Aug. 8, 1944. R. B. JOHNSON 2,355,299

RECORD CARD CONTAINER

Filed Feb. 11, 1942 3 Sheets-Sheet 1

FIG.1.

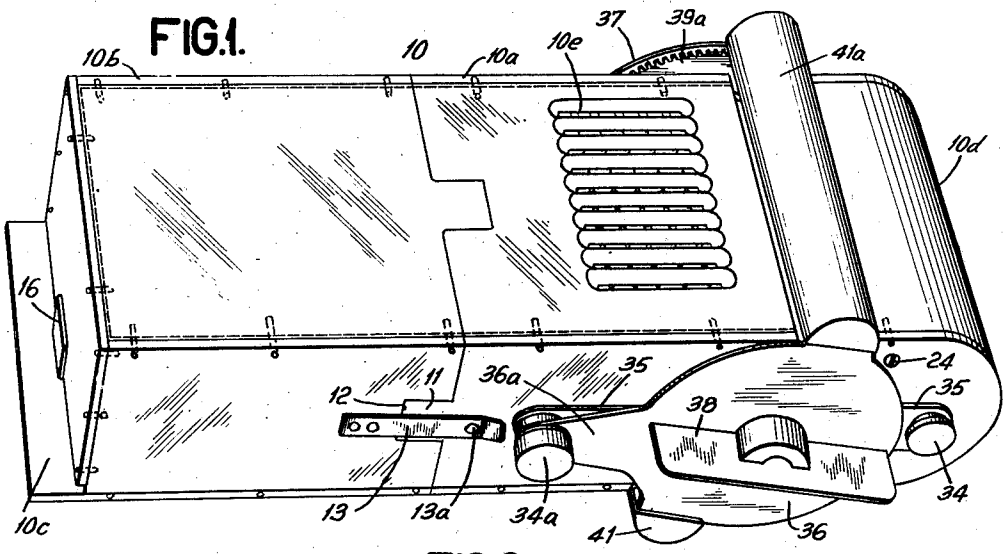


FIG.2.

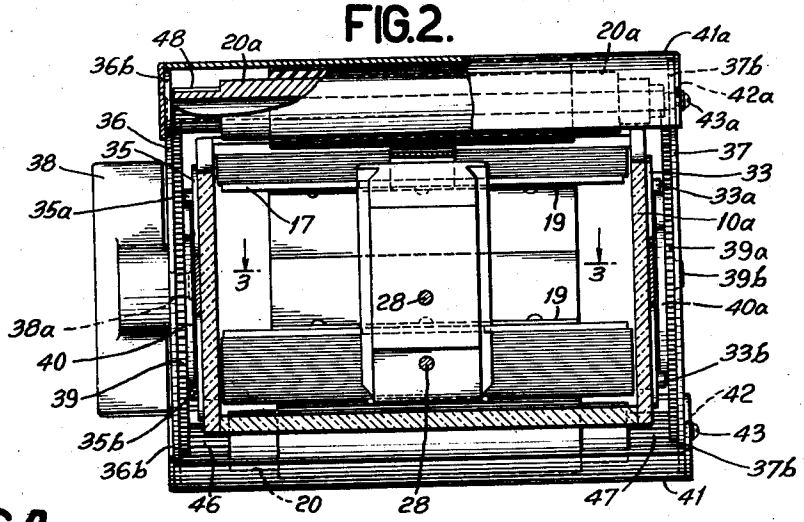


FIG 4

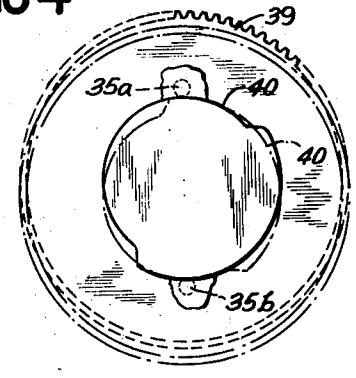
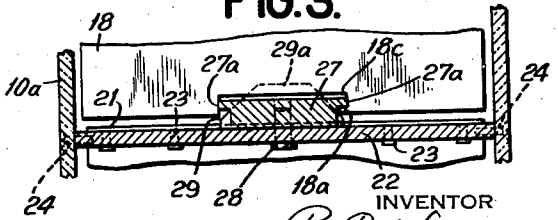


FIG.3.



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RECORD CARD CONTAINER

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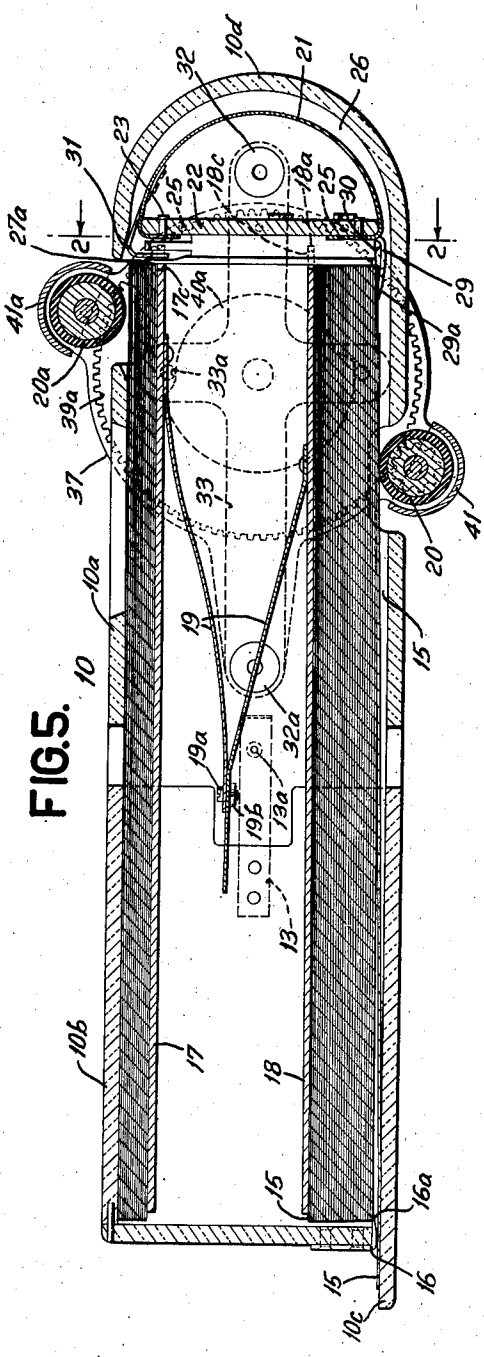


FIG. 5.

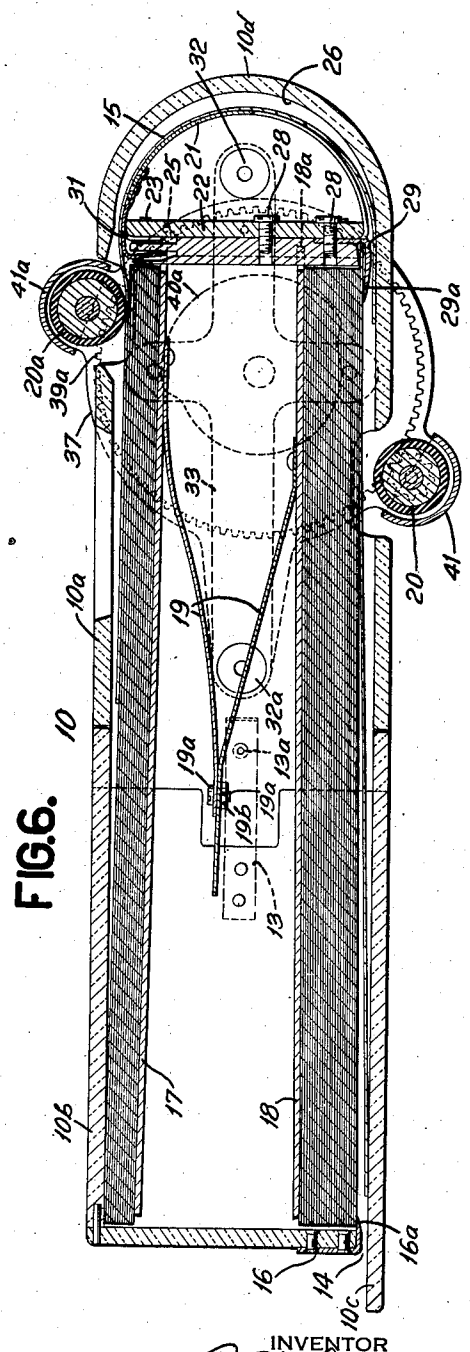


FIG. 6.

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RECORD CARD CONTAINER

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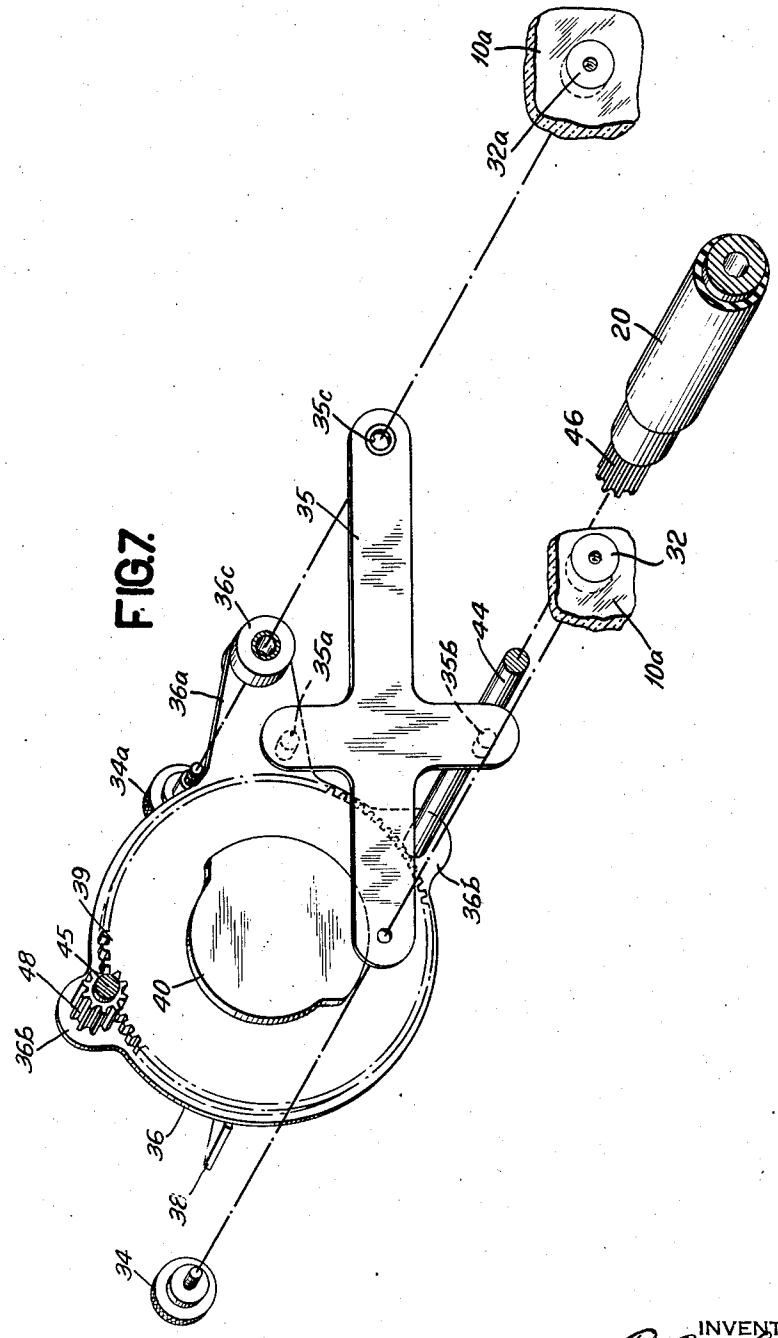


FIG.7.

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UNITED STATES PATENT OFFICE

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RECORD CARD CONTAINER

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Application February 11, 1942, Serial No. 430,395

11 Claims. (Cl. 281—44)

The present invention relates to a card container and more particularly to a container provided with a magazine section and a receiving section, and means for propelling a card from the bottom of a stack of cards in the magazine section to a marking position in the receiving section.

The record cards referred to are preferably of the type employed for tabulating purposes which, as is well known, are provided with different columns, each column having a chosen number of index point positions distributed vertically of the column. In certain uses of these cards, it is desired to mark them in the field in accordance with desired data. For example, a meter reader for an electric or gas public utility company may mark the cards, in respective columns, in accordance with the units, tens, hundreds, etc. readings of a meter and the chosen index point in the particular column is marked in conformance with the value of the integer of the units, tens, hundreds, etc. readings. In this manner, a record is quickly obtained in the field which can be carried by the meter reader. Separate cards are marked for each meter read. It is necessary to provide some form of container to serve as a magazine to protect the cards and as a storage container.

One of the objects of the present invention, therefore, is to provide a simple, compact container for carrying a supply of cards and means for projecting the cards, one at a time, from the bottom of a supply stack, within and protected by the container, around the end of the container, and into position beneath openings in the top of the container whereby the card can be marked in accordance with the meter reading. Subsequent cards are fed on top of the first marked card so that as the magazine stack decreases, the marked stack increases. Means are therefore provided for encroaching upon the magazine section as the receiving section accumulates the marked cards whereby all space within the container is most efficiently employed.

Another object is to provide a novel card container comprising a magazine section for a stack of cards and a receiving section, means for projecting a card from the magazine section to the receiving section, and means for expanding the receiving section into the previous magazine section as the stack of cards in the magazine section decreases.

Still another object is to provide a novel card container comprising a magazine section and a receiving section, and means for moving a card from the magazine section to the receiving section including card dealing means for individually separating cards from the bottom of a supply stack, and means for propelling a separated card around the end of the container to a marking position in the top of the receiving section of the container.

A further object is to provide a novel card container comprising a pair of horizontally disengageable portions, means for aligning said portions, means within said container forming a pair of vertically separated sections, a roller projectable into one of said sections to engage a card therein, a roller projectable into the other of said sections to engage a card therein, gear means for simultaneously driving said rollers, cam means rotated by said gear means, and cam follower means cooperating with said cam means to project said rollers into and out of their respective sections.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a perspective view illustrating the novel card container and card handling mechanism.

Fig. 2 is a sectional view, taken on line 2—2 of Fig. 5.

Fig. 3 is a partial sectional view, taken on line 3—3 of Fig. 2.

Fig. 4 is a diagrammatic view illustrating the respective positions, of members of the card handling mechanism, in two different sequential positions of operation.

Fig. 5 is a sectional view illustrating the card container loaded with cards, and with the card handling mechanism in one sequential position of operation.

Fig. 6 is a different sectional view, generally similar to Fig. 5, but illustrating the card handling mechanism in a different sequential position of operation.

Fig. 7 is an exploded perspective view illustrating certain members of the card handling mechanism.

Referring to the drawings and more particularly to Figs. 1, 5, and 6, the novel card container 10 of transparent plastic material, comprises a horizontally separable portion 10*a*, carrying the card handling mechanism, and another separable portion 10*b* which together with portion 10*a* comprises the container for holding record cards, the two halves of the container being aligned and interfitted by tongue and groove portions 11 and

12, respectively, and held together by spring snap members 13 (only one shown), fastened, respectively, to opposite sides of portion 10b and provided, respectively, with protruding members 13a projecting, respectively, into cooperating openings in portion 10a. Portion 10b is also provided with a slot 14 (Fig. 6) in its rear portion and flush with the bottom of the container, into which slot a card 15 (Fig. 5) may be projected, as described later, preliminary to movement of the card from the bottom or magazine section of the card container 10 to the top or receiving section, all as explained later. A card dealing lug 16, fastened to the rear wall of portion 10b, is provided, which extends at right angles into the container and bears against the bottom of a stack of cards to support the cards at one end, free from the bottom of the container, until one card is moved forward, as described later, to clear the lip 16a of the dealing lug whereby the end of the card formerly engaging the dealing lug is permitted to drop to the bottom of the container, this card then being in position to be moved, as described presently, out the slot 14 onto the extension 10c of the bottom of the container portion 10b, preparatory to being moved from the magazine section of the card container to the receiving section thereof.

A pair of plates 17, 18 (Figs. 5 and 6) are located within the container 10 and are constantly urged apart by the spring member 19 comprising two spring plates fastened together by fasteners, such as a pair of screws and cooperating nuts 19a and 19b, respectively, (only one of the pair shown). The individual or free ends of the spring member are fastened respectively to the plates 17 and 18 and thus constantly urge these plates apart to hold the cards in their upper position as they accumulate and to constantly urge the stack of cards in the magazine section against the dealing lug 16 and card driving roller 20 of the card handling mechanism.

A sheet metal card guide member 21 is formed by bending a flat plate into a hollow semi-cylinder with the free ends of the plate attached to a support plate 22 by rivets 23. A pair of screws 24 (Figs. 1 and 3), one pair on each side of the card container, pass through the side wall of portion 10a and engage tapped holes 25, formed in the respective edges of plate 22, to fasten the plate to the container and to hold the card guide 21 concentrically with and spaced from the closed arcuate end 10d of the casing. A guide passage 26 is therefore formed between the card guide 21 and the curved end 19d of the container, whereby a card 15 may be projected from the magazine section, around the end 10d to the receiving section of the card container and into position to receive marks in the respective columns and index point positions thereon, through the respective openings 10e in the top of the container, to produce a record on the card of desired information, such as, for example, a meter reading. To the plate 22 and in the center portion thereof, there is fastened the member 27 (Figs. 2 and 3). One of the pair of screws 28, which fasten the member 27 to plate 22, also passes through a dealing lug 29 supported between the plate 22 and the member 27 and having a right angled lip 29a projecting into the card container and into position to engage the first card to be handled by the card handling mechanism, all as described later. A space 30 (Fig. 5) is formed between the right angled projecting lip 29a and the bottom of member 27. During assembly of the device, plate 18 is fed through this space 30 until the sides of a channel 18c, formed in the end of the plate, engage the sides of the projecting portions 27a (Fig. 3) of member 27, while a locking lug 18a on the bottom plate 18 prevents withdrawal of the plate 18, lengthwise of the container, except when the plate is moved into alignment with space 30. A channel 17c (Fig. 5) formed in plate 17, similarly surrounds the projecting portions 27a of member 27 and serves as a guide for plate 17 as it moves vertically up and down. A spring element 31 is fastened at one end within guide member 21, projects resiliently upward and then extends downwardly into an opening in member 27 whereby element 31 is compressible downwardly.

Novel card handling mechanism is now provided including the previously mentioned roller 20 which cooperates with the novel card container in projecting a card from the magazine section of the container into position beneath openings 10e in the upper or receiving section of the container. Two pairs of inserts 32, 32a (only one pair shown, Figs. 5 and 6) are molded, one pair, respectively, into each side wall of the container. A cruciform member 33 (Figs. 2, 5 and 6) provided with cam followers 33a and 33b is fastened, outside the container, to one pair of inserts in one side wall, by means of a pair of knurled headed screws 34, 34a, and a similar cruciform member 35 (Figs. 1, 2 and 7) provided with cam followers 35a and 35b, is similarly fastened to the inserts 32, 32a, on the opposite wall of the container. A generally circular member 36 (Figs. 1, 2 and 7), provided with an elongated ear 36a (Fig. 7) and a pair of short ears 36b, 36b, is pivotally fastened to one insert 32a by a screw 34a, passing through an opening in ear 36a, a collar 36c, an opening 35c in the cruciform member 35 and into the threaded portion of this insert 32a, to fasten one end of the cruciform member 35 and also to pivotally connect member 36 to one side of the container. An additional similar member 37 (Figs. 1 and 2) is fastened in similar manner to the other similar insert 32a on the other side of the container. Member 37 is identical to member 36, except that the ears 37b, 37b (Fig. 2) of member 37 are provided with openings, for purposes to be described presently.

A finger operable, rotatable handle 38 (Figs. 1, 2 and 7) carries a center stud 38a (Fig. 2) passing through an opening in the center circular portion of member 36. A gear 39 is fastened to the stud 38a and is rotated upon rotation of handle 38. Gear 39 carries a cam 40 which cooperates with the stationary cam followers 35a, 35b formed on the cross arm of cruciform member 35. Similarly, cam 40a is carried by a gear 39a which is provided with a stud 39b passing through an opening or journal formed in member 37 whereby the gear 39a and cam 40a are journaled for rotation between one container wall and the member 37. Rollers 20 and 20a extend, respectively, transversely of the container and in position to engage a card 15, to move the card from the magazine section of the container to the receiving section thereof. Rollers 20 and 20a are covered by hollow semi-cylindrical protective covers 41, 41a, closed at both ends, one of the ends of each member being provided, respectively, with openings 42, 42a. The imperforate end of cover 41a is inserted over an ear 36b of member 36 (Fig. 1) and the other end of cover 41a is placed in position over an ear 37b of member 37 (Fig. 2). A screw 43a passes through the opening 42a to lock the cover 41a in position, to pro-

tect the roller 20a (Fig. 2). The protective cover 41 is similarly fastened over roller 20 and held in place by screw 43. Screws 43 and 43a, respectively, also serve to align and hold the free ends of stationary axles 44 and 45, respectively, attached at one end (Fig. 7) to the ears 36b, respectively, of member 36. A pair of spur gears 46, 47 are integral, respectively, with the roller 20, at opposite ends thereof, while a spur gear 48 is integral with one end of roller 20a. Spur gears 46 and 48 engage gear 39 while spur gear 47 engages gear 39a.

The rollers 20 and 20a and their associated spur gears are mounted for rotation on the axles 44 and 45, respectively. As the handle 38 is rotated, gear 39 is similarly rotated to drive spur gears 46 and 48 and simultaneously rotate rollers 20 and 20a, in the same direction.

Simultaneously with the rotation of gear 39, gear 39a is rotated, by spur gear 47 rotating with roller 20. Simultaneous rotation of gears 39 and 39a, likewise produces simultaneous rotation of cams 40 and 40a. This rotation of cams 40 and 40a, by cooperation with the fixed cam followers 33a and 33b, and 35a and 35b, respectively, oscillate the cams, gears 39 and 39a, and studs 38a and 39b, whereby the members 36 and 37 are oscillated to different positions, about their respective pivots. The time and degree of such oscillation and the duration of the assumed positions are determined by the contours of cams 40 and 40a. During approximately one-half revolution, the high parts of cams 40 and 40a will engage, respectively, the cam followers 35b and 33b, so that the cams and the rollers 20 and 20a are simultaneously moved to and maintained, in the upper of two positions, as seen by comparison of Figs. 4 and 5. During the other half of a complete rotation of the cams, the high parts of the cams 40 and 40a engage followers 35a and 33a, respectively, and the cams and the rollers 20 and 20a are simultaneously, moved to and maintained, in the lower of two positions (Figs. 4 and 6). When in the upper position, roller 20 engages a card 15, to deal the card from the bottom of the stack, as described presently, and to project it about guide 21 until the card is projected around end 10d of the casing and over the upwardly projecting spring element 31. Spring element 31, thereby tends to urge all cards upwardly into engagement with the roller 20a, as the cards are fed around end 10d and into the receiving section by roller 20. As the card 15 arrives beneath roller 20a, the high portions of cams 40 and 40a engage followers 35a and 33a, respectively, and the rollers move to their lower position, in which position roller 20a engages the fed card 15 and moves it into marking position in the top of the container and beneath the openings 10e.

The operation of the device is as follows: With the two halves of the container 10, disassembled, the card projecting mechanism remains connected to container portion 10a and is completely assembled for operation. The unit comprising the plates 17 and 18 and the plate springs 19, is inserted into the container portion 10a and plate 18 is aligned with opening 30 so that the channel 18c surrounds the projecting portion 27a of member 27 and channel 17c of plate 17 similarly surrounds these projecting portions.

A stack of cards is inserted into the bottom or magazine half of the container portion 10a between the bottom of the container and the lower plate 18, as seen in Figs. 5 and 6, with the printed numbers on the card facing downwardly. The lug 18a on bottom plate 18 rides up along and engages behind one of the projecting portions 27a of member 27, to lock the spring and plate unit in place. The other container portion 10b is now aligned with portion 10a by aligning the tongue and groove portions 11 and 12 and the two portions of the container are slid together, until the spring snapped members 13 engage their protruding elements 13a with the openings in portion 10a, to lock the two portions of the container, together with the stack of cards in the bottom or magazine part of the container.

By a slight rotation of handle 38, gear 39 is rotated, to rotate roller 20 clockwise. Assuming that the cams 40 and 40a have their high portions in engagement with followers 35b and 33b, respectively, the roller 20 will be in the upper position and in strong engagement with a card 15 and upon such rotation of roller 20 it will project the card into the space 30 between the lip 29a and member 27 until the left-hand end of the engaged card clears lip 16a and drops to the bottom of the container. Upon a slight rotation of handle 38 in the opposite direction, the engaged card 15 is moved backwardly through the opening 14 in the back wall of the container and upon extension 10c until the right-hand end of the card clears lip 29a.

Upon rotation of handle 38 again in the original first direction, the engaged card 15 is moved along the bottom of the container, and now beneath, the knife edge of lip 29a and into the arcuate space 26 (Fig. 6) between the guide 21 and the end 10d of the casing. As the handle is continuously rotated, the engaged card 15 is propelled around the end 10d and over the spring element 31 which urges the card upwardly. After the leading end of the engaged card arrives under roller 20a, the high parts of cams 40 and 40a, engage the followers 35a and 33a, respectively, and the rollers are shifted to the lower position whereupon roller 20a more strongly engages the card 15 and propels it into final position in the top of the container and beneath the openings 10e.

As the trailing end of the card 15 clears roller 20, this roller engages the next lower card 15, in the bottom of the container, and propels it into the space 30, so that when the first card reaches its final position, the next card is off lip 16a and is ready to be backed off the lip 29a into position for initiation of its propulsion, from the bottom to the top of the container, the roller 20 having during this time, dropped to lower position and then resumed its upper position, as the first card reaches its final position beneath openings 10d.

Novel card container and card manipulating means are therefore provided, which comprise means for protecting cards against soiling, and provides means for manipulating a card in a simple and direct manner from a storage magazine to an operative position in which the card can be marked.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art, without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. A card container comprising walls defining a hollow box-like structure having therein a magazine space adapted to contain a supply of cards and a receiving space adapted to receive said cards in succession from said magazine space, and means for feeding the cards in succession from said magazine space to said receiving space and comprising a first feed roller mounted to be moved into and out of frictional engagement with a card in said magazine space and operable when in frictional engagement and when rotated in one direction, to move a card out of said magazine space, a second feed roller mounted to be moved into and out of frictional engagement with a card fed from said magazine space by said first roller and operable when engaging the card and when rotated in one direction, to move such card into the receiving space, and means for rotating both rollers in directions to feed a card and including means for first moving said first roller into card engaging position and at the same time holding the second roller out of card engaging position, and then for moving the second roller into card engaging position and at the same time holding said first roller out of card engaging position.

2. A card container comprising walls providing a hollow box-like structure having therein a magazine space adapted to hold a supply of cards and a receiving space adapted to receive said cards, and means for successively transferring said cards from said magazine space to said receiving space and said means comprising a first feed roller adjacent said magazine space and operable to frictionally engage and move the cards one at a time from said magazine space, a second feed roller adjacent said receiving space and operable to frictionally engage the cards as they are fed by said first roller and move such cards into said receiving space, a carrier rotatably supporting both said rollers and being movably supported by said box-like structure so that in one position of said carrier said first roller is in operative engagement with a card and the second roller is out of operative position and so that in a second position of said carrier said second roller is in operative engagement with a card and the first roller is out of operative position, manually operable gear means for driving said rollers, and cam means operable during the operation of said gear means for moving said carrier into its said one position and holding it there while a card is being moved by the first feed roller out of the magazine space and then moving said carrier into its second position and holding it there while the second feed roller moves the card into said receiving space.

3. In a card container having a magazine space adapted to contain a supply of stacked cards, means for successively separating cards from the stack comprising a pair of spaced knife edged lugs holding the outer card of the stack at the respective ends thereof, means defining a space conforming to a card width and thickness and formed at the inner side of one of said lugs, means defining a slot conforming to a card width formed at the outer side of the other of said lugs, and means for projecting the outer card of said stack first into said space far enough to clear the inner side of said other lug and then projecting the card in the opposite direction and into said slot far enough to clear the inner side of said one lug whereby said outer card is dealt from the outer side of the stack.

4. A card container comprising a box-like structure including a pair of oppositely arranged side walls and an outwardly curved arcuate end wall connecting two adjacent ends of said side walls; partition means disposed interiorly of said structure and providing with one of said side walls a magazine space adapted to contain a supply of cards, and providing with the other of said side walls a receiving space for such cards; an arcuate shaped inner wall of similar shape and size as said end wall and disposed inwardly thereof to provide an arcuate passage connecting the outer part of said magazine space with the outer part of said receiving space; and means for successively moving the cards from said magazine space through said passage and into said receiving space.

5. Apparatus according to claim 4 wherein the partition means comprises a pair of approximately parallel plates constantly urged apart and outwardly toward the two side walls, respectively.

6. A card container comprising outer walls defining a hollow box-like structure; partition means extending transversely across the interior of the structure to provide a magazine space for cards between one side thereof and an outer defining wall and to provide a receiving space for said cards between the other side thereof and another defining wall of the container and said partition means comprising a pair of plate members constantly urged apart and toward opposite sides of said structure; and means for successively moving cards from the outer side of the magazine space around said partition means and into the outer side of said receiving space.

7. A card container comprising outer walls defining a hollow box-like structure; means providing a magazine space within said structure formed to contain a supply of record cards; means providing a receiving space within said structure defined at one side by one of said outer walls and formed to hold cards therein in stacked relation one upon another with the outer card of the stack occupying an initial position flat along the inner surface of said one wall; means for constantly urging cards in said receiving space toward said one wall so that the cards are held in stacked relation therein and the outer card of the stack is held in said initial position against said one outer wall; said one outer wall having an opening therethrough providing for the recording of data from the exterior of the container on the card in said initial position; and means for successively moving cards from the magazine space and into said initial position in said receiving space and including means for moving the preceding card occupying said initial position out of said initial position and against the force of said urging means, whereby the cards in said receiving space are stacked one upon another and the last card to enter such space always occupies said initial position.

8. A card container comprising outer walls defining a hollow box-like structure; means providing a magazine space within said structure formed to contain a supply of record cards; means providing a receiving space within said structure defined at one side by one of said outer walls and formed to hold cards therein in stacked relation one upon another with the outer card of the stack occupying an initial position flat along the inner surface of said one wall; means

for constantly urging cards in said receiving space toward said one wall so that the cards are held in stacked relation therein and the outer card of the stack is held in said initial position against said one outer wall; said one outer wall having an opening therethrough providing for the recording of data from the exterior of the container on the card in said initial position; and means for successively moving cards from said magazine space and flat along the inner surface of said one outer wall into said initial position in said receiving space, and said last-named means including means for directing the leading edge of each card entering the receiving space between the surface of a preceding card and said one side wall and for moving the preceding card out of said initial position against the force of said urging means whereby the cards are stacked one upon another in said receiving space.

9. A card container comprising outer walls defining a hollow box-like structure having a magazine space therein adapted to contain a supply of record cards; partition means arranged within said structure and in opposed relation to one of said outer side walls to provide a receiving space for the cards formed to hold the cards in stacked relation one upon another with the outer card of the stack occupying an initial position flat along the inner surface of said one outer wall; means for constantly urging the partition means toward said one outer wall so that cards occupying said receiving space are held in their stacked relation with the outer card of the stack in said initial position firmly against said one outer wall; said one outer wall having an opening therethrough providing for the recording of data on the card occupying said initial position from the exterior of the container; and means for successively moving the record cards from said magazine space into said initial position in said receiving space and including means for moving the preceding card, when the entering card is not the first, away from said initial position and against the force of said urging means and for moving the entering card along said one outer wall and between the latter and the preceding card into said initial position, when the entering card is not the first, and between said one outer wall and the partition means, when the entering card is the first, whereby the last card to enter always occupies said initial position and the cards are stacked one upon another in the receiving space.

10. A card container comprising outer walls defining a hollow box-like structure with two of said walls forming oppositely disposed side walls of said container; partition means extending transversely across the interior of said structure and between said two side walls to provide with one of said side walls a magazine space formed to contain a supply of record cards arranged in stacked relation, and to provide with the other of said side walls a receiving space formed to hold the cards in stacked relation one upon another with the outer card of the stack occupying an initial position flat along the inner surface of said other side wall; means for urging cards stacked in said receiving space toward said other side wall with the card occupying the initial position being held in engagement with said other side wall; said other side wall having an opening therethrough to provide for the recording of data on the card occupying said initial position from the exterior of the container; and means for successively moving cards from the magazine space, around said partition means, and into said initial position in said receiving space and including means for moving the preceding card to enter said receiving space, out of said initial position and against the force of said urging means, whereby the last card to enter said receiving space always occupies the initial position and the cards are stacked one upon the other in the receiving space.

11. A card container comprising outer walls defining a hollow box-like structure with two of said walls forming oppositely disposed side walls of said container; partition means extending transversely across the interior of said structure and between said two side walls to provide with one of said side walls a magazine space formed to contain a supply of record cards arranged in stacked relation with the outer card of the stack lying flat along said one wall, and to provide with the other of said side walls a receiving space formed to hold the cards in stacked relation one upon another with the outer card of the stack occupying an initial position flat along the inner surface of said other side wall; means for urging cards stacked in said receiving space toward said other side wall with the card occupying the initial position being held in engagement with said other side wall; said other side wall having an opening therethrough to provide for the recording of data on the card occupying said initial position from the exterior of the container; means for successively moving the cards from the outer position in the stack in said magazine space and flat along said one outer wall; means for guiding each card as it is moved by said last-named means, around said partition means and into said receiving space; and means engaging each card entering said receiving space and for moving such card flat along said other side wall into said initial position and for moving the preceding card to enter said receiving space out of said initial position and against the force of said urging means.

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