April 4, 1939. W. S. NIVISON ET AL 2,153,154

APPARATUS FOR PHOTOGRAPHICALLY RECORDING DOCUMENTS

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FIG. 1.

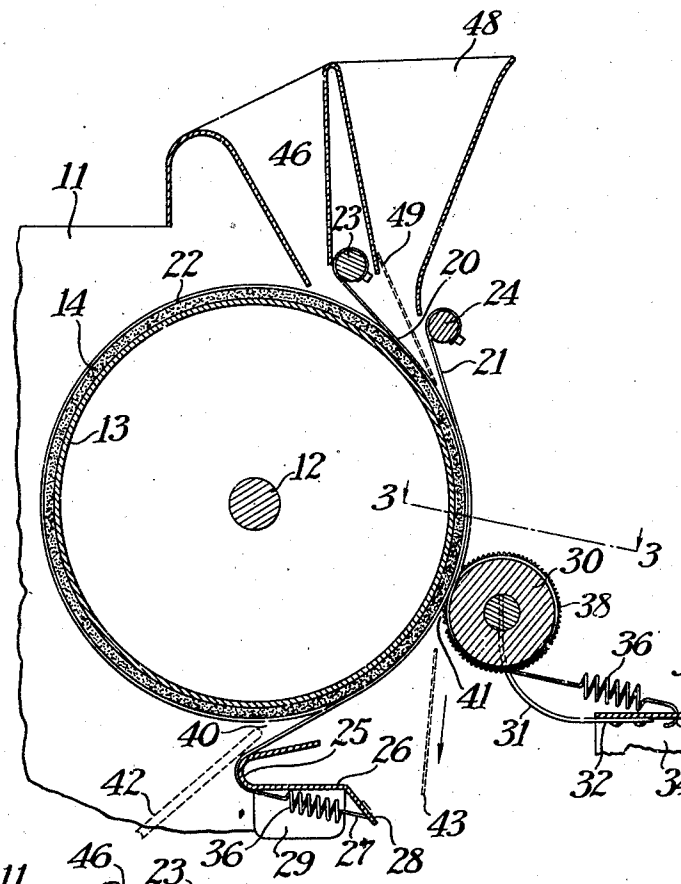
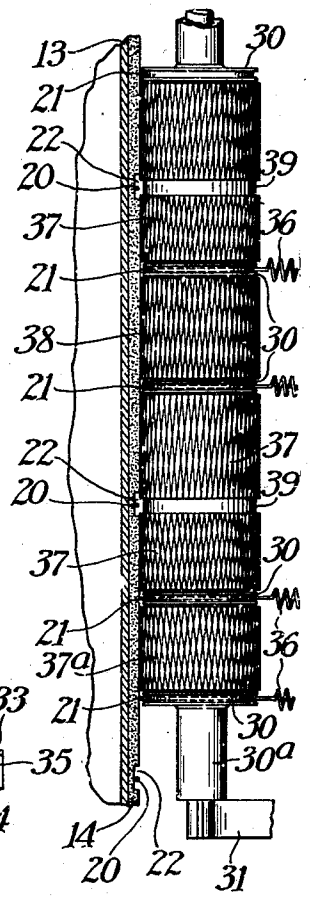


FIG. 3.



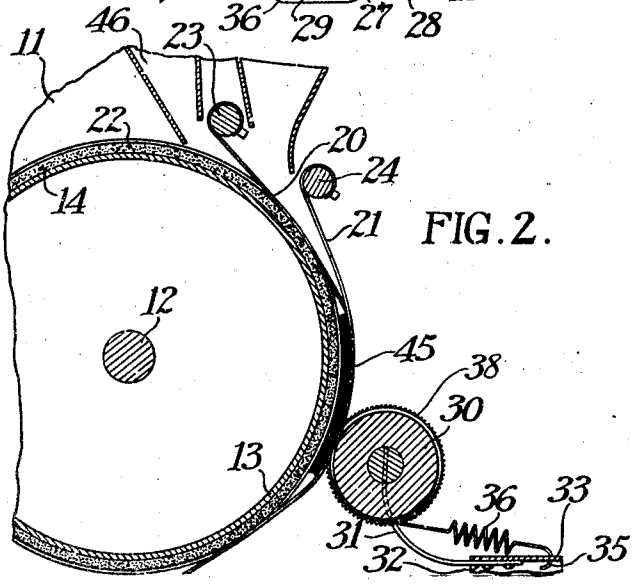


FIG. 2.

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2,153,154

APPARATUS FOR PHOTOGRAPHICALLY RECORDING DOCUMENTS

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5 Claims. (Cl. 271—8)

The present invention relates to an apparatus for photographically recording documents of different types, and particularly to an arrangement for automatically moving these different documents through the photographic field of a camera so as to be photographed thereby, and finally discharging the different documents through spaced exits to separate places of disposal.

An object of the invention is the provision in an apparatus of this class of an arrangement for delivering the different types of photographed documents to separate places.

Another object of the invention is the provision of a double set of guide wires to hold the document in engagement with the drum while passing through the photographic field of the camera, the sets of wires then diverging to provide spaced exits through which the different documents are separately discharged.

A further object of the invention is the provision of such an arrangement which is simple in construction, inexpensive to manufacture, and highly effective in use.

To these and other ends, the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawing:

Fig. 1 is a fragmentary vertical sectional view through a portion of a document-photographing apparatus constructed in accordance with the preferred embodiment of the invention.

Fig. 2 is a view similar to Fig. 1 showing the arrangement for holding and guiding a thick or relatively bulky document during the passing thereof through the photographic field of the camera.

Fig. 3 is a fragmentary plan view, with parts in section, taken substantially on line 3—3 of Fig. 1 but on a slightly smaller scale, showing the arrangement of the pressure rollers for holding the documents against the drum.

Similar reference numerals throughout the various views indicate the same part.

The present invention relates to a machine for photographically recording documents, and is particularly designed for use in savings banks, or institutions of a similar nature. Each time a depositor makes a deposit in a bank of this class, he presents his pass book together with a deposit slip, as well as all money, checks, etc., which make up the deposit. An entry is then made in the pass book and on the bank ledger sheet of the date and amount of such deposit. In order that the bank may have a complete record of the transaction, all of the documents are photographically recorded. After being thus recorded, the pass book is returned to the depositor, while the ledger sheet, checks, etc. are retained by the bank. In order to eliminate unnecessary handling, the present invention provides an arrangement whereby the pass book and the bank records are separately fed through the machine, photographed, then automatically discharged to separate places, accessible to the parties interested. By means of such an arrangement, the pass book is automatically returned to the depositor while the other records are retained by the bank. The operation is automatic, and all the bank employee has to do is to feed the documents to the proper feed hoppers or entrances.

Referring now to the drawing, there is shown a document-photographing apparatus constructed in accordance with the present invention. This apparatus comprises, in general, a machine housing, indicated by the numeral 11, in which is journalled a shaft 12 which carries the rotating or feeding drum 13. This drum is of metal and is preferably covered with a layer of soft material 14, such as cork or rubber. The drum is arranged to feed or convey the documents, in a manner hereinafter described, through the photographic field of a camera, not shown, which is positioned to the right of the drum 13, as viewed in the drawing. The camera is connected, and operated in time relation to the rotation of the drum 13, in a manner clearly shown and described in the patent to C. J. Hughey, No. 1,976,346, dated October 9, 1934. Only so much of the machine as pertains to the present invention is shown in the present application.

In order to hold the various documents against the drum 13 during the passage thereof through the photographic field of the camera, the present invention provides two sets of tightly-strung guide wires 20 and 21, the purposes of which will be more fully described later. The inner set of wires 20 rides, for the most part, in circumferential grooves 22 formed in the periphery of the drum 13, and extend substantially half-way around the latter. The outer set of wires 21, on the other hand, ride on the surface of the covering 14 and terminate short of the lower end of the wires 20, as clearly shown in the drawing. The upper end of the wires 20 and 21 are secured, in any suitable manner, to shafts or rods 23 and 24, respectively, which extend the

full width of the drum and are supported in the opposite side of the housing 11.

The lower ends of the wires 20 extend over a curved portion or guide 25 of a rigid U-shaped plate 26, and have the ends 27 thereof hooked through openings or slots, not shown, in an offset portion 28 of the plate 26. This plate extends the full width of the drum and has the ends thereof bent downwardly to form lugs 29, by which the plate is secured to the opposite side walls of machine housing 11. The lower ends of the wires 21, on the other hand, are directed to the right or away from the drum 13, as shown, and pass under spaced grooved pulleys or guides 30 mounted on a shaft 30a, which extend across the lower front face of drum 13. The opposite ends of the shaft 30a are resiliently supported by leaf springs 31, only one of which is shown, the other ends 32 of which are secured to the under side of a plate 33 extending across the machine. The ends of the plate 33 are bent downwardly to form lugs 34, by which the plate may be secured to the opposite sides of the machine housing. The plate 33 is formed with a plurality of openings or slots, not shown, in which the hook ends 35 of the wires 21 are secured, in a manner well known to those in the art. The rigid portion 25 and the spring-pressed pulleys 30 positively retain the guide wires 20 and 21 in engagement with the drum 13, as will be apparent from an inspection of the drawing. The guide wires are tightly drawn or tensioned by means of coil springs 36 which, in the preferred embodiment, are formed from the material of the wires themselves. It is contemplated, however, that separate coil springs may be used, without department from the spirit of the invention or the scope of the appended claims.

Pressure rollers 37 and 37a are rotatably mounted on the shaft 30a intermediate the grooved pulleys 30, as clearly shown in Fig. 3. The periphery of the rollers are knurled or roughened, as shown at 38, Fig. 3, so as to firmly engage the documents to securely hold the latter against the drum 13, so as to be advanced thereby. The springs 31 yieldably hold the rollers in engagement with the drum when a document is not passing through the machine. When, however, a document is fed by the drum 13, the document engages the rollers 37 and 37a to move them slightly, against the action of the springs 31, so that the document may pass between the drum and the rollers. The knurled surfaces of the rollers then engage the document and prevent slippage thereof on the drum. Each of the two rollers 37 is provided with a circumferential groove 39, in which one of the wires 20 is recessed when bulky or thick documents are fed through the machine, as illustrated in Fig. 2 and later described. While only two grooved rollers 37 are shown in the present embodiment, it is contemplated that a third roller of this type may be used, if desired, in case the entire surface of the drum is to be used. Such additional roller would obviously also be provided with a groove to receive the remaining guide wire 20. In connection with savings banks, however, the arrangement shown has been found to be adequate.

Referring now to the drawing, and particularly to Fig. 1, it is apparent that the guide wires 20, cooperate with the drum 13 to provide a lower exit or discharge opening 40 which is directed to the left. The sets of guide wires 20 and 21, on the other hand, cooperate to provide a divergent downwardly discharge opening or exit 41. It is thus evident that, if the document is fed to the drum between the latter and the guide wires 20, the document will be discharged to the left through the exit or discharge opening 40, as shown in 42, Fig. 1. If, on the other hand, a document is fed between the two sets of guide wires 20 and 21, it will be discharged downwardly through the exit 41 as shown in 43, Fig. 1. However, as the documents pass through the machine, the curved rigid portion 25 and grooved pulleys 30 permit the free passage of the documents through the machine. Yet these members positively press or hold the guide wires 20 and 21 in engagement with the drum 13 to securely hold the documents thereagainst, as will be apparent from an inspection of the drawing. These two sets of guide wires thus provide separate paths by which the different types of documents may be passed through the machine, photographed, and then discharged through separate exits to suitable points of disposal. The two paths necessarily merge as they pass through the photographic field of the camera, and then diverge, as shown, to provide separate entrances and exits.

As the pass book, generally indicated by the numeral 45, Fig. 2, is somewhat thicker than the ledger sheet or check, it is preferably fed to the drum between the latter and the inner set of guide wires 20, as clearly indicated in Fig. 2. In this position, both sets of guide wires 20 and 21 engage the pass book 45 to yieldably hold the latter against the drum during the passing thereof through the photographic field of the camera. Two of the wires 20 are, however, recessed in the grooves 39 of the rollers 37, so that the roughened surfaces 38 thereof may project between the wires 20 and engage the pass book 45 to securely hold the latter against the drum so as to prevent slippage and to assist in conveying the pass book through the machine. After the pass book has been photographed, it is guided solely by the guide wires 20 to the discharge exit 40, from whence it is directed to a suitable place, not shown, from which the depositor may recover his pass book. A suitable feeding hopper or entrance 46 is provided for feeding the pass book under the guide wires 20. The thinner ledger sheets or checks, on the other hand, are fed through a separate hopper or feeding entrance 48, and between the guide wires 20 and 21, as shown at 49, Fig. 1. These ledger sheets and checks then pass through the photographic field of the camera to be photographed and are then discharged downward through the exit 41 to a suitable locked container, not shown, positioned in the bottom of the machine and accessible only to the proper bank employees. During the passage of the ledger sheets and checks through the machine, they are held in engagement with the drum 13, solely by the guide wires 21, as will be apparent from an inspection of the drawing.

It is thus apparent, from the above description, that the present invention provides an arrangement for separately feeding different types of documents to a photographic reproducing apparatus, separately conveying these documents through the photographic field of a camera, so as to be photographed thereby, then discharging the different types of documents through spaced exits to separate points of disposal. It is also apparent that when thicker or bulkier documents are fed through the machine, both sets of guide wires cooperate to securely hold such a document against the drum during its travels through the

photographic field of the camera. When, however, thinner or lighter documents are conveyed, through the machine, only one set of guide wires are utilized to hold the document against the drum.

While one embodiment of the invention has been disclosed, it is to be understood that the general idea may be carried out in a number of ways. This application is, therefore, not to be limited to the precise details described, but is intended to cover all variations or modifications thereof falling within the spirit of the invention or the scope of the appended claims.

We claim:

1. In an apparatus for photographically recording documents comprising, in combination, a housing, a rotating drum mounted in said housing for advancing different types of documents through the photographic field of a camera so as to be photographed thereby, sets of stationary guide wires extending over the periphery of said drum to hold said documents in engagement therewith during the passage through said field, said sets defining separate paths for said documents, means for securing the ends of said wires to said housing, means secured to certain of said ends for separately tensioning said sets, separate feeding entrances for said paths, and spaced exits for separately discharging documents from said paths in different directions.

2. In an apparatus for photographically recording documents comprising, in combination, a rotating drum for advancing different types of documents through the photographic field of a camera so as to be photographed thereby, sets of stationary guide wires extending over the periphery of said drum to hold said documents in engagement therewith during the passage through said field, said sets defining separate paths for said documents, means formed from said wires for separately tensioning said sets, means for positively maintaining said sets in sliding engagement with said drum, separate feeding entrances for said paths and spaced exits for separately discharging documents from said paths in different directions.

3. In an apparatus for photographically recording documents comprising, in combination, a housing, a drum rotatably mounted in said housing and arranged to advance documents through the photographic field of a camera so as to be photographed thereby, said drum having a plurality of circumferential grooves, a set of fixed guide wires positioned in said grooves and extending around said drum a substantial distance beyond said field, means formed from the material of said wires for tensioning the latter, stationary means for securely maintaining said wires in position in said grooves, a second set of fixed guide wires extending over the periphery of said drum, means integral with said second set for tensioning the latter, means for resiliently retaining said second set in engagement with said periphery, a feeding entrance for feeding a document between said drum and said first set so as to be carried by said drum through said field, said second set cooperating with said first set to hold said last mentioned document in engagement with said drum during the passage through said field, a feeding entrance for feeding a different document between said sets so as to be carried by said drum through said field, and spaced exits formed by said sets of wires for separately discharging said documents in different directions.

4. In an apparatus for photographically recording documents comprising, in combination, a housing, a rotating drum mounted in said housing for advancing different types of documents through the photographic field of a camera so as to be photographed thereby, sets of guide wires extending over the periphery of said drum to hold said documents in engagement therewith during the passage through said field, means for separately securing the ends of each set to said housing, said sets defining separate paths for said documents, yieldable means adapted to engage said documents and to cooperate with said sets to securely hold said documents in engagement with said drum, separate feeding entrances for said paths, and spaced exits for separately discharging said documents from said paths in different directions.

5. In an apparatus for photographically recording documents comprising, in combination, a housing, a drum rotatably mounted in said housing and arranged to advance documents through the photographic field of a camera so as to be photographed thereby, said drum having a plurality of circumferential grooves, a set of fixed guide wires positioned in said grooves and extending around said drum a substantial distance beyond said field, means for anchoring the ends of said wires to said housing, means formed on one end of each wire for tensioning the latter, means fixed to said housing for maintaining said wires in position in said grooves, a second set of fixed guide wires extending over the periphery of said drum, means integral with said second set for tensioning the latter, grooved guides for maintaining said second set in engagement with said periphery, a pressure roller adapted to engage said document and cooperating with said sets to securely hold said document in engagement with said drum, a resiliently mounted support on said housing for said guides and said pressure roller, a feeding entrance for feeding a document between said drum and said first set, so as to be carried by said drum through said field, said second set cooperating with said first set to hold said last-mentioned document in engagement with said drum during the passage through said field, a feeding entrance for feeding a different document between said sets so as to be carried by said drum through said field, and spaced exits formed by said sets for separately discharging said documents in different directions.

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