

March 23, 1943.

E. F. JOHNSON

2,314,705

FOLLOW-UP CARD FILE HOLDING AND DESIGNATING MACHINE

Filed Jan. 29, 1942

4 Sheets-Sheet 1

Fig. 2.

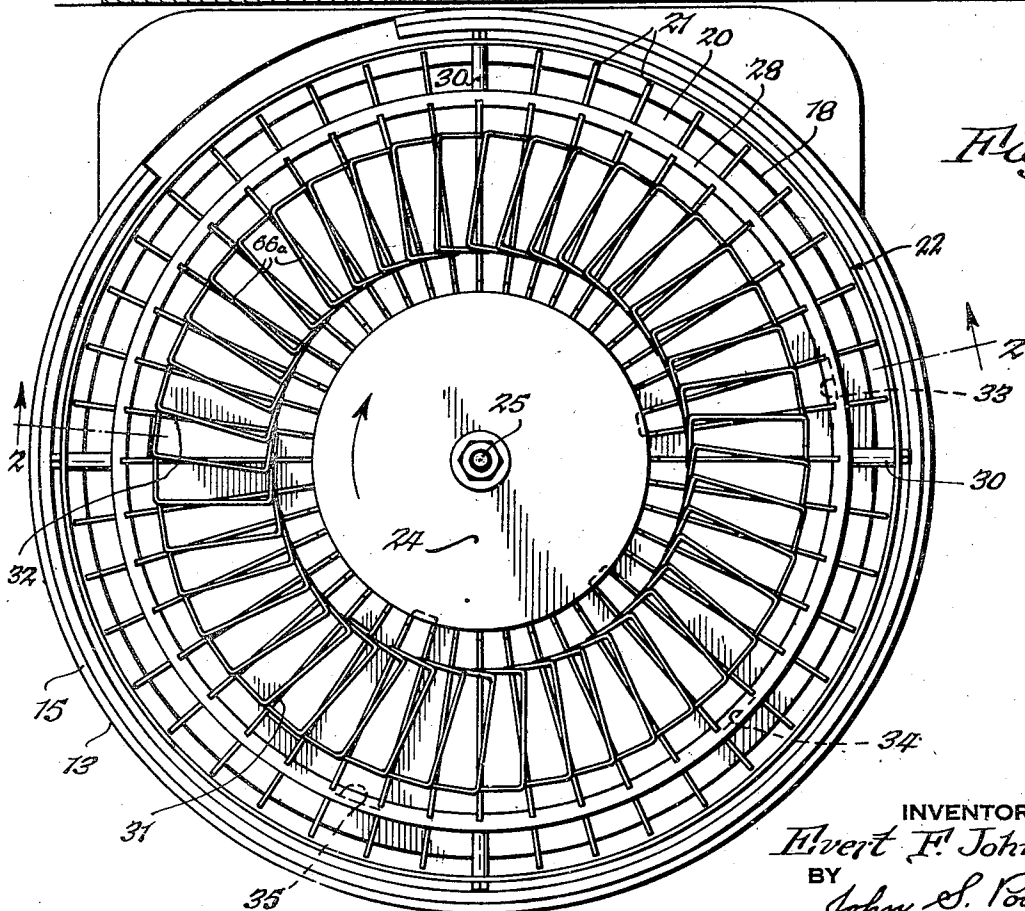
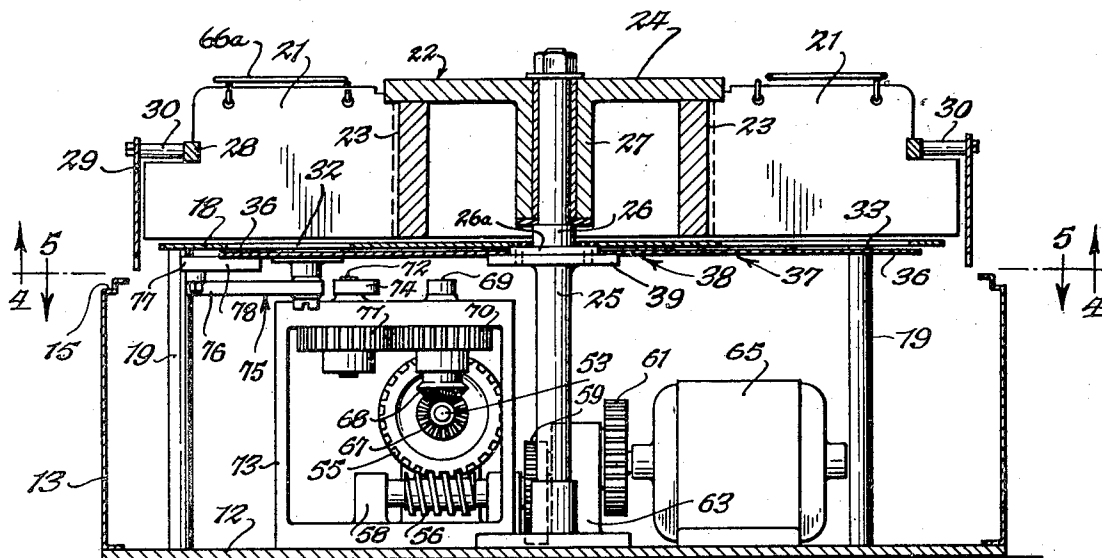


Fig. 1.

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Fig. 3.

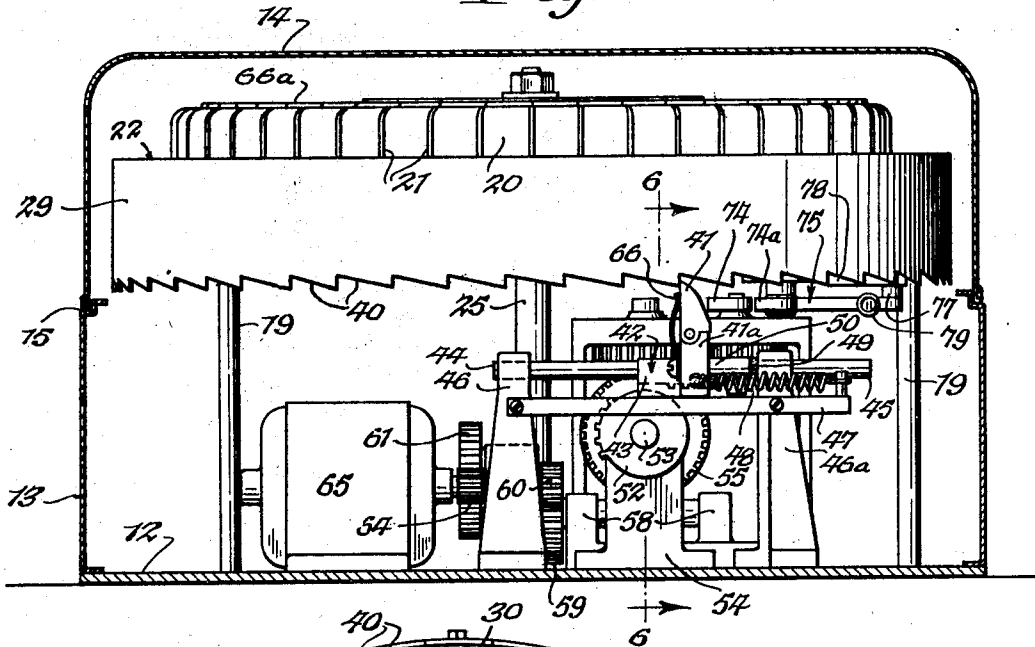
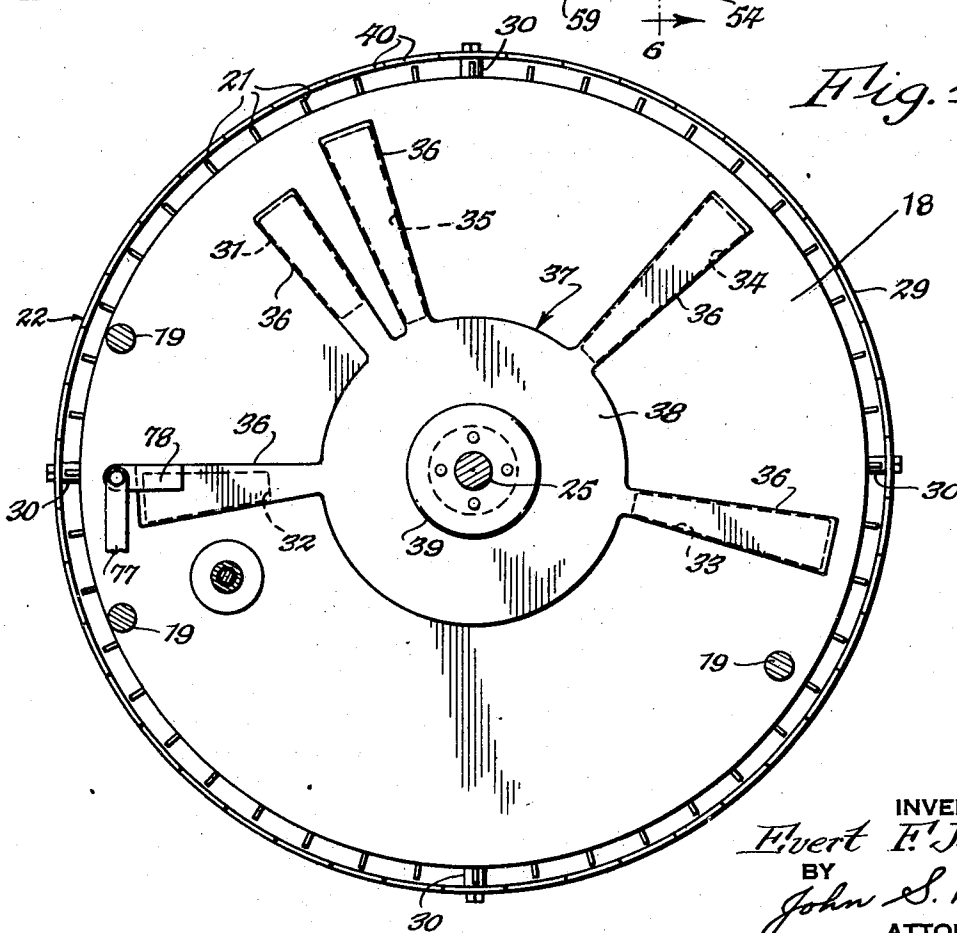


Fig. 4.



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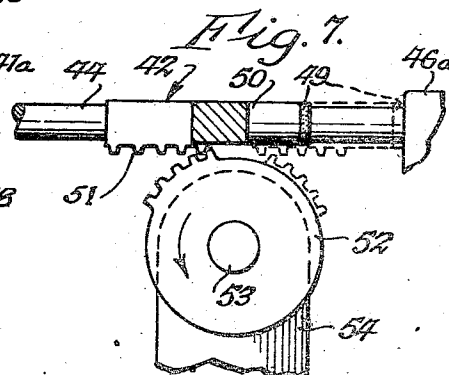
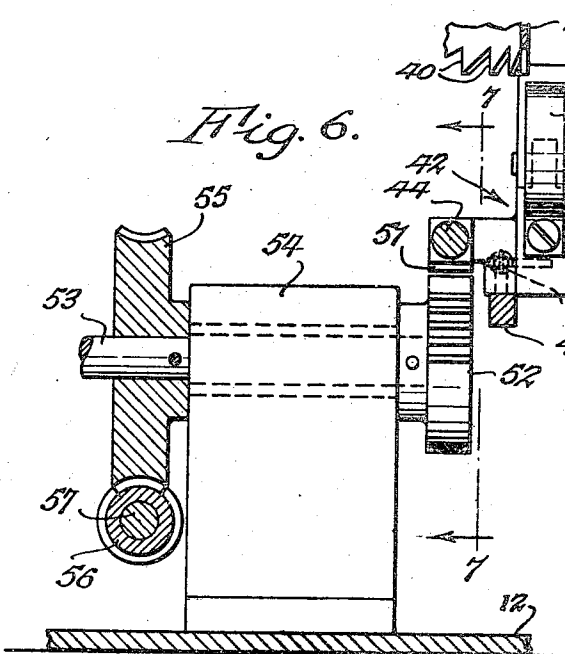
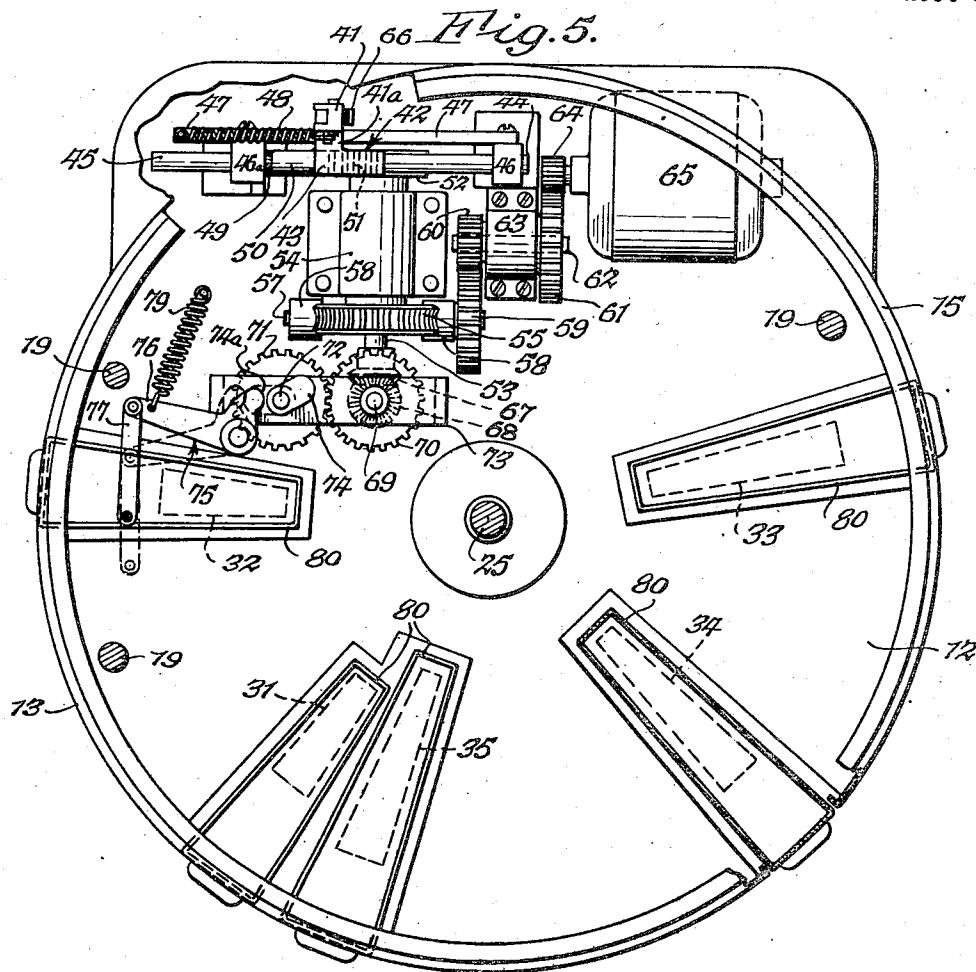
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4 Sheets-Sheet 3



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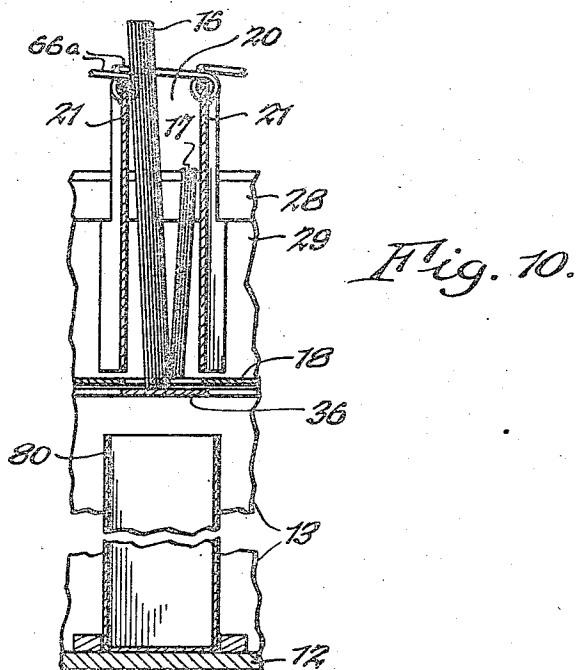
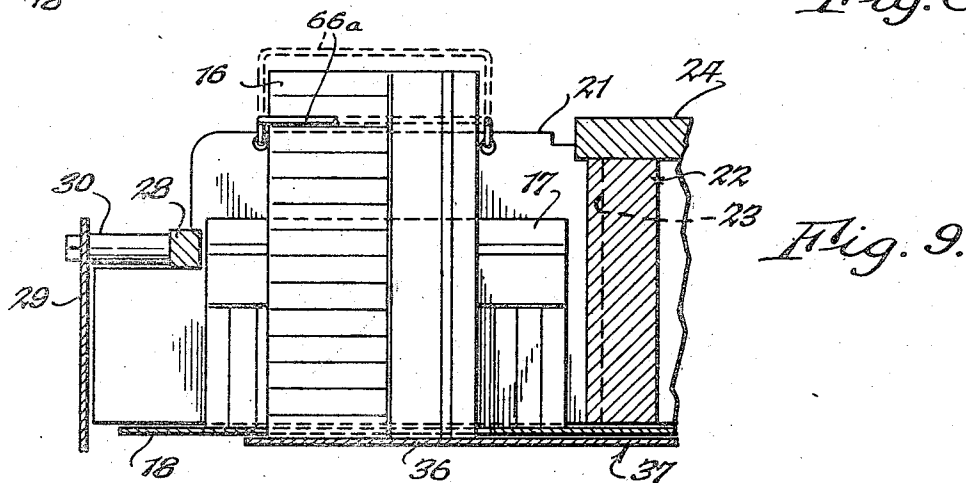
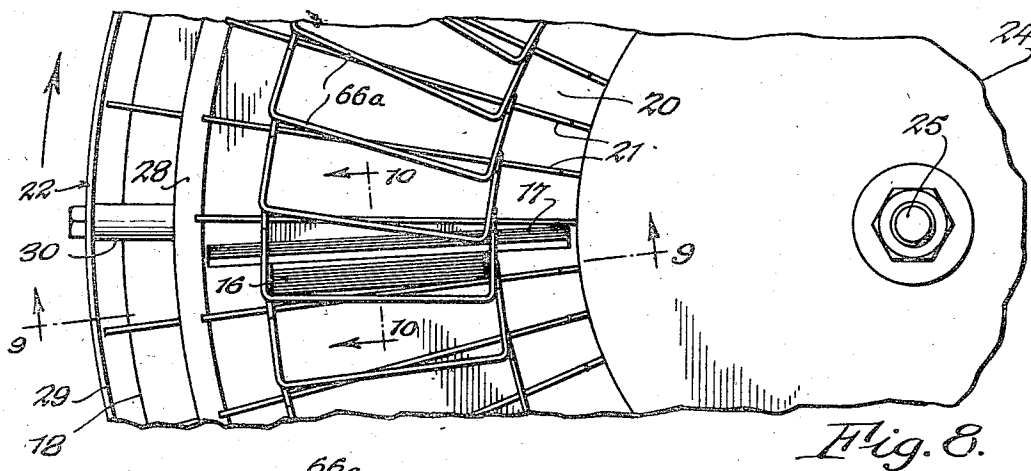
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FOLLOW-UP CARD FILE HOLDING AND DESIGNATING MACHINE

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,314,705

FOLLOW-UP CARD FILE HOLDING AND
DESIGNATING MACHINEEvert F. Johnson, Oil City, Pa., assignor to The
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Application January 29, 1942, Serial No. 428,704

14 Claims. (Cl. 129—16.1)

This invention relates to a machine which, although not necessarily so limited, is available for use in connection with the cards of a "follow-up" file such, for example, as kept by service stations and garages for recording the various lubricating and other services which are performed, or recommended to be performed, at specified periods to maintain the automobiles of customers in proper running condition, the machine being automatically operative when so employed to designate, day-by-day and without the necessity of thumbing through the entire file to obtain such information, which of said customers should be notified to bring in their automobiles for servicing.

One object of the invention is to provide a machine of the type generally described which is adapted to accommodate a file of cards, each of which is intended to be referred to at several specified periods, and which is so designed that the designation of a particular card as currently calling for attention also indicates which of said periods is involved.

A further object is to provide a machine which is adapted to designate the cards at the periods specified, although the numbers of and the times at which such periods occur may vary with different cards.

A still further object is to provide a machine wherein the cards which comprise the file are readily accessible at all times and may be removed and replaced at will.

A still further object is to provide a machine which is simple, compact and attractive in design and which will accommodate conventional cards.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is a top plan view (with the cover removed) of a machine embodying the features of the invention.

Figure 2 is a vertical section taken along line 2—2 of Figure 1.

Figure 3 is to sectional view through the casing of the machine, the operating parts being shown in elevation.

Figure 4 is a horizontal section taken along line 4—4 of Figure 2.

Figure 5 is a similar section taken along line 5—5 of the same figure.

Figure 6 is an enlarged detail section taken along line 6—6 of Figure 3.

Figure 7 is a fragmentary section taken along line 7—7 of Figure 6.

Figure 8 is an enlarged fragmentary top plan view of the wheel which provides the compartments for the cards of the file.

Figure 9 is a fragmentary section taken along line 9—9 of Figure 8.

Figure 10 is a similar section taken along line 10—10 of Figure 8.

The machine, as illustrated, includes a base plate 12; and the parts thereof are enclosed within a housing 13 which is fixed to the base plate and a cover 14 (Figure 3) which is removably supported upon the housing, the upper marginal edge of the housing being flanged to provide a seat 15 for the ring of the cover.

The record cards, indicated at 16 and 17 in Figures 8, 9 and 10, normally rest upon a disc-like support 18 which is carried by posts 19 and occupy compartments 20 which are provided by radially extending plates 21 of a wheel 22. The inner ends of the plates fit in channels 23 formed in a hub 24 which is rotatably mounted upon the upper end of a spindle 25, a shoulder 26 on the spindle cooperating with a sleeve 27 on the hub to support the wheel at an elevation at which the lower edges of the plates just clear the support 18 and a shoulder 26a providing a rest for the central part of the said support. The outer ends of the plates 21 are connected by a ring 28 and the outer ends of the compartments 20 are closed by a band 29 which is supported from the ring by horizontal spacing elements 30. The support 18 is formed with radially extending discharge outlets 31, 32, 33, 34 and 35 which are normally closed by vanes 36 of a spider 37, a hub portion 38 of the latter having an opening through which the spindle 25 passes and resting upon an annular seat 39 formed or provided on the said spindle just beneath the support.

In accordance with the invention the wheel 22 is rotated step-by-step so that each of the compartments 20 is moved successively and at predetermined periods to positions over and in alignment with each of the outlets 31, 32, 33, 34 and 35. To this end the lower edge of the band 29 is formed to provide teeth 40. A dog 41 which engages the teeth 40 is pivotally mounted upon, and provides a vertical continuation of, a post 41a which is carried by a slide 42. The latter includes a body 43 having rod extensions 44 and 45 which are accommodated in horizontal guide bores formed in posts 46 and 46a respectively, the said body extending outwardly with respect to the rod extensions and resting upon a guide bar 47 which is supported by and between the upper ends of the posts 46 and 46a. A spring 48

having one end connected to the body of the slide 42 and the opposite end connected to the bar 47 normally holds the slide in a retracted position in which the post 46a serves as a stop while an element 49 which is carried by the rod extension 45 behind a shoulder providing enlargement 50 acts as a cushion.

The under side of the body of the slide is formed to provide a gear rack 51 (Figure 6). A sector gear 52 which cooperates with the rack 51 is fixed to the outer end of a shaft 53 which is journaled in a bearing 54 and which also carries a worm wheel 55. The latter meshes with, and is driven by, a worm 56. A shaft 57 which carries the worm 56 is mounted in bearings 58 (Figure 5) and at one end carries a gear 59 which meshes with a gear 60. The latter and a gear 61 are carried by a shaft 62 which is mounted in a bearing 63, a pinion 64 which is carried by the armature shaft of a motor 65 meshing with the gear 61. The sector gear 52, therefore, may be driven by the motor 65 to actuate the slide 42 and thereby advance the wheel 22 one step, the spring 48 restoring the slide to its original position as the teeth of the sector gear 52 move beyond and out of engagement with the teeth of the gear rack. Simultaneously a spring 66 which normally holds the dog 41 in an upright position yields to permit the dog to pass under the succeeding tooth on the band 29, whereby when the slide is again actuated in the manner described, the wheel 22 will be advanced another step.

In each of its rest positions a compartment of the wheel 22 is located over each of the outlets 31, 32, 33, 34 and 35; and each movement of the wheel moves such compartments ahead as the succeeding compartments are advanced to the positions originally occupied by them. In this connection it will be noted (see Figures 8, 9 and 10) that the cards 16 and 17 in the compartments 20 are similar except that the former are inserted lengthwise while the latter are inserted widthwise. The first two outlets in the support 18, i. e., 31 and 32 are of a length slightly greater than the width of the cards 16 and 17 but less than the length of the said cards while the remaining three outlets, i. e., 33, 34 and 35 are of a length slightly greater than the length of the said cards, the ring 28 and the hub of the wheel cooperating with the ends of the cards 17 to guide the latter across the shorter outlets to the longer outlets. In order to guide the cards 16 so that their lower ends will align properly with the shorter outlets, a ball 66a is carried by each of the plates 21, the legs of the balls cooperating with the side edges of the cards 16 to hold the latter in the proper positions in the compartments and being pivotally connected to the upper edges of the plates 21 so that the balls may be swung from horizontal operative positions in which they rest upon adjacent plates to vertical inoperative positions. When the balls occupy the latter positions the cards may be inserted widthwise into, or removed widthwise from, the compartments.

After each movement of the wheel 22 to advance the cards 16 and 17 in the manner described, the spider is actuated to move the vanes 36 momentarily to one side of the outlets 31, 32, 33, 34 and 35. To this end the shaft 53 (Figures 2 and 5) carries a bevel gear 67 upon its inner end which meshes with a companion gear 68 fixed to a vertical shaft 69. The latter also carries a gear 70 which meshes with a gear 71 fixed to a

shaft 72, the shafts 69 and 72 being mounted in suitable bearings carried by a horizontal member of a frame 73. A cam 74 which is fixed to the upper end of the shaft 72 is engageable with an arm 74a of a crank 75 and is operative to move the latter to the dotted-line position indicated in Figure 5. The outer end of the other arm 76 of the crank 75 is connected by a link 77 to an extension 78 (Figure 4) on one of the vanes of the spider 37; and hence such movement of the crank is transmitted to the spider to move the vanes 36 to positions at the sides of the outlets 31, 32, 33, 34 and 35, a spring 79 (Figure 5) which connects the arm 76 of the crank to the plate 18 yielding to permit movement of the parts in the manner described and being automatically operative to restore them to their original positions as the cam 74 moves beyond and releases the arm 74a.

When the spider 37 is thus actuated the cards 16 in the compartments over the outlets 31 and 32 and all of the cards in the compartments over the outlets 33, 34 and 35 are permitted to fall through the said outlets into receivers 80. The latter are in the form of drawers which extend radially into the housing 13 and which may be withdrawn to remove the cards which enter them, it being understood in this connection that the use of drawers is optional and that if desired built-in compartments may be substituted for them.

In accordance with the invention the motor 65 is energized once every twenty-four hours, preferably at mid-night, or any other period between normal periods of use, the circuit for the motor including a conventional time-controlled device for automatically closing the circuit and for holding it closed for a complete cycle of the machine, that is to say an interval during which the wheel 22 is advanced one step and the spider 37 is actuated to open the outlets 31, 32, 33, 34 and 35 to permit the cards which have been moved over the outlets to fall into the receivers 80. It will thus be apparent that the location of the outlets with respect to the location of the compartments when the cards are placed in the latter may be predetermined to effect the delivery of the cards from the wheel 22 at the desired periods and may be varied to meet different requirements. In the machine illustrated the plates 21 divide the wheel 22 into forty-four compartments. Hence, cards which initially are inserted lengthwise in the compartment over the outlet 35 (the starting position) will be automatically discharged through the outlet 31 on the third day. After the procedure called for has been carried out these cards may be replaced in their original compartment and will not be discharged again, assuming they are inserted lengthwise when being replaced, until the said compartment is moved to a position over the outlet 32 on the tenth day.

In the meantime those of the cards which were initially inserted widthwise in the compartment over the outlet 35 have been advanced step-by-step with the cards inserted lengthwise. Such cards, however, owing to their length, will not pass through the outlets 31 and 32 and hence will be advanced until the compartment is moved to a position over the outlet 33 on the thirtieth day. After the directions called for have been followed the cards which are discharged through the outlet 33 may be replaced in their original compartment and will not be discharged again, or referred to, until the compartment is moved to a position over the outlet 34 on the thirty-sev-

enth day. When they are again replaced in their compartment after being discharged through the outlet 34 the cards will not be discharged until the compartment is moved to a position over the outlet 35. This will occur on the forty-fifty day. In this connection it will be noted that the compartment from which the cards are discharged on the forty-fifty day is the same compartment in which the cards were inserted on the first day. This is possible as the outlets 31, 32, 33, 34 and 35 are normally closed, the spider 37 being actuated to momentarily open the outlets immediately after each advancing movement of the wheel 22 between the normal periods of use. The various compartments may, of course, be identified in any suitable manner.

It will be apparent that in the use of the machine the cards are placed initially in the compartment over the outlet 35. Each day, or as often as intended, the receivers 80 may be withdrawn, the cards inspected and the procedure called for carried out. The outlets 31, 32, 33, 34 and 35 being normally closed and the spider 37 being actuated only between normal periods of use, the cards may, after they have been removed from the drawers and inspected, be replaced immediately in their original compartments without causing any break in their step-by-step movement toward outlets representing specified later periods of time. If desired, a conventional file of duplicate cards may be kept in connection with the file of cards in the machine. In such case the duplicate file of cards will be available for reference in the event that it should be desired to locate particular cards in the compartments 20.

From the foregoing it will be apparent that the machine is characterized by features which adapt it particularly for use in connection with a card file of customers of the kind kept by service stations and garages. When so employed the machine may be availed of to discharge the cards day-by-day so that an attendant may send out notices to such customers advising them when their cars require servicing, what the particular services are and when they were last performed. The cards being replaced in the machine after such notices have been sent out, they will again be discharged at future specified periods so that the customers may be notified of additional services as recommended periods for such services occur and may also be reminded of the need of services which they may have neglected to have performed in the past.

As only those cards which are inserted lengthwise in the compartments 20 will be discharged through the outlets 31 and 32 provision is thus made whereby with respect to certain periods only certain of the cards will be discharged. Those cards, however, which are discharged through the first two outlets, or either of them, may be replaced in the machine with those which are intended to pass over said outlets. The machine, therefore, has the further advantage that although the physical characteristics of the cards are identical their discharge through certain of the outlets 31, 32, 33, 34 and 35 may be selectively controlled.

I claim as my invention:

1. A machine of the character described including a horizontal support having a plurality of discharge outlets, a vertical shaft, means carried by said shaft for closing said outlets, a wheel mounted on said shaft over said support, said wheel being divided into compartments in which

cards may be accommodated, means for rotating said wheel to advance each of said compartments successively to positions over each of said outlets, and means for actuating said first named means to permit the discharge of said cards through said outlets.

2. A machine of the character described including a horizontal support having a plurality of discharge outlets, a vertical shaft, means carried by said shaft for normally closing said outlets, a wheel mounted on said shaft over said support, said wheel being divided into compartments in which cards may be accommodated, means for rotating said wheel to advance each of said compartments successively to positions over each of said outlets while the latter are closed, and means for thereafter rotating said first named means to permit the discharge of said cards through said outlets.

3. A machine of the character described including a horizontal support having a plurality of radially extending discharge outlets, a vertical shaft, a rotatable spider mounted on said shaft and having radially extending arms for closing said outlets, receivers under said outlets, a wheel divided into compartments in which cards may be accommodated, means for rotating said wheel to advance each of said compartments successively to positions over each of said outlets, and means for rotating said spider to permit the discharge of said cards through said outlets into said receivers.

4. A machine of the character described including a horizontal support having a plurality of radially extending discharge outlets, a vertical shaft, a rotatable spider mounted on said shaft under said support and having radially extending arms for normally closing said outlets, a wheel mounted on said shaft over said support, said wheel having a rim and being divided into compartments in which cards may be accommodated, means engageable with said rim for rotating said wheel to advance each of said compartments successively to positions over each of said outlets, and means for rotating said spider after said compartments have been moved to said last named positions to permit the discharge of said cards through said outlets.

5. A machine of the character described including a horizontal support having a plurality of spaced-apart, radially extending discharge outlets, a vertical shaft, a rotatable spider mounted on said shaft under said support and having radially extending arms for normally closing said outlets, receivers under said outlets, a wheel mounted on said shaft over said support, said wheel being divided into compartments in which cards may be accommodated, means for rotating said wheel to advance each of said compartments successively to positions over each of said outlets, means for rotating said spider through a predetermined angle, after said compartments have been moved to said last named positions to permit the discharge of said cards through said outlets into said receivers, and means for thereafter restoring said spider to its original position.

6. A machine of the character described including a horizontal support having a plurality of discharge outlets, a vertical shaft, a rotatable spider mounted on said shaft under said support and having radially extending arms for closing said outlets, a wheel mounted on said shaft over said support, said wheel having a notched rim and being divided into compartments in which

cards may be accommodated, means engageable with said rim for rotating said wheel step-by-step to advance each of said compartments successively to positions over each of said outlets, and means for rotating said spider to permit the discharge of said cards through said outlets.

7. A machine of the character described including a horizontal support having long and short discharge outlets, a vertical shaft, a wheel mounted on said shaft over said support, said wheel being divided into compartments in which oblong cards may be inserted lengthwise and widthwise, means for rotating said wheel to advance each of said compartments successively to positions over each of said outlets, whereby to effect the discharge of certain of said cards through one of said outlets and the passage of other of said cards over said outlet according to their horizontal dimensions, and means for holding in predetermined positions in said compartments those of said cards which are inserted lengthwise, whereby to prevent their lateral displacement and insure their alignment with said short discharge outlets.

8. A machine of the character described including a horizontal support having long and short discharge outlets, means for normally closing said outlets, a wheel divided into compartments in which oblong cards may be inserted lengthwise and widthwise, means for rotating said wheel to advance each of said compartments successively to positions over each of said outlets, and means for actuating said first named means after said compartments have been moved to said last named positions to momentarily open said outlets, whereby to effect the simultaneous discharge of cards through a plurality of said outlets including the selective discharge of certain of said cards according to their horizontal dimensions through at least one of said outlets.

9. A machine of the character described including a horizontal support having long and short discharge outlets, means for normally closing said outlets, receivers under said outlets, a wheel divided into compartments in which oblong cards may be inserted lengthwise and widthwise, means for rotating said wheel step-by-step to advance each of said compartments successively to positions over each of said outlets, and means for actuating said first named means to open said outlets momentarily after each of said step-by-step movements, whereby to effect the simultaneous discharge of cards through a plurality of said outlets including the selective discharge of certain of said cards according to their horizontal dimensions through at least one of said outlets.

10. A machine of the character described including a horizontal support having short and long discharge outlets, a wheel mounted over said support and divided into compartments into which oblong cards may be inserted lengthwise and widthwise, means for rotating said wheel to advance each of said compartments successively to positions over each of said outlets, and means for holding in predetermined positions in said compartments those of said cards which are inserted lengthwise whereby to prevent their lateral movement and insure their alignment with said short outlets.

11. A machine of the character described including a horizontal support having short and long discharge outlets, means for normally closing said outlets, a wheel mounted over said support and divided into compartments into which

oblong cards may be inserted lengthwise and widthwise, means for rotating said wheel step-by-step to advance each of said compartments successively to positions over each of said outlets, balls carried by the walls of said compartments for holding against lateral movement those of said cards which are inserted lengthwise, whereby to insure their alignment with said short outlets, and means for actuating said first named means to permit the discharge of cards through said outlets, said balls having operative positions in which they extend across said compartments and being movable to inoperative positions to permit cards to be inserted widthwise and to be removed in the same manner.

12. A machine of the character described including a horizontal support having short and long discharge outlets, a vertical shaft, a spider rotatably mounted on said shaft under said support and having radially extending arms for normally closing said outlets, receivers under said outlets, a wheel mounted on said shaft over said support, said wheel being divided by radial partitions into compartments into which oblong cards may be inserted lengthwise and widthwise, means for rotating said wheel step-by-step to advance each of said compartments successively to positions over each of said outlets, balls pivotally connected to said partitions for holding against lateral movement in said compartments those of said cards which are inserted lengthwise, whereby to insure their alignment with said short outlets, said balls normally extending across said compartments and being movable to inoperative positions to permit cards to be inserted widthwise and to be removed in the same manner, and means for rotating said spider after each step-by-step movement of said wheel to open said outlets momentarily to permit the discharge of cards through them into said receivers according to their horizontal dimensions.

13. A machine of the character described including a horizontal support having short and long discharge outlets, means for normally closing said outlets, receivers under said outlets, a wheel having radially extending partitions which provide compartments into which oblong cards may be inserted lengthwise and widthwise, means for rotating said wheel step-by-step to advance each of said compartments successively to positions over each of said outlets, U-shaped balls carried by said partitions for holding against lateral movement in predetermined positions in said compartments those of said cards which are inserted lengthwise, whereby to insure their alignment with said short outlets, said balls normally extending across said compartments and being movable to inoperative positions, and means for actuating said first named means after each step-by-step movement of said wheel to open said outlets momentarily to permit the discharge of cards through them into said receivers according to their horizontal dimensions, the legs of said balls having pivotal connections with said partitions, being engageable with the vertical edges of those of such cards as are inserted lengthwise into said compartments and extending over those of the cards which are inserted widthwise, and being of such a length that their connecting cross-pieces will clear the tops of the engaged cards when the balls are swung to said inoperative positions.

14. A machine of the character described including a stationary support having short and long radially extending discharge outlets formed

therein, a vertical shaft, a spider rotatably mounted on said shaft under said support and having radially extending arms which normally close said outlets, a wheel mounted on said shaft over said support, said wheel having a rim and radially extending partitions which provide compartments into which oblong cards may be inserted lengthwise and widthwise, means engageable with said rim for rotating said wheel step-by-step to advance each of said compartments successively to positions over each of said outlets, U-shaped bails carried by said partitions for holding against lateral movement in said compartments those of said cards which are inserted lengthwise, whereby to insure their alignment with a short discharge outlet, said balls extend-

5 ing across said compartments in their operative positions and being movable to inoperative positions, and means for actuating said spider after each step-by-step movement of said wheel to open said outlets momentarily to permit discharge of cards through them into said receivers in accordance with their horizontal dimensions, the legs of said bails having pivotal connections with said partitions, being engageable with the vertical edges of those of said cards which are inserted lengthwise into said compartments and being of such a length that their connecting cross-pieces will clear the top edges of said last mentioned cards when the bails are swung from
10 operative to inoperative positions and conversely.
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