

C. A. MELCHERT.
CLOCK SET PRINTING MECHANISM.
APPLICATION FILED FEB. 6, 1911.

1,014,017.

Patented Jan. 9, 1912.
4 SHEETS—SHEET 1.

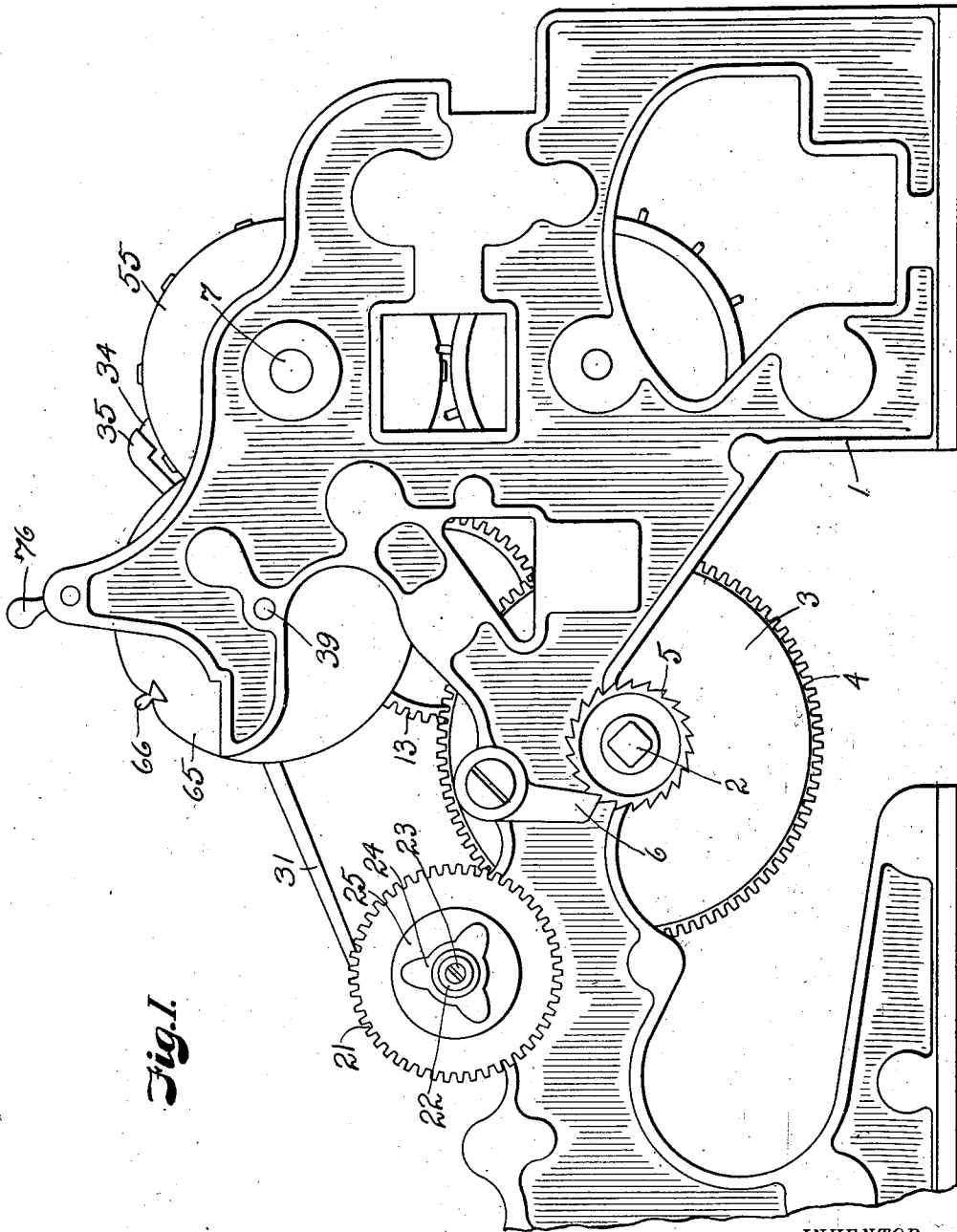


Fig. 1.

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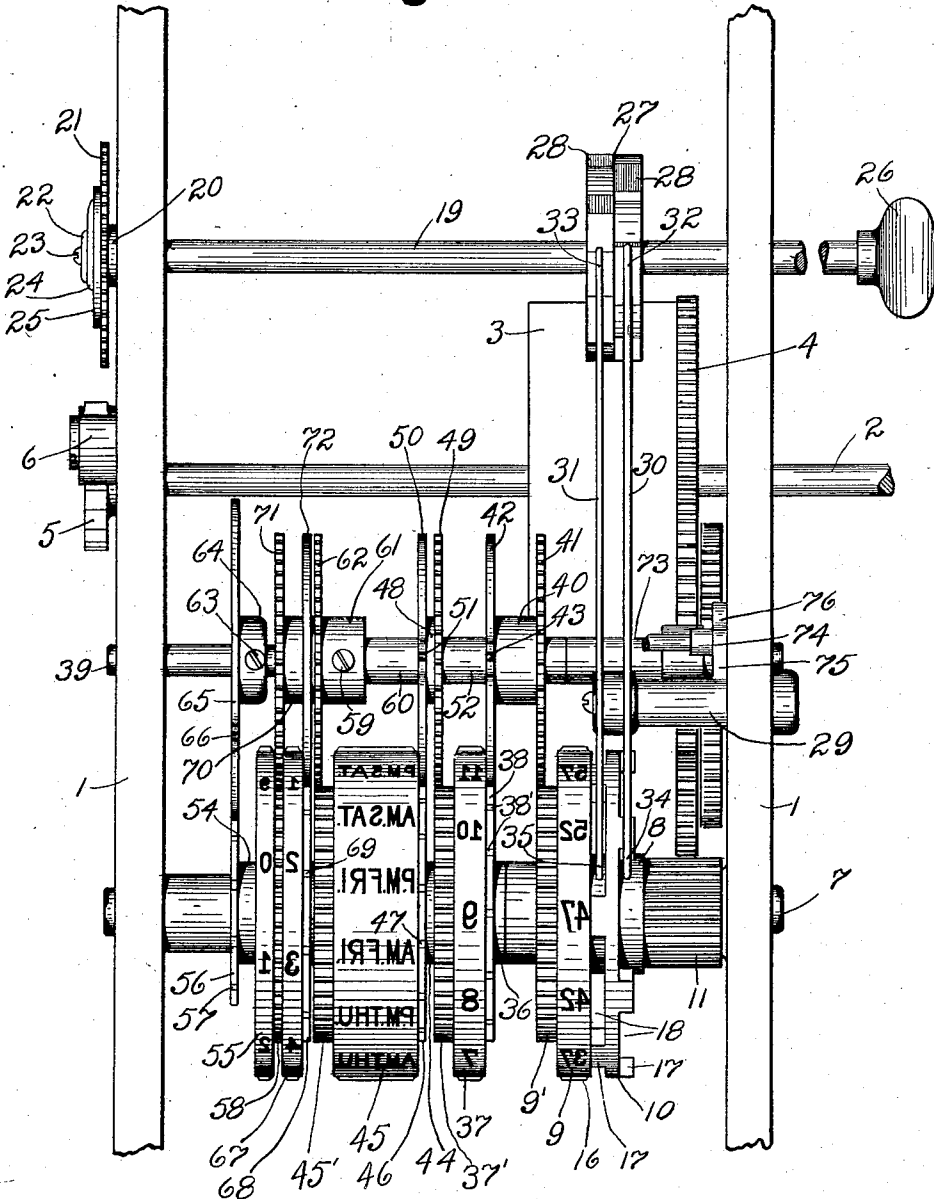
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4 SHEETS—SHEET 2.

Fig. II.



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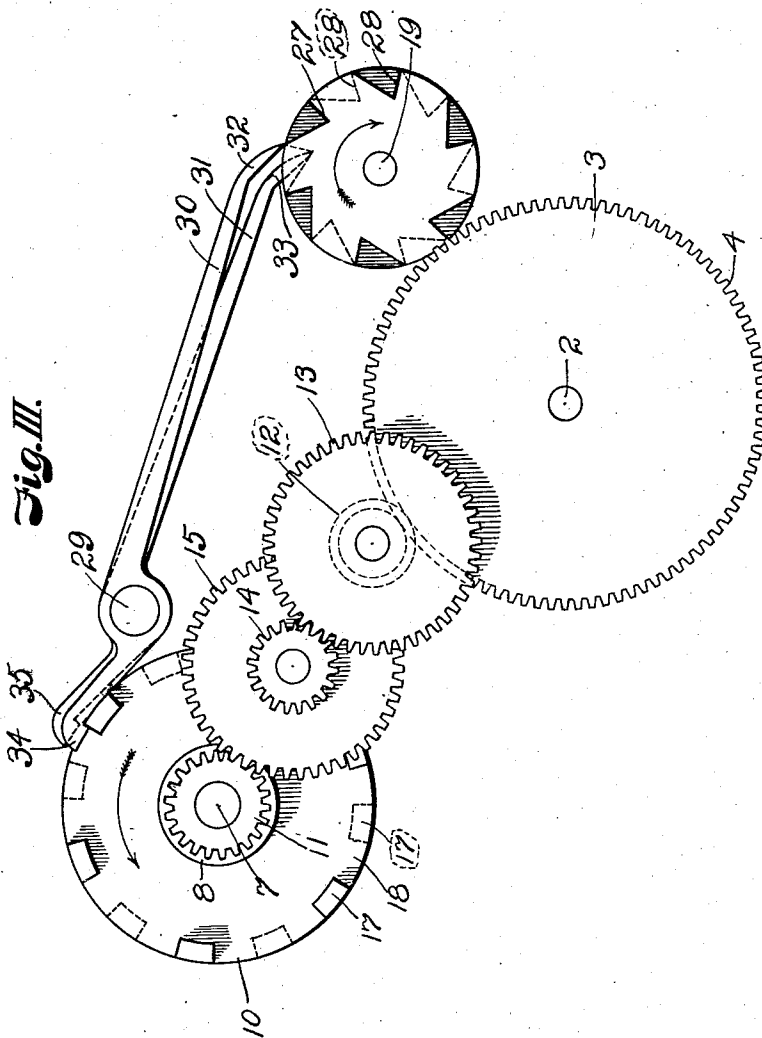
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. IV.

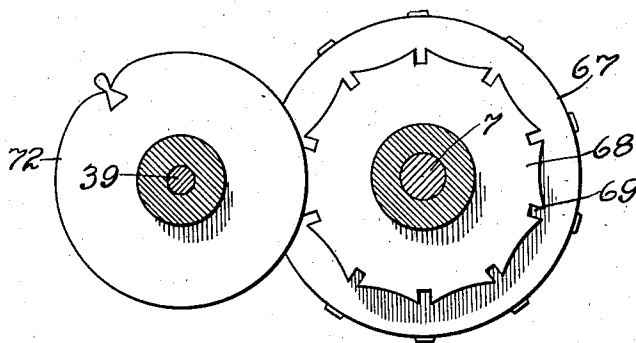


Fig. V.

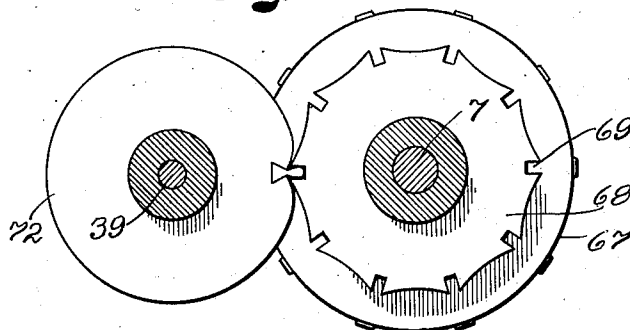


Fig. VI.

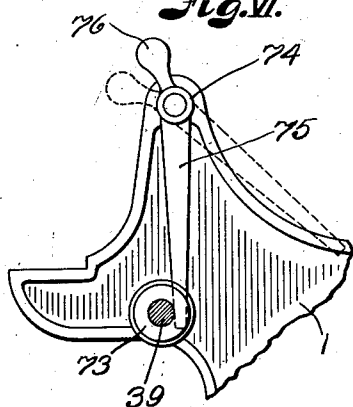
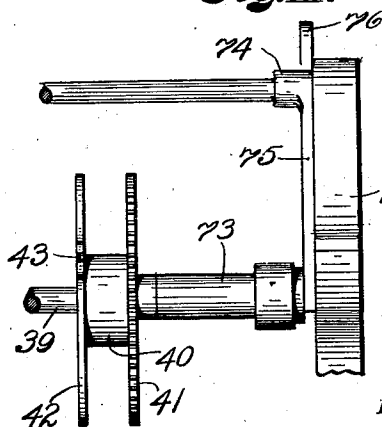


Fig. VII.



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UNITED STATES PATENT OFFICE.

CHARLES A. MELCHERT, OF KANSAS CITY, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE ACCIDENT INSURANCE MACHINE COMPANY, OF KANSAS CITY, MISSOURI, A CORPORATION OF THE TERRITORY OF NEW MEXICO.

CLOCK-SET PRINTING MECHANISM.

1,014,017.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed February 6, 1911. Serial No. 606,842.

To all whom it may concern:

Be it known that I, CHARLES A. MELCHERT, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Clock-Set Printing Mechanism; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to clock set printing mechanism and more particularly to a mechanism of that character for use with coin controlled machines adapted for automatically vending insurance policies, etc.

It is the principal object of the present invention to provide means for forwarding and timing the type wheels, which form a part of the mechanism, from a single shaft, and wherein the forwarding mechanism also acts to lock the time wheels between the periods of motion.

It is a further object of the invention to so arrange the type wheels and timing and driving parts that the type wheels may be set independently of the clock.

A further object of the invention is to provide other improved details of structure, hereinafter described and illustrated in the accompanying drawing, wherein:—

Figure I is a side view of a clock set printing mechanism constructed according to my invention, showing part of the frame of a vending machine of which the present machine forms an element. Fig. II is a plan view of same. Fig. III is a side view of the type wheel driving mechanism and escapement. Fig. IV is a detail view of one of the type wheels with its forwarding mechanism in inoperative position. Fig. V is a view of the same parts in operative position. Fig. VI is a detail side view of the spacing lever for retaining the type wheel forwarding disks in operative position. Fig. VII is an end view of same, showing the spacing sleeve and one of the wheel forwarding disks.

Referring more in detail to the parts:—1 designates the frame of a vending or other

machine, of which my improved clock set printing mechanism forms a part, the other parts of the vending machine not being illustrated as they form no part of the present invention. Journaled in frame 1 is a motor shaft 2, which carries a spring or other motor 3, of suitable construction. Fixed to the motor 3 is a driving gear 4, and fixed to shaft 2 is a ratchet 5, which latter is adapted for engagement by a pawl 6 pivotally mounted on frame 1 and adapted for holding the motor against revolution in a reverse direction. Fixed in the sides of frame 1 and spaced from shaft 2 is an axle 7. Revolvably mounted on axle 7 is a hub 8 which carries a type wheel 9, an escapement wheel 10, and a laterally directed pinion 11. Connecting the gear 4 on the motor with the pinion 11 on the type wheel hub is a train of gears 12, 13, 14, and 15, through which the type wheel is revolved when the motor is active. On the periphery of type wheel 9 are twelve raised characters 16, which are equally spaced and represent numerals for designating five minute periods, that is the numerals on the wheel may be 2, 7, 12, etc., or any other numerals having four point intervals, so that a complete revolution of the wheel 9 will indicate an hour in time. The escapement wheel 10 comprises a body portion having lugs projecting laterally therefrom to provide intervening spaces 18, the lugs being arranged alternately on opposite sides of the wheel body as shown in Fig. II. Journaled in and projecting through the sides of frame 1 is a shaft 19. Loosely mounted on one end of shaft 19 and spaced from the frame by collar 20, is a gear wheel 21, which is connected with a clock mechanism (not shown). Fixed on shaft 19, preferably by a friction washer 22 and screw 23 is a friction disk 24 which bears against a washer 25 that in turn engages the faces of the clock gear 21 to form driving connection between the clock gear and shaft 19. On the opposite end of shaft 19 is a thumb nut 26, by means of which the shaft may be turned manually. Fixed on the shaft 19 is a double ratchet 27, the teeth 28 of which are arranged in staggered relation. Projecting inwardly from one side of frame 1 is a post 29. Pivotally mounted on post 29 are the two escapement levers 30—31, having teeth 32—33 for engaging the respec-

tive members of the double ratchet 27 on the clock shaft 19. On the ends of the levers 30—31 are lugs 34 and 35 for engaging the lugs 17 on respective sides of the escapement wheel 10, on shaft 17, the toothed ends of the escapement levers being of greater weight than the lugged ends, so that the former will fall by gravity, except when supported by the peripheries of the ratchet, so that the escapement operates in the manner presently set forth. Also revolubly mounted on shaft 7 is a hub 36, on which is rigidly fixed a type wheel 37 having twelve raised numerals on its periphery, which are equally spaced and run consecutively from one to twelve, and are adapted for designating the hours of the day. Also fixed on hub 36 is a forwarding member 38, comprising a disk having twelve equally spaced inset notches 38', the spaces between the notches being concaved to the same curvature as the driving disk presently described. Journaled in the sides of frame 1 is a shaft 39. Revolubly mounted on shaft 39 is a hub 40, to one side of which is rigidly fixed a gear 41, that meshes with the gear 9' on the first type wheel 9. Fixed to the opposite side of hub 40 is a driving disk 42, the circumferential face of which is adapted for moving smoothly in the concaved spaces between the notches 38' in the periphery of the driven member 38, and has a tooth 43 adapted for taking into the notches 38'. The periphery of disk 42 is concaved at each side of the tooth 43 to receive the points of the driven member 38 when the tooth and driven member notches are in mesh. It is apparent that with this mechanism the type wheel 37 will be moved through one-twelfth of a revolution upon one complete revolution of the first type wheel 9, and that when the disk 42 is traveling in the spaces of the driven member 38 the points of the concaved sections of the disk will hold same against revolution and lock the type wheel, so that no special means for this purpose need be provided. Also revolubly mounted on shaft 7 is a hub 44, upon which is rigidly fixed a type wheel 45 having fourteen raised characters on its periphery for designating the morning and afternoon of each day of the week.

To one side of the type wheel 45 is fixed a disk member 46 similar to the driven member 38, previously described, but having fourteen notches in its periphery. On the opposite side of the type wheel is a gear wheel 45'. Also revolubly mounted on shaft 39 is a hub 48 having rigidly fixed thereto a gear 49—that meshes with the gear 37' on type wheel 37, and a driving disk 50 having a tooth 51 adapted for taking into the notches 47 in the driven member 46 on type wheel 45. The driving parts just mentioned are spaced from the previously de-

scribed driving set on shaft 39, by a sleeve 52, so that the two sets may operate independently without interference from each other. Also revolubly mounted on shaft 7 is a hub 54, to which is rigidly fixed a type wheel 55, bearing raised numerals on its periphery that run consecutively from one to naught and represent the units in a pair of wheels for designating the days of the year. Also fixed on hub 54 is a member 56, similar to the other driven members previously described, and provided with ten equally spaced notches 57. Rigidly secured to wheel 55 is a gear 58, the gear and driven member being arranged reversely on this type wheel in comparison with the wheels previously mentioned. Fixed on shaft 39, preferably by a set screw 59 and spaced from disk 50 by a sleeve 60 is a hub 61. Rigidly mounted on hub 61 is a driving gear 62 which meshes with the gear 45' on the type wheel 45. Also fixed rigidly on shaft 39, preferably by a set-screw 63, is a hub 64 and fixed on hub 64 is a driving member 65 having a tooth 66 for taking into the notches 57 on the driven member 56, which controls the action of the units type wheel 55.

It is apparent that with each complete revolution of the day type wheel 45, the driven member 56 and units type wheel will be moved through one-tenth of a revolution by the transmission comprising the gear 45', driving gear 62, shaft 39 and driving member 65. Revolubly mounted on shaft 7 is a tens type wheel 67 having raised numerals on its periphery running consecutively from one to ten, the wheel being arranged in close relation to the units type wheel 55, so that the two wheels may cooperate. Rigidly fixed to type wheel 67 is a disk member 68 having ten peripheral notches 69. Revolubly mounted on shaft 39 is a hub 70 having a gear 71 rigidly fixed thereto and meshing with the gear 58 on the units type wheel. Also fixed to hub 70 is a driving member 72 having a tooth for engaging the notches in the driven member 68, so that the tens type wheel will be moved through one-tenth of a revolution upon each complete revolution of the units wheel.

In arranging the type wheel sets on shaft 7, sufficient space is left between the sets so that the driving gears on shaft 39 may be moved laterally on the type wheel gears and the driving disks on the shaft 39 moved out of contact with the driven members on the type wheels, so that any one of the type wheels may be moved without actuating the others. Revoluble on shaft 39 between the hub of the first driving member 19 and the frame 1, is a sleeve 73 which is shorter than the space between the hub and frame, so that it may have longitudinal play on the shaft. Pivottally mounted on the frame 1 above the shaft 39 is a spacing lever 74 hav-

ing an arm 75 adapted for projection between the end of sleeve 73 and frame 1, in order to hold the sleeve spaced from the frame and the driving disks on shaft 39 in position for operative engagement with the type wheel driving members. On the upper end of lever 74 is a handle portion 76, by which the lever may be operated. By making the lever arm 75 of the spacing lever of greater weight than the handle portion 76, the former will drop by gravity into position between the sleeve and frame when the sleeve is spaced from the frame.

When the present mechanism is in use, presuming the clock shaft 19 to be operatively connected with a suitable timing mechanism through the gear 21 and the motor to be in operation, the first type wheel 9 will be constantly revolved through its pinion and gear connection with the motor, were it not restricted by a suitable escapement. This escapement is provided in the lugged wheel 10, levers 30 and 31 and the ratchet 27, whereby the type wheel is released at five minute intervals and stopped in position for printing each of the raised characters on its periphery, the escapement mechanism being in duplicate in order to eliminate the possibility of the wheels traveling past any of the characters.

As the characters on wheel 9 are twelve in number and are arranged at regular intervals, the wheel will move through one-twelfth of a revolution at each escapement action. For each action of the wheel 9, the driving set on shaft 39, comprising the hub 40, gear 41 and driving disk 42, is moved through one-twelfth of a revolution, the periphery of disk 42 moving in the concaved recess in a space between two of the peripheral notches 38' in the driven member 38 of the second type wheel 37. During one of the twelve periods of travel, which it takes to complete a single revolution of the driving set, the tooth 43 takes into one of the notches 38' in the driven member 38 and moves such member through one-twelfth of a revolution. Being integral or rigidly secured to the driving member 38, the second type wheel 37 and gear 37' are carried around one-twelfth of a revolution, so that the raised characters, which are numerals from one to twelve, are brought successively into printing position.

Between the second and third type wheels is a driving mechanism identical with that just described as operating between the first and second wheels, with the exception that the notches in the driven member on the third wheels are fourteen in number, and that the raised characters designate the morning and afternoon of each day in the week. Between the same type wheel and the wheels for designating the days of the month, a special mechanism must be pro-

vided, as the outside or units wheel must be operated before the inside or tens wheel. To accomplish this operation, I fix the driving gear 62, which is operated from the gear 45', on the third type wheel, rigidly on shaft 39, so that the gear wheel and shaft are revoluble through one-fourteenth of a revolution for each movement of the third type wheel, and the driving disk 65, which is spaced from the gear 62 by the last driving set, will operate the outside or units type wheel once for each complete revolution of the third type wheel and shaft 39. It is apparent that the last or tens type wheel 67 is operated from a driving mechanism similar to that between the first and second, and second and third type wheels.

When the machine is started in operation, the type wheels are set in their proper relation to the clock, so that a policy or ticket will bear the proper day of the month, day of the week, hour and five minute period, the type wheels being controlled from the clock so that this relation will continue as long as the clock continues to run and the motor is active. Should the clock or motor stop and it be necessary to set either or both of such parts, the clock hands may be set in the usual manner. If the period which it is necessary to correct is short, the type wheels may be brought into their proper relation with the clock by operating the escapement through the thumb-nut 26, so that the friction clutch 24 may move over the clock gear 21 without interfering with the action of the clock, but operating the double ratchet 27, so that the type wheels may be operated rapidly in order to catch up with the clock. If, however, it is necessary to set one or more of the type wheels, relative to the others, or to set all of the type wheels for an extended period, relative to the clock, the wheels may be disconnected from each other by lifting the space lever 74, so that the sleeve 73 may be moved outwardly on the shaft 39 and the driving sets moved laterally on the shaft so that their disks will be thrown out of operative connection with the driving members on the type wheels. With the parts in this condition, all of the wheels, except the week day wheel 45 and units month wheel 55, may be revolved independently of the others and set to the proper position, the escapement being operated through the thumb nut 26 to allow the five minute wheel 9 to reach its proper position. With the parts set, the sleeve may be again moved laterally to carry the driving sets into operative position, and the sleeve set by dropping the spacing lever into position.

It is apparent that between each driving period, the peripheries of the toothed driving disks are traveling in concaved recesses in the driven disks, so that it is impossible

for the latter to move out of their printing
alinement, except when actuated by the driv-
ing disks, at the proper intervals. With a
mechanism of this character it is possible
5 to mount all of the drivers on a single shaft
and to positively lock the parts without the
aid of springs, levers, etc.

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

1. A clock set mechanism comprising a
primary shaft, a plurality of type wheels
revolubly mounted on said shaft, a motor
having driving connection with the first
15 wheel, an escapement wheel carried by the
first wheel and comprising dogs projecting
alternately from opposite sides of said
wheel, a timing shaft, a double ratchet fixed
on the timing shaft, and levers pivotally
20 mounted and having their respective ends
adapted for frictional engagement with the
ratchet on the timing shaft and positive
locking engagement with the escapement

wheel on the first type wheel, substantially
as and for the purpose set forth. 25

2. In a clock set mechanism, a primary
shaft, a plurality of type wheels revolubly
mounted on said shaft, means for revolving
the first type wheel, a timing shaft, a gear
revolubly mounted on said shaft, a friction
30 clutch comprising a washer having fric-
tional engagement with said gear and a
spring disk fixed on the shaft and pressing
against said washer, a ratchet on said tim-
ing shaft, an escapement lever operatively
35 connecting the ratchet and the first type
wheel, and means on said timing shaft for
actuating same independently of the driv-
ing gear, substantially as and for the pur-
pose set forth. 40

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

CHARLES A. MELCHERT.

Witnesses:

MYRTLE M. JACKSON,
PEARLE LOCKE.

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