F. M. RUSSELL & A. J. JUNG.

TIME INDICATING AND RECORDING MACHINE OR APPARATUS.

APPLICATION FILED OCT. 8, 1909.

967,567. Patented Aug. 16, 1910.

4 SHEETS—SHEET 1.

Fig. 1.

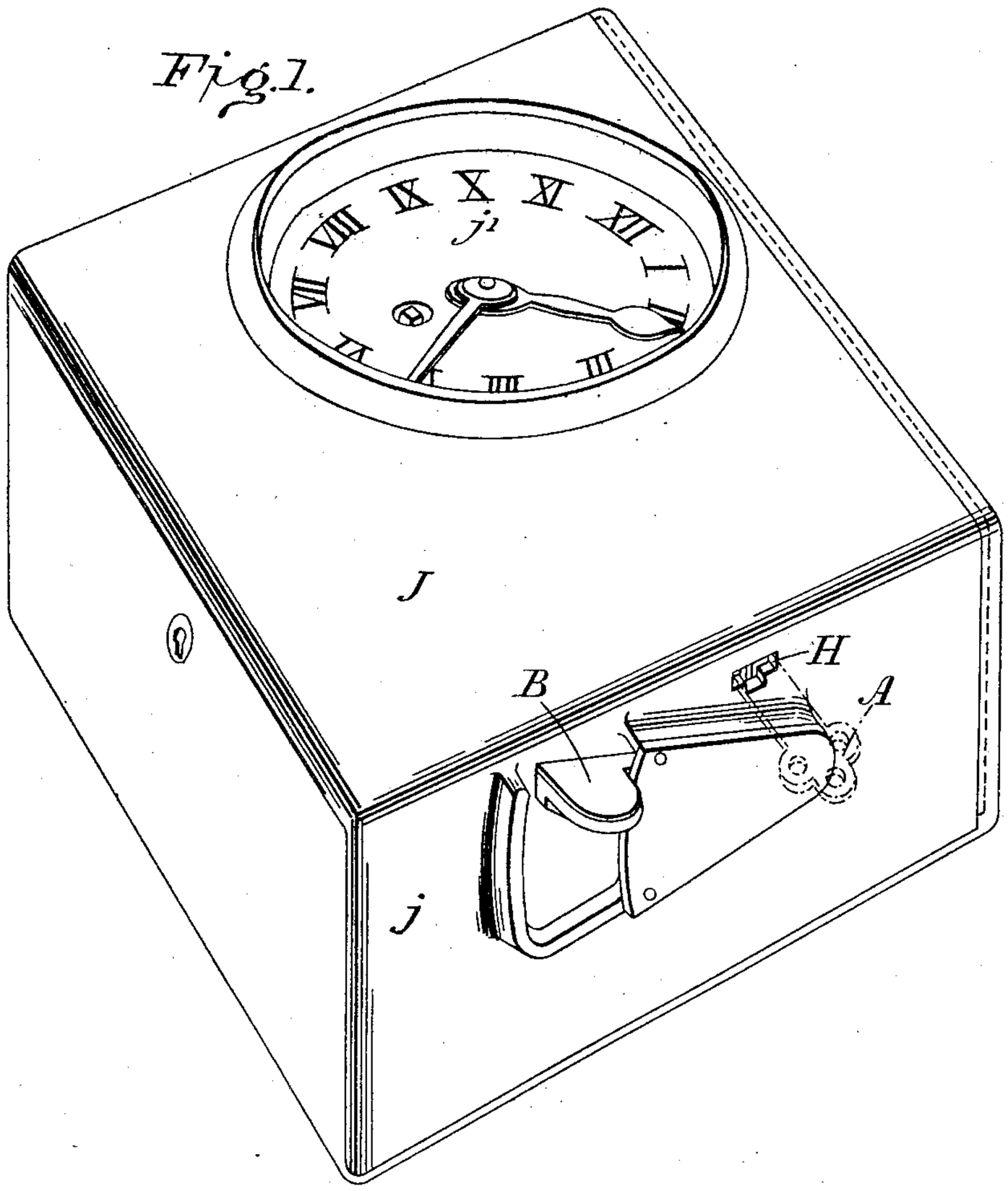

Fig. 9.

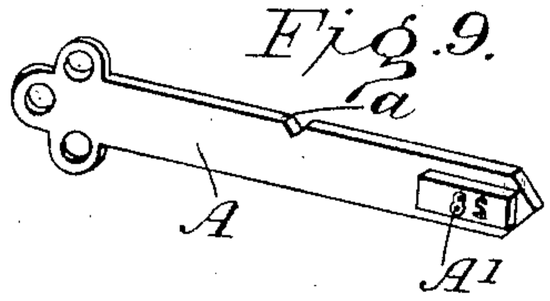

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Fig. 2.

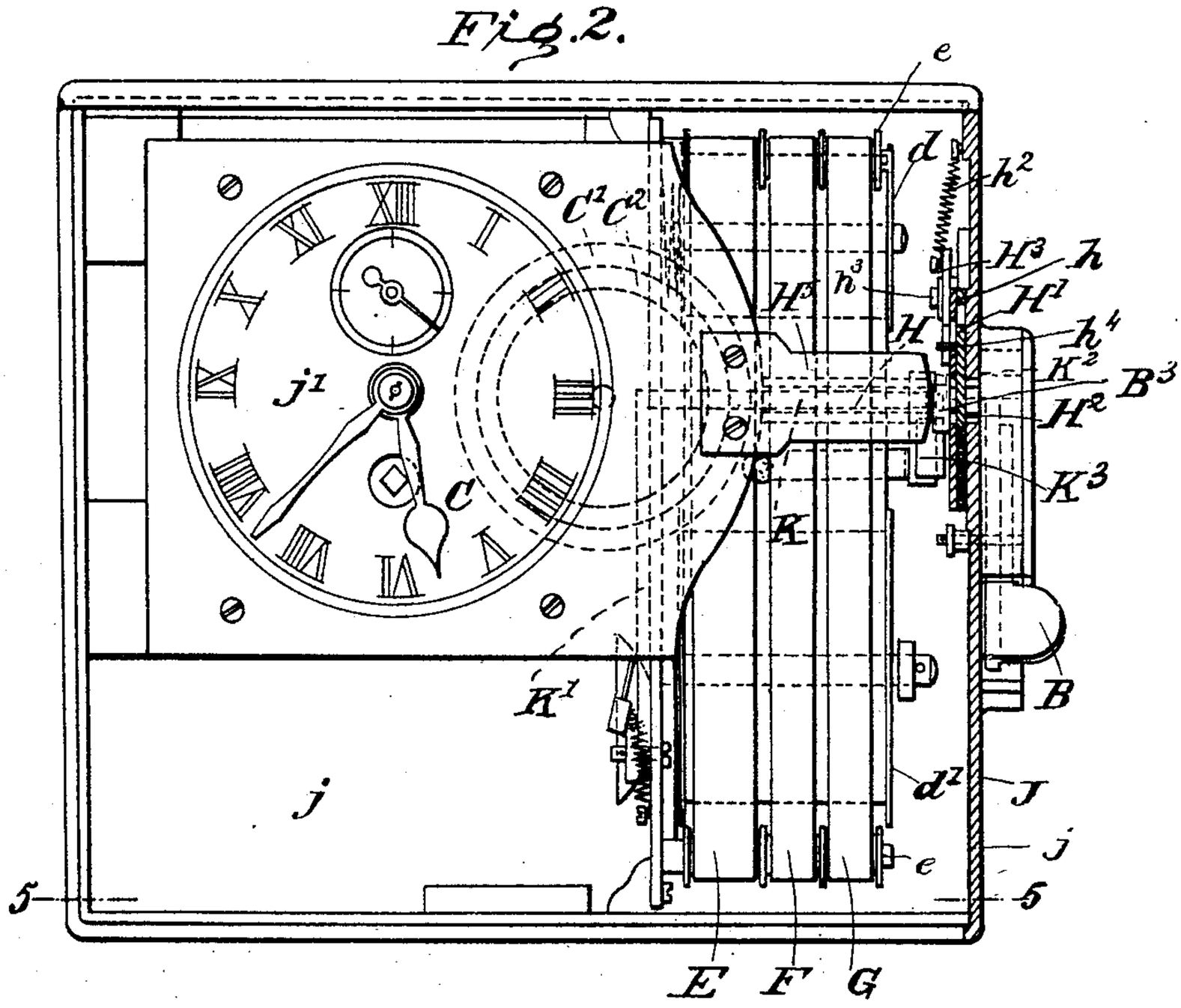
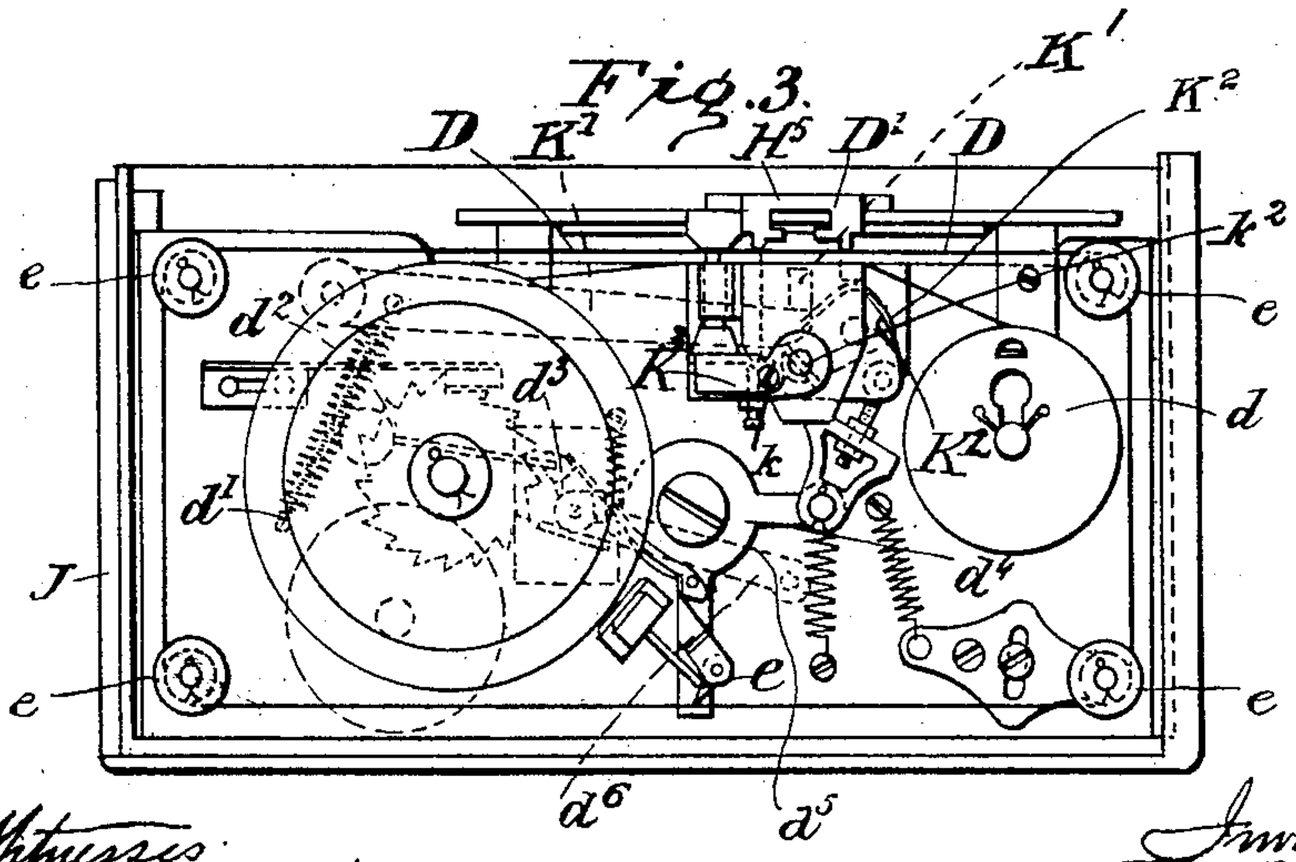


Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 4.

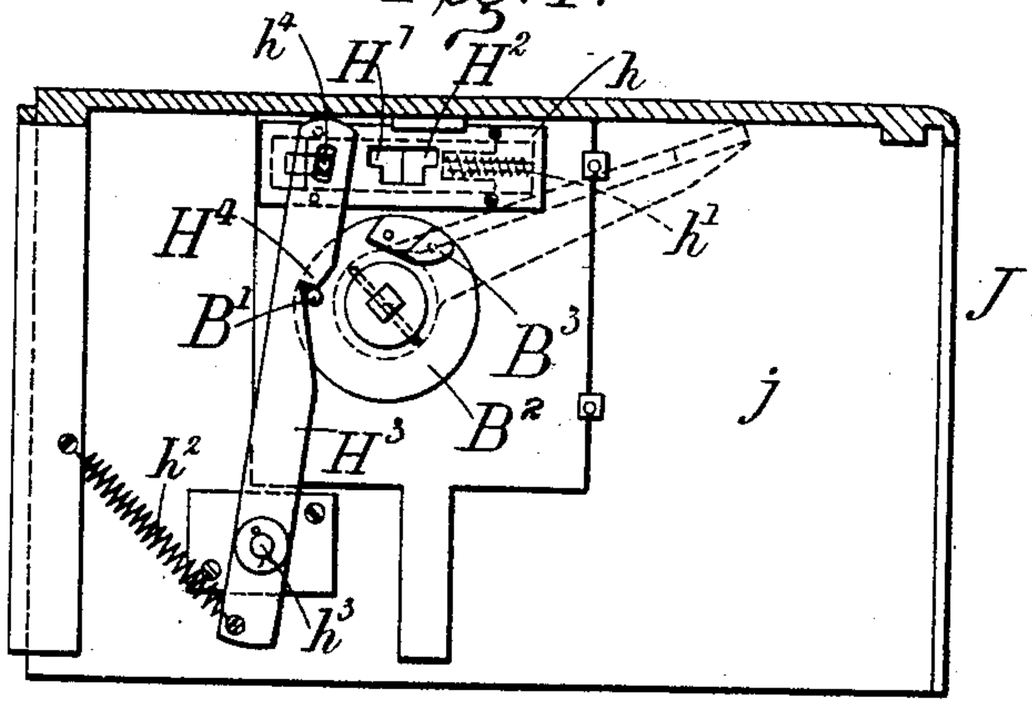
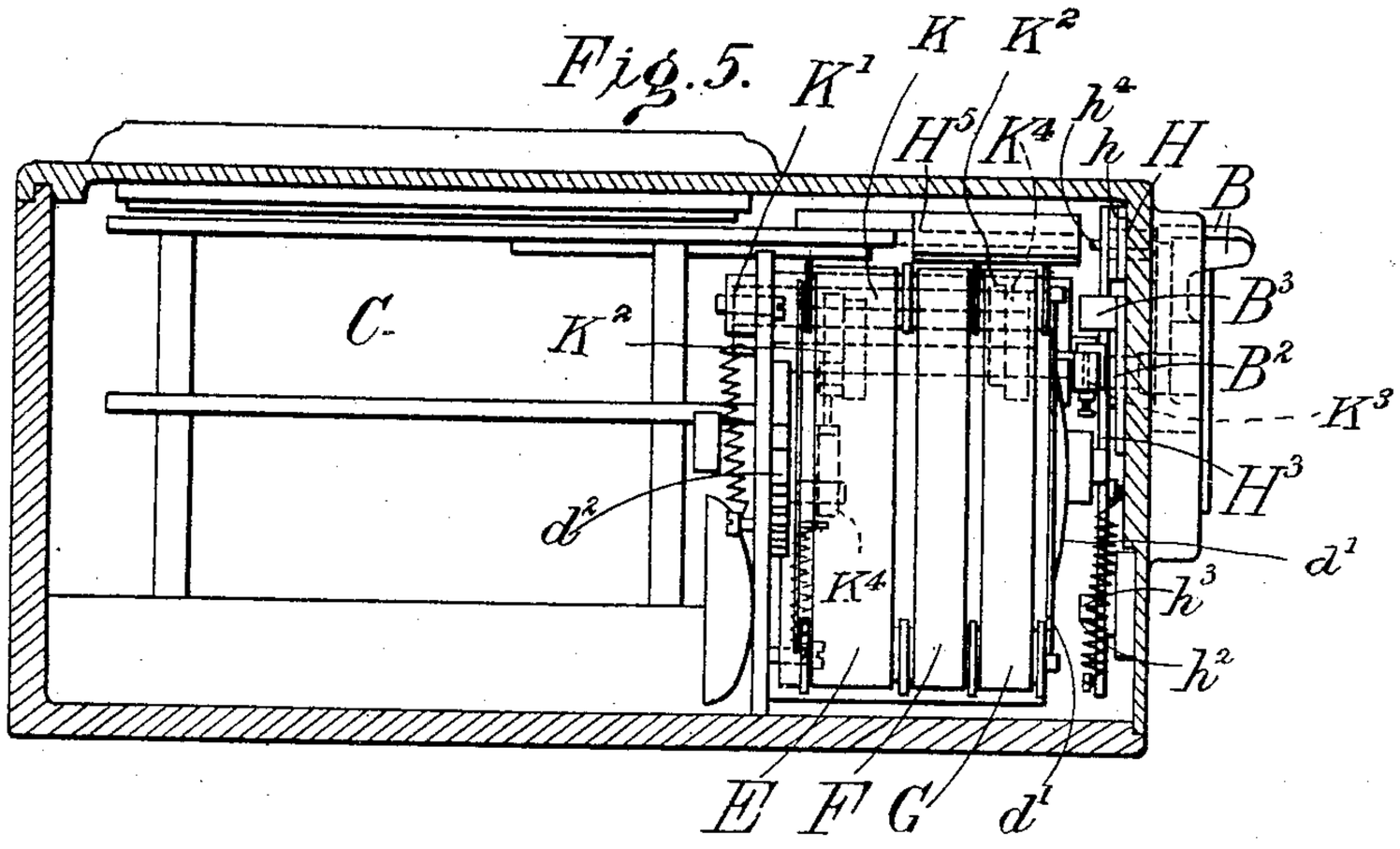


Fig. 5.



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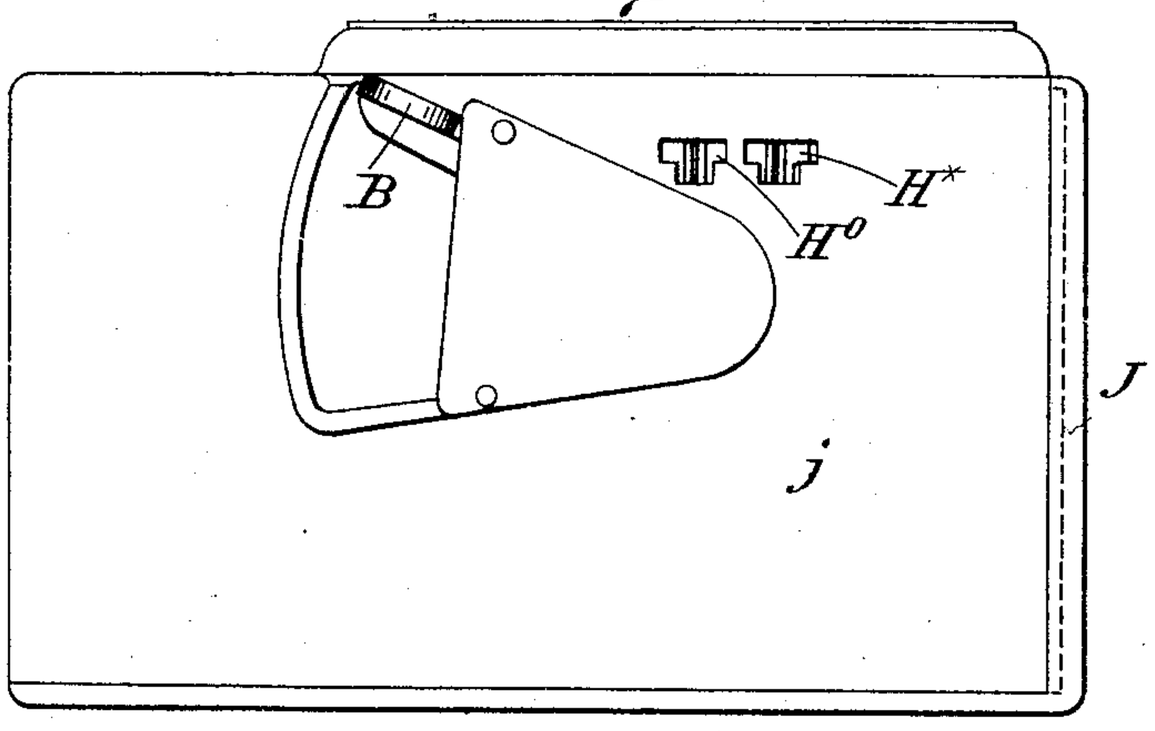
4 SHEETS—SHEET 4.

Fig. 6.



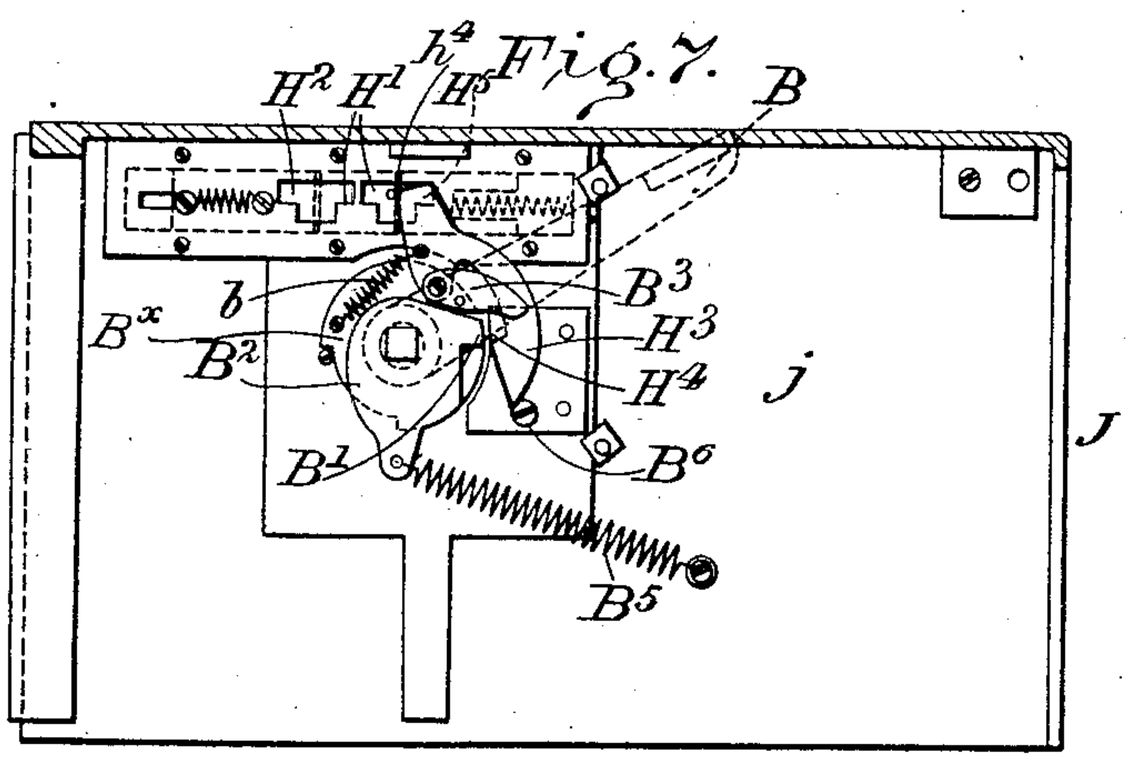
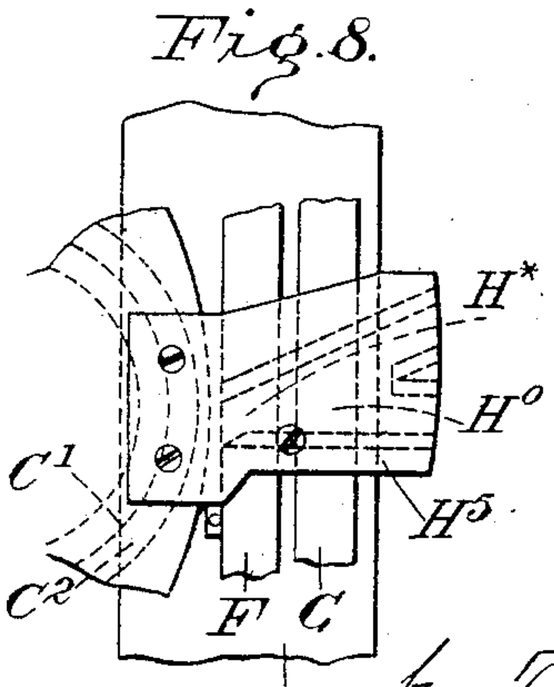


Fig. 7.

Fig. 8.



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UNITED STATES PATENT OFFICE.

FREDERIC MONTAGU RUSSELL AND ALFRED JAMES JUNG, OF WILLISDEN, LONDON, ENGLAND.

TIME INDICATING AND RECORDING MACHINE OR APPARATUS.

967,567. Specification of Letters Patent. **Patented Aug. 16, 1910.**

Application filed October 8, 1909. Serial No. 521,740.

To all whom it may concern:

Be it known that we, FREDERIC M. RUSSELL and ALFRED J. JUNG, subjects of the King of Great Britain, residing at Willisden, London, England, have invented certain new and useful Improvements in Time Indicating and Recording Machines or Apparatus, of which the following is a specification.

This invention relates to workmen's time recorders tell-tales and similar machines and refers more particularly to what are generally known as key-machines wherein the time is recorded on a record strip adjacent to the user's mark or stamp from the user's key.

The apparatus forming the subject of the present invention is chiefly intended for use on tramway, omnibus and other vehicle routes where it is required to record the entrance of a vehicle to and its exit from a section, the arrival at and departure from a section or the commencement and finish of an operation. These times are conveniently recorded in different columns on the record strip or in different colors on both, for example one column and one color for "In", "Up", "Start" and another for "Out", "Down", "Finish".

According to the present invention a single key is employed, the keys of the various users being all alike in the construction to effect the connection or render operative the connection between the hand controlled lever and the hammer or striker mechanism. The key is inserted in a slot normally closed to prevent tampering and can move into one or another of two positions to record in one or another column on the record strip as aforesaid. A lever manually controlled is employed to press the record strip against the time printing type of the clock and the type or mark on the user's key.

Referring to the drawings Figure 1 is a perspective view of a time recording machine or apparatus embodying the present invention. Fig. 2 is a sectional plan of the apparatus shown in Fig. 1. Fig. 3 is an end view with the top and end cover removed. Fig. 4 is an elevation of the top and end cover showing the hand-actuated mechanism carried thereby. Fig. 5 is a section on the line 5—5 of Fig. 2. Fig. 6 is an end view of an apparatus showing a slight modification. Fig. 7 is an elevation of the same modification looking on the inside of the end cover. Fig. 8 is a plan of part of the modification according to Figs. 6 and 7, and Fig. 9 is a perspective view of the key used with the apparatus.

The same letters of reference refer to the same or similar parts throughout the drawings.

A is the key used by the operator, each key bearing the distinguishing mark or number of the particular user.

B is the lever operated by the user to effect the printing of his mark or number on the record strip together with the time of such operation.

C is the clockwork mechanism which drives the time recording or printing disks drums or the like C^1. C^2.

D is the record strip.

E. F. and G are inking or carbon ribbons.

The clockwork and time indicating mechanisms illustrated, do not form part of the present invention, and it is not considered necessary to give a detailed description of these, but only to refer briefly to the parts coöperating with the parts according to the present invention. The time recording mechanism is similar to that employed in the inventions forming the subject matter of application Serial No. 438662 and Patent No. 941955. In general the mechanism comprises a clock, having a dial open to the observation of the user and which indirectly imparts motion to an hour indicating disk C^2 having the hour numerals on its under surface in the form of type. This disk is intermittently rotated one step or division at the end of each hour through pawl and ratchet mechanism from another disk C^1 which is concentric with the disk C^2, bears on its under surface the minute indicating numerals in the form of type, and this disk C^1 is rotated continuously and directly from the clock. These disks overlap at one edge a recording strip D of paper or flexible material. The mechanism for operating the disks is shown and described in the patent referred to. The strip D is fed from a roll d on to a roll d^1 which is partially rotated each time the actuating lever is operated through pawl and ratchet mechanism d^2 d^3

controlled in the present instance in accordance with the movement of the lever B which is connected by a link d^5 to a bell crank d^4 which moves the pivoted lever d^6 carrying the pawl d^3 and the link d^5 is connected with a lever K^4 operated as hereinafter described by the lever B. The strip passes over a table D^1 and between it and the disks C^1 C^2 is interposed a carbon or ink ribbon E carried on supporting and tensioning rollers e e' and adapted to be fed forward intermittently by a clutch e^4 carried by the bell crank d^4 controlled by the operating lever B.

The entrance to the key slot H is closed conveniently by two spring controlled plates H^1 H^2 mounted to slide in a supporting plate h on the end J of the casing j, and these guard plates are moved aside by the entrance of the key A against the action of controlling springs. In the example shown one spring h^1 acts directly on plate H^2 while the spring h^2 acts on plate H^1 through a lever H^3. The lever H^3 is pivoted at h^3 to the end j of the casing and is slotted at its upper end to receive a pin h^4 carried by the guard plate H^1 and intermediate of its ends, the lever H^3 has a shoulder or offset H^4 which normally engages a pin B^1 carried by a disk B^2 secured to the operating lever B.

The lever B is secured to the disk carrying the pin B^1 and also has pivoted to it a pin or piece B^3 which engages a projection K^3 on a lever K^4 which latter controls a rubber covered or other striker or hammer K which forces the record strip up against the time printing disks as aforesaid. The hammer K is carried by a pivoted lever K^1, and rests on or is engaged by cam parts K^2 on the levers K^4 (see Fig. 5) which latter are carried on a pivot shaft k^2, and one lever K^4 has on its other end the projection K^3 which the part B^3 engages when lever B is operated and raises the hammer K to carry the strip D against the type disks and the type or mark on the user's key. The part K^3 is fulcrumed at k so that it can be adjusted by a screw k^4.

The key A to enable the user to operate the apparatus is pushed into the slot until it reaches one or other of two printing positions, that is to say until it is opposite one of the columns on the record strip, and with a slight obstruction by which the user knows that he may now press the actuating lever. In the example illustrated the obstruction is provided by forming a notch a in the side of the key into which the end of the guard plate H^1 enters when the type A^1 on the key A is in the printing position for one column or for one ribbon. As a further security, the key may carry marks which register with a pointer on the machine to signify when the key is in proper position, and a pointer moved by the key may also be employed. The key slot H is formed in a guide plate H^5 to accommodate the key A and in which the key can assume two printing positions, one for each column as already designated. On its entrance to assume either of these printing positions the key forces back the plates H^1 H^2, thereby removing the locks on the actuating mechanism and permitting the lever B when operated to force the record strip against the time printing disks and also against the type A^1 on key A. This first imaginary column on the record strip is for say "In" "Up" "Start" or the like and when the user wishes to record say "Out" "Down" "Finish" and so forth the key is pressed beyond the obstruction which it overcomes and is stopped in the second position or column by a second notch a or by the head of the key.

Table D^1 is perforated for the passage of the hammer K.

Separate ribbons are employed for the time printing disks and the key, and preferably the ribbon F for one column is of different color to the ribbon G for the other column on the record strip.

Referring now in detail to the modification shown in Figs. 6 to 8, the key slot H in the guide plate H^5 has two inlets H°, H^* so as to further facilitate the placing of the key in proper position for each printing column. The key when inserted by the opening H^* reaches to the inner column or position and when inserted in opening H° only reaches to the outer or first column on position. These entrances are normally closed by spring controlled plates or guards H^1. H^2. H^6, the plate H^1 being situated between the plates H^6 and H^2 and projecting partly over both inlet openings. The plate H^1 carries the pin h^4 which engages the upper end of pivoted lever H^3 which in this case is pivotally mounted upon a disk $B^\times$ which is loosely mounted upon the shaft of the operating lever B and which has attached to it the hammer actuating piece B^3. The shoulder or offset H^4 on the lever H^3 is adapted to engage with a pin or shoulder B^1 on the disk B^2 but is normally held out of engagement by a spring b connected to the disk $B^\times$ and the lever H^3. B^5 is a spring which returns disk B^2 and lever B to normal position. A pin B^6 engages the lever H^3 when it has been moved into engagement with the shoulder on disk B^2 and helps to hold it in engagement during the operation of the lever B. When the key enters the slot H by the inlet H^* the plates H^2. H^1 are forced apart and the pin h^4 operates lever H^3 to connect it to disk B^2. When the key enters slot H by inlet H° the key itself as shown bears upon lever H^3 to actuate it. The pin h^4 may however be carried on plate H^6 when the key entering by

H* will force plate H¹ against plate H⁶ to operate lever H³. After the lever H³ and its disk B× have been connected to disk B² the printing mechanism may be actuated by handle B as described in the first modification.

The entire mechanism with the exception of the actuating lever B is inclosed in a casing J having a glazed part j^1 through which a clock face is visible. This casing is conveniently of metal for outdoor use and is made in two parts, one forming the top and end and to which the actuating mechanism is secured and the various joints between the two parts are let in to one another so that water cannot enter.

We declare that what we claim and desire to secure by Letters Patent is:—

1. In a time indicating and recording mechanism, the combination with printing mechanism, of means for actuating said mechanism, means for normally disconnecting said actuating mechanism, and a removable key adapted to be inserted to operatively connect said actuating and printing mechanisms.

2. In a time indicating and recording mechanism, the combination with printing mechanism, of means for actuating said mechanism, means for normally disconnecting said actuating mechanism, a key adapted to operatively connect said actuating and printing mechanisms, type carried by said key, and means for taking an impression of said type.

3. In a time indicating and recording mechanism, the combination with means for supporting a record strip, of a removable key provided with type arranged to engage said record strip, actuating mechanism for bringing said record strip and type into printing engagement, means for disconnecting said actuating mechanism so as to render it normally inoperative, and means whereby said key renders said actuating mechanism operative.

4. In a time indicating and recording mechanism, the combination with means for supporting a record strip, of time printing mechanism, including type, a clock arranged to place said type in position, a removable key provided with type, actuating mechanism for bringing said strip, and said time and key type into printing engagement, means for normally disconnecting said actuating mechanism from said actuated mechanism, and means operated by said key for operatively connecting said actuating mechanism to said actuated mechanism.

5. In a time indicating and recording mechanism, the combination with means for supporting a record strip, of time printing mechanism engaging said strip, a removable key provided with type, actuating mechanism including connections for bringing said strip and type into printing engagement, means for breaking said connections so as to render said actuating mechanism normally inoperative, and means whereby said key closes said connections so as to render said actuating mechanism operative.

6. In a time indicating and recording mechanism, the combination with means for feeding a record strip, of a removable key provided with type, a hammer for bringing said strip and type into printing engagement, actuating mechanism for said feeding mechanism and for said hammer, means for normally disconnecting said actuating mechanism from said hammer, and means operated by said key for connecting said actuating mechanism to said hammer.

7. In a time indicating and recording mechanism, the combination with printing mechanism of actuating mechanism for said printing mechanism, means for normally disconnecting said actuating mechanism, a removable key, means whereby said key is adapted to connect said actuating and printing mechanism, and means for maintaining said connections.

8. In a time indicating and recording or similar apparatus having time indicating disks or the like, the combination with means for feeding a record strip, of a key guide, a key adapted to assume either of two effective positions in the guide, an operating lever and recording striker, and guard plates actuated by the key to control the operation of said lever and striker.

9. In a time indicating and recording or similar apparatus, the combination with a support having a key slot H and a key guide H⁵, of spring controlled sliding guard plates H¹ H², a striker K, and a pivoted lever B for operating the striker and rendered effective by the insertion of a key A between the guard plates H¹ H².

10. In a time indicating and recording or similar apparatus the combination with a pivoted lever B and a pivoted striker K, of a projecting piece B³ arranged for connection to the lever B, guard plates, and a lever H³ controlled by the movement of said guard plates under the control of a key A to render effective the connection between lever B and piece B³ to actuate the striker K.

11. In a time indicating and recording or similar apparatus, the combination with a type carrying key and means for feeding a record strip, of a plate H⁵ having a key slot H and one or more openings leading thereto, key actuated guide plates controlling said openings, means whereby the record strip may extend over both effective or printing portions of the type carrying key, and ribbon mechanism.

12. In a time indicating and recording or similar apparatus the combination with a

pivoted lever, of a pivoted hammer, key means operated by a key to connect operatively the hammer and lever, a paper feed mechanism, and means controlled by the lever to operate the paper feed mechanism.

13. In a time indicating and recording mechanism, the combination with time printing mechanism, means for actuating said mechanism, means for normally disconnecting said actuating mechanism from said printing mechanism, and a key slot guard plate arranged to be moved to connect said actuating mechanism to said printing mechanism.

14. In a time indicating and recording mechanism, the combination with means for supporting a record strip, of a removable key, actuating mechanism for causing said key to place an identification mark on said record strip, means for normally disconnecting said actuating mechanism from said actuated mechanism, and a key slot guard plate arranged to be moved to connect said actuating mechanism to said actuated mechanism.

15. In a time indicating and recording mechanism, the combination with means for supporting a record strip, of time printing mechanism engaging said strip, a removable key, actuating mechanism for causing said key to place an identification mark on said record strip, means for normally disconnecting said actuating mechanism from said actuated mechanism, and a key slot guard plate arranged to be moved to connect said actuating mechanism to said actuated mechanism.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FREDERIC MONTAGU RUSSELL.
ALFRED JAMES JUNG.

Witnesses:
F. L. Rand,
Wm. J. Dow.