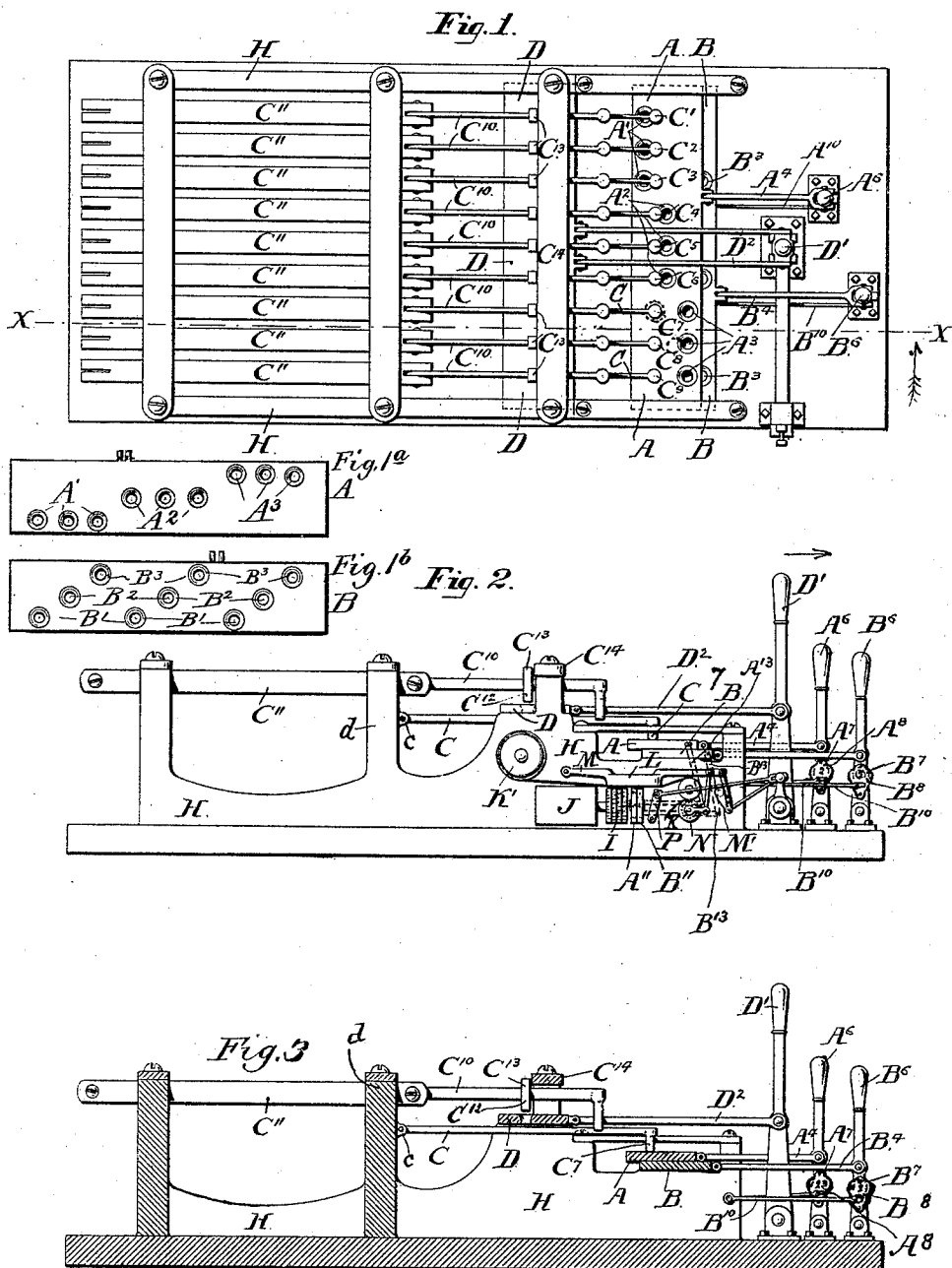


3 Sheets—Sheet 1.

No. 461,970.

Patented Oct. 27, 1891.



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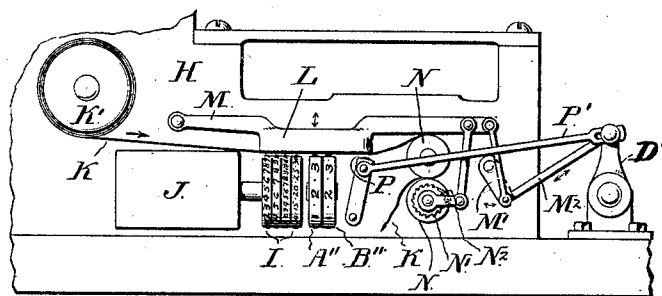
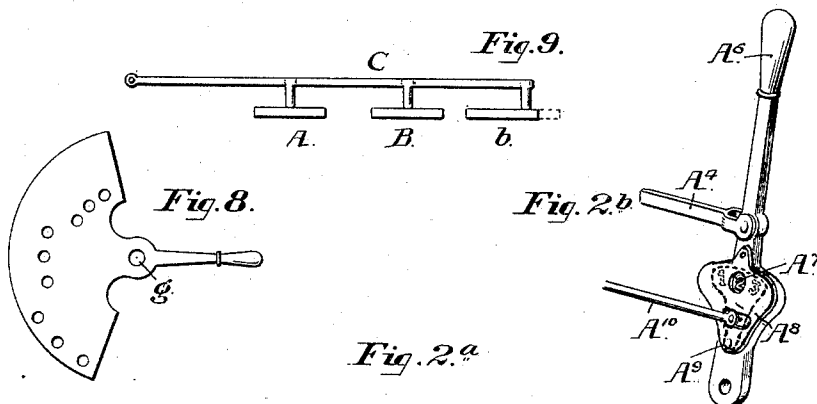
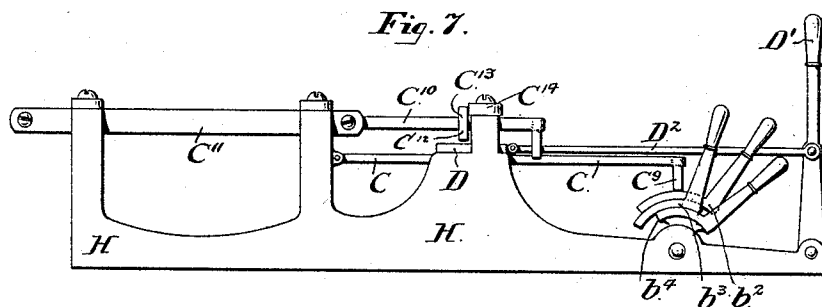
(No Model.)

3 Sheets—Sheet 2.

S LLOYD WIEGAND.
MECHANICAL SELECTOR AND RECORDER.

No. 461,970.

Patented Oct. 27, 1891.



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(No Model.)

S LLOYD WIEGAND.

3 Sheets—Sheet 3.

MECHANICAL SELECTOR AND RECORDER.

No. 461,970.

Patented Oct. 27, 1891.

Fig.4.

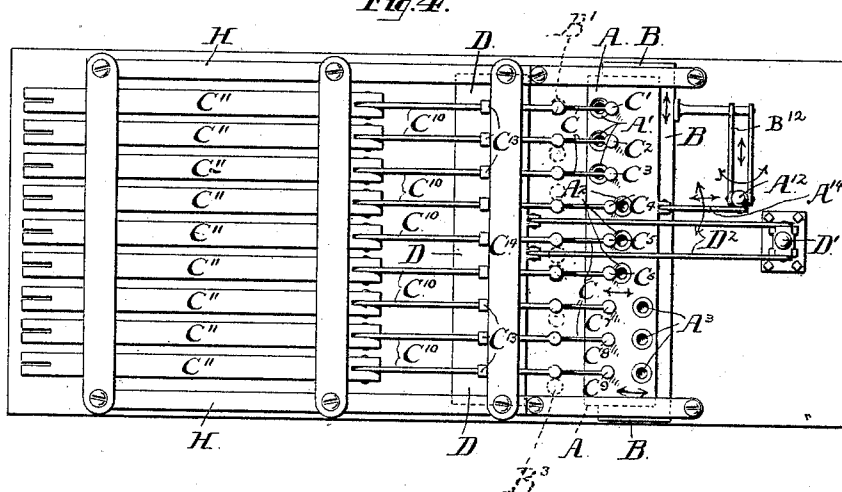


Fig. 5.

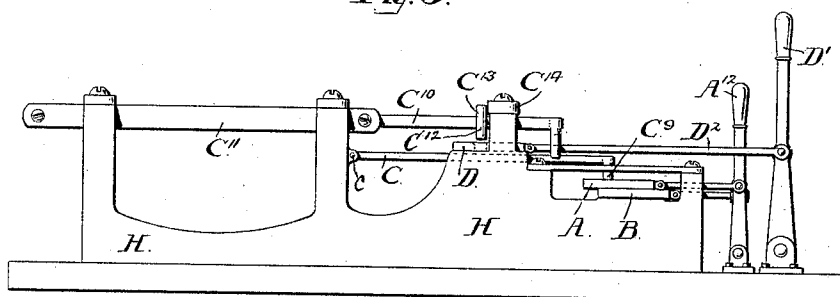


Fig. 4.^a

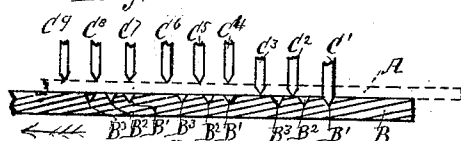
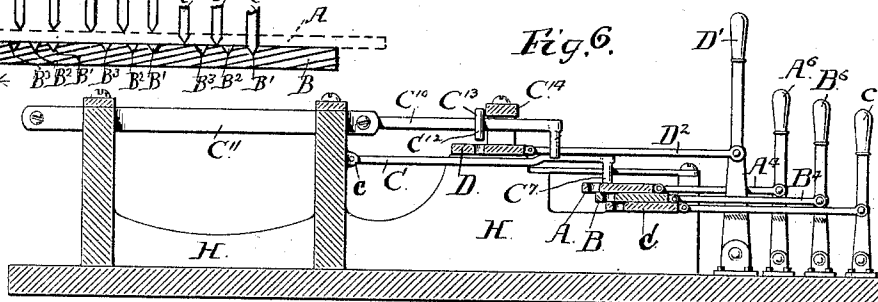


Fig. 6.



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UNITED STATES PATENT OFFICE.

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MECHANICAL SELECTOR AND RECORDER.

SPECIFICATION forming part of Letters Patent No. 461,970, dated October 27, 1891.

Application filed November 7, 1889. Serial No. 329,585. (No model.)

To all whom it may concern:

Be it known that I, S. LLOYD WIEGAND, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Selecting and Recording Instruments and the Method of Operating the Same; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable others skilled in the art to make and use the said invention.

This invention relates to selectors for finding any desired mechanism in a series of similar mechanisms and connecting such mechanism thus selected, so that the selected mechanism alone may be operated; and the invention is especially applicable to a series of railway-switch-operating mechanisms and mechanisms for recording the motions thereof.

The invention consists in a series of co-operating devices whereby one of a series of any number of mechanisms may be brought into operation to control a switch to the exclusion of the others, as will be hereinafter more fully set forth, and specifically defined in the claims. Any number of co-operating mechanisms may be employed; but in the accompanying drawings a ternary system, or one of progression from one set of mechanisms to another in groups of three, is represented.

Referring to the drawings, Figures 1, 2, and 3 respectively indicate the apparatus in plan, side elevation, and section, showing two selecting-plates arranged to control nine signals or switch-operating bars. Figs. 1^a and 1^b represent detached views of the selecting-plates, and Figs. 2^a and 2^b enlarged details of Fig. 2. Fig. 3 represents a sectional view taken on the line X X of Fig. 1. Figs. 4 and 5 represent modifications of my invention, respectively, in plan and side elevation. Fig. 4^a is a sectional view of one of the plates, showing the holes therein, with the position of the other plate indicated by dotted lines. Fig. 6 represents a vertical sectional view of an apparatus in which three selecting-plates are employed. Fig. 7 represents a view in which segmental plates are substituted for the flat selecting-plates. Fig. 8 represents a view in which selecting-plates turning pivotally are substituted for the sliding plates. Fig. 9 rep-

resents another modification of the invention, showing a different arrangement of plates and pins employed.

Referring to Figs. 1, 2, and 3 of the drawings, the letter C indicates a series of levers, nine in number, which are fulcrumed at *c* to a standard *d* of the frame H of the apparatus. Each of these levers at its forward end is bent downwardly or provided with a pin, the pins or downwardly-bent ends being indicated by the letters C' C² C³ and so on to C⁹, arranged consecutively in a row. Beneath the pins or downwardly-projecting ends of the levers are located two sliding plates A B, arranged one above the other in guideways in the frame H, in which they are adapted to slide. In each of these plates are arranged three series of apertures of three each, as shown particularly in Figs. 1^a and 1^b of the drawings. These apertures are so located that when the upper plate A is moved by its lever and connecting-link the row of apertures A' therein will register with the pins or bent ends C', C², and C³ of the levers C, bearing them. When moved farther in the same direction, the same row of apertures will pass out of register with the said pins, and when moved still farther the second row of apertures A² will fall into register with the pins C⁴ C⁵ C⁶, and when moved still farther the row of holes A² will pass out of register with the pins C⁴, C⁵, and C⁶, and the third row of apertures A³ will fall into register with pins C⁷, C⁸, and C⁹ of the levers. The apertures in the plate B, which is arranged to slide below the plate A, are arranged in series of threes, but in different positions, as shown in Fig. 1^b of the drawings, so that when said plate is moved by its lever and link the apertures B', B², and B³ may be brought successively into register with the apertures A' A² A³, so that the pin registering with either of the said apertures may also register with one of the apertures B', B², and B³ and permit the lever C, carrying said pin, to drop to its full extent. It will be seen that by this construction only one pin can be brought into register with a registering aperture in both plates, or, in other words, that the plates in their movements will bring but one aperture of each in registration, so as to permit no more than one of the levers C to be operated at a time. By this arrangement of the plates

A and B and the registering apertures thereof it will be seen that there can be a registering of any one, and not more than one, of the pieces C' C² C³ effected with the simultaneously-registering holes of the two plates, but that in consequence of the grouping of the apertures in the respective plates the plates may be brought simultaneously into such position as to permit any of the levers C to act.

To facilitate the entrance and disengagement of the pins above mentioned in the apertures in the plate, the ends of said pins are made conical or rounded and the apertures in the upper plate are countersunk or chamfered. The plates A and B are respectively connected by means of links A⁴ B⁴ with hand-levers A⁶ and B⁶, fulcrumed to the frame H, and may be operated by an attendant or switchman. The levers have connected to them at one side plates A⁸ B⁸, back of which work segmental plates A⁷ B⁷, secured to the frame of the apparatus. The plates A⁷ B⁷ are provided with raised figures on their faces corresponding with the positions which the levers may be made to assume, and the covers A⁸ B⁸ are provided with openings, opposite which one of these figures appears in the different positions of the levers, so that the position of each particular lever may be read by touch or feeling in the absence of sufficient light to enable the attendant to determine their position by sight. The plates A⁷ and B⁷ are arranged to turn upon pivots A⁹ and B⁹, and by the links A¹⁰ and B¹⁰ they are pivotally connected to the frame H.

C¹¹ indicates the switch-operating bars, which are arranged to travel in guides in the frame H. To the forward ends of these are pivoted the levers C¹⁰, which are downwardly bent at their forward ends, said ends being forked to overset the levers C. The levers C¹⁰ have blocks C¹³ secured to them, which normally engage the bars C¹⁴ and are disengaged therefrom when a particular lever C is dropped, dropping its attendant lever C¹⁰, and thus permitting the switch-bar thereof to be operated by the lever D', the other switch-bars at the time being securely locked. To each of the slides A and B is attached, by angle-levers A¹³ and B¹³, (shown in dotted lines in Fig. 2,) a series of printing-types A¹¹ and B¹¹, each type of each series marking a figure indicative of the position of the slide. Adjacent to these printing-types is a series of time-indicating type-wheels I, denoting hour, date, and minute and fractions thereof, and operated by a clock-movement J so as to present the type showing the time at the side of the types showing the movement, a ribbon K of paper being fed from a suitable reel K' over the types and under the impression-platen L, which is reciprocated to and from the type-wheels I by means of a lever M, connected to the switch or signal operating lever.

The lever M is connected to the lever D' by a pair of toggle-levers M' and the link M², which straighten in the middle of their travel,

so as to produce an impression during both the forward and backward motions of the lever D' in the position which they occupy after the lever D' has been moved to the right and an impression of the platen is made against the printing forms or types. A pair of rollers N, operated by a ratchet-wheel N' and pawl N², connected to the lever M, serves to move the paper ribbon K progressively after each impression. A record is thus made on the ribbon K of each switch or signal that is operated, together with the time and date of such operation, and may be made to distinguish between opening and closure by a type P, which is retracted from juxtaposition with the other types A¹¹ by a link P', connected with the lever D'.

As shown in Figs. 4 and 5, instead of operating the perforated slides A and B by separate levers, a single lever A¹², having two motions, is used to perform the functions, and the motions of the slides A and B are at right angles to each other. The direction of the motions of the plates A and B and the double motion of the handles A¹² is susceptible of being indicated by arrows marked in parallel position with the connected links.

In operating the mechanism by the lever A¹², as shown in Fig. 4, when the lever A¹² is moved from left to right the plate A, connected therewith by the link A¹⁴, is moved in the same direction. The links B¹², connecting the lever A¹² with the plate B, merely oscillate in curved lines with the handles as indicated by the curved arrow crossing the links B¹², and when the plate B is moved in the direction of the arrow between the links B¹² the plate B moves in a similar direction and the link A¹³ merely oscillates in the direction of the curved arrow drawn across it. It will be observed that the points C', C², and C³ fall simultaneously into the holes A' in the plate A at one extreme of motion of the plate A, while on the opposite extreme of motion of the plate A the points C⁷, C⁸, and C⁹ fall simultaneously into the holes A³, and when in intermediate position the pins C⁴, C⁵, and C⁶ simultaneously fall into the holes A², the plate A thus serving to select the pins in groups of three adjacent pins, the extent of motion required for the performance of this function being equal to the distance between two parallel right lines drawn through the centers of the outer rows of the said holes.

The arrangement of holes in plate B in relation to the pins C' to C⁹ is shown in the sectional figure marked 4^a. In the plate B the series of holes marked B' B' B', which simultaneously register with the pins C', C⁴, and C⁷, are not adjacent, but are at intervals equal to the spaces between the pins registering therewith, as are also the series of holes marked B² B² B² and the series of holes marked B³ B³ B³, as shown in section in Fig. 4^a. The holes B' B² B³ are equidistant in each group. The distances between each hole B' and the adjacent hole B² should be sufficient (when

the plate B, as shown in Fig. 4^a, is moved toward the left, as indicated by the arrow) to support the pins C', C⁴, and C⁷ on the top of the plate B before the pins C², C⁵, and C⁸ commence to register with the holes B² B² B², and the distances between the holes B² B² B² and the holes B³ B³ B³ should be such that the pins C², C⁵, and C⁸ should rest on the top of the plate B between the holes B' B' B' and the holes B² B³ B² before the pins C³, C⁶, and C⁹ can enter the holes B³ B³ B³. The motion of the plate B from right to left is therefore attended first with the registering of the holes B' with the pins C', C⁴, and C⁷. Continued motion leaves these pins out of register and causes the holes B² to register with the pins C², C⁵, and C⁸, and further motion places these pins C², C⁵, and C⁸ out of register with the holes B² and brings the holes B³ into register with the pins C³, C⁶, and C⁹. A movement of the plate in the opposite direction repeats the registering of pins and holes in a reverse order.

It will be observed that by the selection in groups and by singles from each group any one of the entire series of points may be selected or engaged with the operating-mechanism draw-bar D and operated therewith through the links D² and the lever D'. In the form of apparatus shown in Fig. 6 three sliding plates A B C are used. The construction and operation of these plates are the same as of those shown in Figs. 1, 2, and 3, the difference between them being that the greater number of mechanisms can be controlled by it.

It is not essential that the series of holes to receive the pins be made in flat slides or plates, as the same effect can be produced in substantially the same manner by a series of perforated cylinders or cylindric segments b², b³, and b⁴, turning one within the other, as shown in section in Fig. 7, or by making the several series of holes in plates turning upon the axis g, as shown in Fig. 8. Neither is it requisite that the plates A and B be superposed one on the other; but they can be used in conjunction with a series of pins on each of the levers C, one pin on each lever C for each plate A, B, and b, as shown in Fig. 9 of the drawings.

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

1. In a mechanical selector, several separate mechanisms arranged in series, with points or projections on each susceptible of two adjustments, as to alternately engage such mechanism with a stationary locking-piece or with an actuating mechanism, in combination with a second series of mechanisms likewise having points or projections on each and with two or more adjustable forms having depressions or holes formed therein adapted to receive the points of said second series and so arranged in series that but one of said points or projections will register at the same time with a hole or depression in each and all of

said forms and permit the engagement of the mechanism corresponding to said points with the operating mechanism, substantially as set forth.

2. In a mechanical selector, the combination, with a series of selecting-levers having downwardly-bent points or projections, of the plates having apertures arranged in series and mechanism whereby they may be operated to bring the apertures in the plates into registration with a projection on one of the selecting-levers to drop and release a lever of a second series and engage it with an operating mechanism, substantially as specified.

3. In a mechanical selector, the combination, with the perforated sliding plates, their operating levers and links, of the sliding bars, the levers fulcrumed thereto and having forked ends, and the blocks secured to said fulcrumed levers bearing normally against a cross-bar by means of which they are locked, but from which each is released when that particular selecting-bar comes into operation, substantially as specified.

4. The combination, in a mechanical selector, of the fulcrumed levers, perforated selecting-plates and mechanisms for operating the same, and a connected recording printing-form whereby each particular combination selected is shown, with a mechanism operating the selected mechanism and impressing the record from the printing-form, substantially as specified.

5. The combination, in a mechanical selector, of the fulcrumed levers, the selecting-plates and mechanism for operating the same, the sliding bars and their connecting-levers, the printing mechanism, and the time-recording mechanism whereby the particular bar selected and time and direction in which it is operated are recorded, substantially as specified.

6. In an apparatus for selecting a mechanism from a series of mechanisms, the combination of the registering points and two or more registering forms arranged to be independently adjusted and by their combined action control the motion of the registering pins, with the indicators to indicate the position of the operating-levers and connected parts, substantially as specified.

7. In a mechanical selecting mechanism, a number of mechanisms arranged in series, each to be separately operated by a single actuating mechanism and controlled in engagement therewith by the registration of projecting points with two or more independently-adjustable forms, in combination with a printing or marking form connected with each of the adjustable forms, and an impressing mechanism connected with and operated by said single actuating mechanism, substantially as set forth.

8. In a mechanical selecting mechanism, a number of mechanisms arranged in series to be separately operated by a single actuating mechanism and controlled in engagement

separately therewith by the combined adjustments of two or more adjustable forms constructed and arranged as set forth, in combination with two or more dials and covers
5 therefor, each connected with one of the adjustable forms and provided with characters indicative to the sense of touch of the adjustment of each adjustable form, and the several dials together indicative of the mechanism of the series then in connection with the
10 actuating mechanism.

9. In a mechanical selecting and recording mechanism, a time-measuring instrument having connected to operate therewith printing or embossing wheels indicative of the time-measures and fraction thereof, and a series of printing or embossing forms connected with and moved by the adjustable selecting-forms, in combination with an impressing
15 mechanism, a recording-surface operated by a connection with the actuating mechanism moving the selected mechanism then engaged therewith and arranged to record the selection and time on such recording-surface, substantially as set forth.
20
25

10. In a selecting and recording mechanism having several separately-operating mechanisms singly controlled in engagement with an actuating mechanism by the combined operation of two or more adjustable forms, the combination therewith of a recording-surface
30 moved by the actuating mechanism, a printing or marking form indicating the direction of motion of the actuating mechanism and connected therewith and operated thereby,
35 with a series of printing or marking forms connected with and actuated by the selecting-forms, a series of time-printing forms connected with a time-measuring instrument, and an impressing mechanism connected with
40 and actuated by the single actuating mechanism simultaneously with the moving of each of the selected and engaged mechanisms, substantially as set forth.

S. LLOYD WIEGAND.

Witnesses:

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