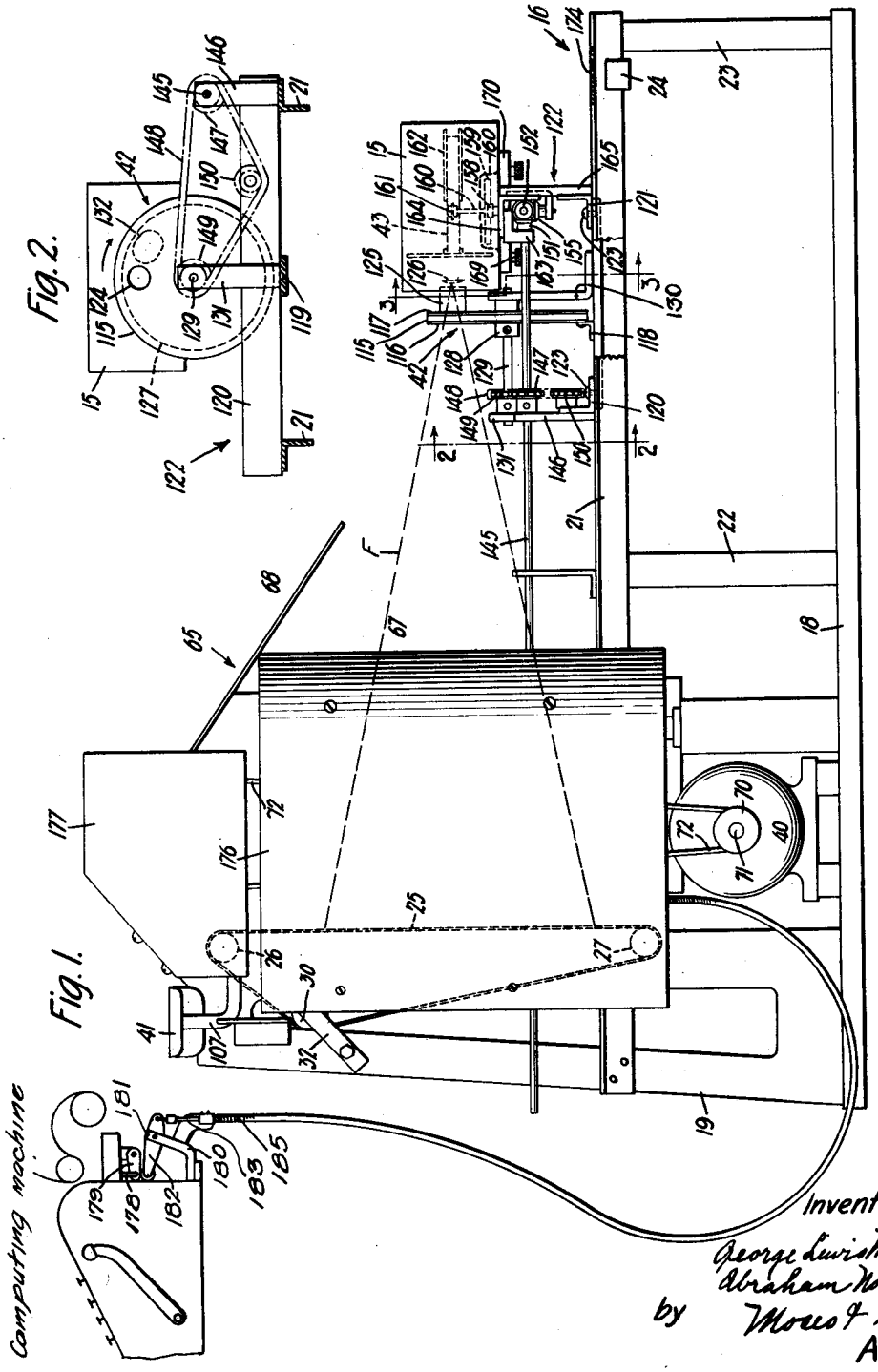
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PHOTOGRAPHING APPARATUS

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PHOTOGRAPHING APPARATUS

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Fig. 3.

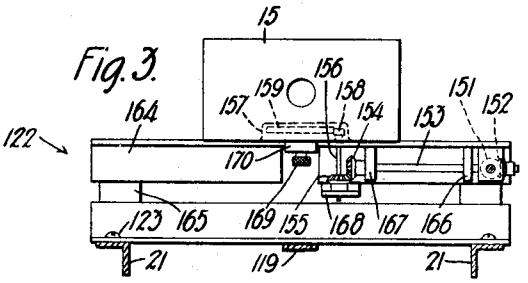
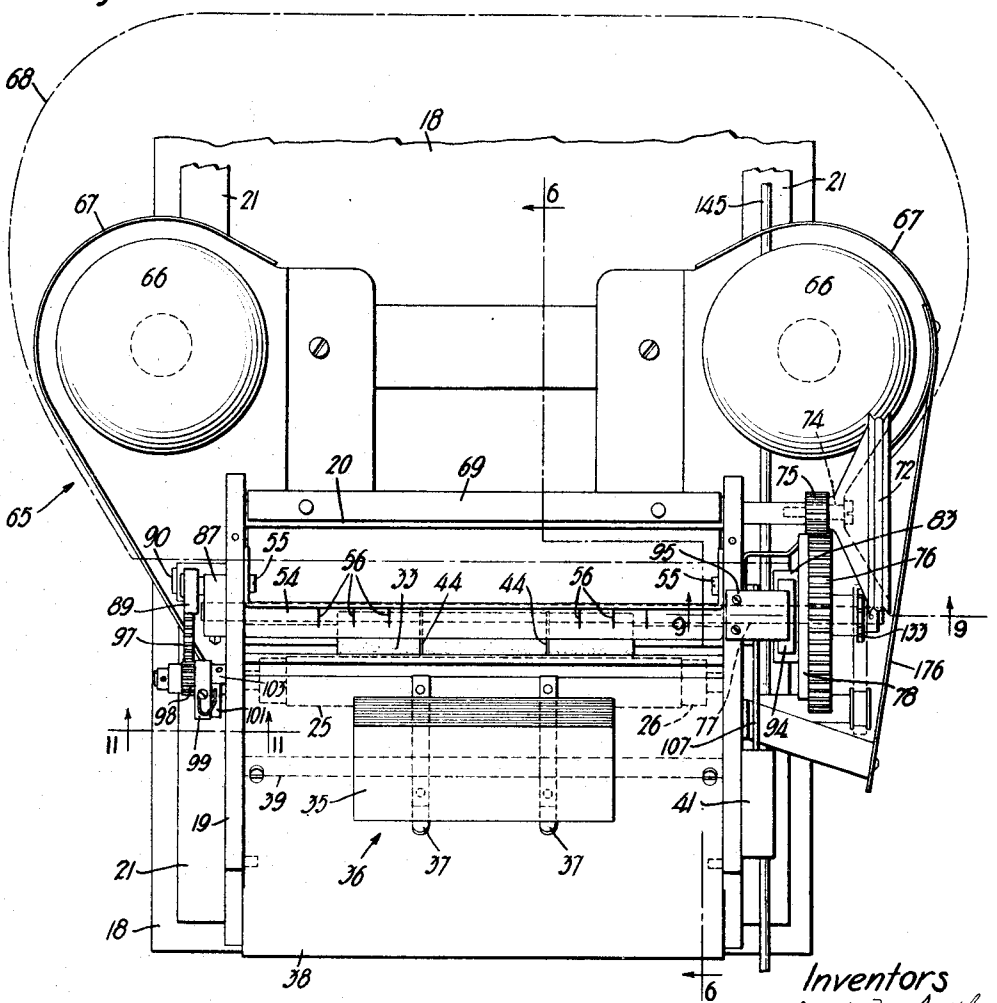


Fig. 4.



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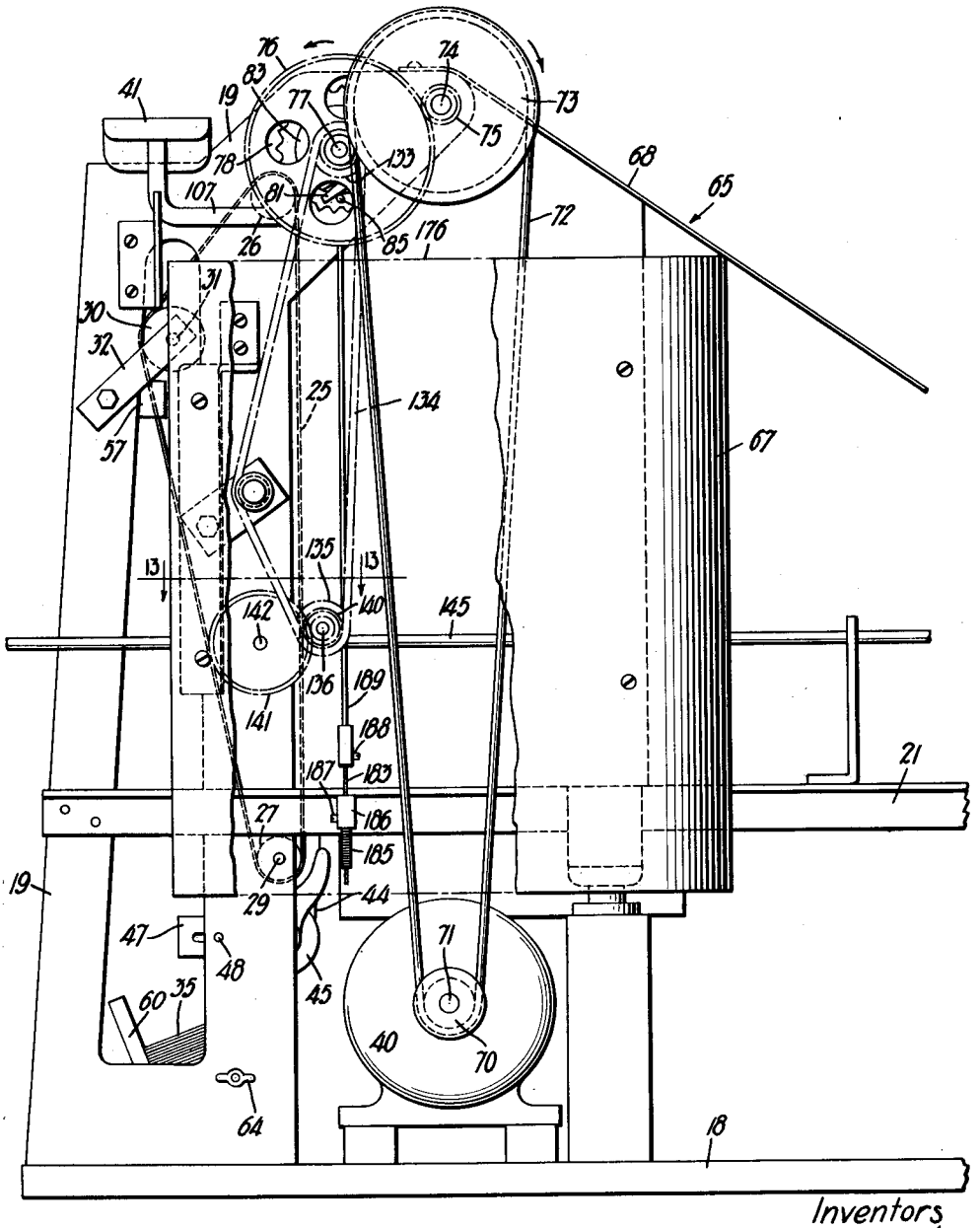
by Moses & Nolte
Attys

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PHOTOGRAPHING APPARATUS

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Fig. 5.



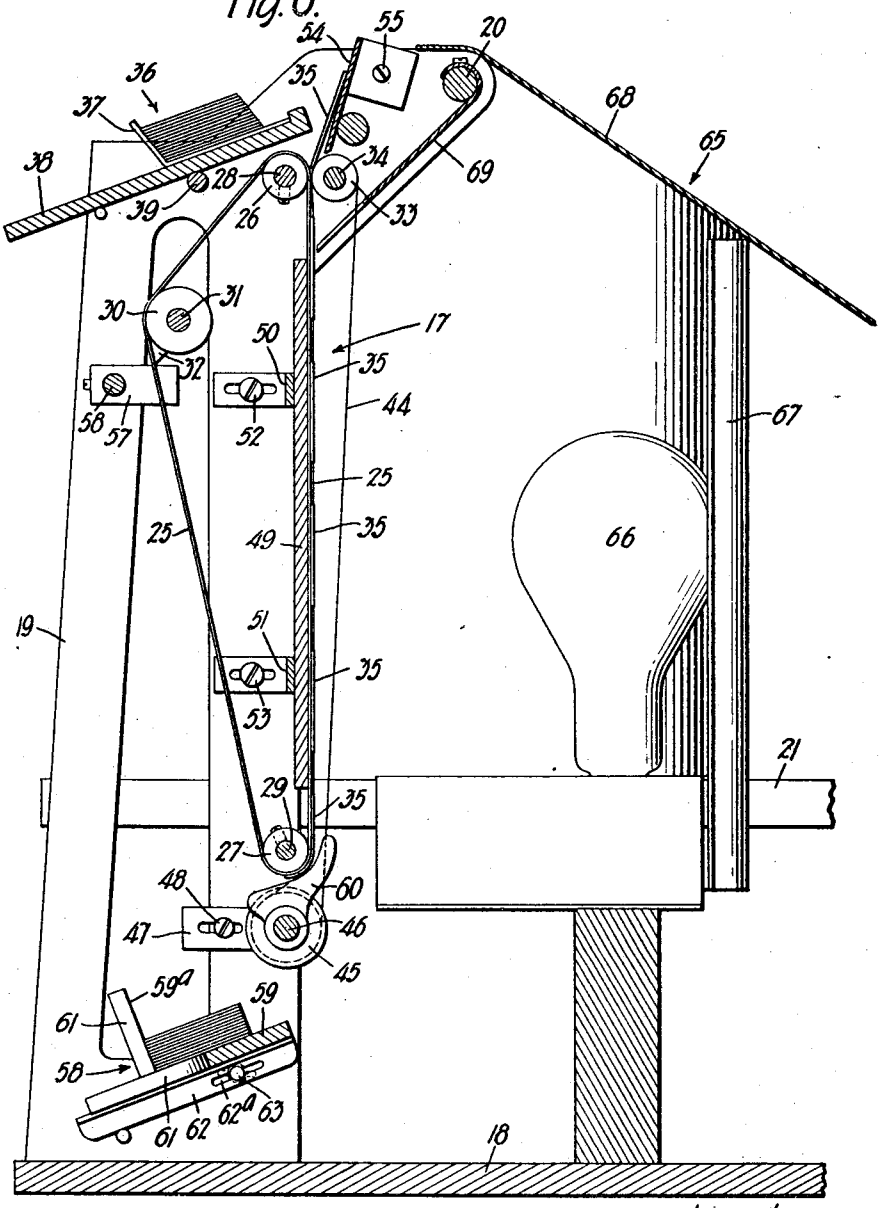
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Fig. 6.



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Fig. 7.

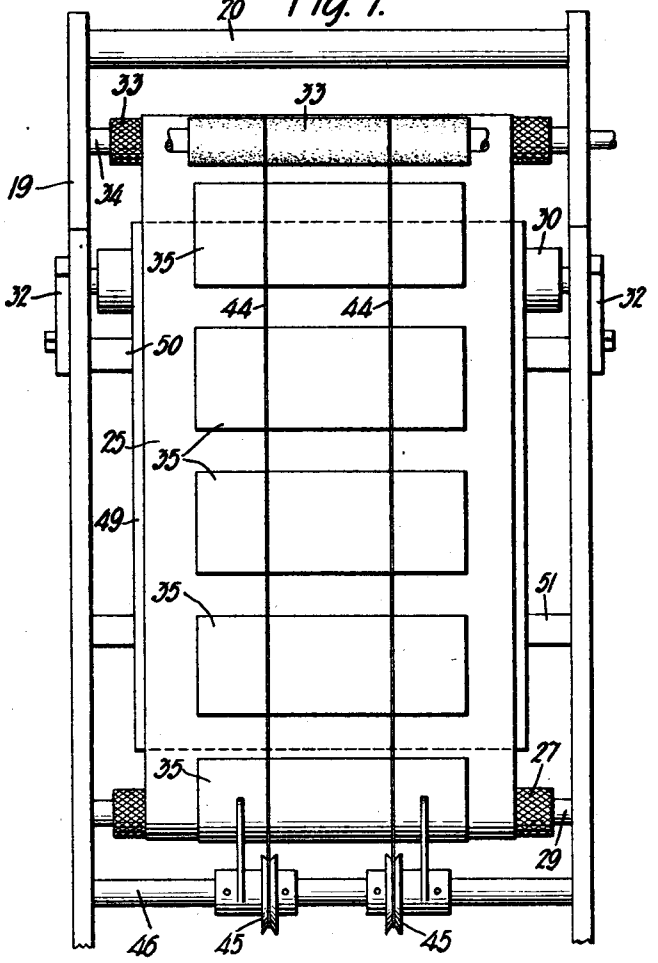
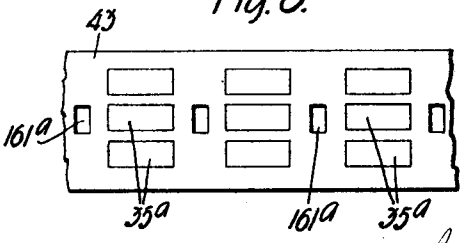


Fig. 8.



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Fig. 9.

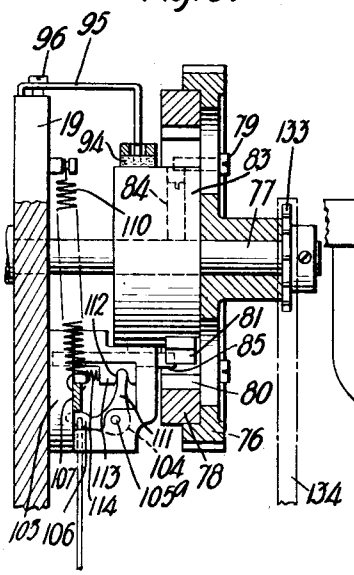


Fig. 10.

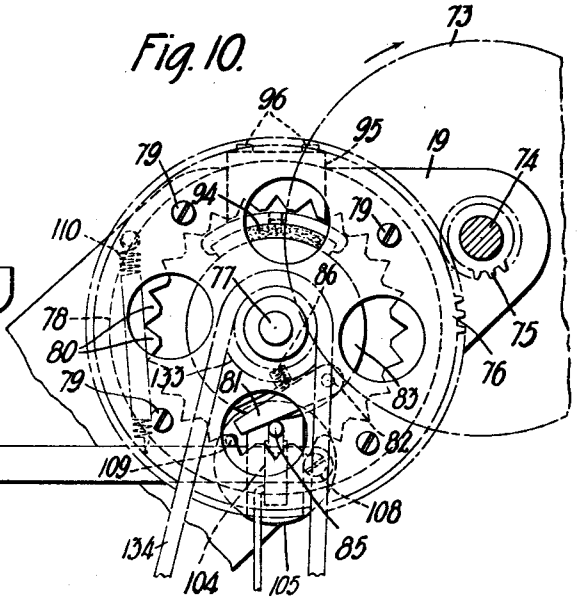


Fig. 11.

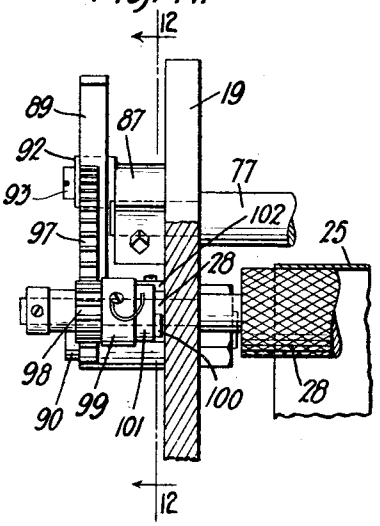
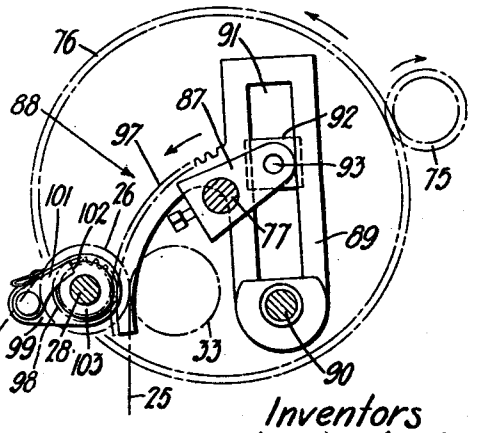


Fig. 12.



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Fig. 13.

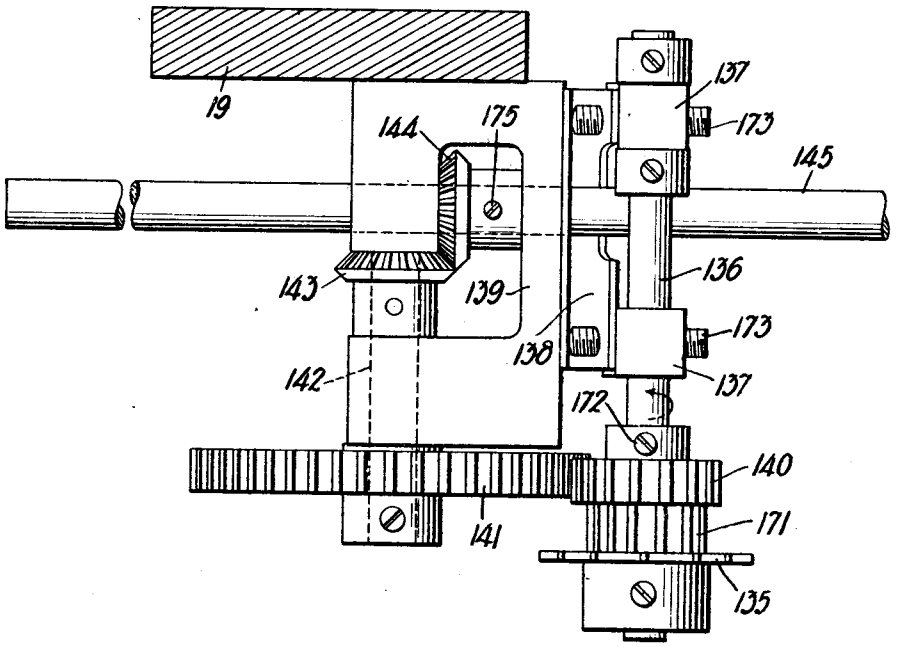
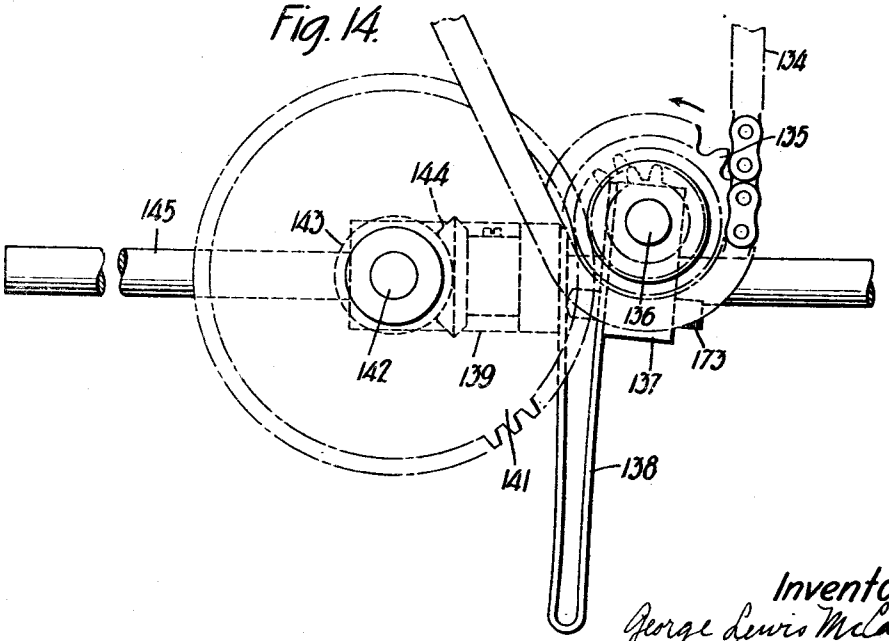


Fig. 14.



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UNITED STATES PATENT OFFICE

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PHOTOGRAPHING APPARATUS

Application filed June 28, 1926. Serial No. 118,890.

This invention relates to improvements in photographing machines which may be used with devices shown in the application of G. L. McCarthy and A. Novick No. 18,075 filed March 25th, 1925, in which bank slips or checks may be photographed.

The invention relates more particularly to various features such as shutter operating mechanism, slip feeding mechanism, motor drive, means for connecting the slip feeding means with the motor drive, film feeding mechanism, shutter operating mechanism and the timing thereof with respect to feeding mechanism, arrangement of a light reflecting chamber with respect to an object presenting device, and other features hereinafter described.

Figure 1 is a side elevation of the machine.

Figure 2 is a vertical transverse section taken on the line 2—2 of Figure 1 and shows the shutter mechanism and the operating means therefor.

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 1 and shows the film feeding means.

Figure 4 is a top plan view of the forward end of the machine.

Figure 5 is a side elevation of the forward end of the machine showing the driving connections.

Figure 6 is a longitudinal vertical section taken on the line 6—6 of Figure 4 and shows a series of checks in position to be photographed.

Figure 7 is an elevation of the check positioning and guiding means or object presenting means.

Figure 8 shows a portion of the film and the successive series of checks photographed thereon.

Figure 9 is a vertical section taken on the line 9—9 of Figure 4 and shows the clutch mechanism for connecting the check feeding means with the motor drive.

Figure 10 is a right hand side view of the parts shown in Figure 9.

Figure 11 is a vertical section taken on the line 11—11 of Figure 4 and shows the left hand end of the belt feeding means.

Figure 12 is a vertical section taken on the line 12—12 of Figure 11.

Figure 13 is a horizontal section taken on the line 13—13 of Figure 5 and shows the driving connection to the shutter mechanism and to the film feeding means.

Figure 14 is a side view of the mechanism shown in Figure 13.

The machine includes a camera 15 suitably supported on a framework 16. An object presenting device 17 is also supported on the framework 16; the object presenting device being in the focal range F of the camera.

The framework may include a bed-plate 18 to which are secured standards 19 connected at their upper ends by a crossbar 20 (Figure 6). Two angle bars 21 are secured to the standards 19 and extend lengthwise of the machine, said bars 21 being supported by standards 22 and 23 rising from the bed plate. The angle bars may be secured to each other at their rear ends by a crossbar 24.

The object compressing device 17 may include a belt 25 trained over guide rollers 26 and 27 secured to shaft 28 and 29 respectively, said shafts being suitably supported in the standards 19. The belt 25 is also conducted over an idler 30 on a shaft 31 adjustably supported by brackets 32 secured to the standards 19 to take up slack in said belt. To co-operate with the upper guide roller 26, there is provided a feed roller 33 on a shaft 34 mounted in the standards 19. The feed roller 33 presses against the belt 25 which belt is driven, by suitable means hereinafter described, through the medium of the roller 26. While said belt is running, and upon the insertion of a slip or check 35 between the belt and the feed roller 33, the slip 35 is conveyed or fed downwardly with said belt,

The checks may be piled up in a stack or pack 36 by brackets 37 on a plate 38 which plate may be secured to a crossbar 39. They are picked up from the pack by the operator and placed one by one between the belt 25 and feed roller 33.

The belt 25 is normally at rest, but may be connected at will, to a power drive which may include an electrical motor 40, by the depression of a power key 41. The power key controls mechanism hereinafter described for connecting said feed belt 25 with the power drive. After the insertion of each check into the bite of the rollers 26 and 33, the power key 41 is depressed, thus connecting the feed belt or conveyor belt 25 with the power drive and causing the check to be fed into the machine. Provision is made as hereinafter described for feeding each check a definite distance, this being accomplished by retaining the connection between said feed belt and said power drive a definite period of time. Thus the checks are fed successively into the focal range F of the camera.

After a series of checks comprising a definite number, for example 3, have been fed into the focal range of the camera, a shutter mechanism 42 associated with the camera, is operated automatically by mechanism hereinafter described to expose the series of checks to the film 43 of said camera.

To hold the checks in position on the belt 25 while being conveyed thereby, there are provided two belt-like bands 44 which bands may be comparatively thin and composed of music wire. The bands are stretched over said feed belt 25 and are conducted at the upper ends over the feed roller 33 while the lower ends are conducted around guide rollers 45 rotatably supported on a rod 46 carried by brackets 47 adjustably secured to the standards 19 by screws 48, so that the bands 44 may be properly tensioned to cause them to bear tightly against the belt 25 and thus hold the checks against said belt while in transit.

To assist in causing the bands 44 to bear against the feed belt 25, there may be provided a panel 49 located behind effective reach of the feed belt 25. Said panel may be carried by bars 50 and 51 which bars are adjustably secured, by means of screws 52 and 53 respectively, to the standards 19, thus affording an adjustment of said panel towards the bands 44.

To assist in inserting the checks into the bite of the rollers 26 and 33, there is provided a guide-plate 54 secured to the standards 19 by screws 55 to form a chute. Said guide-plate may be provided with indication marks 56 (Figure 4) to assist in locating the checks width-wise of the belt 25. Guides 57 (Figure 6) may be adjustably secured to a bar 58, supported in the standards 19, to prevent accidental lateral displacement of the belt 25 on its rollers 26 and 27.

As the insertion of checks into the machine continues, the photographed checks are fed out of the machine by the belt 25, and they are received and stacked or piled up in a container 58 which is located at the lower end of the belt 25. The container or receptacle 58 may include an inclined base 59 and an upright wall 59*a* to form a corner into which the checks drop. To assist the checks around the lower end of the belt and direct them as to properly fall into the receptacle, guides 60 are provided which guides are secured to the rod 46. To facilitate a removal of the checks from the receptacle 58, the base 59 and the wall 59*a* may be provided with cut-outs 61 at the middle thereof to provide clearance for the hand of the operator to enable the pack of checks to be grasped. The receptacle 58 may include angle bars 62 having slots 62*a* by which it is adjustably supported on studs 63 which studs are headed and extend through the slots 62*a* and the standards 19, and are provided at the outer ends with wing-nuts 64 by which the studs 63 may be tightened to hold the receptacle in its adjusted position. It will be understood that by this arrangement the receptacle 58 is adjustable back and forth on the studs 63 to accommodate checks of various heights.

To illuminate the checks on the object presenting device 17, there may be provided an illuminating chamber 65 containing lamps 66 (Figures 4 and 6). Said chamber may be formed by vertical reflectors 67, and an inclined top reflector 68; all of said reflectors being suitably secured to the standards 19. A guard 69 may be secured to the crossbar or rod 20 to keep the light of the lamps 66 from annoying the operator who is positioned, while operating the machine, at the front thereof (Figure 4) or left hand end (Figure 6).

The motor drive includes the motor 40 which motor may be secured to the base plate 18 in any convenient manner. A pulley 70 secured to the motor shaft 71 drives a belt 72 to rotate a pulley 73, which pulley may be supported on a shouldered screw (Figure 4) threaded into one end of the rod 20. The pulley 73 has secured thereto a pinion 75 meshing with a gear 76 to constantly drive the latter in a counter-clockwise direction (Figure 5); said gear 76 being rotatably supported on a shaft 77 (Figures 9 and 10). Ordinarily the gear 76 rotates freely on the shaft 77 but it may be connected therewith at will by the depression of the power key 41 which power key controls suitable clutch mechanism between the gear 76 and the shaft 77.

The clutch mechanism includes a ring 78 secured to the gear 76 by screws 79. The ring is provided with internal teeth 80 with which a pawl 81, pivotally supported on a

stud 82 of a collar 83, may engage; the collar 83 being secured to the shaft 77 by a set screw 84. Said pawl 81 is normally in contact with a clutch controlling pin 85 to hold said pawl clear of the teeth 80 of the ring 78. Upon the withdrawal of the pin 85 out of the path of the pawl 81, by means hereinafter described, the pawl is pressed outwardly, by a spring 86, to swing into engagement with the toothed ring 78 which, it will be remembered, is constantly rotating. Consequently as soon as the pawl engages the ring 78 the shaft 77 is connected with the power drive, and is rotated thereby. The clutch mechanism, including the ring 78, is located at the right-hand end (Figure 4) of the shaft 77. Said shaft is provided at its left hand end (Figures 4, 11 and 12) with a crank arm 87 secured thereto to actuate intermediate mechanism 88 between the shaft 77 and the roller 26 by means of which intermediate mechanism the guide roller 26 and the feed belt 25 are driven.

The intermediate mechanism 88 may include a lever 89 pivotally supported on a headed stud 90 secured to the standard 19. Said lever is provided with a slot 91 in which there is slidingly supported a block 92 connected to a wrist-pin 93 of the crank arm 87. As the shaft 77 rotates in a counter clockwise direction in Figure 12, the lever 89 is swung in a counter-clockwise direction through the medium of the arm 87 until said arm is moved through 180°, or in other words while the shaft 77 is making one half of a revolution of the shaft 77, the lever 89 is returned to its normal position. Before the shaft 77 has completed a, revolution the clutch controlling pin 85 has again entered the path of the pawl 81. As said pawl is again brought in contact with the pin 85, the pawl is withdrawn from the toothed ring 78 to disconnect the shaft 77 from the power drive. To prevent overthrow of the shaft 77 during its release from the power drive, there is provided a friction means which include a shoe 94, which shoe is held in place and pressed in contact with the collar 83 by a resilient arm, the tension of which may be adjusted by screws 96 threaded into the standard 19. The lever 89 is provided with a gear segment 97 which meshes with a pinion 98 rotatably supported on the shaft 28; said pinion 98 being rotated by the gear segment 97 in a clockwise direction (Figure 12) during the first half revolution of the shaft 77. The pinion 98 has secured thereto an arm 99 which has pivotally supported thereon, by means of a stud 100, a spring pressed pawl 101 engaging in a notch 102 of a collar 103 secured to the shaft 28. Thus when the pinion 98 is rotated in a clockwise direction in Figure 12 the shaft 28 is rotated therewith through the medium of the pawl 101, to thus feed the belt 25 through the medium of the roller 26. During the latter half revolution of the shaft 77, the lever 89 is swung in the opposite direction thus rotating the pinion 98 in a counter-clockwise direction, and a complete revolution, thus causing the pawl 101 to slide around the collar 103 until it snaps into the notch 102. From this it follows that the feed belt 25 remains at rest during the latter half revolution of the shaft 77.

To operate the clutch controlling pin 85, there is provided a bell crank 104 (Figure 9) which may be swung about a fixed pivot 105*a* in a bracket 105 secured to the standard 19. The bell crank is provided with an arm 106 underlying a lever 107 pivoted on a stud 108 to be actuated by said lever when it is depressed by the power key 41 secured to its free end. The key lever 107 is normally held against a stop pin 109 by a spring 110. Upon the depression of the key lever 107, the bell crank 104 is swung in a counter-clockwise direction (Figure 9) about its pivot 105*a* to slide the clutch controlling pin 85 leftwardly through the medium of an arm 111 of said bell crank, said arm 111 engaging in a notch 112 of a projection 113 on said clutch controlling pin 85. A spring 114 is provided against the tension of which the clutch controlling pin 85 is moved, said spring being effective upon the release of the key lever 107, and after the pawl 81 has passed said pin 85, to return said pin 85 into the path of the pawl 81, so as to be in readiness to release the pawl 81 from the toothed ring 78 and thus break the connection between the power drive and the shaft 78, upon the completion of a revolution of said shaft 77. To prevent slipping of the feed belt 25 on the roller 26, the surface of the latter may be roughened as by knurling.

The shutter mechanism 42 includes a casing 115 (Figures 1 and 2) having a front wall 116 and a rear wall 117. Said casing is secured by a bracket 118 to a crossbar 119 secured to two angle bars 121 and constituting a frame 122 adjustably supported on the angle bars 21 of the framework or main frame 16, and secured thereto by screws 123. The front wall 116 is provided with an aperture 124 which registers with a tubular extension 125 extending into the camera and in register with the camera lens 126. Within the casing 115, there is rotatably supported a disc 127 having a hub 128 secured to a shaft 129. Said shaft is supported in brackets 130 and 131 secured respectively to the crossbar 119 and the angle bar 120. The disc 127 normally closes the aperture 124. Said disc is provided, however, with an aperture 132 which, as the disc is rotated by means hereinafter described, is brought into register with the aperture 124, thus opening the camera to expose the film 43 to the checks on the feed belt 25. The speed of the disc 127

and the length of the aperture 132 are such that the camera remains open to expose the film the required length of time.

A definite time relation exists between the feeding of the checks, and the shutter mechanism 42, and as illustrated in Figures 5, 13 and 14, the shutter is operated after the feeding of each third check into the machine. The shutter operating mechanism is connected to the shaft 77 (Figure 9) by means including a sprocket-wheel 133 secured to the shaft 77. Said sprocket-wheel drives a chain 134 (Figures 5, 13 and 14), which chain drives a sprocket-wheel 135 secured to a shaft 136 rotatably supported in bearing blocks 137 secured to an auxiliary bracket 138. The auxiliary bracket 138 is secured to a main bracket 139, which main bracket is fixed to the standard 19. The sprocket-wheel 135 has secured thereto a pinion 140 which meshes with a gear wheel 141 to drive a shaft 142 supported in the bracket 139. The shaft 142 has secured thereto a bevel gear 143 meshing with a bevel gear 144 to drive a shaft 145. The shaft 145 is supported near one end thereof in the main bracket 139, and extends lengthwise of the machine toward the camera where said shaft is supported in a bracket 146 (Figures 1 and 2). The shaft 145 has secured thereto a sprocket-wheel 147 which through the medium of a chain 148 drives a sprocket-wheel 149 secured to the shaft 129. An idler 150 may be adjustably supported on the angle bar 120 to take up slack in the chain 148.

It will be remembered that the shaft 77 makes one complete revolution upon each actuation of the power key 41 and that the belt 25 is fed during the first half revolution of the shaft 77, said belt remaining at rest during the latter half revolution of said shaft. The relative speed of the shaft 77 with respect to the shutter disc 127, is three to one. In other words, the shaft 77 makes three complete revolutions to one of the disc 127. Consequently, the shutter aperture 132 is brought in register with the aperture 124 for each series of three checks. The parts are so timed that the shutter aperture 132 passes the aperture 124 during the latter half revolution of the shaft 77, at which time, it will be remembered, the lever 89 is being returned to normal and while the belt 25 is at rest. Thus it will be understood that the checks which are supported by the belt, are at rest while being photographed. The position in which the successive series of checks appear on the film is shown at 35*a* (Figure 8).

To feed the film 43, for each exposure the shaft 145 is provided with a bevel gear 151 (Figures 1 and 3) meshing with a bevel gear 152 to drive a counter shaft 153. The counter shaft 153 is provided with a bevel gear 154 meshing with a bevel gear 155 to drive a shaft 156, said shaft extending into a depression 160 in the floor of the camera 15. The shaft 156 is provided with a pinion 158 meshing with a gear wheel 159 to drive a shaft 160 extending into the camera from the gear wheel 159, and has secured thereto a sprocket-wheel 161 having teeth engaging in apertures 161*a* (Figure 8) which is rotated to draw the film from one of two spools 162 and supply the exposed film to the other one of said spools. The camera used may be a regular Eastman Cine Kodak in which the mechanism is so arranged and geared together that the film is shifted at the lens 126 by suitable means, while the light is excluded from the camera and the light is admitted while the film is stationary. The shaft 145 may be supported at the bevel gear 151 by a bracket 163 secured to an angle bar 164 supported on standards 165 extending upwardly from the angle bar 121. The counter-shaft 153 may be supported in brackets 166 and 167 on the angle bar 164. The shaft 156 may be supported at its lower end by a bracket 168 secured to the angle bar 164 and at its upper end, it may be guided in the horizontal flange of said angle bar. The camera may be detachably supported on the frame 122 by the thumb screws which pass through a crossbar 170 secured to the horizontal flange of the angle bar 164, said screws being threaded into the floor of the camera. In detaching the camera the gear 159 in the depression 160 lifts away from the pinion 158.

Provision is made for increasing the number of checks to be photographed at each exposure, or in other words, to expose four in each series instead of three. To this end a smaller pinion 171 (Figures 13 and 14) is provided, and is secured to the pinion 140. After loosening set screw 172, which secures the pinion 140 and 171 to the shaft 136, said pinions may be moved lengthwise of the shaft 36 towards the block 137 to bring the smaller pinion 171 into alignment with the gear wheel 141. After this has been done, screws 173 in the blocks 137 may then be manipulated, thus allowing the resilient auxiliary bracket 138 to move the shaft 136 towards the gear wheel 141 to thus carry the pinion 171 into meshing relation with said gear 141. The pinion may then be secured to the shaft 136 by the set screw 172. The bracket 138 is under constant spring tension and strong enough to hold the pinion 140 or the pinion 171 in meshing relation with the gear wheel 141. By bringing the pinion 171 into use, the speed ratio between the drive shaft 77 and the camera disc 127 is changed to 4 to 1 which results in one exposure for every four checks.

The focal range F of the camera may be increased in order to span a greater distance to include four checks. To this end the camera is supported on the adjustable frame 122, which frame may be moved further away from the checks and secured in the adjusted

position by threading the screws into holes 174 (Figure 1) of the angle bars 21. In order to make this adjustment the set screw 175 (Figure 13) which secures the bevel gear 144 to the shaft 145, may be loosened, thus enabling the shaft 145 to be shifted with the adjustable frame, said shaft being long enough at one end to compensate for this shifting movement. After the shifting has been accomplished the bevel gear 144 may again be secured to this shaft 145 by tightening the screw 175.

A guard 176 (Figures 4 and 5) may be provided to enclose the driving belt 72 and the sprocket chain 134. A guard 177 is also provided to enclose the pulley 73 in the gear wheel 76. A similar guard (not shown) may be provided to enclose the operating mechanism including the arm 89 and the pinion 98 at the other side of the machine.

In some instances it is desirable to record the amount of each check, before it is fed into the machine, on a computing machine. When this is done, the clutch releasing mechanism including the pin 85 may be released by means operated from the computing machine. In computing the amounts, it is customary to set up the amount by keys and then run it into a register. While the number is being run into the register, mechanism which may include a link 178, is actuated to operate an arm 179; said link and arm forming part of a computing machine. A bracket 180, which may be secured to the computing machine in convenient manner, has pivotally supported at 181 a lever 182, which is depressed when the arm 179 is operated, thus pulling upwardly on a rod 183 connected to the lever 182. The rod 183 is flexible and is guided in a flexible housing 185 which housing may be composed of a closely wound coil of wire. The housing 185 extends from the computing machine to one of the angle bars 21 (Figure 5) where its end is connected to a block 186 by means of a set screw 187, said block being secured to the angle bar 21 in any convenient manner. The rod 183 extends through the block and is connected by means of a set screw 188 to the lower end of a link 189. The upper end of the link 189 is connected to the arm 106 of the bell crank 111 so that when the level 182 is operated by the computing machine, the link 189 is pulled downwardly to swing the bell crank 111 (Figure 9) about its pivot in a counter-clockwise direction, to withdraw the clutch controlling pin 85 from the path of the pawl 81, thus establishing the connection between the gear wheel 76 and the shaft 77, to drive the belt 25 and thus feed the check which has been placed between the rollers 26 and 33.

What we claim is:

1. The combination of a camera, document feeding means normally at rest, a power drive, a clutch operable at will to connect the feeding means with the power drive to feed the documents into the focal range of the camera, means automatically effective to operate the clutch to disconnect the conveying means from the power drive after a feeding step of substantially the length of one of the documents, and means timed to operate the camera after a predetermined number of such feeding steps.

2. The combination of a camera, object feeding means normally at rest, a power drive, a clutch to connect the feeding means with the power drive, distant means to operate said clutch to connect the feeding means with the power drive to feed slips into focal range of the camera and listing, and computing mechanism including means connected to actuate said distant means each time a member is listed so that each slip listed will be photographed and each slip photographed will be listed.

3. The combination of a camera, a shutter for said camera, means to feed a series of objects into the focal range of the camera, operating means for the feeding means, means, connected with the feeding means to operate the shutter, the shutter being timed to operate after a definite number of objects have been fed, and means to vary the timing of said shutter so that a different number of objects may be fed before the shutter is operated.

4. The combination of a camera, a shutter for said camera, means to feed a series of objects into the focal range of the camera, operating means for the feeding means, mechanism connected with the feeding means to operate the shutter, the shutter being timed with respect to the feeding means and actuated by the operating means, and means to vary the timing of the shutter with respect to the feeding means.

5. The combination of a camera, a shutter for said camera, means to feed a series of objects into focal range of the camera, operating means for the feeding means, mechanism with the feeding means to operate the shutter, the shutter being timed with respect to the feeding means and actuated by the operating means, means to vary the timing of the shutter with respect to the feeding means, so as to vary the number of objects to be exposed at a time and means to facilitate an adjustment of the camera to vary the span of its focal range at feeding means.

6. In a document recording apparatus the combination of a camera, a belt conveyor stretched across the focal range of the camera, means to drive said belt and means including two narrow belt-like bands stretched over said belt to co-operate therewith in gripping and feeding documents bodily into the focal range of the camera, and means connected to and coordinately operating the camera and the conveyor in synchronous relation.

7. In a photographing device the combina-

tion of a camera, a belt conveyor stretched across the focal range of the camera, means to drive said belt, means including two narrow belt-like bands stretched over said belt to co-operate therewith in gripping and feeding documents bodily into the focal range of the camera, a guide roller at the introductory end of the belt, a feed roller co-operating with said guide roller to start slips over said belt, means at the delivery end of said belt to receive the slips as they are fed from said belt, and means connected to and coordinately operating the camera and the conveyor in synchronous relation.

8. In a photographing device the combination of a camera, object presenting means in the focal range of said camera, lamps at each side of the focal range, and in front of the plane of the object presenting means, a reflecting chamber at one side of the object presenting means and formed by reflectors about said lamps to throw the light on the object presenting means, and means to facilitate the feeding of slips into said chamber to the object presenting means from one end of said chamber.

9. In a recording business machine, in combination, mechanism including document feeding means for photographing documents serially, means for concomitantly printing a proof list of the documents photographed for comparison with the documents to assure the completeness of the undeveloped photographic record, and means coordinating the operations of the photographing mechanism and the proof list printing means, to assure correspondence of the proof list and the photographic record.

10. In a document tabulating and recording machine, in combination, tabulating mechanism, document recording mechanism, including synchronized document feeding and photographing means, and a recording mechanism actuator controlled by the tabulating mechanism, to assure the photographing of a document for each tabulated item.

11. In a protective business machine, mechanism for adding and tabulating the amounts of checks, mechanism for making a serial photographic record of the checks, and common actuating means for said mechanisms under the control of the operator, whereby the photographing of the checks is controlled mechanically without attention from the operator, and correspondence between the tabulated list and the photographic record is assured.

12. In a document tabulating and recording machine, in combination, tabulating mechanism including an actuating member necessarily operated each time that an item is tabulated, document recording mechanism including document feeding means, document photographing means, and means operating the feeding and photographing means synchronously, and means connecting the recording mechanism for operation by said actuating member to assure correspondence between the tabulated list and the photographic record.

13. In a business machine, mechanism for adding and tabulating the amount of checks, including an actuating member necessarily operated at the entry of each item, mechanism for making a serial photographic record of the checks, including step by step check feeding means and a camera, means operated by the actuating member to produce a check feeding step at the entry of each item, and means for automatically operating the camera periodically after a predetermined number of check feeding steps.

14. In a document recording machine, in combination, a camera, means for receiving documents, feeding them sequentially into the photographic field of the camera and discharging them, comprising confronting belts converging at their introductory ends running parallel through the photographic field of the camera and diverging at their delivery ends, means for guiding the documents into the bight formed by the belts at the introductory ends thereof, means for setting the belts into operation at will, and means operating the camera synchronously with said belts.

15. In a business machine, in combination, computing mechanism comprising an actuating member necessarily operated at predetermined stages of the computing operation, document recording mechanism including document feeding means, document photographing means, and means operating the feeding and photographing means synchronously, and means connecting the recording mechanism for operation by and under the control of said actuating member whereby the production of the photographic record is mechanically controlled as an incident of the computing.

16. In a photographing apparatus, in combination, means for feeding checks step by step into the photographic field of the camera, means for causing an exposure of the film after a predetermined number of checks has been fed into photographing position, means for effecting an adjustment of the shutter driving train to cause a different number of checks to be photographed at each exposure, and means for adjusting the camera to increase or diminish the area included in the photographic field thereof in accordance with the adjustment of the shutter driving train.

17. In a photographing apparatus, in combination, means for feeding checks step by step into the photographic field of the camera, means for causing an exposure of the film after a predetermined number of checks has been fed into photographing position, means

for effecting an adjustment of the shutter driving train to cause a different number of checks to be photographed at each exposure, comprising gearing of different mechanical ratio substitutable in the normal gear train that drives the camera shutter, and means for adjusting the camera to increase or diminish the area included in the photographic field thereof in accordance with the adjustment of the shutter driving train.

In testimony whereof we have affixed our signatures to this specification.

GEORGE LEWIS McCARTHY.
ABRAHAM NOVICK.