

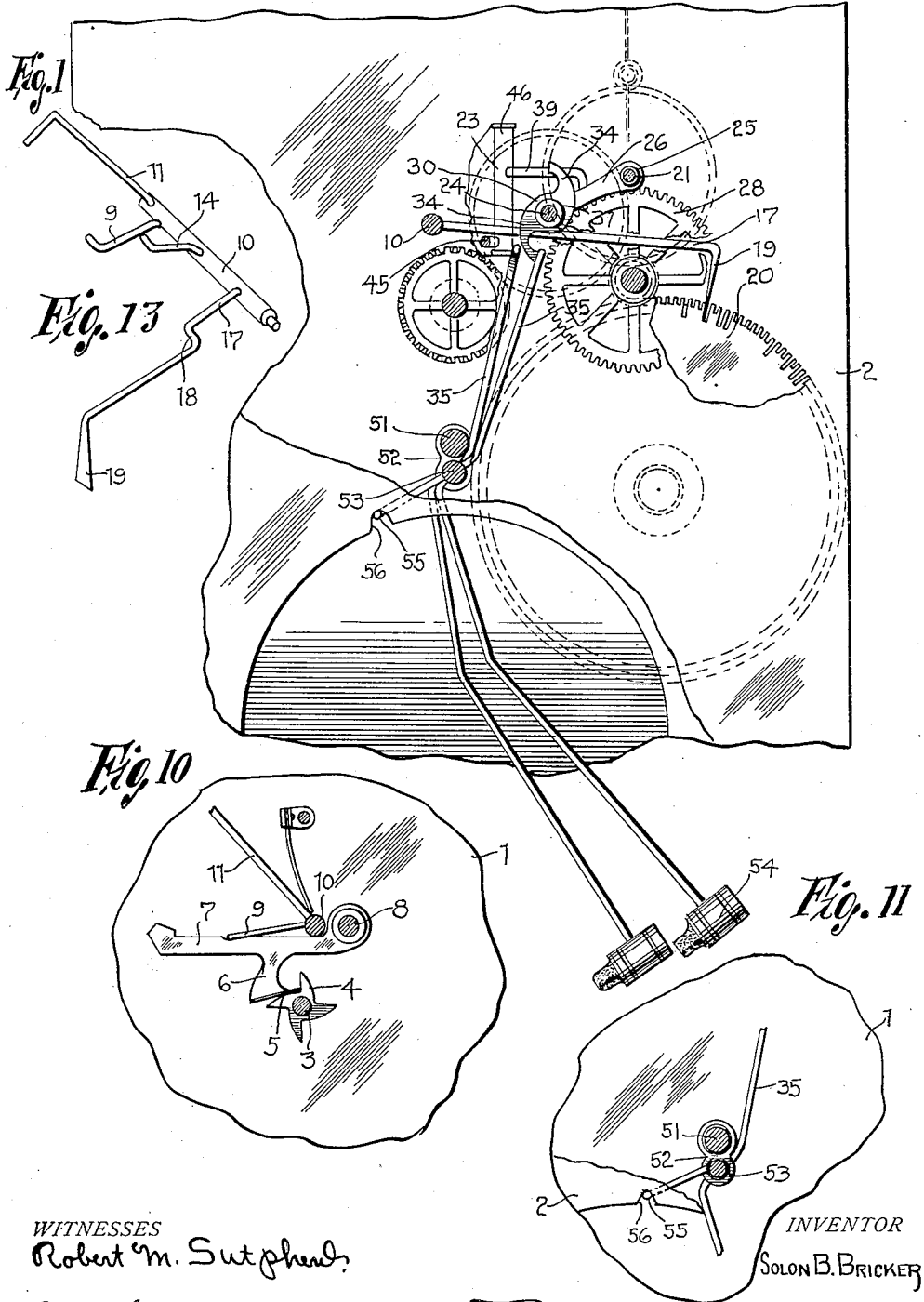
S. B. BRICKER.
CLOCK.

APPLICATION FILED OCT. 14, 1911.

Patented June 4, 1912.

2 SHEETS-SHEET 1.

1,028,427.



WITNESSES

Robert M. Sutphen,

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INVENTOR

SOLON B. BRICKER

By E. C. Vrooman, his Attorney.

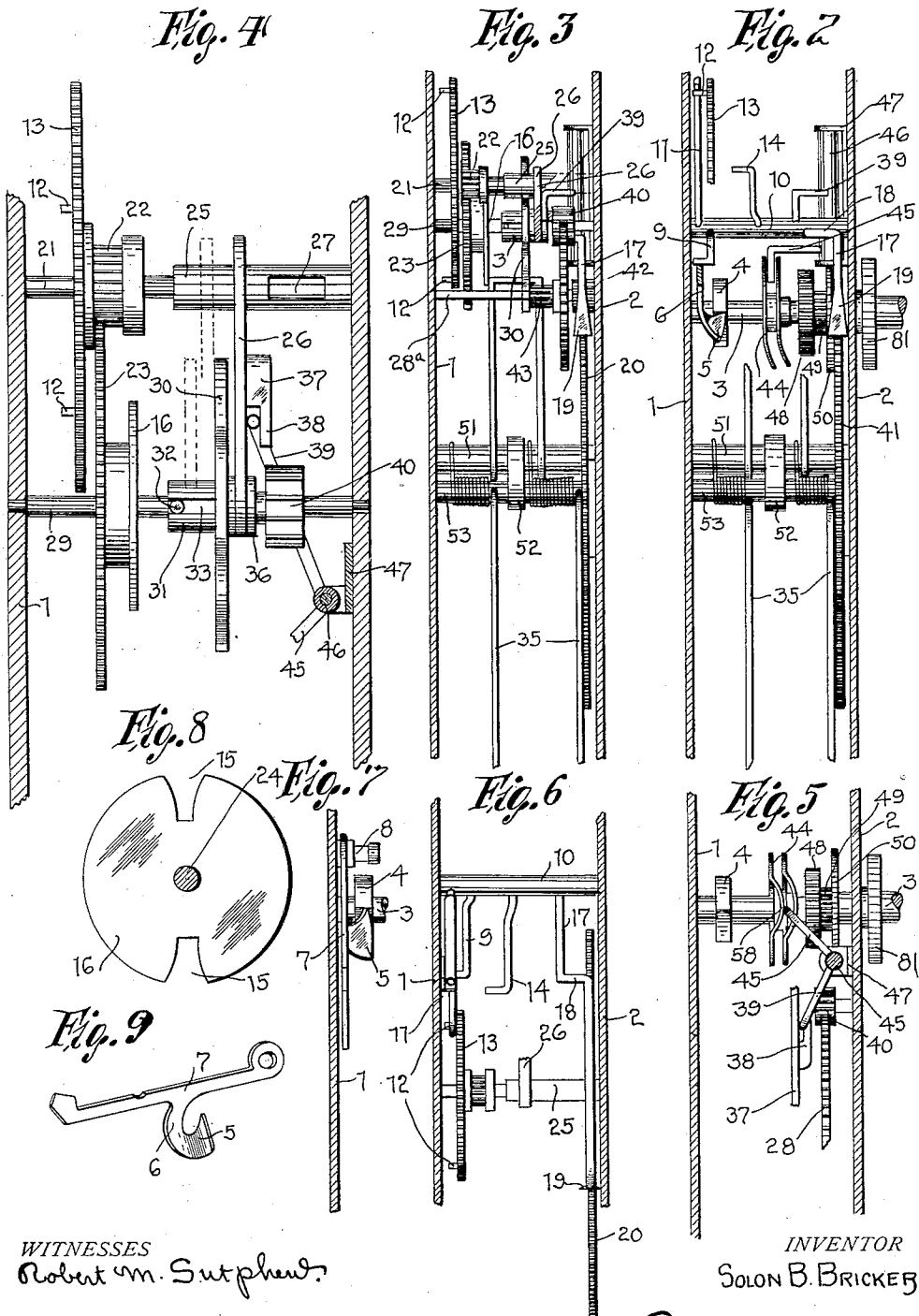
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UNITED STATES PATENT OFFICE.

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CLOCK.

1,028,427.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed October 14, 1911. Serial No. 654,686.

To all whom it may concern:

Be it known that I, SOLON B. BRICKER, a citizen of the United States, residing at St. Paris, in the county of Champaign and State of Ohio, have invented certain new and useful Improvements in Clocks, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to clocks and has for its object the production of a striking device for the quarter of an hour, which may be connected to the main striking gear of the clock, thereby doing away with the necessity of providing a separate gear for the quarter strike.

Another object of this invention is the production of a simple and efficient shifting means for causing the different striking arms to operate.

With these and other objects in view this invention relates to certain novel constructions, combinations, and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings: Figure 1 is a vertical fragmentary section of the striking mechanism. Fig. 2 is a vertical section through the clock frame showing the shifting means for the striking mechanism. Fig. 3 is a vertical section through the clock casing showing the operating mechanism for the striking device. Fig. 4 is a transverse section through the frame showing the striking mechanism operating device in bottom plan. Fig. 5 is a transverse section taken through the casing showing the shifting mechanism in top plan. Fig. 6 is a transverse section taken through the casing showing the arrangement of the control arms for the striking mechanism in top plan. Fig. 7 is a fragmentary vertical section taken through the back plate of the casing showing an end view of the releasing lever and wheel. Fig. 8 is a side view of the locking disk for the striking device. Fig. 9 is a perspective of the releasing lever of the striking device. Fig. 10 is a vertical section through the clock frame showing the releasing lever and wheel in side elevation. Fig. 11 is a fragmentary view of the casing showing the support for the clapper arms. Fig. 12 is a detail perspective of the control arms and support therefor. Fig. 13 is a perspective view of the shaft carrying the counting control arm.

Referring to the drawings by numerals 1 designates the back plate of the frame which supports the front plate 2 in the unusual manner by spacing bars. The main shaft 3 passes through the plates 1 and 2 and carries near its end a cam-star wheel 4 upon which rests the curved end 5 of the arm 6 carried by the releasing lever 7. The releasing lever 7 is pivotally secured to the back plate 1 as at 8 and is provided with a notch upon its upper edge which is adapted to be engaged by the angle end of the raising arm 9 carried by the control shaft 10.

A stop arm 11 is carried by the shaft 10 and is provided with a downwardly extending end adapted to engage one of the laterally extending lugs 12 carried by the checking gear 13. A stop arm 14 is also carried by the control shaft 10 and is provided with a laterally extending end being adapted to engage notches 15 formed in the check disk 16. The arm 17 which controls the number of strikes by each clapper is also carried by the controller shaft 10. This arm 17 is bent intermediate its end as at 18 so as to accommodate itself to the gearing carried by the frame. The end of the arm 17 is flattened and bent downwardly for forming a tooth gripping blade as at 19 for engaging the teeth of the counting wheel 20 hereinafter described. A shaft 21 is carried near the upper end of the frame upon which is mounted the check gear 13. A small gear 22 is secured to the gear 13 and meshes with a gear 23 carried by the shaft 29. A sleeve 25 is carried by the shaft 21 and one end of the shifting bracket 26 is secured thereto. The sleeve 25 is cut away at 27 to allow the gear 28 to rotate.

The strike operating shaft 29 is carried by the frame between the controller shaft 10 and the shaft 21. This shaft 29 carries the gear 23 hereinbefore mentioned, to which gear is secured the stop disk 16. The strike operating cam 30 is carried by a sleeve 31 which works upon the shaft 29. A pin 32 is carried by the shaft 29 and works in the slot 33 formed in the sleeve 31 so as to allow longitudinal movement of the sleeve but prevents the rotary movement thereof relative to the shaft 29. The striking cam 30 comprises a pair of fingers 34 which are curved upon their back to allow the clapper arms 35 to be easily operated. One end of the shifting bracket 26 is carried by the shaft 29 and a collar 36 is placed upon the collar

31 to hold the same in engagement with one end of the shifting bracket 26. A lug 37 is carried by one side of the shifting bracket 26 and is provided with a projecting finger 38 which finger is adapted to be engaged by the shifting arm 39 of the shifting mechanism. A gear 40 is carried by the shaft 29 and meshes with the gear 28 carried by the shaft 28^a, for imparting rotary movement to the counting gear 20 through the medium of the gear 42. A gear 43 is keyed to the gear 28 for engaging the regular clock gearing.

A cam wheel 44 is carried by the main shaft 3 and comprises a pair of spaced disks between which fits the depending end of the shifting arm 45. The arms 39 and 45 are carried by a shaft 46 which is supported upon a bracket 47, which bracket is supported by the front plate 2. A number of gears 48, 49, and 50 are carried by the shaft 3 for connecting with the different gears for operating the hour, minute and date hand of the clock in the usual manner.

A spacing member 51 is positioned between the back plate 1 and the front plate 2 and carries a hanger bracket 52 intermediate its ends. A clapper supporting shaft 53 is supported upon each side of the hanger bracket 52 and each of the shafts 53 has a coil spring wound around the same for normally holding the striking end 54 in engagement with the bell or signal. A finger 55 is carried by each shaft and is provided with an angle end fitting in the stop notch 56 formed in the plates 1 and 2. The upper ends of the clapper arms 35 are bent so as to face each other and are adapted to be engaged by the cam-member 30 as herein-after described.

From the foregoing description it will be obvious that as the main shaft 3 is rotated every one fourth of a turn the releasing lever 7 will be raised thereby raising the arm 9 and rotating the shaft 10, whereby all the arms carried by the shaft 10 will be raised and allowing the counting wheel to rotate and cause the clapper which is adapted to indicate the quarter of an hour to operate. This clapper just mentioned will be operated by the cam 30 as the same rotates, the rotary movement being imparted thereto by the gears 20, 42, 28 and 40. The arms which are carried by the shaft 10 are held in their normal position by means of the spring 57 which bears upon the arm 11. As the shaft is operated one whole revolution the curved portion 58 engages the depending end of the arm 45 thereby swinging the same and causing the shifting bracket 26 to slide upon the shaft 29 so as to have the cam 30 engage the clapper which engages the hour signal and operate the same. As the shaft 3 continues to rotate the cam 30 will be again brought back to its normal

position. The number of strikes is regulated by the counting wheel 20 which is engaged by the flattened end 19 of the arm 17. This wheel 20 is provided with teeth formed upon the edge thereof in the following manner: one deep tooth indicating the end of an hour, one deep tooth indicating the first quarter of the hour, one shallow tooth and one deep tooth indicating a second quarter of the hour, two shallow teeth, and one deep tooth indicating the third quarter of the hour and finally the number of teeth to indicate the succeeding hour. This is repeated around the entire wheel, the arrangement between each hour being the same as that just stated.

What is claimed is:

1. In a striking device for a clock the combination with a frame, a train of gears, a counting wheel, a plurality of striking clappers, of a cam member carried by said frame and being adapted to engage said clappers, a cam wheel carried by said frame, and means coöperating with said cam-wheel and cam-member for shifting said cam-member when said cam wheel is rotated.

2. In a striking device for a clock, the combination with a frame, a main shaft, of a cam-member supported by said frame, a cam-wheel carried by said shaft, a bracket carried by said frame, a shaft carried by said bracket, laterally extending arms carried by said shaft, a shifting member engaging said cam-member, one of said arms engaging said cam-wheel, the other of said arms engaging said shifting-member for causing said cam-member to be shifted when said cam-wheel is rotated, and means for rotating said main shaft.

3. In a striking device, the combination with a frame, a train of gearing carried thereby, of a main shaft, a cam-wheel carried thereby, a cam-member comprising a pair of cam-arms carried by said frame, striking clappers having angle ends carried thereby, means for rotating said cam-members, and means coöperating with said cam-wheel and cam-member for shifting said cam-member whereby the same may be brought to operate different striking clappers.

4. In a striking device for a clock, the combination with a frame, of a train of gears, a counting wheel, a plurality of striking clappers, a counting arm coöperating with said counting wheel, a cam spur wheel carried by said frame and operated by said train of gears, a releasing lever carried by said frame and provided with a downwardly extending leg having a laterally extending foot engaging said cam spur wheel, said releasing lever provided with a forwardly extending arm, means engaging said forwardly extending arm and coöperating with said counting arm for raising and lowering said

counting arm as said spur wheel is rotated
whereby the rotation of said counting wheel
will be controlled, means for operating said
clappers, a cam guide wheel supported by
5 said frame, and means cooperating with said
cam guide wheel and carried by said frame
and cooperating with said clapper operating
means for causing said clapper operating

means to actuate different clappers at dif-
ferent times.

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

SOLON B. BRICKER.

Witnesses:

B. F. BAKER,

E. K. FLOWERS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."