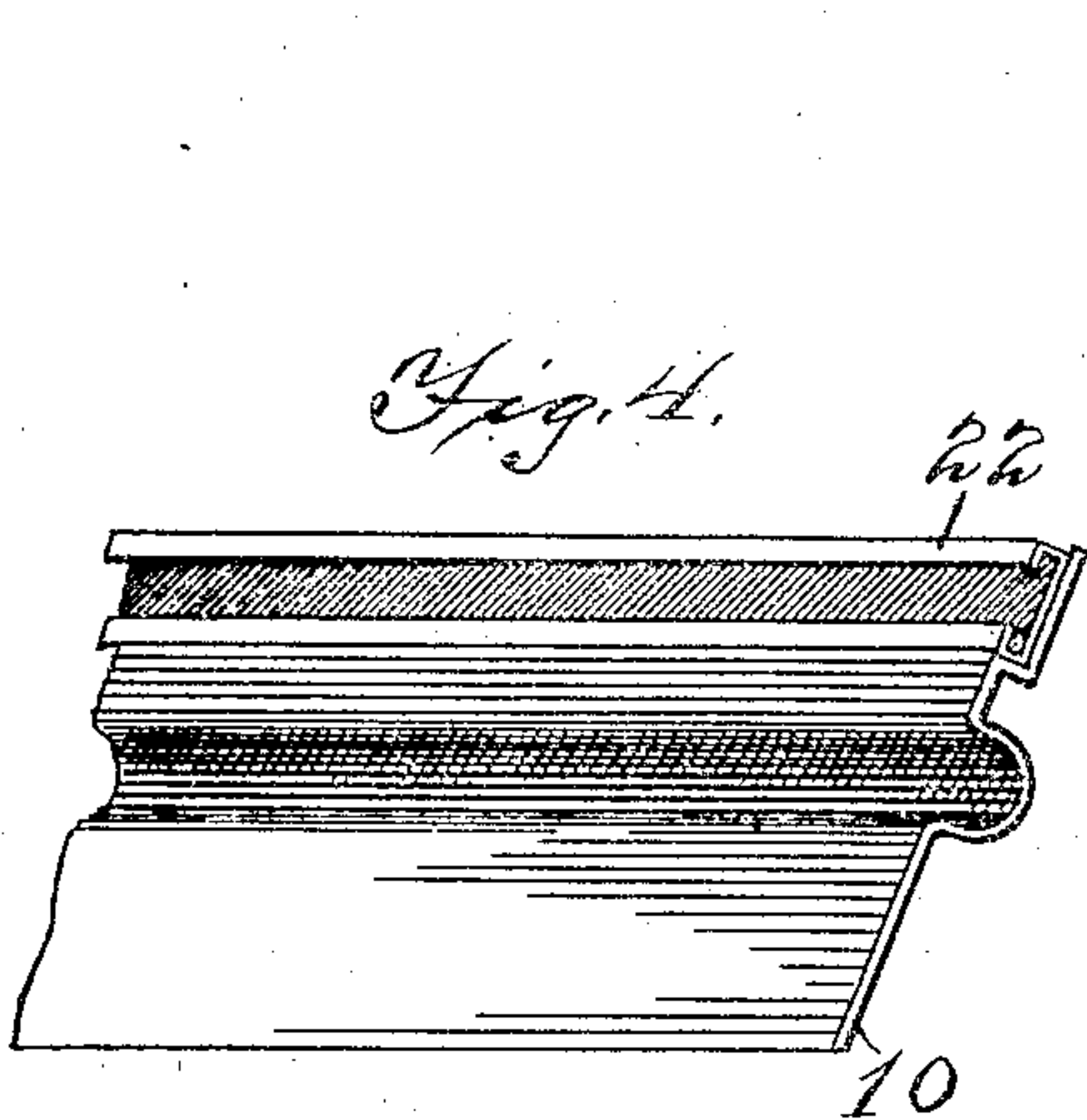
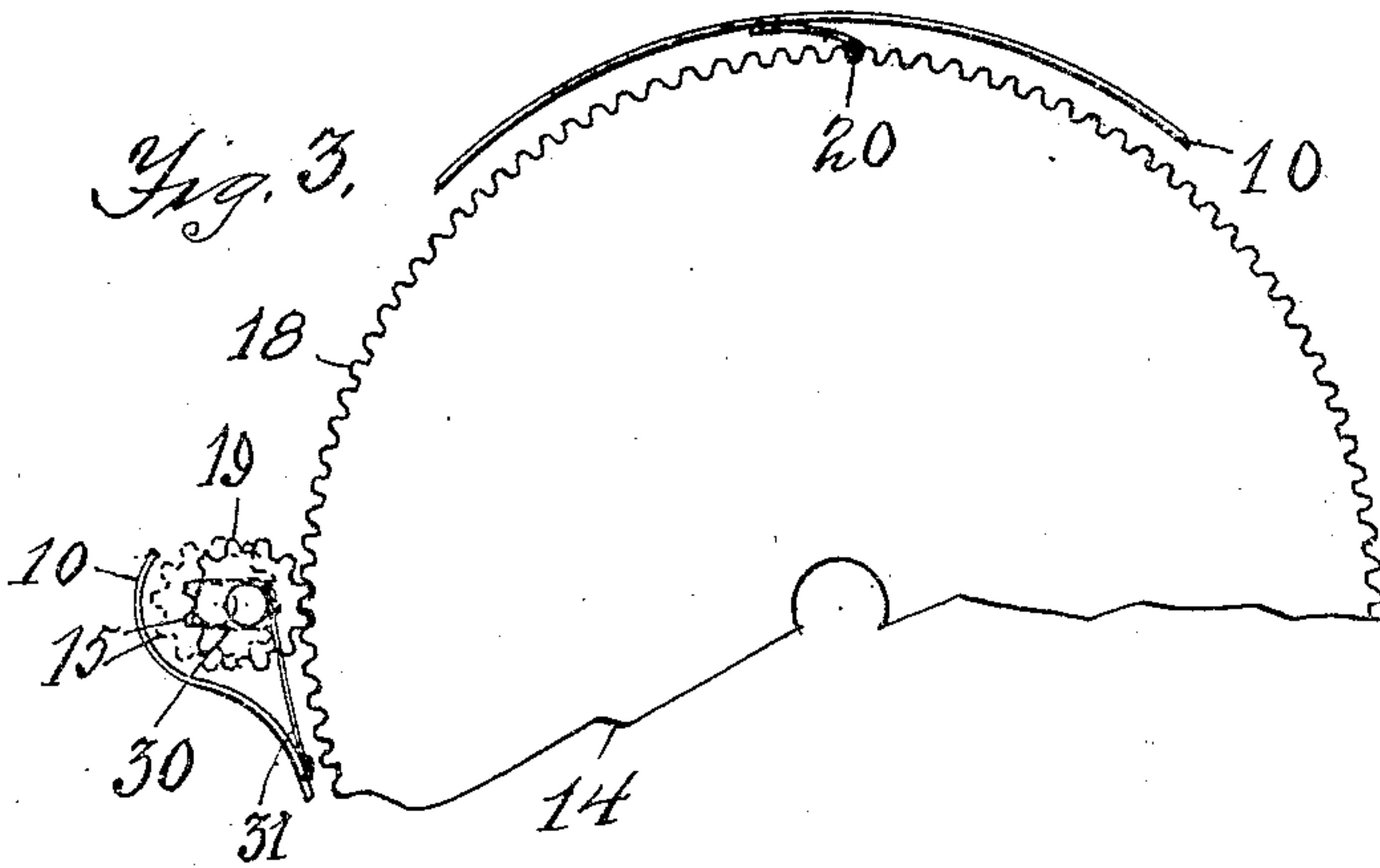
Attorney

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2 SHEETS—SHEET 2.



Witnesses

J. A. Ellsworth.
awr little

Inventor

Chester J. Smith,

By

S. Arthur Baldwin.

Attorney

UNITED STATES PATENT OFFICE.

CHESTER J. SMITH, OF JAMESTOWN, NEW YORK.

CALCULATING-MACHINE.

No. 879,204.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed April 1, 1907. Serial No. 365,734.

To all whom it may concern:

Be it known that I, CHESTER J. SMITH, a citizen of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Calculating-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The invention relates to calculating machines, more particularly for calculating wages, or interest, or the price of a commodity; and the objects of the invention are first, to provide a simple mechanism which is cheap to manufacture, in which for example the table showing the rate per hour and those showing the fractions of an hour may be brought into such conjunction that the amounts may be simultaneously read from the two tables; and second, to provide means whereby the adjoining figures in the tables are covered from sight to prevent error, so that only the correct amount at the prescribed rate is readable.

In the drawings, Figure 1 is a perspective view of the machine with certain portions of the case broken away in order to show a portion of the tables and operating mechanism. Fig. 2 is a crosswise sectional view of the machine. Fig. 3 is an end view of the two rolls showing the intermeshing gears and the spring dog which controls the large roll. Fig. 4 is an enlarged view of a section of the case, showing the form of holder for the rate numbers and the depression for the index rod. Fig. 5 is a plan view of the index; and Fig. 6 is a side elevation of the index; the index rod and case underneath the index being shown in section.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 indicates the case which is preferably made of sheet metal in substantially cylindrical form with cast metal ends 11 which are so formed as to provide suitable supports for the case and also revolvably support the rods 12 and 13 upon which the rolls or cylinders 14 and 15 are mounted within case 10. The rolls or cylinders are made hollow and have suitable disk shaped ends to mount the cylinders 14 and 15 on rods 12

and 13. A hand wheel 16 is provided on the end of rod 12 and a knob 17 on the end of rod 13 in order to turn the same.

One end of each of the cylinders 14 and 15 is provided with intermeshing teeth or gears 18 and 19, as shown in Figs. 1 and 3; the teeth being of such size as to move the cylinder exactly one line of numerals. Thus, for example, the numerals, as shown are for hours on cylinder 14, and for fractions of an hour on cylinder 15. Consequently teeth 18 and 19 should be of such a size as to correspond to the size of the numerals so that cylinder 14 will stop exactly on the hour and cylinder 15 on each five minute fraction of an hour. A spring ratchet 20 is provided within the upper side of the case 10 having a roller to engage teeth 18, said roller working easily backward or forward over the rounded ends of teeth 18. Ratchet 20 stops the cylinder 14 exactly on the hour.

A lengthwise slot 21 is provided on the front side of the case 10 to reveal the amounts in the table for each consecutive number of hours, which table is placed on the outer side of cylinder 14, the hours being placed at the center and the computations according to the rate per hour being arranged horizontally on each side of the number of hours.

A flanged holder 22 is attached to the case immediately below and adjacent to slot 21 to receive the rate slip. It is preferably placed below instead of above the slot in order that it shall not cast a shadow over the numerals in slot 21 and also to be more easily readable, as hereinafter set forth. The different rates per hour are placed upon a strip of paper which is slipped into holder 22 so that the rates are in line with and close to the amount for any given number of hours.

A slot 23 is provided in case 10 in front of roll 15 parallel to slot 21, to be used in relation to roll 15 in the same manner as slot 21 is used in relation to roll 14. A rod 24 is provided mid-way between slots 21 and 23, and upon rod 24 an index 25 is slidably mounted so that the index may be slipped back and forth from one end to the other of the rolls. The upper end of the index 25 slides under the edge of case 10 adjacent to slot 21.

Index 25 is an important part of my invention. It is made sufficiently broad to allow an opening 26 therein of sufficient length to take in the amounts on roll 14. A similar opening 27 is provided for the rate numerals in rate holder 22, and an opening 28 is provided at the lower end, which is one-half the size of opening 26, and is placed in line with the right end of openings 26 and 27 and being one-half the size covers only the cent column; since the amount for the fraction of an hour would not reach above the dollar mark. Openings 26, 27 and 28 are preferably filled with suitable magnifying or reading glasses to easily read the small figures which are necessary in such a table in order to diminish the size of rolls 14 and 15. Index 25 is made sufficiently wide also to cover the numerals each side of the openings 26, 27 and 28, thereby preventing error.

To use my device, the accountant slides index 25 on rod 24 to the rate per hour desired, which rate will show through opening 27. He then turns the cylinders to the desired number of hours and fraction of an hour. He then reads the amount in opening 26 and adds to it the number of cents shown in opening 28 which gives him the exact amount for the number of hours and fraction of an hour, provided he has turned the cylinders 14 and 15 correctly. A small knob 29 is provided on index 25 for the easy handling of the same.

In order to quickly turn the cylinders 14 and 15 to the desired point, they are geared so that the large cylinder 14 will turn the small cylinder when it is desired. To accomplish this, a slot 30 is provided in the end plate 11 adjacent to the gear 19, which slot is made of sufficient length to allow the roll 15 to be out of mesh with teeth 18 on roll 14, and a spring 31 is provided on case 10 to hold said roller 15 out of mesh with roll 14. It is now apparent that either roll 14 or 15 can be turned independent of the other while thus held out of mesh. In order to quickly adjust the rolls, however, it is found exceedingly convenient to hold the rolls in mesh by pressing against spring 31 by means of knob 17, and wheel 16 is then turned until the desired number of hours is attained or nearly attained on roll 14. When it is apparent that the roll is nearing this point, the small roll 15, which has probably made a number of revolutions in the turning of the big roll, is released from contact with the big roll as said small roll approaches the fractional amount desired. The turning of the large roll is continued until the desired number of hours appears in slot 21. It is only necessary to cause the desired number of hours to appear in slot 21 and the desired number of minutes to appear in slot 23 and to slide index

25 to the desired rate in order to read the exact amount due for the number of hours plus the number of cents for the minutes, to calculate the exact amount for a given time.

It is apparent that interest may easily be calculated upon my device by placing a table with the number of days and computations on the large wheel, the interest rates being placed in the holder 22, and the months and computations being placed on the smaller roll 15. It is also obvious that the computation of the selling or cost price of commodities by the pound or by the yard may be greatly accelerated by the use of my device. As, for example, the cost of coal per ton may be computed by placing the table upon roll 14 extending from one pound to one hundred and placing the number of hundred pound computation on the small roll 15, the different rates per ton being placed in the rate holder 22, then by sliding index 25 along rod 24, until opening 27 is over the desired rate per ton, and turning the cylinders 14 and 15 until the number of hundred pounds and fractions of a hundred are readable in the openings 26 and 28, thereby giving the computation at once and greatly aiding in the quick calculation of such sales. It is also apparent that additional rolls may be added with additional slots therefor in case where it is desired to handle a greater number of fractional parts in the computation, it only being necessary to provide additional openings in index 25, the office of the index 25 being to bring the desired computations into quick relation one to the other so that they may be added together.

I claim as new:—

1. In a calculating machine, a case having parallel slots therein, cylinders revolubly mounted in said case opposite said slots, computations arranged in annular and horizontal lines on said cylinders, an index slidably mounted in said case having openings opposite said slot, gear teeth on said cylinders, said cylinders resiliently held apart to be pressed into gear when desired.
2. In a calculating machine, a case having lengthwise parallel slots, cylinders revolubly mounted in said case opposite said slots, gears on said cylinders and a spring to hold said gears out of mesh, computations arranged on said cylinders in series corresponding to said slots, a rod on said case between and parallel to said slot, a price holder on said case between and parallel to said slots, an index slidably mounted on said rod and extending over said price holder and slots, said index having openings opposite said slots and price holder, substantially as and for the purpose specified.
3. In a calculating machine, a case having slots 21 and 23, cylinders 14 and 15 revolubly mounted in said case, knobs 16 and 17

for turning said cylinders, hour computations on the large wheel and minute computations on the small wheel in annular and horizontal lines, price holder 22 on said case, 5 an index 25 slidably mounted on rod 24 in said case, said index having openings 26 27 and 28 opposite said slots and price holder, gears 18 and 19 on said cylinders, a slot 30 in said case, and a spring 31 on said case to hold

said gears out of mesh, substantially as and 10 for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHESTER J. SMITH.

Witnesses:

I. A. ELLSWORTH,
A. W. KETTLE.