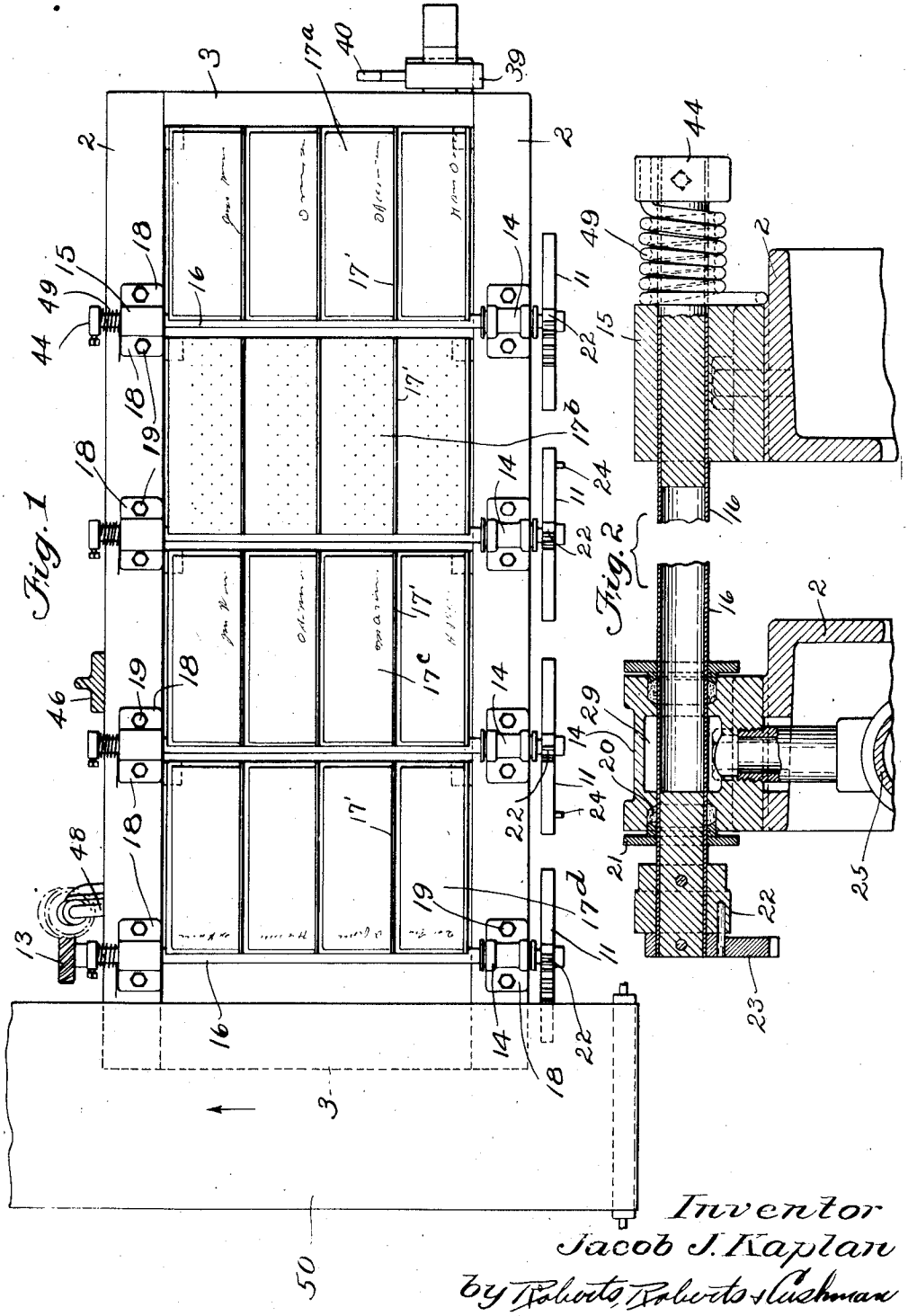
Jan. 18, 1927. 1,614,619

J. J. KAPLAN

APPARATUS FOR PHOTOGRAPHING CHECKS, ETC

Filed June 15 1925 4 Sheets-Sheet 1



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APPARATUS FOR PHOTOGRAPHING CHECKS, ETC

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Fig. 3

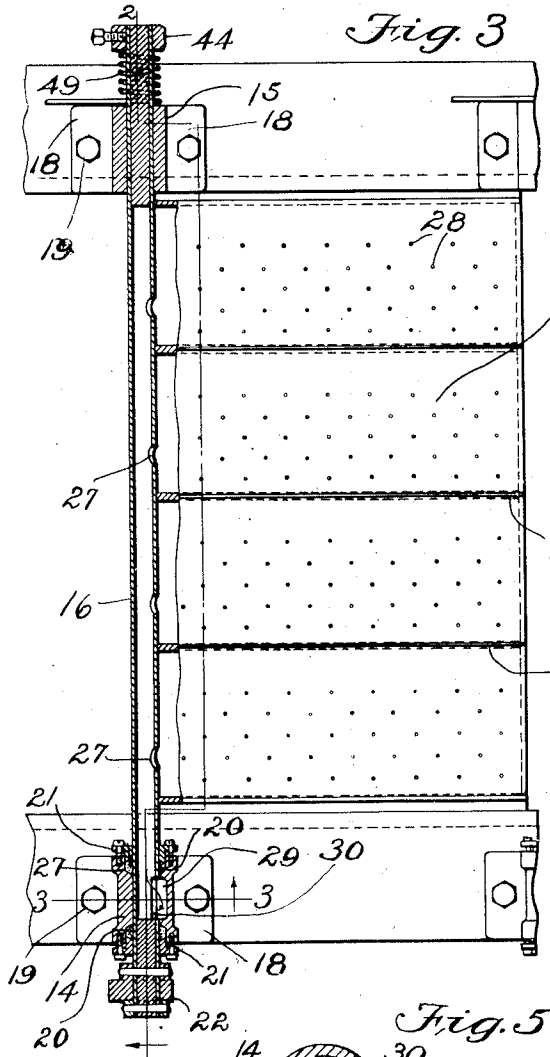


Fig. 4

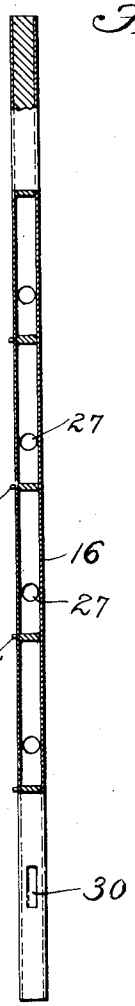


Fig. 5

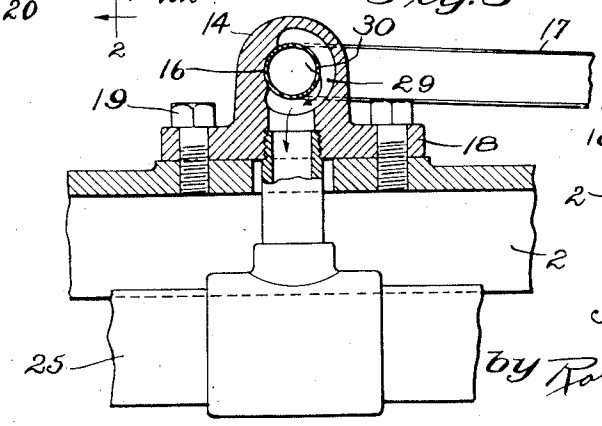
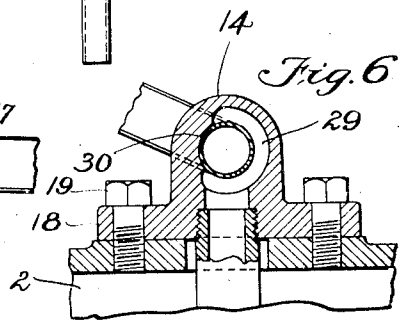


Fig. 6



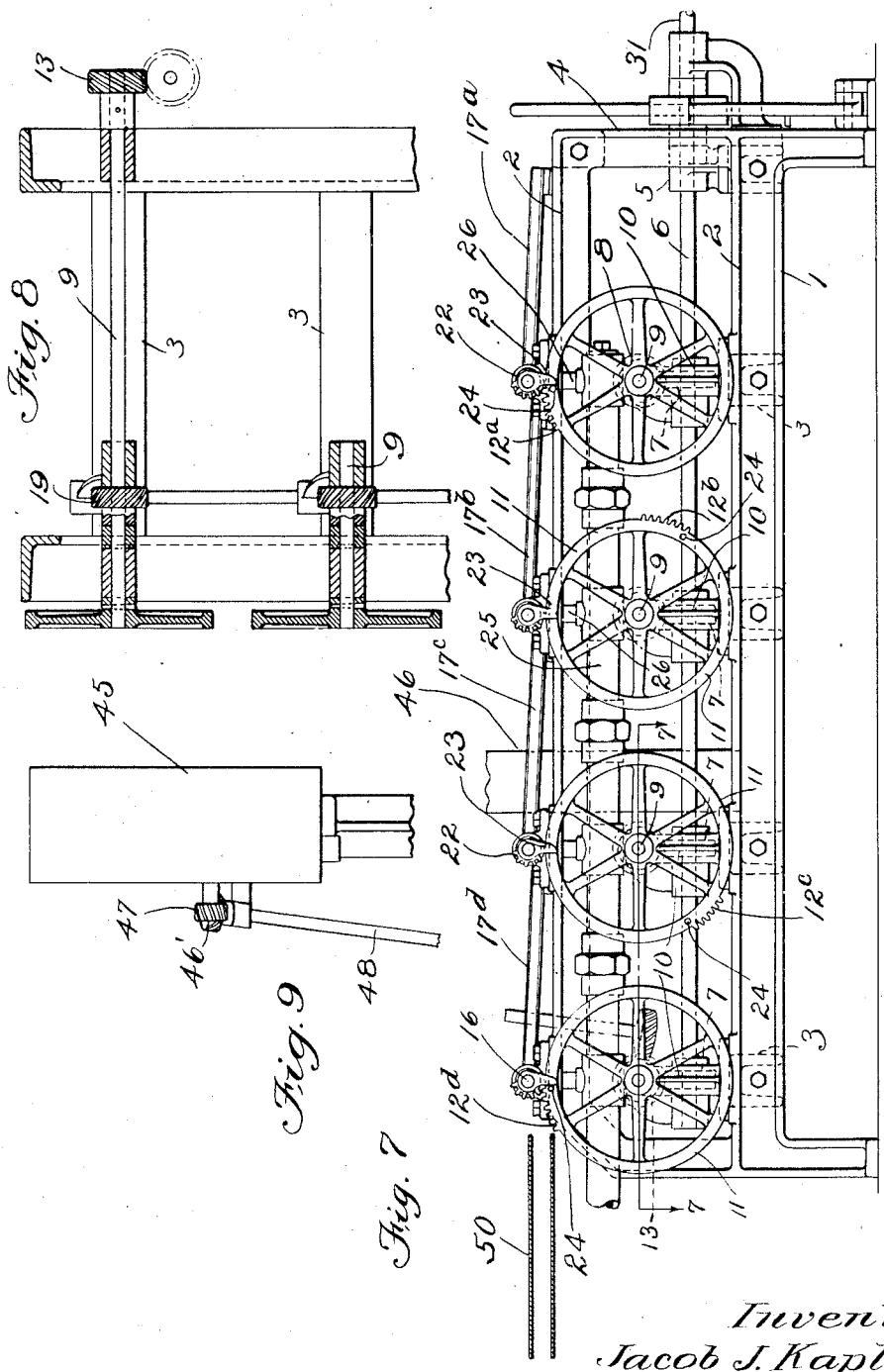
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APPARATUS FOR PHOTOGRAPHING CHECKS, ETC

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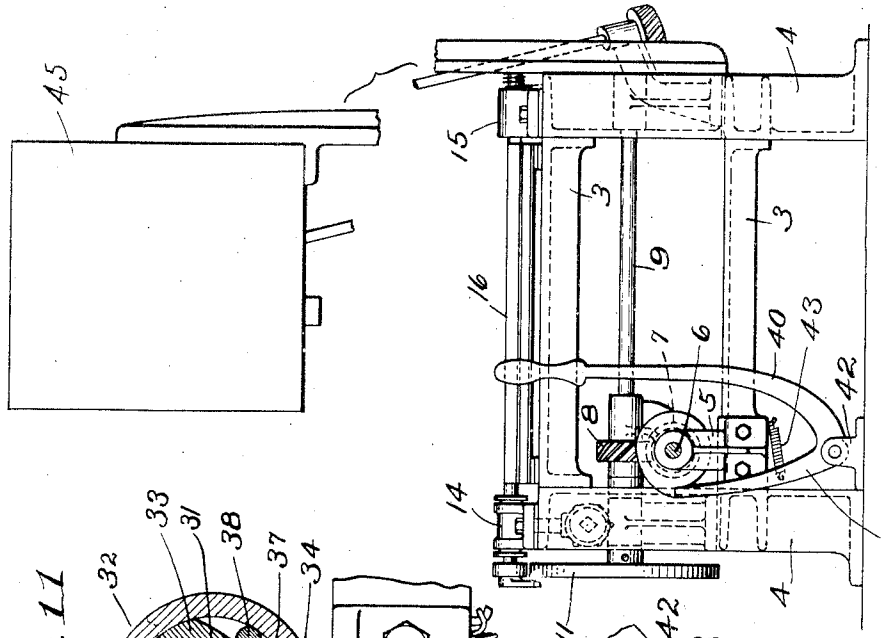


Fig. 10

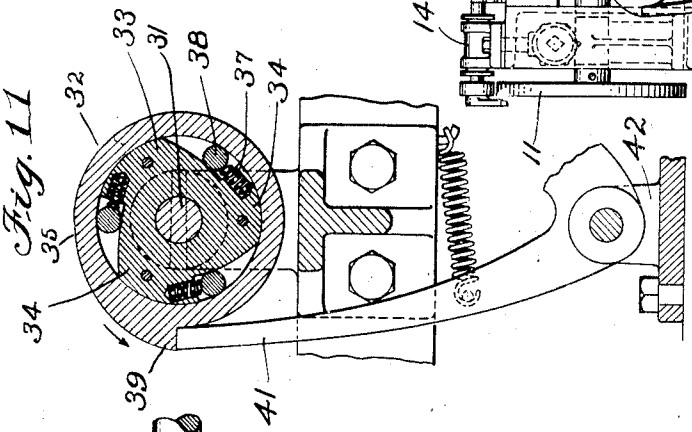


Fig. 11

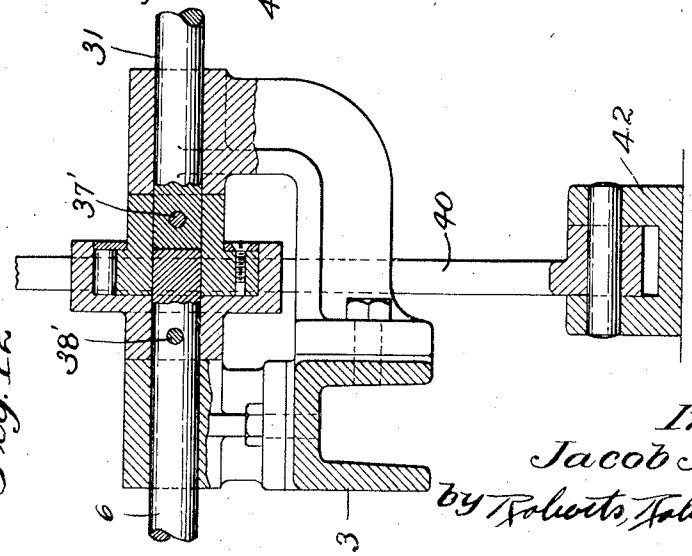


Fig. 12

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Patented Jan. 18, 1927. 1,614,619

UNITED STATES PATENT OFFICE.

JACOB J. KAPLAN, OF BOSTON, MASSACHUSETTS.

APPARATUS FOR PHOTOGRAPHING CHECKS, ETC.

Application filed June 15, 1925. Serial No. 37,009.

This invention relates to an apparatus for recording an impression of both sides of a large quantity of checks or other articles to be kept as a permanent record on a moving picture film or other photographic film. It frequently happens that banks are subject to embarrassment and liability due to the loss of checks, that have been paid, through fraudulent destruction of forged instruments, or the carelessness of messengers or others in the regular channels of business. A photographic record showing a picture of both sides of every cancelled and paid check obviously constitutes excellent evidence of payment and would necessarily protect the bank against undue liability. Heretofore the daily volume of checks passing through a bank has rendered it impossible to secure photographic copies thereof due to the fact that the known methods for photographing such a quantity were too crude and clumsy to render it practical or even possible. As a result the banks have little evidence of a convincing nature to show payment of checks that have become lost, since in the ordinary course of banking practice the bank gives up to its depositors or others the original vouchers which justify its payment.

Objects of this invention therefore are to provide an apparatus whereby a large volume of checks can be photographed on both sides with remarkable dispatch and with little labor; to provide an apparatus whereby a quantity of checks are conveyed along a predetermined pathway and simultaneously and alternately reversed, passing beneath the focal lens of a moving picture camera or other photographic instrument whereby a picture of each side of every check is obtained. It is of course to be understood that this invention is not limited to photographing checks but any article containing matter on both sides which it is desired to reproduce comes within the purview of the invention.

For purposes of illustration the invention is shown in the accompanying drawings in which—

Fig. 1 is a top plan of the apparatus for photographing both sides of checks or other articles;

Fig. 2 is a section on the line 2—2 of Fig. 3;

Fig. 3 is a plan view of a plate with its pivoted shaft shown in section;

Fig. 4 is a section of the plate shown in Fig. 3;

Fig. 5 is a section on the line 3—3 of Fig. 3 showing the valve mechanism in open position;

Fig. 6 is a view similar to that shown in Fig. 5 with the valve mechanism shown in closed position;

Fig. 7 is a side elevation of the apparatus shown in Fig. 1;

Fig. 8 is a plan section on the line 7—7 of Fig. 7;

Fig. 9 is a view in elevation of the motion picture camera or other photographic instrument;

Fig. 10 is a front view of the apparatus shown in Fig. 1 with the camera shown in elevation;

Fig. 11 is a cross sectional view showing the clutch mechanism; and

Fig. 12 is a cross section of the clutch mechanism at right angles to the view shown in Fig. 11.

As illustrated the reference numeral 1 designates as a whole a supporting standard having upper and lower side beams 2—2, transverse beams 3—3 and end supports 4—4. Bearings 5—5 are mounted on the transverse beams 3—3 near one side of the supporting standard and receive a shaft 6 journaled in said bearings. The shaft 6 has a series of gears 7—7, adjacent the point where the shaft is journaled on the bearings 5—5, adapted to mesh with gears 8—8 mounted on shafts 9—9 which are mounted at right angles to the shaft 6 (Fig. 10). Suitable bearings 10 are provided at spaced intervals along the side beams 2—2 of the supporting standard 1 and the shafts 6 are journaled in the said bearings 10. Fixed on one end of each of the shafts 9 is an intermittent gear wheel 11 which has a few gear teeth 12 (Fig. 7). The number of shafts 9 and likewise the number of intermittent gears 11 will determine the spacing of the gear teeth 12 on the various gears but preferably and as shown four such shafts and gear wheels are provided and the gear teeth 12 are located on the respective gear wheels at positions angularly spaced 120° apart. The left-hand shaft 9, (Fig. 1), on its end opposed to the end carrying the intermittent gear 11, has a gear 13 mounted thereon the purpose of which will be hereinafter explained.

On top of the upper beams 2 of the supporting standard 1, at points immediately above the shafts 9 are located a number of opposed bearing members 14 and 15 which

receive tubular shaft members 16 rigidly carrying a series of hollow plates 17. The bearing members 14 and 15 have flanges 18 directly engaging the top of the beams 2 and suitably held in engagement therewith through the medium of the bolts 19. Each end of the bearing 14 has counterbores containing packing 20 held in place by packing glands 21 (Figs. 2 and 3) so that an air-tight joint is formed between the hollow tubular shaft 16 and its bearing member 14. On the end of each of the hollow tubular shafts 16 adjacent its bearing 14 there is suitably mounted a gear 22 having teeth corresponding in number to and adapted to mesh with the teeth 12 on the intermittent gear 11. A lug 23 projects alongside each gear 22 in position to contact with a pin 24 projecting from the side of the corresponding intermittent gear 11 to start the gears in mesh.

The shaft 16 is rotatably mounted in its bearings 14 and 15 and is adapted to swing with its plates 17 through an arc of almost 180° when the teeth 12 of the intermittent gear 11 engage the teeth of the gear 22. A coil spring 49 is located on each shaft 16 between the bearing 15 and a nut 44 on the extreme end of the shaft, opposite ends of the spring being anchored to the bearing and shaft respectively. The spring is tensioned when its shaft is moved from its normal position (Fig. 5) to the other extreme position (Fig. 6) so that the spring returns the shaft and plate to normal position when the gear 12 passes out of mesh with the gear 16.

Extending alongside the supporting standard 1 and parallel with the hereinbefore mentioned shaft 6 is an air line 25 having a number of conduits 26 leading therefrom to the various tubular shafts 16. The tubular shafts 16 are in open communication with the hollow plates 17 through the opening 27. The plates 17 have a number of minute openings 28 in their upper surface so that air drawn through the main line 25 will cause a suction or partial vacuum through the several conduits 26, tubular shafts 16 and hollow plates 17 with the result that any article placed on the plates 17 will closely adhere to the surface of said plates. The plates 17 are divided into a series of sections by the partitions 17′ so that each plate will accommodate a number of checks or other articles and separately maintain said checks or articles in position on each section of the plate free from the influence of the air suction in other sections of the plate. Each of the conduits 26 has its upper end in screw-threaded engagement with the base of the bearing member 14 as clearly shown in Fig. 5 and is in open communication with a recess 29 formed in said bearing member. Each tubular shaft 16 also has an opening 30 normally in open communication with said recess 29 so that as heretofore stated open communication is established between the main air line 25 and the hollow plates 17. However, the opening 30 is adapted to be shut off from communication with the recess 29, conduits 26 and air line 25, by reason of the eccentric interior wall of the recess 29 closing the said opening 30 when the rotatable tubular shaft 16 is moved from its normal position to its extreme opposite position. It will be readily understood, therefore, that the arrangement of the opening 30 and recess 29 provide a valve mechanism whereby communication between the main air line 25 and plates 17 is open or closed depending on the position of the said plates 17 and its shaft 16.

The numeral 31 (Figs. 9 and 12) designates a driving shaft constantly rotated from some convenient source of power not shown. The driving shaft 31 is adapted to transmit motive power to the shaft 6 at the will of the operator through a clutch mechanism designated as a whole by the numeral 32. This clutch mechanism consists of a bearing member 33 mounted directly on the shaft 31 and having lugs or projections 34 concentric with and rotatable in a housing 35. The lugs 34 have recesses 36 containing springs 37 which press on rollers 38 located between the bearing member 33 and the inner wall of the housing 35. The shaft 31 is rigidly attached to the bearing 33 by means of the pin 37′ while the shaft 6 is rigidly attached to the housing 35 by a pin 38′ similar to the pin 37′. On the outer periphery of the housing 35 there is located an ear adapted to be engaged by the end of an arm 41 of the lever 40 which is pivotally mounted in a supporting member 42 attached to the standard 1. A spring 43 is attached at one end to the lower end of the arm 41 of the lever 40 and at its other end to a portion of the supporting standard 1 so that said arm 41 is disengaged from the ear 39 only against the tension of the spring 43 and said spring will normally hold the arm 41 in position to engage the ear 39. It will be apparent that when the housing 35 is held against rotation in the manner just described the rollers 38 will be pushed backward against the tension of the springs 37 and ride between the bearing 33 and the housing 35 at a point where the space therebetween is of greatest width thus causing a negligible amount of friction between the rollers 38 and the interior wall of the housing 35. When, however, the arm 41 is disengaged from the projection 39 the rollers 38 will be advanced by the springs 37 and frictionally grip the housing 35 so that said housing 35 and its shaft 6 will rotate with the bearing 33 and its shaft 31. Motive power from the shaft 31 may therefore be

transmitted to the shaft 6 at the will of the operator handling the lever 40. By shifting lever 41 to disengage projection 39 and then releasing the lever the shaft 6 is turned 360° and then stopped automatically by projection 39 again engaging lever 41.

A motion picture camera or other photographic instrument 45 is mounted on a supporting base 46 attached to the supporting standard 1. The camera is so mounted and has a focal distance sufficient to include as an image the two last plates 17. The camera 45 is synchronized with the driving mechanism to make one exposure for each revolution of the gears 11 and at the proper instant as hereinafter described.

Assuming the parts to be in the position shown in Figs. 1, 7 and 11 and the oscillatory plates 17^a and 17^c to be covered with checks facing upwardly and plate 17^d to be covered with checks facing downwardly, the operation is as follows: The starting lever 41 is shifted to the left (Fig. 11) permitting the gears 12^a, 12^b, 12^c, 12^d to make one complete revolution. During the first fraction of the first one-third revolution the plates 17^a and 17^d are turned over, to transfer the checks thereon to plate 17^b and the traveling conveyor 50 respectively, the air suction being automatically cut off where the plates reach positions such as shown in Fig. 6 to permit the checks to fall in reversed position. After gears 12^a and 12^d pass by the gears 22^a and 22^d the plates 17^a and 17^d are snapped back to normal position by their springs. During the first fraction of the second one-third revolution of gears 12^a to 12^d the gear 12^c engages the gear 22^c and transfers the checks on plate 17^c to plate 17^d, the checks being reversed in the transfer. During the first fraction of the last one-third revolution of gears 12^a to 12^d the gear 12^b engages gear 22^b and transfers the checks from plate 17^b to 17^c. During the latter part of the revolution of gears 12^a to 12^d after plate 17^b has snapped back to normal position, the camera is actuated to make an exposure of the checks on plates 17^c and 17^d. If the operator can cover plate 17^a with new checks between the time it returns to normal position and the end of the revolution of gears 12^a and 12^d the machine may be permitted to continue with another cycle; otherwise lever 41 is caused to stop the machine at the end of each revolution until such time as plate 17^a is again covered. In this way each side of each check is photographed and by suitably timing the machine to the speed of the operator it may run continually.

Numerous changes in details of construction and arrangement of parts may be effected without departing from the spirit of the invention, especially as defined by the appended claims and although the invention has been described in connection with an apparatus for photographing checks or other articles on both sides, it is to be understood that it is not limited exclusively thereto but may be employed for other purposes requiring the conveyance and simultaneous reversing of an article or articles along a predetermined path.

I claim:

1. An apparatus of the character described comprising means for progressively conveying a series of sheets of paper or the like along a predetermined course, automatic means for reversing said sheets during said movement, and photographic means connected in synchronism therewith for photographing both sides of the sheets during their movement.

2. In apparatus for photographing both sides of an article, a camera and conveyor, said conveyor being adapted to automatically to reverse the article so that both sides are in turn exposed to the camera, means synchronously actuating said camera during each of said periods of exposure, means for positively holding the article on said conveying means during its travel therealong and means for subsequently releasing the article therefrom.

3. Apparatus for photographing both sides of an article comprising a series of pivotally mounted plates adapted to carry the article, means for successively turning the plates so that said article is transferred from one plate to the next plate in reversed position and a camera in synchronized relation with the plates so that each side of the article is photographed during its period of travel.

4. Apparatus for photographing both sides of a series of sheets, comprising a progressive conveyor mechanism adapted to receive a row of said sheets and convey them along a given path, reversing them during said movement while retaining them in the same relative position as when received, photographic means synchronously connected to said conveyor to photograph the sheets both in their original and their reversed positions in immediate juxtaposition to each other.

5. Apparatus for photographing both sides of successive series of sheets of paper or the like, comprising progressive conveyor mechanism adapted to receive a series of sheets in an original position with one side exposed and to reverse the series of sheets from their original position so that their opposite sides are exposed while receiving the succeeding series of sheets in the first position, and photographic means synchronized with the conveyor mechanism simultaneously to photograph succeeding series of sheets in their original and reversed positions respectively in immediate juxtaposition to each other.

6. Apparatus for photographing both

sides of a series of articles comprising conveying mechanism adapted to simultaneously carry said articles along a predetermined path and alternately reverse said articles and photographic means synchronized in relation with the conveying mechanism to photograph both sides of the articles during the conveyance of same.

7. Apparatus for photographing both sides of a series of articles comprising a series of successively arranged and pivotally mounted plates adapted to retain said articles, means for alternately moving said plates whereby said articles are alternately reversed and carried therealong, and photographic means in synchronized relation with said plates whereby both sides of each article are photographed.

8. Apparatus for photographing both sides of a series of articles comprising a series of successively arranged and pivotally mounted plates adapted to receive said articles, means for alternately moving said plates through a path describing a semicircle whereby said articles are alternately reversed and moved from plate to plate, and photographic means in synchronized relation with said plates whereby both sides of each article are photographed.

9. Apparatus for photographing both sides of a series of articles comprising a series of successively arranged and pivotally mounted plates adapted to receive said articles, means for alternately moving said plates through a path describing a semicircle whereby said articles are alternately reversed and moved from plate to plate, means automatically returning the plates to their original position, and photographic means in synchronized relation with said plates whereby both sides of each article are photographed.

10. Apparatus for photographing both sides of a series of articles comprising a series of successively arranged and pivotally mounted plates adapted to receive said articles, means for alternately moving said plates through a path describing a semicircle whereby said articles are alternately reversed and moved from plate to plate, means positively holding the articles on the plates during the major portion of their travel thereon and automatically releasing the articles at the end of said travel, means returning the plates to their original position and photographic means synchronized in relation thereto whereby both sides of each article are photographed.

11. Apparatus for photographing both sides of a check or other article comprising a series of progressively arranged and pivotally mounted hollow plates carrying checks or other articles, means for rotating said plates through an arc of 180 degrees, so that said checks or articles are progressively moved along the plates, spring means for returning the plates to their original position, clutch mechanism for disengaging the plates from their motive power at will and synchronized photographic means whereby both sides of the checks are photographed during their progressive travel along the plates.

Signed by me at Boston, Massachusetts, this 11th day of June, 1925.

JACOB J. KAPLAN.