

No. 749,517.

PATENTED JAN. 12, 1904.

H. P. BALL.

SPEED REGULATOR FOR MECHANICAL MUSICAL INSTRUMENTS.

APPLICATION FILED SEPT. 25, 1903.

NO MODEL.

FIG. 1.

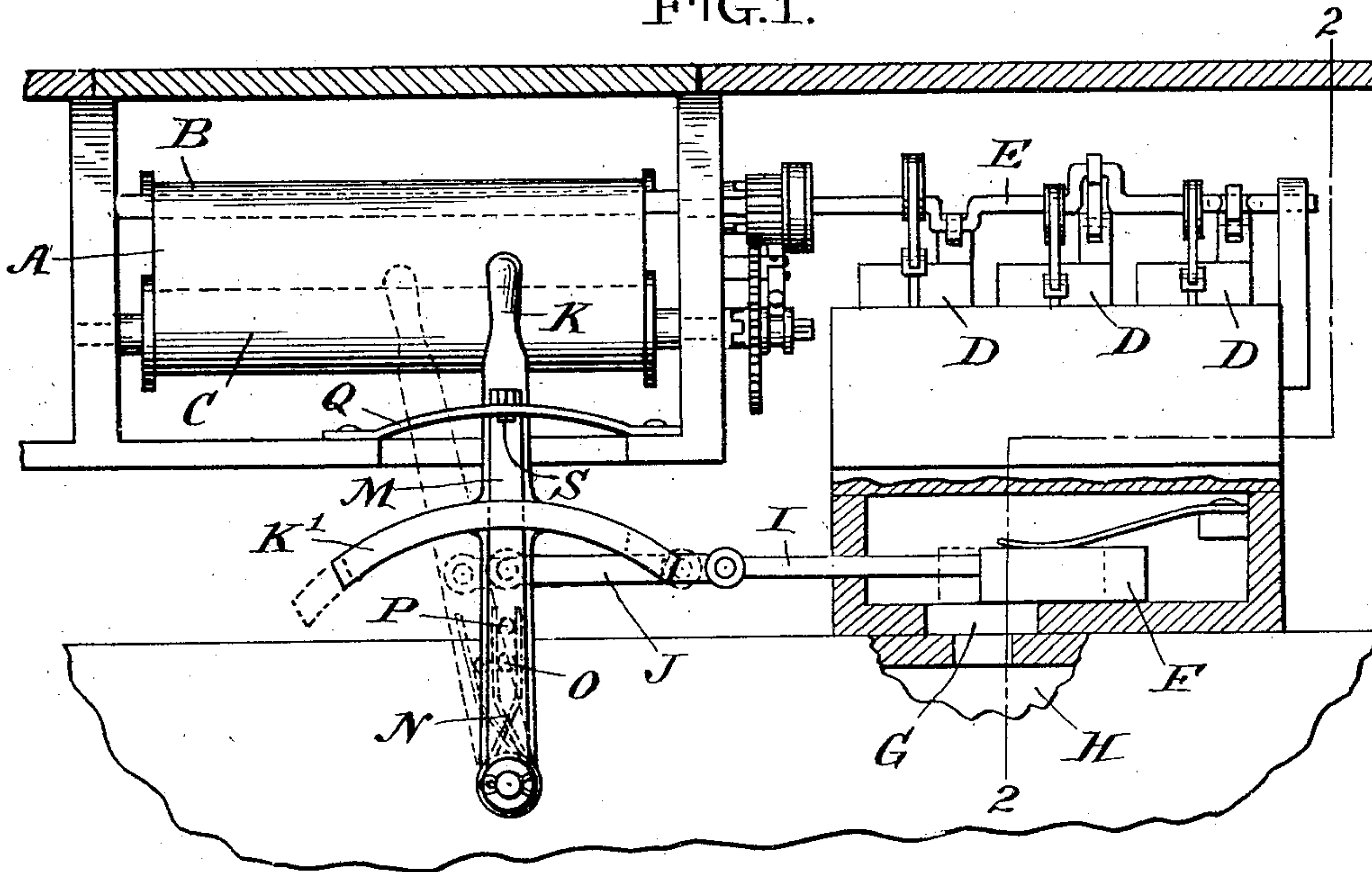


FIG. 2.

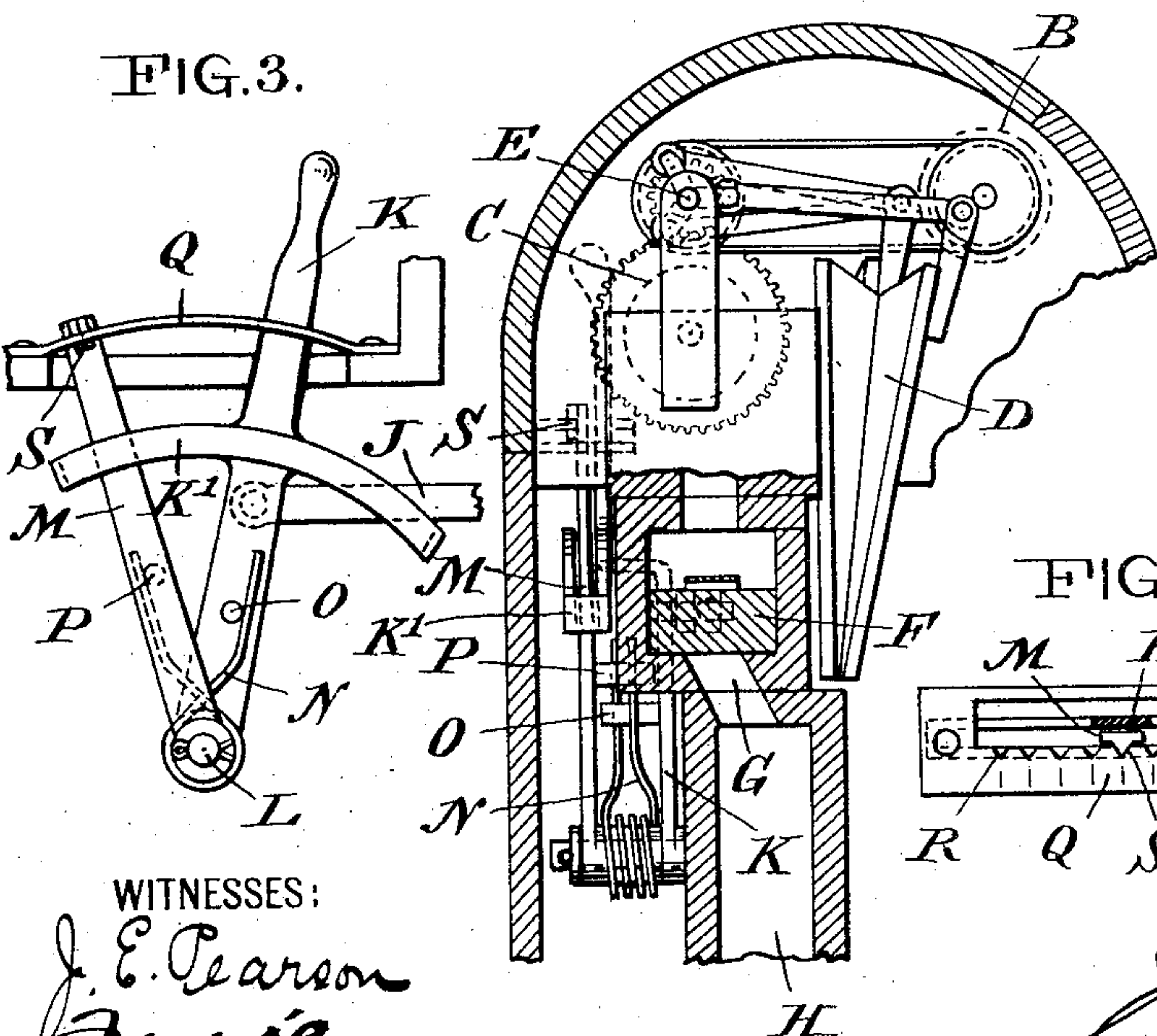


FIG. 4.

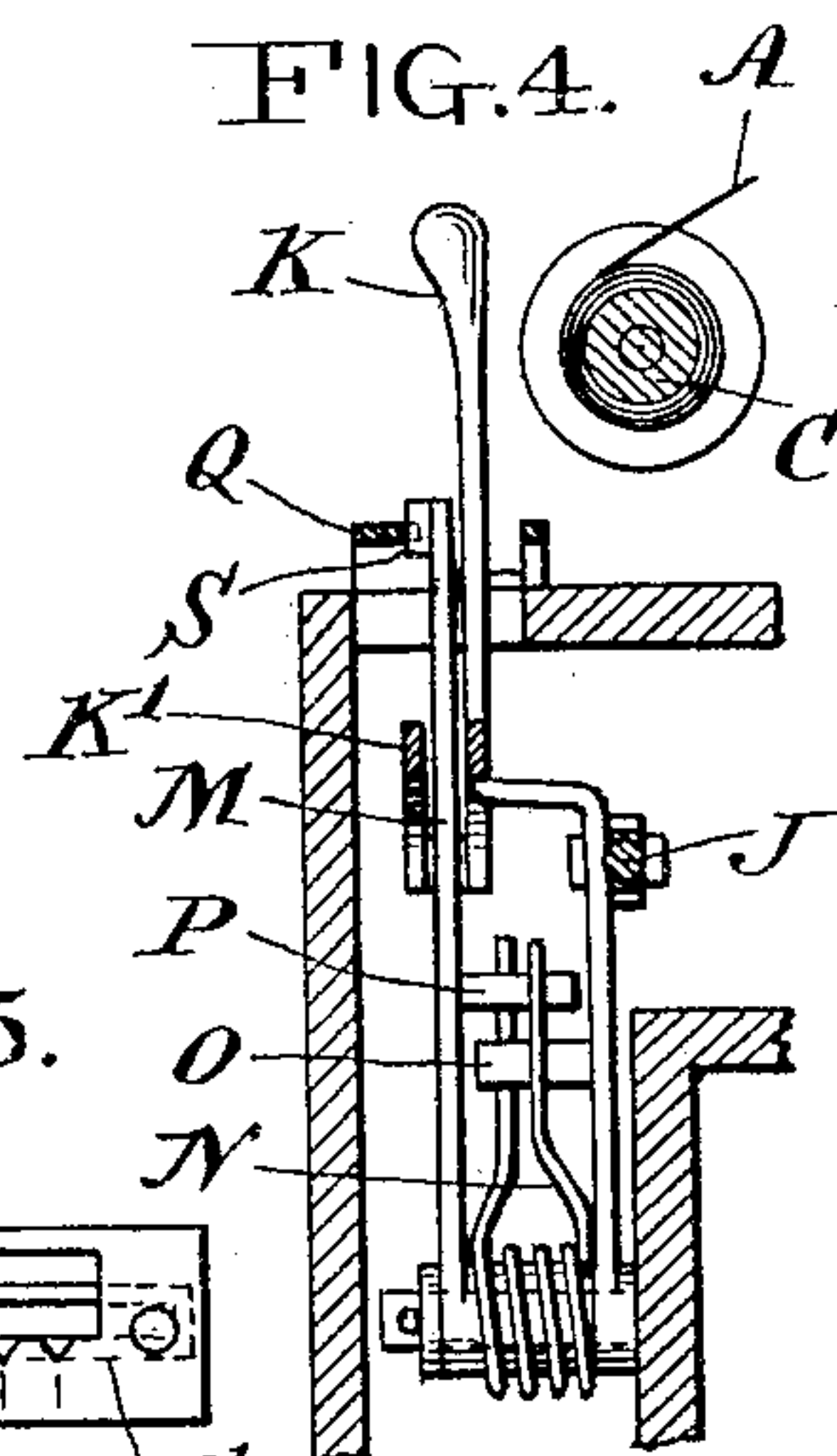
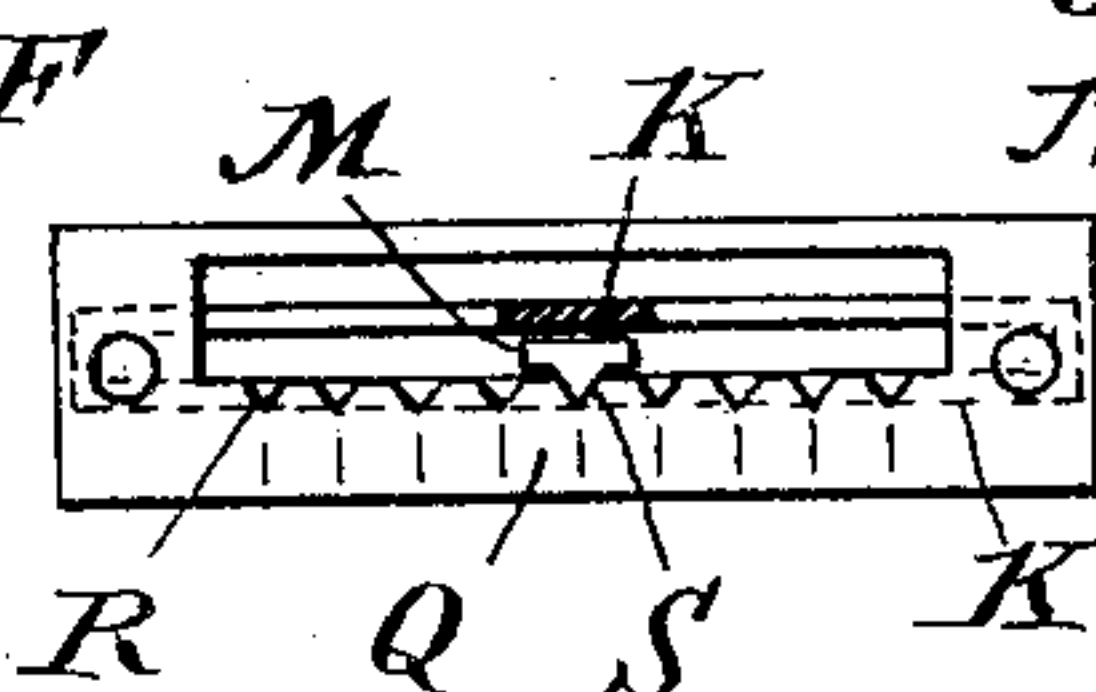


FIG. 5.



WITNESSES:

J. E. Pearson
Mark O'Connor

INVENTOR

H. P. Ball
BY
G. W. H. Benjamin
ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY PRICE BALL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
SAMUEL INSULL, OF CHICAGO, ILLINOIS.

SPEED-REGULATOR FOR MECHANICAL MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 749,517, dated January 12, 1904.

Application filed September 25, 1903. Serial No. 174,548. (No model.)

To all whom it may concern:

Be it known that I, HENRY PRICE BALL, a citizen of the United States, residing at New York city, county and State of New York, have
5 invented certain new and useful Improvements in Speed-Regulators for Mechanical Musical Instruments, of which the following is a specification.

Different musical compositions are written
10 in different time, and consequently the music-roll must be moved at a rate of speed corresponding to the time. Further, in many compositions the time, and consequently the rate of speed, must be varied at intervals during
15 the playing of the composition—that is, the time and rate of speed fixed at one rate during the playing of a bar or bars, at another rate during the playing of a succeeding bar or bars—and, further, the time and rate of speed
20 fixed for any bar or bars must be momentarily changed—that is, changing for the instant—without altering the fixed time and rate of speed for the balance of the notes of the bar or bars.

The speed regulation of mechanical musical instruments has heretofore been accomplished by means of a lever which under the action of a spring normally takes a certain defined position, generally midway of a time-indicating scale. When the performer desires to
30 alter the time and speed, he moves the lever to the required position indicated on the scale, which may be either to the right or left of the normal position on the scale, and holds it there and which position for the purposes of this description I will term the “second position.” Should now a momentary change of speed be required, the lever is moved to the right or left of the second position and then
40 instantly back to the second position. This arrangement seems very simple and effective; but in point of fact it does not obtain the best results, first, because the performer is required to hold the lever in the required position, and, second, when momentarily moved to the right or left of the second position it frequently happens that he cannot recall the precise position previously occupied by the

lever required to produce the time and speed, the general effect being confusion.

In order to overcome the objections stated, I have designed a regulating mechanism wherein when the speed-lever is moved to any so-called “second position” it when released will remain in that position and when in such
55 second position may be manually moved to produce the momentary change in time and speed required and which will automatically return to such second position when released by the operator.

The objects of my invention are to simplify the construction of the speed-regulating mechanism and obviate the necessity of the performer moving and holding the lever to and in all the positions necessary to produce the
65 required changes of time and speed.

The accompanying drawings will serve to illustrate my invention, in which—

Figure 1 is a front elevation. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 70 3 is a front detached view of the regulating-levers. Fig. 4 is a side detached view of the regulating-levers. Fig. 5 is a top view and horizontal section of the speed-regulating plate and levers.

Referring to the drawings, A represents a music-roll, which is wound from the spool B onto the take-up spool C. The movement of the take-up spool C is effected by means of the air-motors D, which transmit their motion
80 through the shaft E and suitable gearing to the take-up spool C. The mechanism illustrated for producing movement of the music-roll is that now commonly employed. Manifestly any other suitable mechanism may be
85 used.

The movement of the motors D is controlled by means of a valve F, which controls a passage G through a wind-chest H. Secured to the valve F is a rod I, which is pivotally connected to a link J, which in turn is pivotally
90 connected to a lever K, pivoted at L. The lever K has secured to its front side an arc-shaped strap K', which incloses a lever M, also pivoted at L. These two levers are resiliently connected by means of a spring N,

which spring is bent around the pivot L, one end carried in front of a pin O on the lever K and the other end carried in the rear of a pin P on the lever M. The effect of this spring, as will be readily understood, is under normal conditions to cause the axes of the levers K M to occupy parallel vertical planes.

The lever M is adapted to coöperate with a notched plate Q, suitably situated on the front of the instrument. The notches R in the plate Q represent different speeds of movement of the music-roll—for instance, the speed increasing with the notches from left to right, or vice versa. The lever M at the top is provided with a horizontally-projecting V-shaped pin S, which coöperates with the notches R.

The operation of my device is as follows: To determine the position of the valve F, and consequently the speed of the motors D, the operator pushes the lever K away from him and backward, which lever acting through the strap K' releases the pin S on the lever M from engagement with a notch R on the plate Q. The operator then moves the lever K and with it the lever M through the interposed spring N to the right or to the left, depending upon whether he wishes to increase or decrease the speed, and allows the pin S to enter into engagement with the desired notch R on plate Q. The operator then releases the lever K, which lever will take the position occupied by the lever M. If now the operator desires to momentarily change the speed, the lever K is moved to the right or to the left, held in the required position for the desired time, and then released, when it will under the action of the spring N immediately return to the position of the lever M—i. e., to the position where its vertical axis will be parallel with that of the lever M whatever its position at the time may be.

I wish it understood that I do not limit myself to the use of the precise mechanism shown, as it will be evident that various mechanisms may be employed to accomplish the same result, the principal feature of my invention being the employment of mechanism which will initially determine the speed of the music-roll and which will permit variation of the speed and automatically restore the speed to its initial rate when temporarily altered by the performer.

Having thus described my invention, I claim—

1. In a mechanical musical instrument, the combination with a music-roll and mechanism for actuating said roll, means for initially determining, means for manually varying and means for automatically restoring the initial speed of movement of said roll.

2. In a mechanical musical instrument, the combination with a music-roll and mechanism

for actuating said roll, a lever for initially determining, a lever for manually varying, and means for automatically restoring, the initial speed of movement of said roll.

3. In a mechanical musical instrument, the combination with a music-roll and mechanism for actuating said roll, valve mechanism for controlling said actuating mechanism, a lever for controlling the initial position of said valve, a second lever for varying the position of said valve, and means for automatically restoring said valve to its initial position upon the release by the operator of the second lever.

4. In a mechanical musical instrument, the combination with the music-roll and its actuating mechanism, a lever for initially determining the speed of movement of the actuating mechanism, means for fixing said lever in any defined position, a lever for manually varying the speed of movement of the actuating mechanism, and means for returning the second-named lever to the position of the first-named lever when released.

5. In combination with the music-roll, of a motor device, valve mechanism for controlling the motor device, a pair of levers having the same pivotal point, means interposed between said levers whereby, when uninfluenced, their axes will occupy parallel vertical planes, means for fixing one of said levers in any defined position, and mechanism interposed between the other of said levers and said controlling-valve mechanism.

6. In a mechanical musical instrument, the combination with a music-roll, of air-operating mechanism for actuating said roll, a valve for controlling said actuating mechanism, and a pair of levers for controlling the position of said valve, one of which is connected to said valve and the other capable of being given defined positions and connected to said first-named lever through a spring device, which normally tends to maintain the levers with their axes in parallel vertical planes.

7. In a mechanical musical instrument, the combination with the music-roll and valve-controlled mechanism for actuating said roll, of two levers having the same pivotal point, connecting means interposed between one of said levers and the valve mechanism of the motor device, means for fixing one of said levers in defined positions, and means for automatically moving the second lever and the valve mechanism connected thereto in coincidence with the first-named lever.

In testimony whereof I affix my signature in the presence of two witnesses.

HENRY PRICE BALL.

Witnesses:

J. E. PEARSON,
FRANK O'CONNOR.