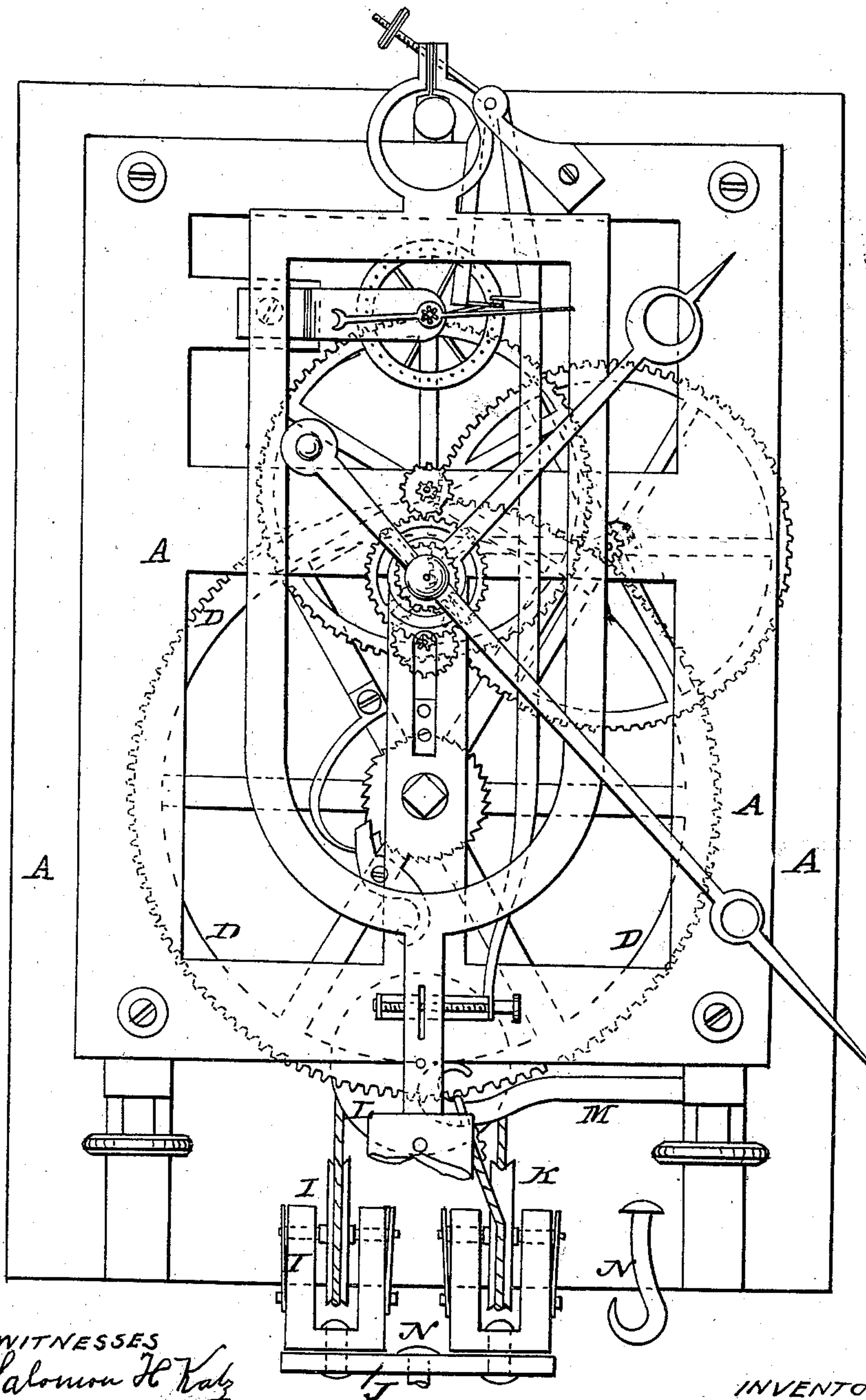


P. BANTEL.
Chronometer.

3 Sheets—Sheet 1.

No. 80,051.

Patented July 21, 1868.



WITNESSES
Salomon H. Katz
Louis Fisher

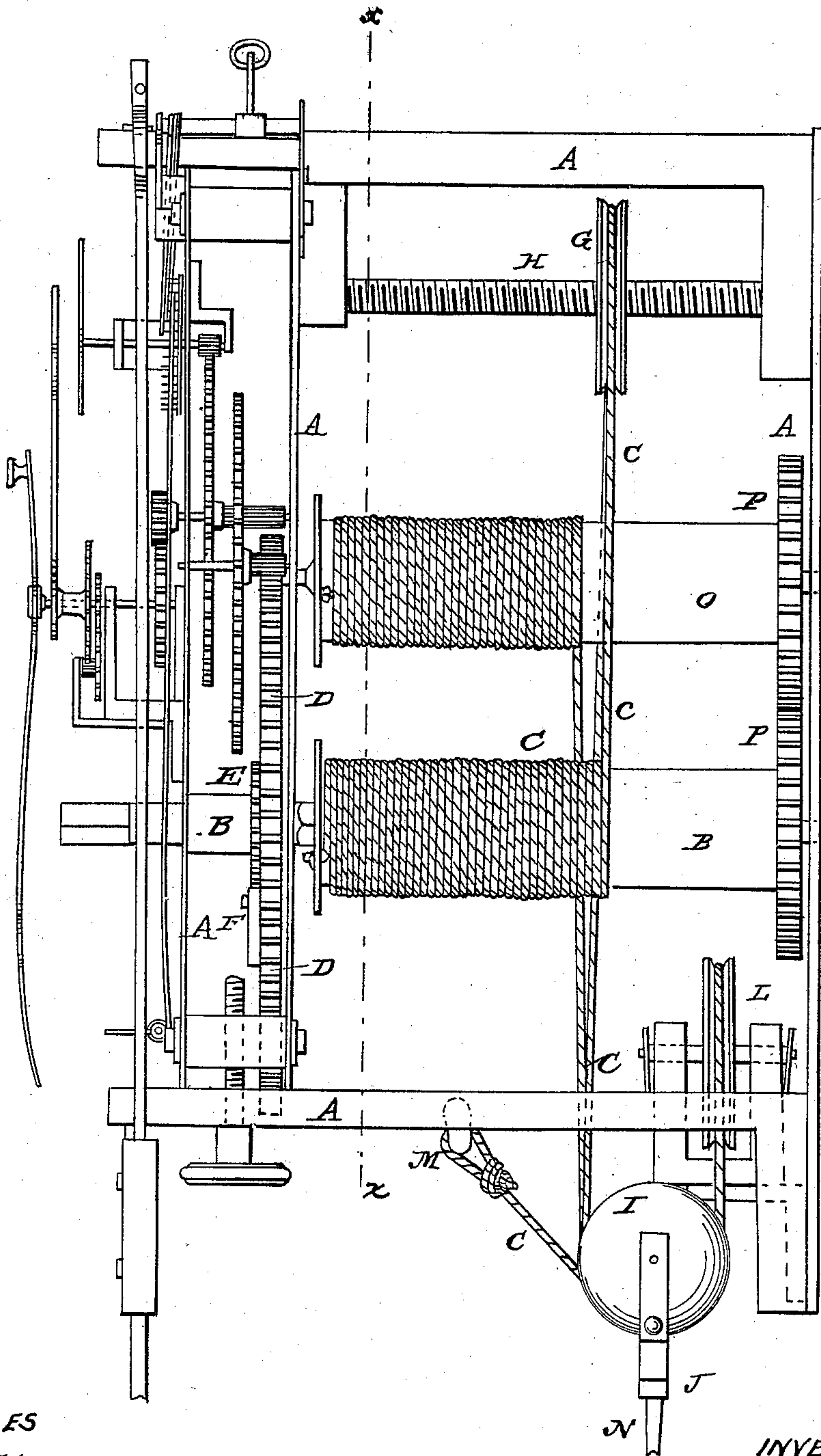
INVENTOR
Philipp Bantel

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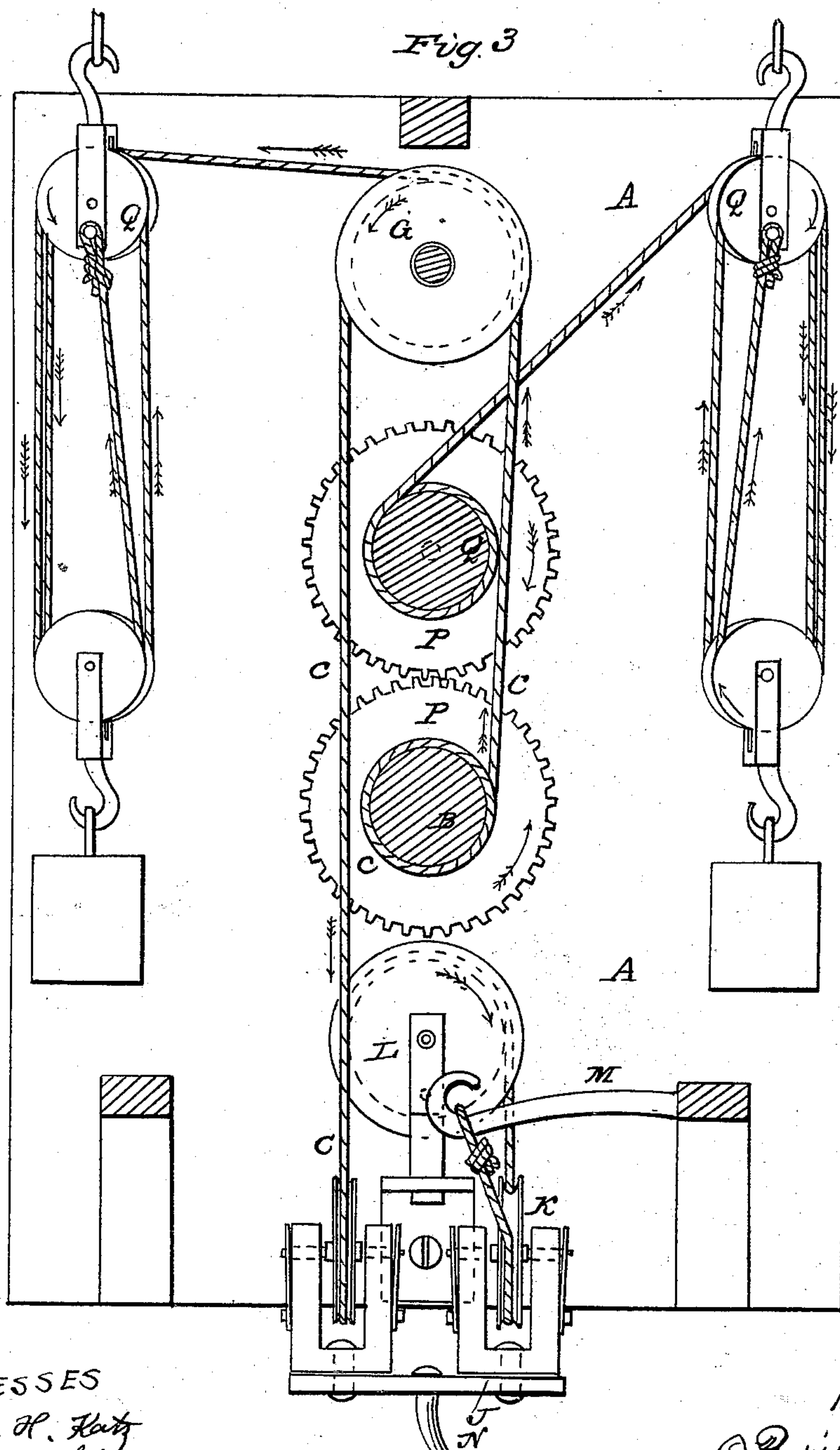
INVENTOR
Philip Banuel

P. BANTEL.
Chronometer.

3 Sheets--Sheet 3.

No. 80,051.

Patented July 21, 1868.



WITNESSES
Salomon H. Katz
Lucas Fisher

INVENTOR
Philip Bantel

United States Patent Office.

PHILIPP BANTEI, OF NEW YORK, N. Y.

Letters Patent No. 80,051, dated July 21, 1868.

IMPROVEMENT IN CHRONOMETERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, PHILIPP BANTEI, of the city, county, and State of New York, have invented a new and useful Improvement in Chronometers; and I do hereby declare the following to be a clear and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet I, is a front view of a clock-work illustrating my improvement.

Figure 2, Sheet II, is a side view of the same.

Figure 3, Sheet III, is a vertical section of the same, taken through the line *x x*, fig. 2.

Similar letters of reference indicate like parts.

My invention relates to that class of clocks which are used as standard chronometers in large watch and clock-establishments, telegraph-offices, railroad-offices, and other places where it is necessary to have always the correct time; is designed to furnish a clock that will keep correct time for months and years without its being necessary to adjust or regulate it, or even to wind it up; and it consists in so constructing, combining, and arranging the propelling part of the gearing as to obtain a very slow, steady, and constant initiatory movement, and in the combination and arrangement of the minor devices by which this result is more satisfactorily effected, the whole being constructed and arranged as hereinafter more fully described.

A is the framework, in which the clock-work is placed, and in which are formed the bearings for the various journals.

B is the shaft, around which the cord C is wound in winding up the clock, and from which said cord unwinds as the clock runs. This shaft or drum I make one and one-eighth inch in diameter, and of such a length that the cord C may make seventy-two turns around it.

The journals of the shaft B revolve in bearings in the frame A, and the projecting end of its forward journal is squared off to receive the key for winding up the said cord C.

To the forward journal of the shaft B is attached a gear or driving-wheel, D, which is made large, and with two hundred and forty teeth, and which is so connected with the gear-wheels of an ordinary clock-work and with the pendulum, as to make one revolution in fifteen days.

The gear-wheel D is provided with a ratchet-wheel, E, and pawl, F, in the ordinary manner.

From the shaft B the cord C passes over the screw-pulley G, which is placed upon the screw H, the ends of which are attached to the frame A, and the pitch of the threads of which equals the diameter of the cord C, so that as the said cord unwinds itself from the shaft B, the pulley G may always adjust itself to a position directly over the part of the shaft B from which the cord is unwinding.

From the pulley G the cord C passes down to and around the pulley I swivelled to one end of the bar J, to the other end of which is swivelled the pulley K, and from which bar is suspended the weight, by means of the hook N.

From the pulley I the cord C passes to and over the pulley L, the supports of which are attached to the frame A.

From the pulley L the cord C passes around the swivelled pulley K, and its end is attached to the fixed support M.

This construction and arrangement of the pulleys I K L allow the cord C to take always that position which the weight naturally causes, the said I and K being self-adjusting, thus greatly diminishing the friction.

If desired, the end of the cord C may be removed from the support M, and attached to the shaft O, of exactly the same size as the shaft B, with which it is connected by the equal gear-wheels P, so that the said shafts may move together. In this case the cord C should be wound equally upon both the shafts B and O, as shown in red in fig. 2.

By this construction the leverage of the weight is doubled, so that the said weight may be diminished one-half.

By this construction the clock will run only half the time it would under the construction before described, that is to say, only one and a half year.

In case the clock is set up in such a situation that a case deep enough for the first-described construction cannot conveniently be used, the fixed pulley L may be replaced by the pulley-blocks Q, shown in red in fig. 3. In this case the cord C must be divided, the free end of each part being attached to each of the blocks Q, as shown, the weight also being divided, each half being supported beneath each of the blocks Q by means of a pair of swivelled pulleys similar to the pulleys I K. In this case the clock will run the full time of three years with one-half the depth of case.

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

1. The combination of the shafts B and O, one or both, and large gear-wheel D, said parts being constructed as described, with the ordinary clock-work of a chronometer, substantially as and for the purpose set forth.

2. The combination of the self-adjusting screw-pulley G and stationary screw H with cord C and shaft B, substantially as herein shown and described, and for the purpose set forth.

3. The swivelled pulleys I and K, in combination with the cord C, weight-bar J, and pulley L, or its equivalent, substantially as herein shown and described, and for the purpose set forth.

The above specification of my invention signed by me, this 17th day of February, 1868.

PHILIPP BANTEL

Witnesses:

SOLOMON H. GRATZ,
LOUIS FISLER.