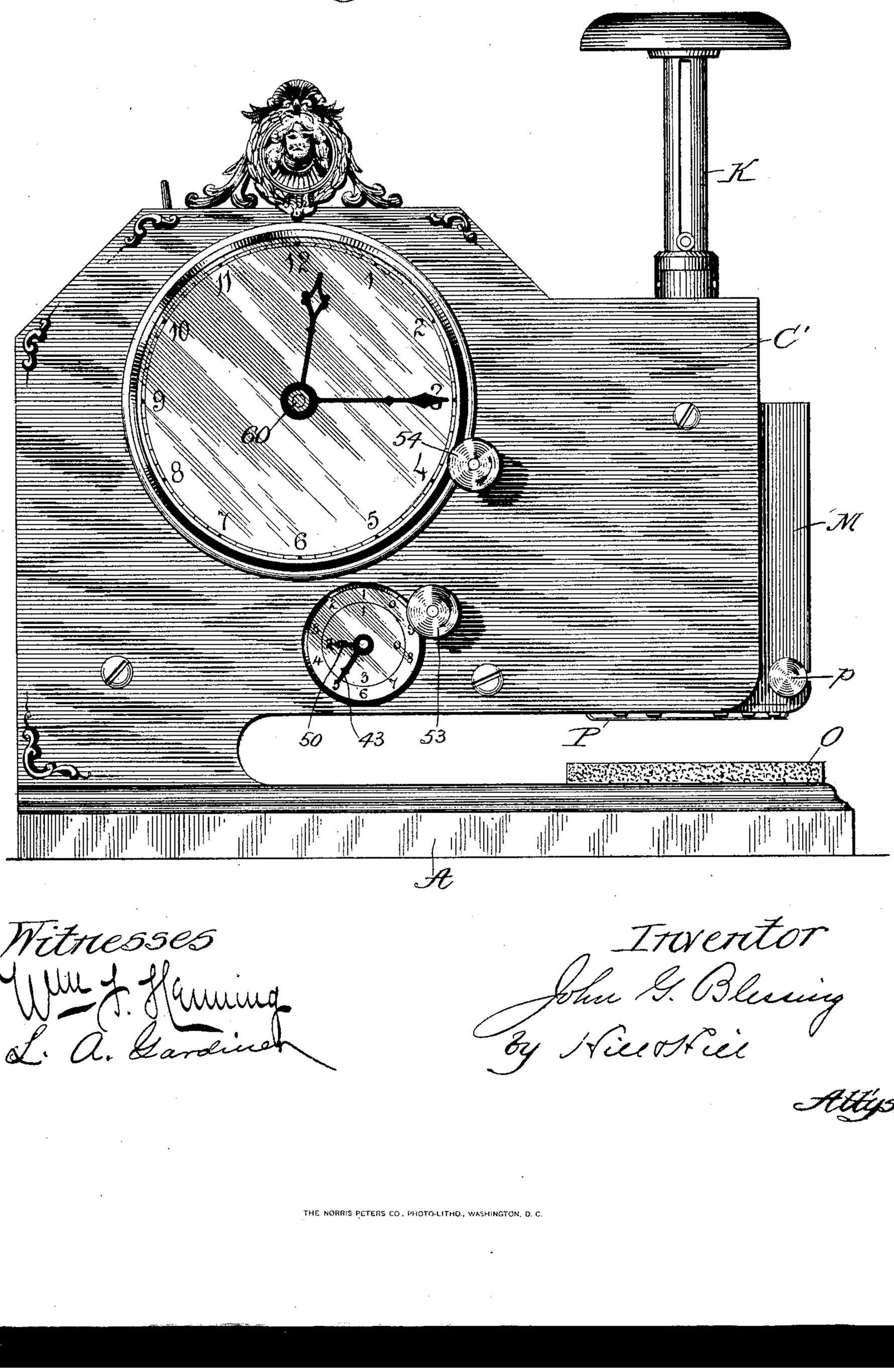
(No Model.) 7 Sheets—Sheet 1.

J. G. BLESSING.

TIME STAMP.

No. 602,026. Patented Apr. 5, 1898.

Fig. 1.



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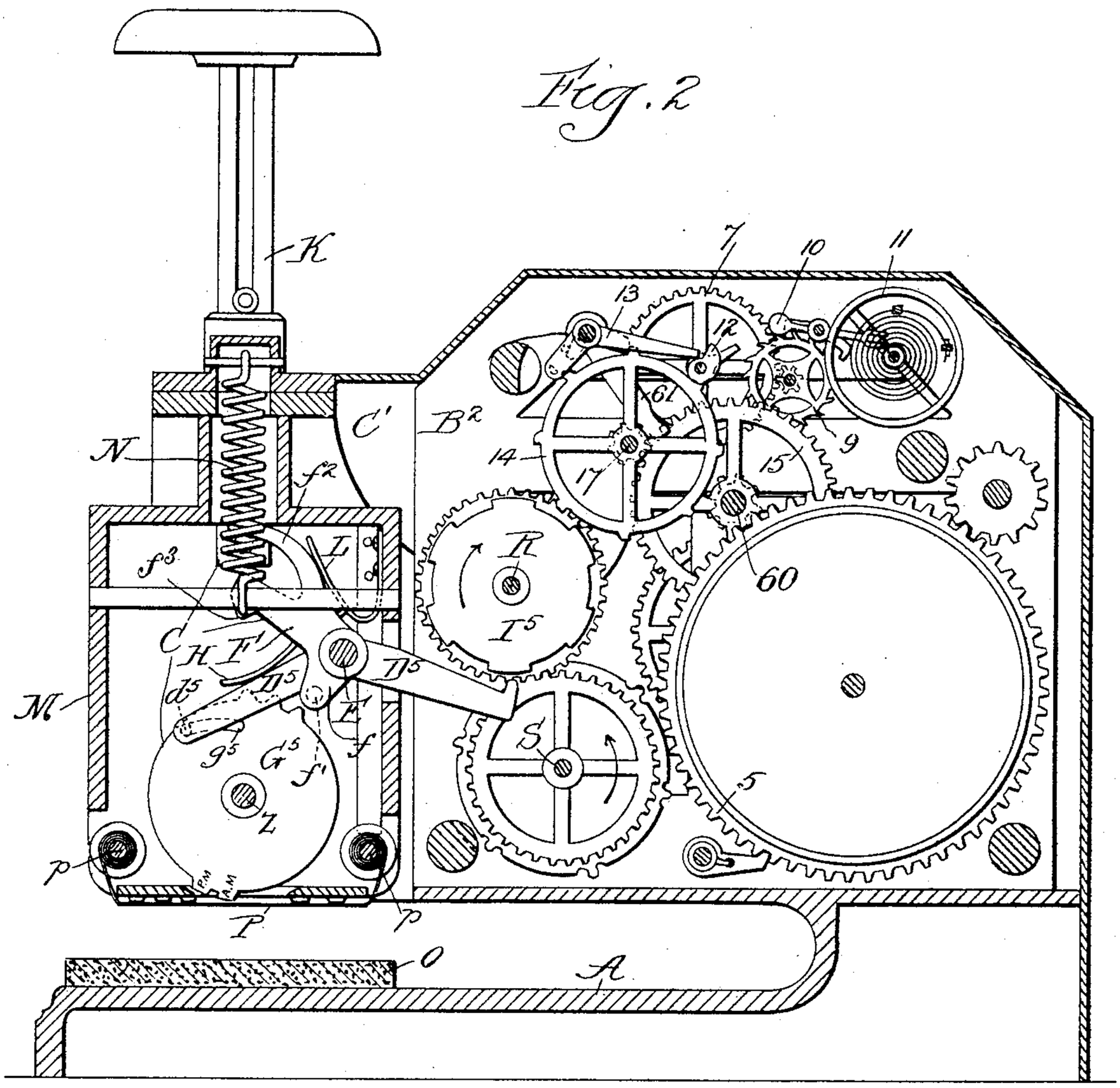
(No Model.) 7 Sheets—Sheet 2.

J. G. BLESSING.

TIME STAMP.

No. 602,026. Patented Apr. 5, 1898.

Fig. 2



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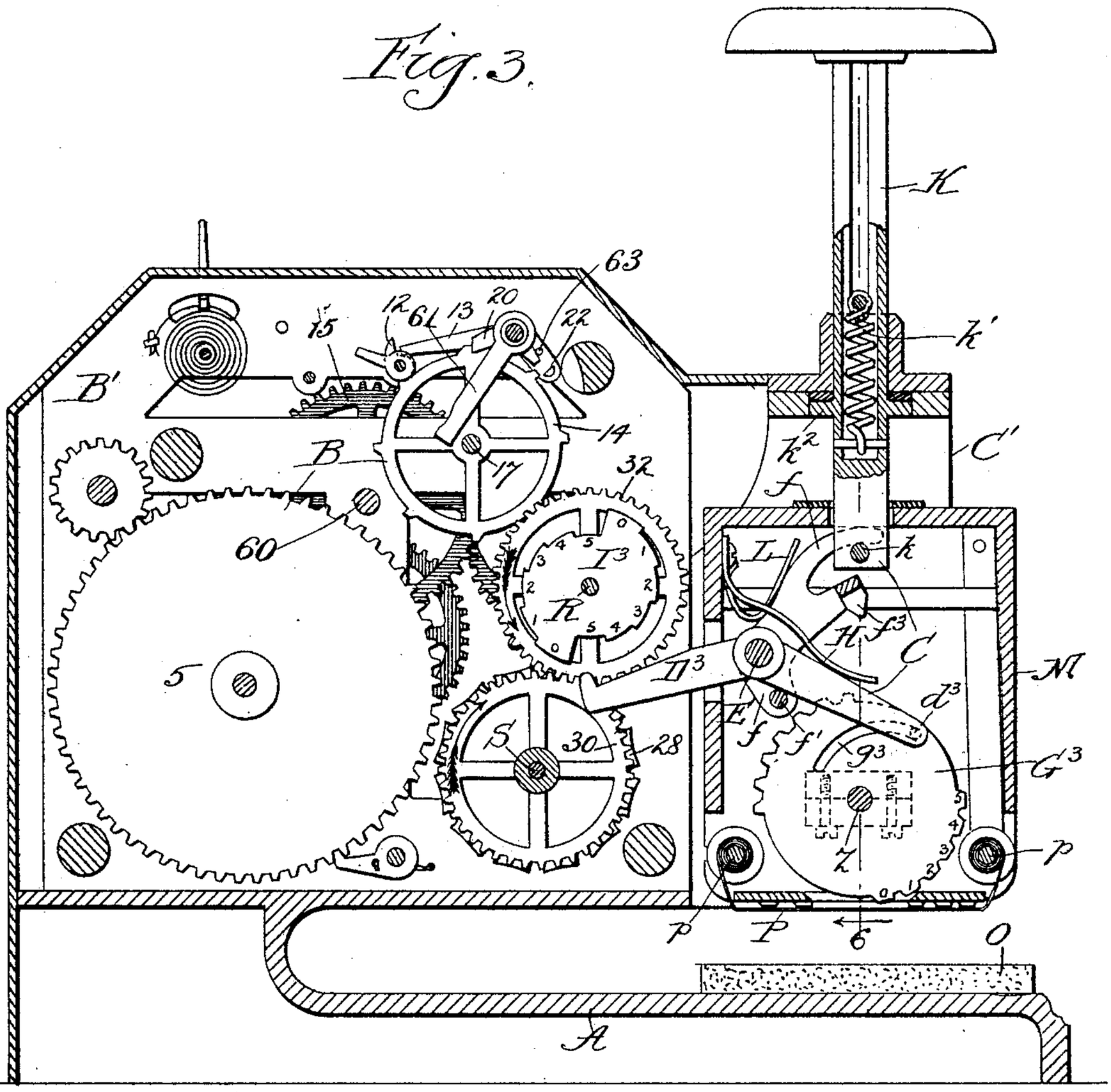
(No Model.) 7 Sheets—Sheet 3.

J. G. BLESSING.

TIME STAMP.

No. 602,026. Patented Apr. 5, 1898.

Fig. 3.



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J. G. BLESSING.

TIME STAMP.

No. 602,026. Patented Apr. 5, 1898.

Fig. 4.

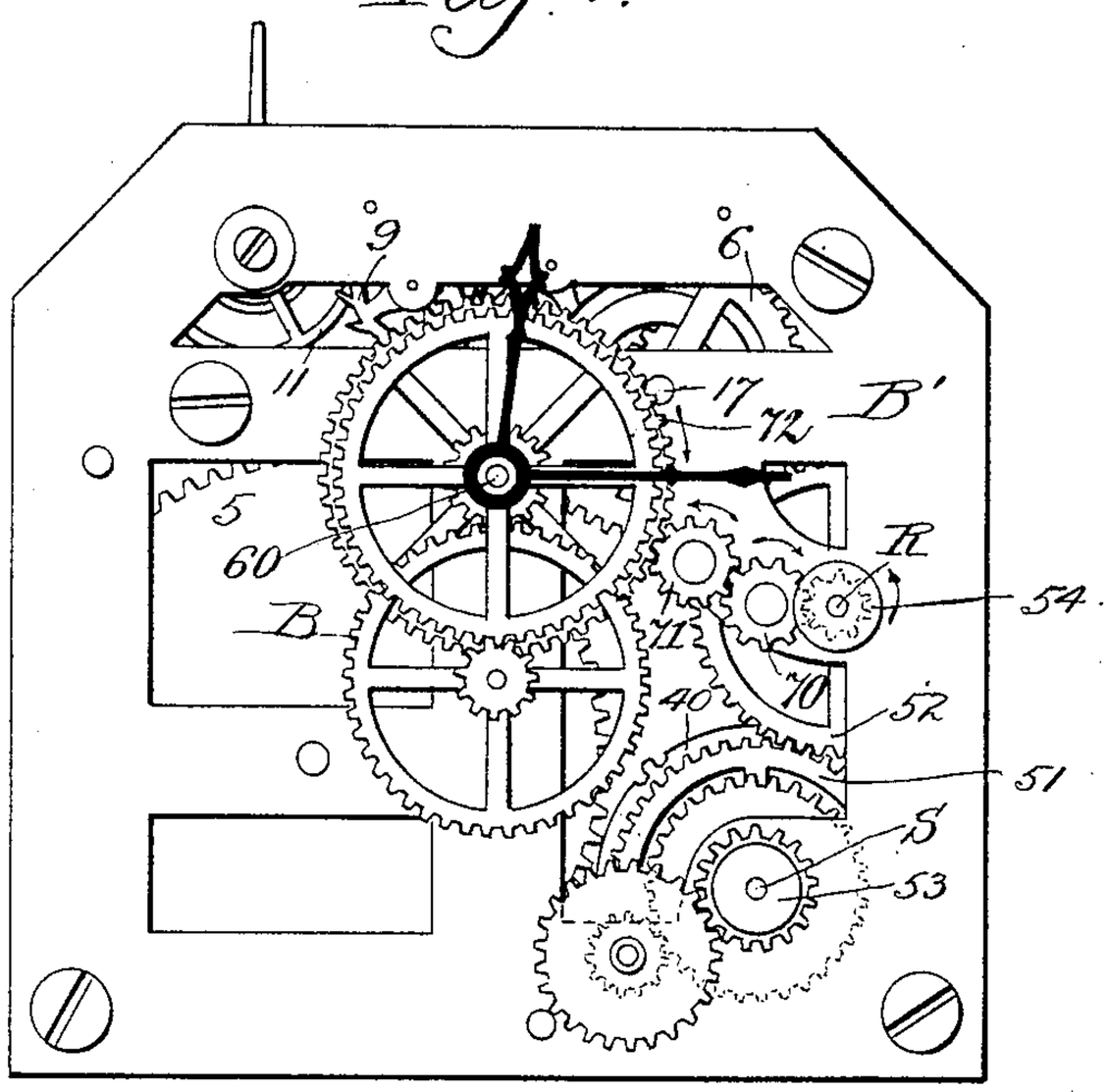
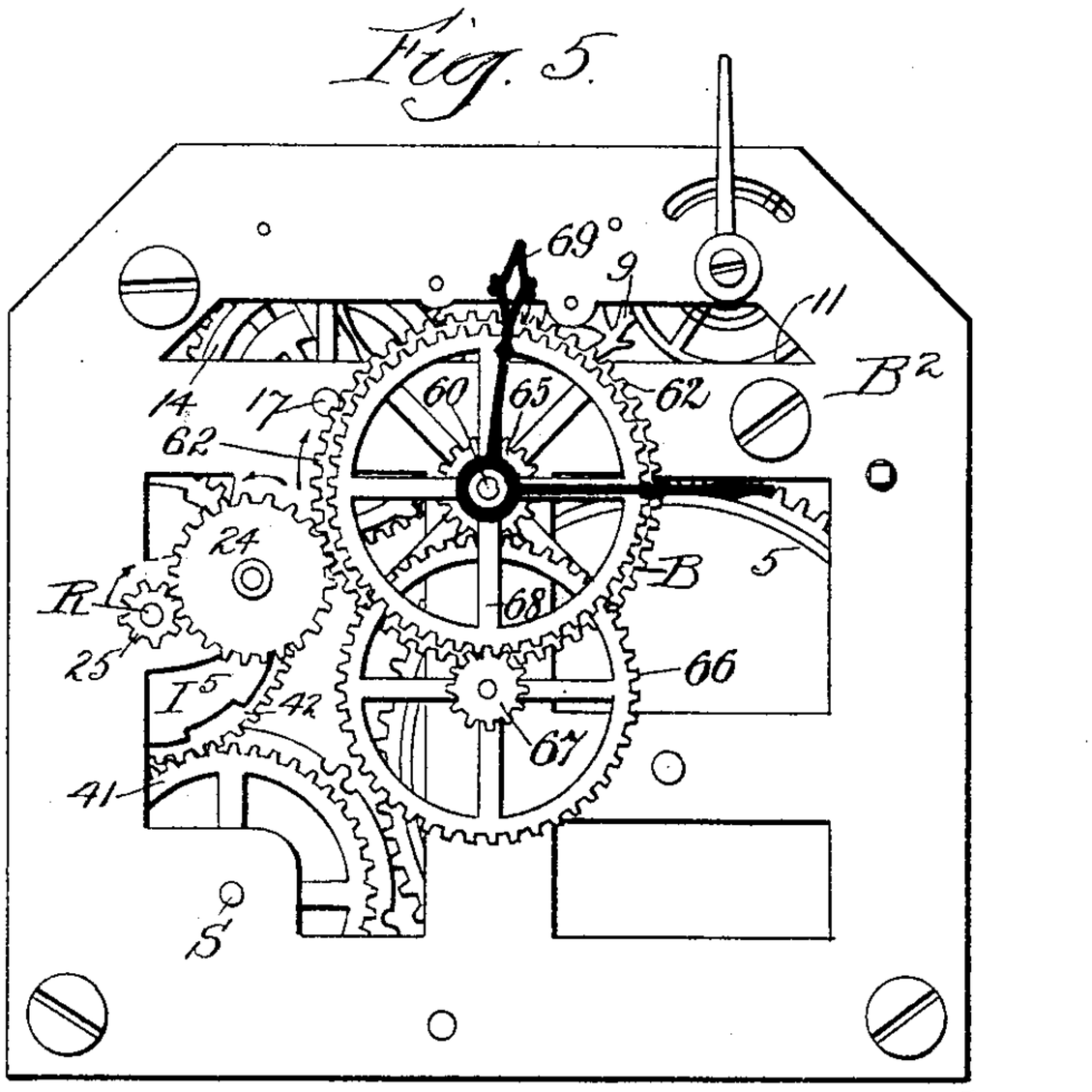


Fig. 5.



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(No Model.)

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J. G. BLESSING.

TIME STAMP.

No. 602,026. Patented Apr. 5, 1898.

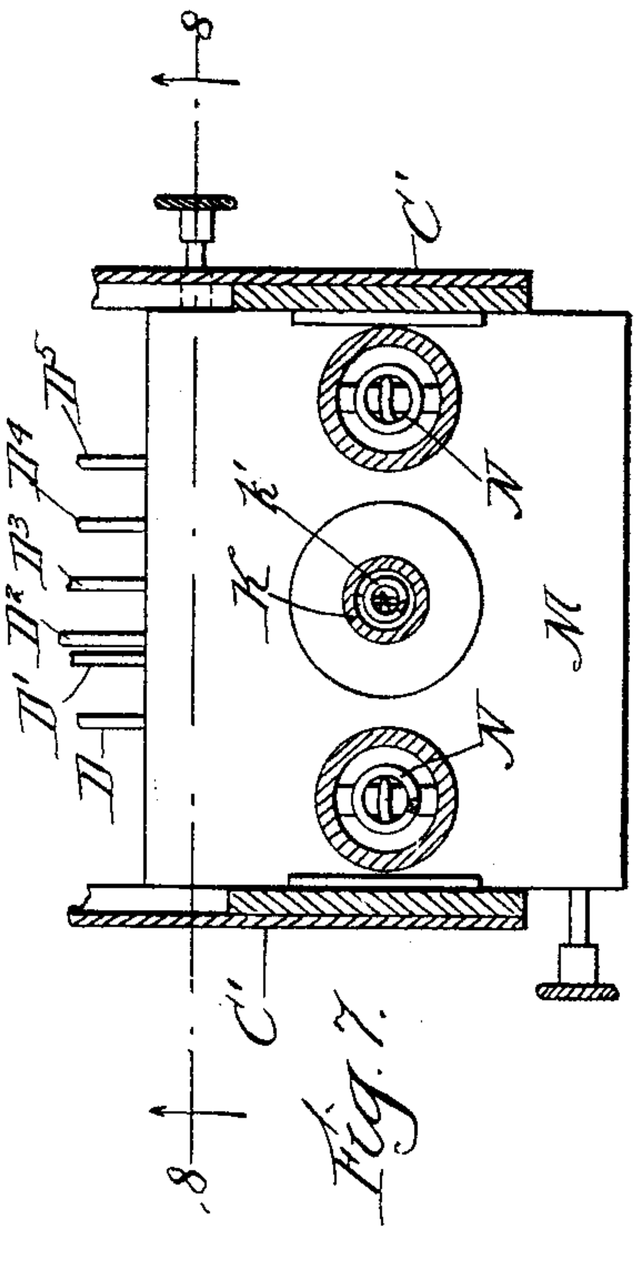

Fig. 7.

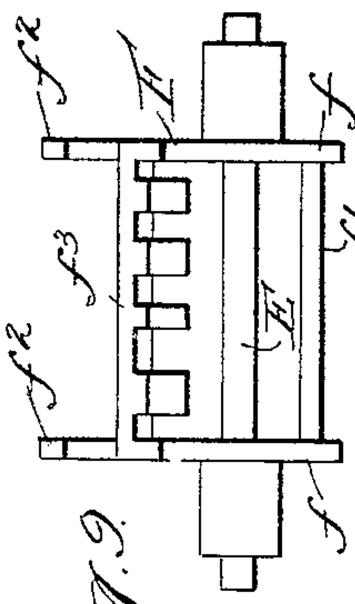

Fig. 9.

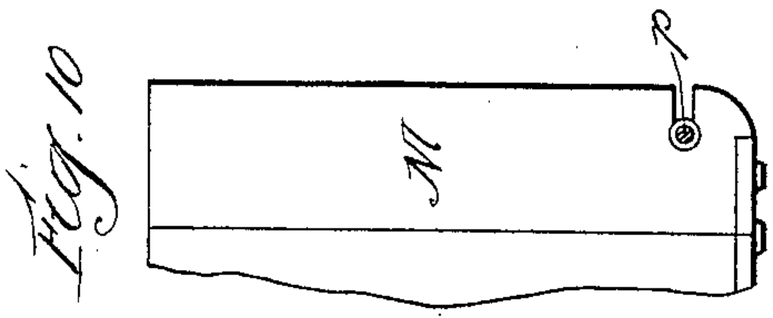

Fig. 10

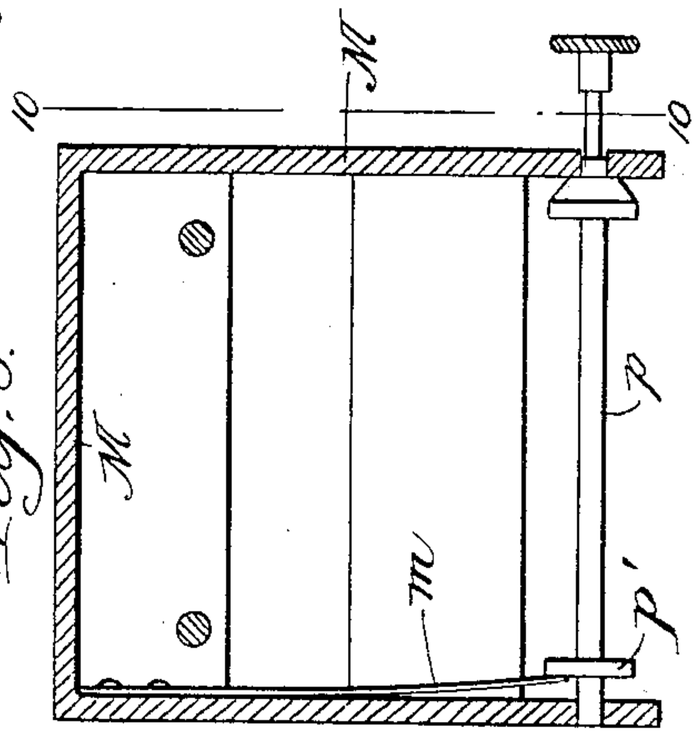

Fig. 8.

Fig. 6.

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(No Model.) 7 Sheets—Sheet 6.

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TIME STAMP.

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Fig. 11.

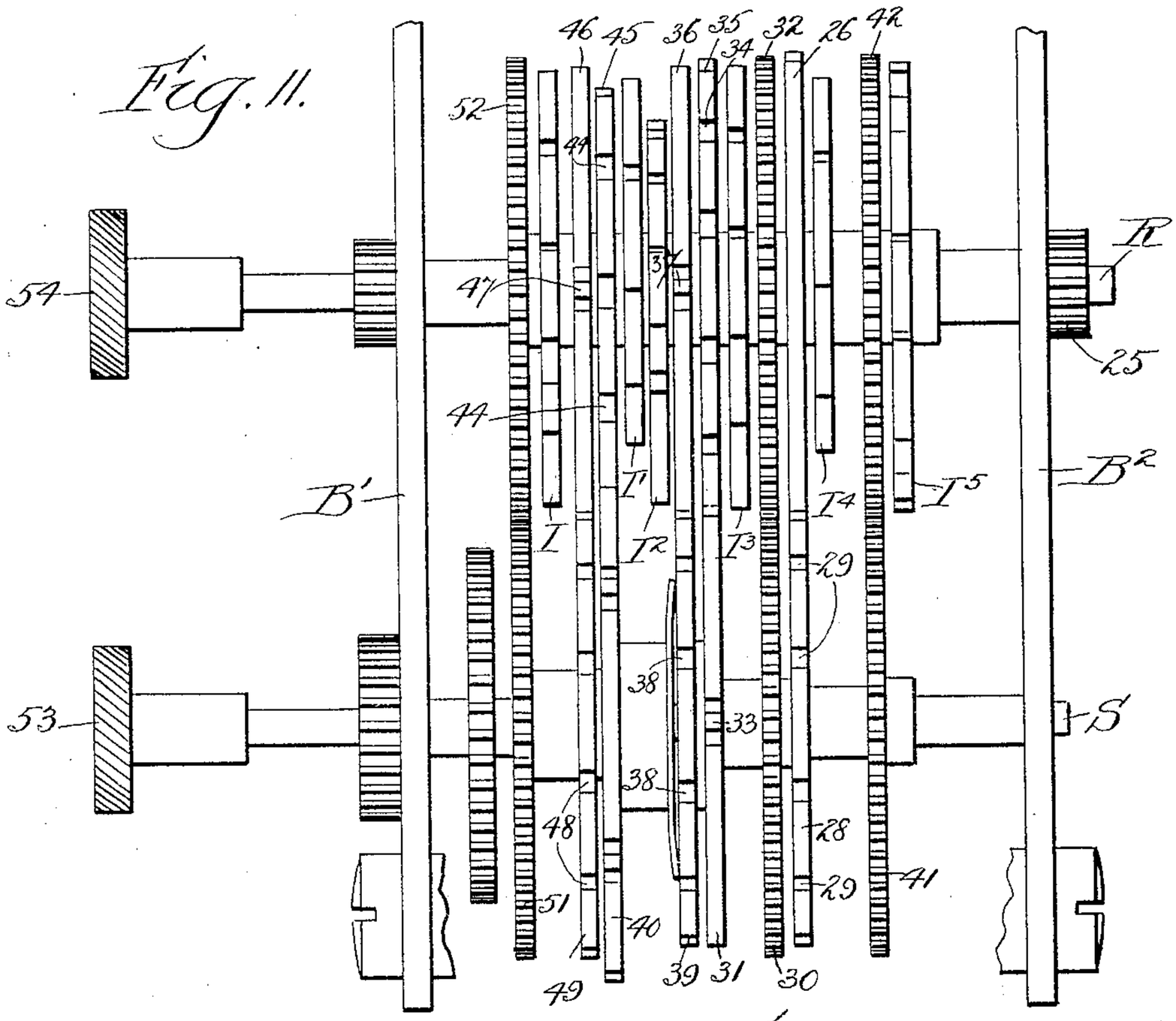


Fig. 12.

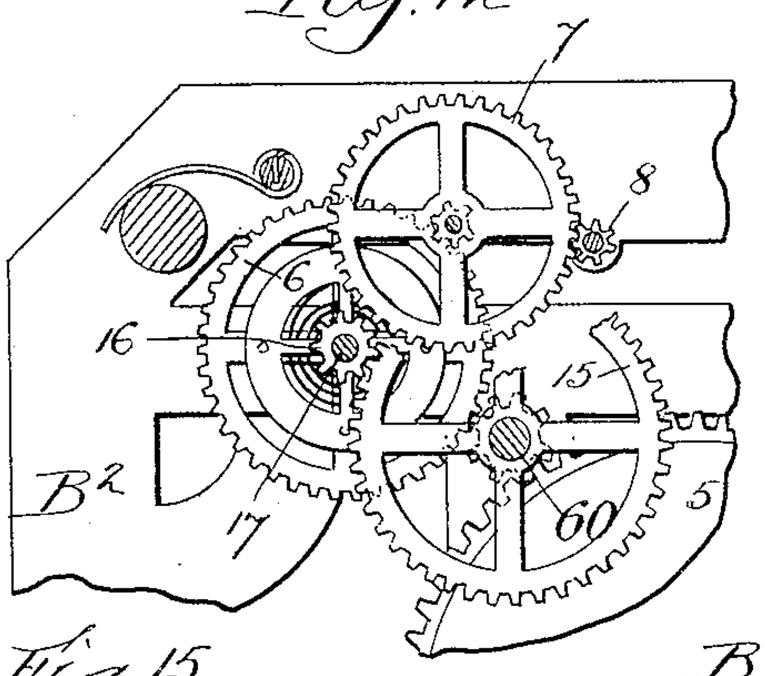


Fig. 13.

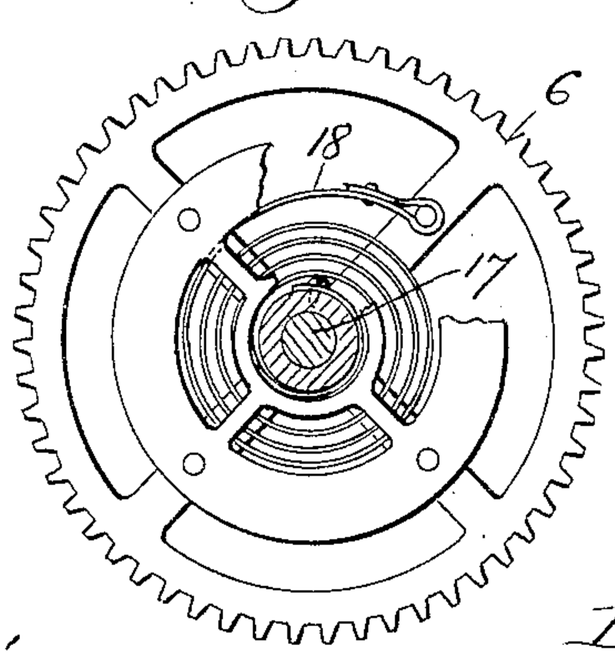


Fig. 14.

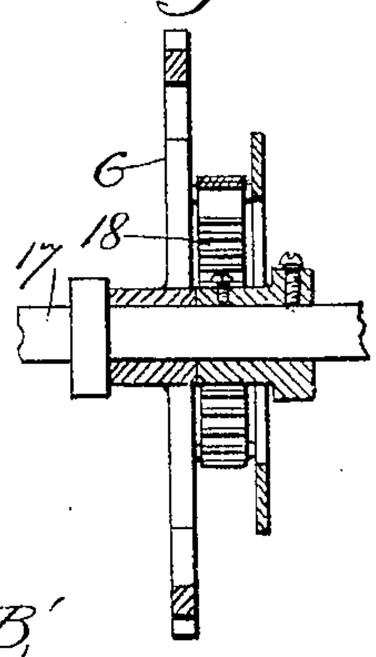


Fig. 15.

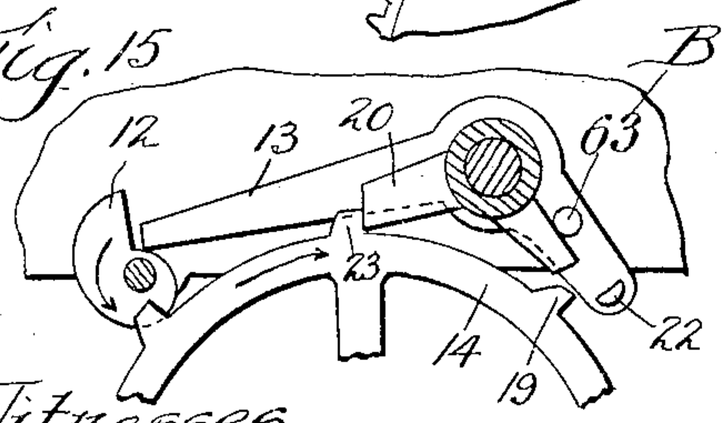
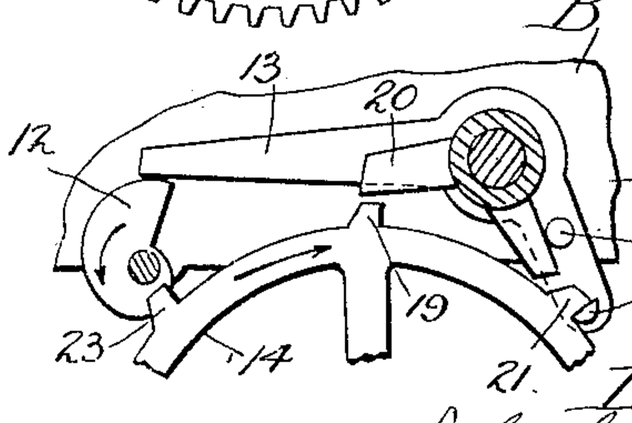


Fig. 16.



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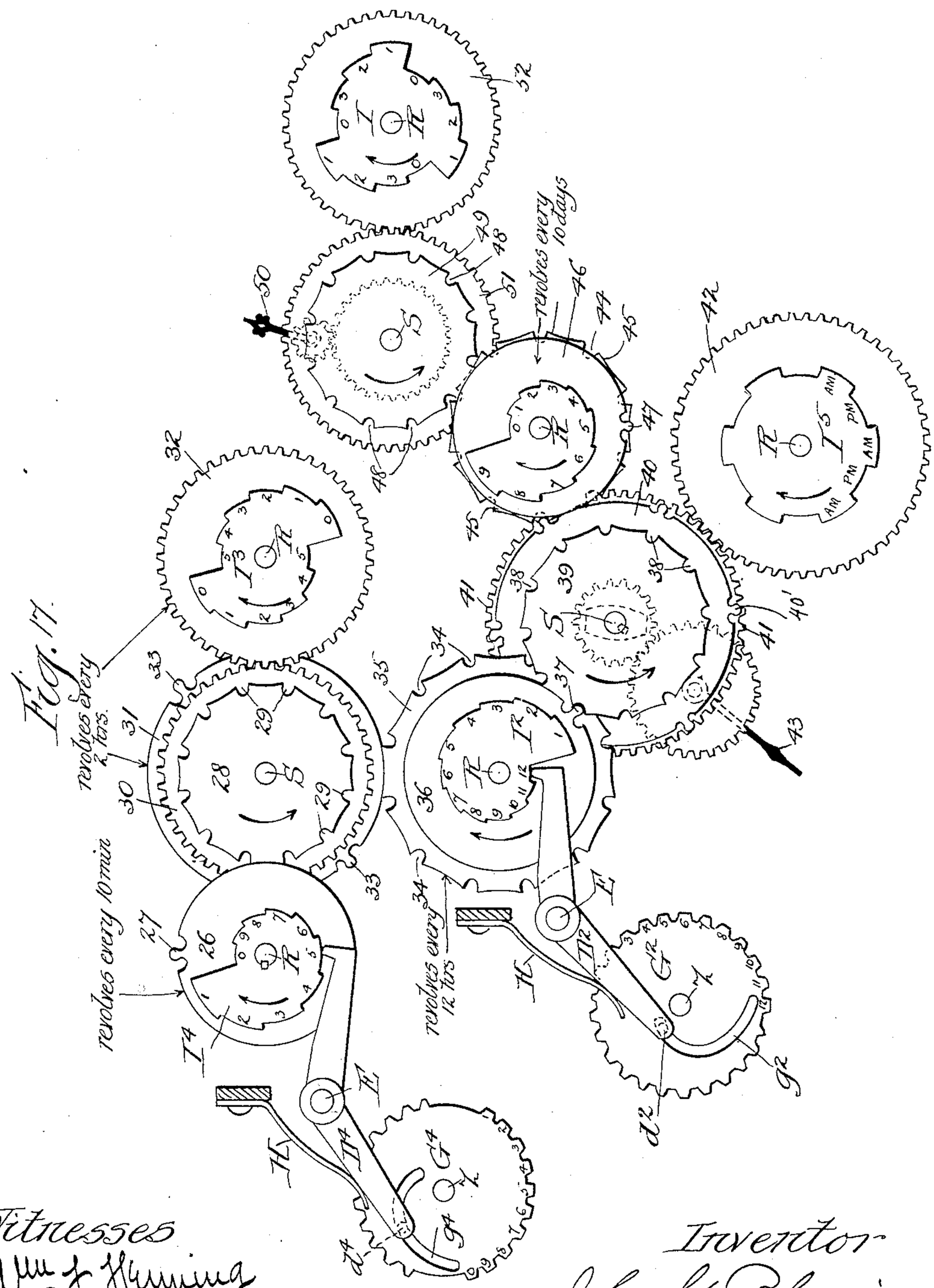
(No Model.) 7 Sheets—Sheet 7.

J. G. BLESSING.

TIME STAMP.

No. 602,026. Patented Apr. 5, 1898.



UNITED STATES PATENT OFFICE.

JOHN G. BLESSING, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ALBERT TUERK, OF SAME PLACE.

TIME-STAMP.

SPECIFICATION forming part of Letters Patent No. 602,026, dated April 5, 1898.

Application filed April 2, 1897. Serial No. 630,415. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. BLESSING, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Time-Stamps, of which the following is a description.

Referring to the accompanying drawings, wherein like reference letters and figures indicate like or corresponding parts, Figure 1 is a side elevation of my improved time-stamp. Fig. 2 is a similar view with the side plate removed, showing the interior. Fig. 3 is a similar view of the opposite side. Figs. 4 and 5 are opposite views of an elevation of the clock mechanism. Fig. 6 is a vertical transverse section in lines 6 6 of Fig. 3. Fig. 7 is a horizontal section in line 7 7 of Fig. 6, looking downward. Fig. 8 is a section in line 8 8 of Fig. 7. Figs. 9, 10, 11, 12, 13, 14, 15, and 16 are detail views, and Fig. 17 is a diagrammatic view.

In the construction of time-stamps it is the usual practice to so connect the various parts that the clock-spring driving the clock mechanism also drives the registering wheels or devices. Considering the many parts necessary for the accurate working of such a device this proves a heavy burden upon the clock-spring, limited, as it must be, to the small space it necessarily occupies. Consequently in a short time the overburdened spring ceases to drive the mechanism and the device stops and ceases to operate, as designed.

The object of my invention is to obviate the above in a simple and effective manner.

To this end my invention consists, primarily, in so constructing a time-stamp that the index or registering wheels shall be wholly disconnected from the clock mechanism and be operated by the force exerted by the hand of the operator, thus entirely relieving the clock from this unnecessary burden.

It also consists in so constructing the clock that the driving parts shall only be operated at stated intervals—say of one minute each—and during the remainder of the time shall stand inactive or still.

It also consists of such other novel construction and combination of parts as are shown and described and as are particularly pointed out in the claims.

In the drawings, A represents a base of suitable form supporting the clock mechanism B, assembled and contained in position within the plates B′ B², and the stamp mechanism C, contained in proper position within the frame C′. (See Figs. 2, 3, 4, and 5.) An inspection of these figures shows that the two mechanisms are not so connected together as to be operated in unison by the clock-spring.

Referring first to the stamping or registering mechanism, D D′ D², &c., are levers pivotally supported between their ends on the shaft E, supported in turn by the frame M, which is vertically movable within the frame C′. The outer end of each lever D, &c., is provided with a lateral pin d d' d^2, &c., which in each case is positioned within an eccentrically-formed slot g^2 g^3 g^4, &c., formed in the index or registering wheels G G′ G², &c., to be actuated by that particular lever. The several index-wheels are loosely mounted on a shaft Z. It will thus be seen that the depression of the outer end of the several levers will cause the several registering-wheels to be rotated, if no obstruction is met with, to the limit permitted by slot g^2 g^3 g^4, &c., therein. (See Figs. 2, 3, 6, and 17.) The several springs H tend to normally throw the levers D downward to their limit and thus turn or rotate the index or registering wheels to their limit.

The inner ends of the levers D extend into the clock mechanism and are arranged to come in contact each with one of the shoulders of a cam or irregularly-shaped piece or an equivalent part I I′, &c., located in the same vertical plane, thereby limiting the distance the inner end of the lever shall move upward, and consequently the distance the outer end of the lever shall move downward, and, as before stated, the distance the index-wheels will be rotated. The frame F, mounted upon the shaft E, Figs. 2, 3, and 9, is constructed with sides substantially in the form of a bell-crank lever, the lower arm projecting downward and forward at f, supporting a rod f', running transversely across just beneath the several levers D, so that when the rod f' is lifted the outer ends of the several levers D D′ D², &c., will be lifted to such an

extent that the inner ends of said levers will be released and free from the cams I I′ I², &c. The upper part of the frame F is provided with an extension f^2, passing above the pin k in the lower end of the plunger K. The result is that when the plunger K is at its upper limit the outer ends of the several levers D D′ D², &c., are also lifted, while the inner ends are disengaged from the several cams I I′ I², &c., of the clock and in no wise interfere with the clock mechanism. The bar f^3 also extends across the frame F, Figs. 2, 3, 6, and 9, and the several projections extending downward between the levers D D′, &c., when pressed downward, fit into depressions 1 2 3, &c., in the upper periphery of the several index-wheels G G′, &c., and lock them against misplacement during the stamping operation and thus keeps them in proper alinement. A spring L tends to normally throw the frame F downward when it is released from the cross-bar k of the plunger.

The entire working parts of the stamping mechanism thus described are supported and positioned in a vertically-movable frame M, Figs. 2, 3, and 6, which is normally held at its highest limit within the fixed frame C′ by the springs N N. The vertically-movable plunger K is held at its upper limit by the spring k', Fig. 3.

The mode of operation of the stamp as thus described is as follows: As the plunger K is depressed by the hand of the operator the frame F is released from the bar k and thrown forward on its pivotal shaft E by the spring L. The outer ends of the several levers D D′, &c., are thrown downward to the extent permitted by the inner ends coming in contact with the cams I I′ I², &c., revolving the several index-wheels to that extent. The parts still descending, the fixed collar k^2 comes in contact with the movable frame M, and the entire frame is then depressed. The downwardly-projecting parts of the bar f^3, Figs. 6 and 9, register with the depressions in the tops of the several index-wheels and lock them in their then position and in alinement. The parts still descending under the force of the hand of the operator, the several numbers, letters, &c., at the lower limit of the several index-wheels are brought positively in contact with the pad O below. An inking-ribbon P, supported on the rolls p p, being interposed, any article, as a sheet of paper, &c., resting on the pad receives the inked impression of the indices on the index-wheels. On removing the pressure of the hand on the plunger the several springs return the several parts to their normal position, as first described. A spring m, Fig. 8, pressing against the collar p', serves to hold the roll p in proper position and also acts as a spring-brake to the roll.

It will thus be seen that the clock mechanism takes no part in the stamping operation aside from setting the several cams I I′ I², &c., in proper position to regulate the distance the inner ends of the levers D D′ D², &c., shall be permitted to move upward and also that the contact of the levers with the cams is but momentary, and consequently does not interfere with the operation of the clock.

In the stamping mechanism the index-wheels for the year and month are preferably set by hand. Wheel G, indicating the tens of days, and G′ the units of days, wheel G², indicating the hour, wheels G³ and G⁴, indicating, respectively, the tens of minutes and the units of minutes, and wheel G⁵, indicating the morning or evening, are all automatically set, as described.

The clock mechanism is of the familiar construction or type known as "spring-clocks," in which a spring drives the main or master wheel 5, which by means of the usual well-known intermediate gears drives all the rest of the mechanism, including the shaft 60, timed to rotate once each hour and carrying the minute-hand. The ordinary train for causing the hands to indicate the hour, &c., will not need detailed description here, as I claim nothing new in that particular as applied to a clock alone.

The pinion 65, Fig. 5, firmly secured to the shaft 60, meshes with the cog-wheel 66, rotating the same and the pinion 67, secured thereto. Pinion 67 meshes with cog-wheel 68, secured to a sleeve carrying the hour-hand 69. The whole forms a reducing-gear between the minute-shaft and the hour-sleeve, so timed that while the former is making a complete revolution the latter will only make one-twelfth of a revolution.

Fig. 5 shows the positive side of the clock mechanism, while Fig. 4 shows the mechanism upon the reverse or negative side, which may be employed or not, as preferred. To cause the hands to rotate in the proper direction on the negative side, (shown in Fig. 4,) it is necessary to reverse their movement. In doing this I prefer to place the pinion (shown in dotted lines) on the end of the shaft R in mesh with pinion 70, meshing with pinion 71, which in turn meshes with cog-wheel 72, mounted on a sleeve carrying the minute-hand. The reducing mechanism is the same as shown in Fig. 5 and heretofore described. Thus the hands are rotated from left to right in the usual manner. For the purpose of this invention, however, I prefer to so construct the clock mechanism proper that it will stand inactive for an interval of time—say one minute—and will then advance the several parts sufficiently to mark that interval. To this end I arrange a supplemental train to continue the operation of the clock during said interval, which receives its energy from the clock mechanism. This train consists of the spring-actuated pinion 6 and the connected pinions 7 and 8 and the regulating-escapement 9 10 11. To this combination also belongs the cam 12, trip 13, and ratchet-wheel 14, Figs. 2, 3, 12, 13, 14, 15, and 16. The cog-wheel 15, driven by the master-wheel

5, energizes the train as follows: The cog-wheel 15, which is mounted on the minute-shaft 60 by a close frictional contact, is driven by the master-wheel 5, Fig. 2, and thus actuates the pinion 16, as well as the shaft 17, to which it is secured. (See Fig. 12.) Firmly secured to the shaft 17 is the ratchet-wheel 14, Figs. 2, 15, and 16, while loosely mounted on the same shaft is the spring-actuated cog-wheel 6, Figs. 12, 13, and 14. The spring 18 is secured at one end to the shaft 17 and at the other end to the wheel 6, Figs. 13 and 14. The rotation of the shaft, therefore, puts a tension on the spring, which is transmitted to the wheel 6 and the connected train 7, 8, 9, 10, and 11. The operation of this portion of my invention is as follows: The master-wheel 5, driving the cog-wheel 15, rotates the shaft 17, Fig. 2, putting a tension on the spring 18, rotating the cog-wheel 6. This in turn rotates the cog-wheel 7 and cam 12, Figs. 15 and 16. The connected escapement, the operation of which is obvious, is timed to cause the cam-wheel 12 to be rotated once in the desired interval, say one minute. As the cam 12 rotates it lifts the arm of the trip 13, releasing the tooth 19 from the arm 20, but causing the rotation of the ratchet-wheel 14 to be arrested by the tooth 21 coming in contact with the stop 22, Fig. 16. The further rotation of the cam 12 releases the arm 13, permitting it to fall by reason of the weighted arm 61, secured thereto, Fig. 3, thereby releasing tooth 21 from the stop 22 and permitting the ratchet-wheel 14 to rotate sufficiently to bring the tooth 23 to the arm 20, which arrests the further rotation, Fig. 15. The momentary rotation of the shaft 17 permits the mechanism of the clock to move forward sufficiently to indicate the interval during which it has remained inactive—viz., one minute. By using the term "inactive" I wish it to be understood that the various pinions are inactive. The mainspring of the clock is always at a tension, so that as soon as the lever 13 is released from the cam 12 and falls the whole clock-movement moves forward until checked by the next tooth in the ratchet coming in contact with the arm 20. This momentary advance again increases the tension on the spring 18 to an extent sufficient to carry the operation of the supplemental train over the next interval, as described.

In the preferred form the arm 20 is loosely mounted on the shaft bearing the trip 13 and may thus remain undisturbed during a part of the movement of the trip. At the desired point in the trip's upward movement the pin 63 comes in contact with the rear of the arm 20, and the further lift of the trip lifts the said arm 20 and releases the proximate tooth 19, &c.

Referring now to the mechanism setting the cams I, I′, I^2, I^3, I^4, and I^5 or their equivalents in proper position to properly limit the upward movement of the inner ends of the levers D, D′, D^2, D^3, D^4, and D^5 and thus set the index-wheels G, G′, G^2, G^3, G^4, and G^5, as first described, it will be seen that six cams must be used to properly designate the day of the month, the time of the day, and morning and evening. The cog-wheel 62 is firmly secured to the shaft 60, which rotates once every hour and carries the minute-hand of the clock. This cog-wheel 62 drives pinion 24 and that the pinion 25 and the shaft R, Fig. 5, the several parts being so proportioned that the pinion 25 and shaft R make a revolution every ten minutes. Firmly secured to said shaft R, so as to rotate therewith, is the cam-wheel I^4, Figs. 11 and 17, also making a complete revolution once in ten minutes. Placed next to the cam I^4 is the disk or wheel 26, arranged to rotate in unison therewith and having upon its periphery a single projecting tooth or lug 27. In the same plane with the disk 26, loosely mounted on the shaft S, is a disk 28, having twelve depressions 29 in its periphery adapted to mesh with and receive the lug 27. Each time the disk 26 makes a revolution, therefore, disk 28 is rotated the distance between two of the depressions 29, requiring one hundred and twenty minutes, or two hours, to make one complete revolution. Upon the shaft S and arranged to rotate in unison with the disk 28 are the cog-wheel 30 and disk 31. On the shaft R, in the same plane with the cog-wheel 30 and meshing therewith, is the cog-wheel 32, so secured to the cam I^3 that the two rotate in unison. The cam I^3 therefore makes a complete revolution once in one hundred and twenty minutes, or two hours. It is for this reason made double, each half being adapted to regulate the setting of the proper index-wheel up to "6," one indicating the tens of minutes for one hour, when the second half begins at the proper moment to indicate the number of the next hour.

The disk 31, which it will be remembered makes a revolution once in two hours, has upon its periphery diametrically opposite to one another two teeth or lugs 33, which are adapted to mesh with twelve corresponding depressions 34 in the periphery of the disk 35, loosely mounted on the shaft R. It will thus be seen that each hour-disk 35, and cam I^2 moving in unison therewith, is moved forward the distance between the depressions 34 and make one complete revolution every twelve hours.

On the shaft R, rotating in unison with the cam I^2 and disk 35, is another disk 36, having on its periphery a single lug or tooth 37. In the same plane on shaft S is firmly secured the disk 39, having in its periphery twelve depressions 38, meshing with the lug 37. For each revolution of the disk 36 and cam I^2, or each twelve hours, therefore, disk 32 is moved forward the distance between the depressions 38. The disk 40 and cog-wheel 41 are also firmly secured to the shaft S and consequently rotate therewith and the disk 39. On shaft R, meshing with cog-wheel 41, is a cog-wheel

42, carrying in unison with it the irregular wheel or cam I^5, which is so shaped and proportioned that it is therefore regularly carried forward the distance between the shoulders on its periphery every twelve hours, corresponding to a. m. and p. m.

The movement imparted to shaft S by disk 39 is also by proper pinions utilized to control the hand 43, Figs. 1 and 17, indicating the units of the days of the months. On the periphery of disk 40 are six lugs or teeth 40′, one corresponding to each day of twenty-four hours, which mesh in ten depressions 44 in the periphery of the disk 45 on the shaft R and move the said disk and cam I′ forward regularly one notch or depression each day of twenty-four hours. Disks 45 and 46 and cam I′ each make a complete revolution, therefore, once in ten days. Disk 46, moving in unison with disk 45 and cam I′, has upon its periphery a single lug 47, which meshes with depressions 48 in the periphery of disk 49, causing the same to move forward a single notch every ten days. Suitable pinions impart this movement to the hand 50, Figs. 1 and 17, to indicate the tens of days of the month. Cog-wheels 51, moving in unison with disk 49, mesh with cog-wheel 52 on shaft R, which is so connected with cam I that it also will be regularly moved forward the required distance to indicate a change of ten days. These several movements serve to set the several cams, as stated, so that the index-wheels, actuated by the levers, will correctly stamp the time and date. By means of the buttons 53 the parts governing the registering mechanism can be moved backward or forward to set the parts as desired—for example, at the beginning of a month—without affecting the clock. Buttons 54 serve a like purpose for the clock, which can be likewise moved backward or forward, the several parts assuming correct positions.

It will be obvious that in Fig. 17 the train is extended to show the proper connection. The cams, wheels, and disks are each mounted on the shaft indicated by the letters R or S thereon.

I do not wish to be understood as limiting myself to the exact form herein described, the broad idea of my invention consisting in so disconnecting the stamping or registering mechanism from the clock mechanism that it will not burden or retard the operation thereof.

Having thus described my invention and shown one way in which it may be successfully employed, what I claim as new, and desire to secure by Letters Patent, is—

1. In a time-stamp, the combination of the following elements: the clock mechanism, a series of cams, connecting mechanism whereby the movement of the clock operates the cams, registering devices normally wholly disconnected from the clock mechanism and the cams, and means for momentarily securing mediate connection between the registering devices and the cams, whereby the position of the cams regulates the impression of the stamp, substantially as described.

2. In a time-stamp, the following elements in combination: clock mechanism, a controlling-train, whereby the clock remains inactive at regular intervals, a series of cams, mechanism connecting the same to the clock whereby the movement of the clock operates the cams, registering devices normally wholly disconnected from the clock mechanism and the cams, and means for momentarily securing mediate connection between the registering devices and the cams, whereby the position of the cams regulates the impression of the stamp, substantially as described.

3. In a device of the kind described, the clock mechanism, a series of cams, and connecting mechanism whereby the movement of the clock operates the cams, in combination with a movable frame containing a series of registering-wheels wholly disconnected from the clock mechanism and cams, and means for momentarily securing mediate connection between the registering-wheels and the cams, whereby the position of the cams regulates the position of the registering-wheels, when the stamp is operated, substantially as set forth.

4. In a device of the kind described, a clock mechanism, a controlling-train whereby the clock remains inactive at regular intervals, cams, and connecting mechanism whereby the movement of the clock operates the cams, in combination with a movable frame containing a series of registering-wheels wholly disconnected from the clock mechanism and the cams, and means for momentarily securing mediate connection between the registering-wheels and the cams, whereby the position of the cams regulates the position of the registering-wheels when the stamp is operated, substantially as described.

5. In a device of the kind described, the clock mechanism, a series of cams, and connecting mechanism whereby the movement of the clock operates the cams, in combination with a vertically-movable frame and series of registering-wheels, G, G′, &c., provided with cam-formed slots, *g*, *g′*, &c., levers, D, D′, &c., pivoted between their ends and provided at their outer ends with pins, *d*, *d′* &c., adapted to be loosely positioned in said slots, the inner ends of the levers extending into the clock mechanism and being positioned in a vertical plane with the several cams, and means for normally holding the outer ends of the levers at their upper limit, whereby upon depressing the frame the levers are released and the registering-wheels set in a position governed by the upward movement of the inner ends of the levers as limited by the action of the cams, substantially as described.

6. In a device of the kind described, the clock mechanism and controlling-train where-

by the clock remains inactive at regular intervals, a series of cams, and connecting mechanism whereby the movement of the clock operates the cams, in combination with a vertically-movable frame, a series of registering-wheels, G, G′, &c., provided with cam-formed slots, *g*, *g′* &c., levers, D, D′ &c., pivoted between their ends and provided at their outer ends with pins, *d*, *d′*, adapted to be loosely positioned in said slots, the inner ends of the levers extending into the clock mechanism, and being positioned in a vertical plane with the several cams, and means for normally holding the outer ends of the levers at their upper limit, whereby upon depressing the frame the levers are released and the registering-wheels set in a position governed by the upward movement of the inner ends of the levers as limited by the action of the cams, substantially as and for the purpose set forth.

7. In a device of the kind described, the movable frame, M, the plunger, K, the frame, F, the registering-wheels, G, G′, &c., and the levers, D, D′ &c., in combination with a clock mechanism, the cams, I, I′ &c., and connecting mechanism between the clock and said cams whereby the movement of the clock operates the cams, substantially as and for the purpose set forth.

8. In a device of the kind described, the movable frame, M, plunger, K, frame, F, registering-wheels, G, G′ &c., provided with alinement depressions 1, 2, 3, the levers, D, D′ &c., and the spring H, in combination with a clock mechanism, the train 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15, the cams, I, I′, &c., and connecting mechanism whereby the clock mechanism remains inactive at regular intervals and when in action regulates the position of the cams, substantially as and for the purpose set forth.

9. In a device of the kind described, the frame M, the plunger K, the frame F, spring L, registering-wheels, G, G′ &c., provided with alinement depressions 1, 2, 3, the levers, D, D′ &c., the spring H and the inking-ribbon P and pad O, in combination with a clock mechanism, the cams, I, I′, and connecting mechanism whereby the operation of the clock regulates the position of the cams, substantially as and for the purpose described.

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Witnesses:
L. A. GARDINER,
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