

Sept. 20, 1966

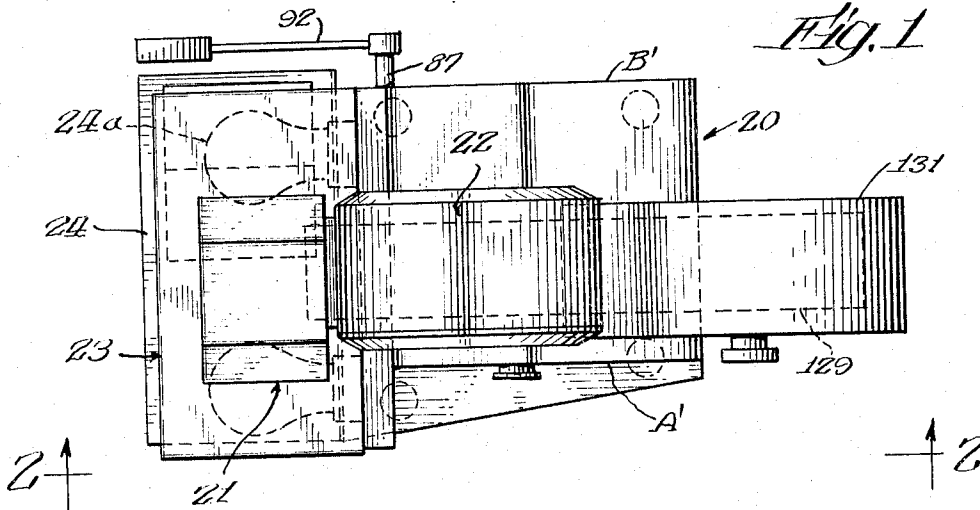
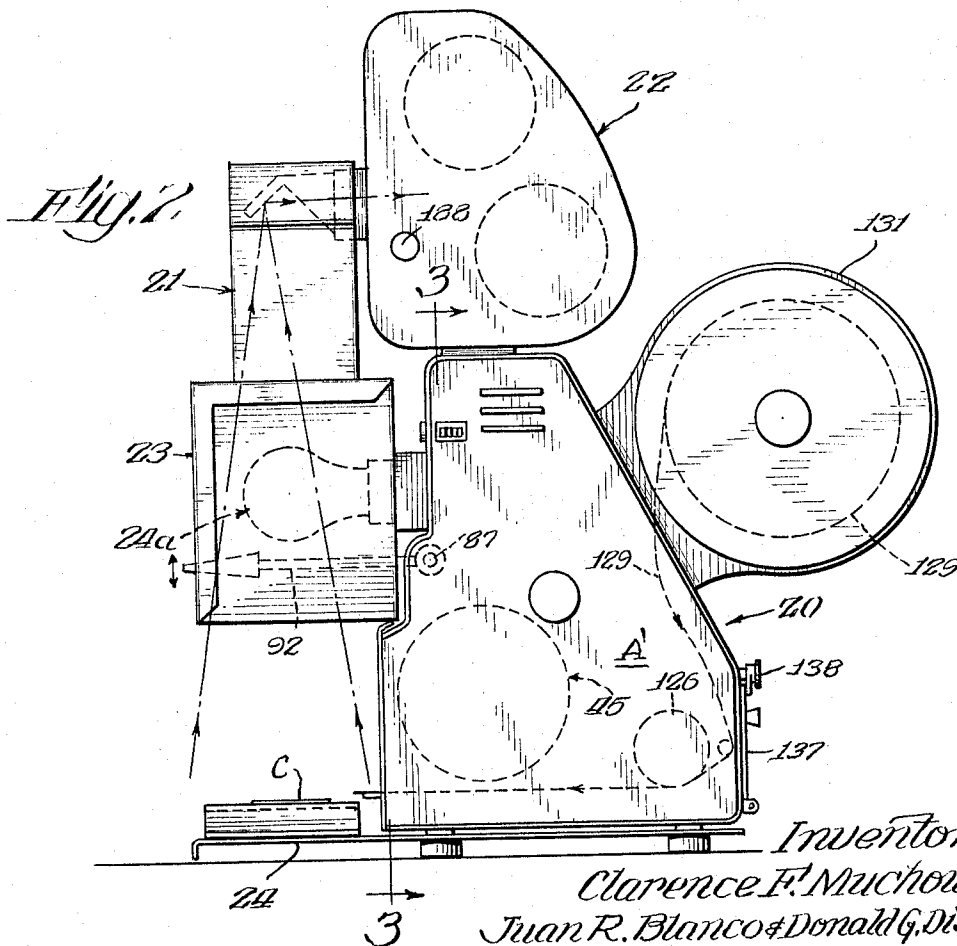
C. F. MUCHOW ETAL

3,274,607

COMBINATION MICROFILM PHOTOGRAPHIC AND PRINTING APPARATUS FOR
PHOTOGRAPHICALLY RECORDING TRANSACTIONS AND DISPENSING
PRINTED MEMORANDA OF THE SAME

Filed June 23, 1964

11 Sheets-Sheet 1



Inventors:
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Juan R. Blanco & Donald G. Disney
By MAX R. KRAUS Att'y.

Sept. 20, 1966

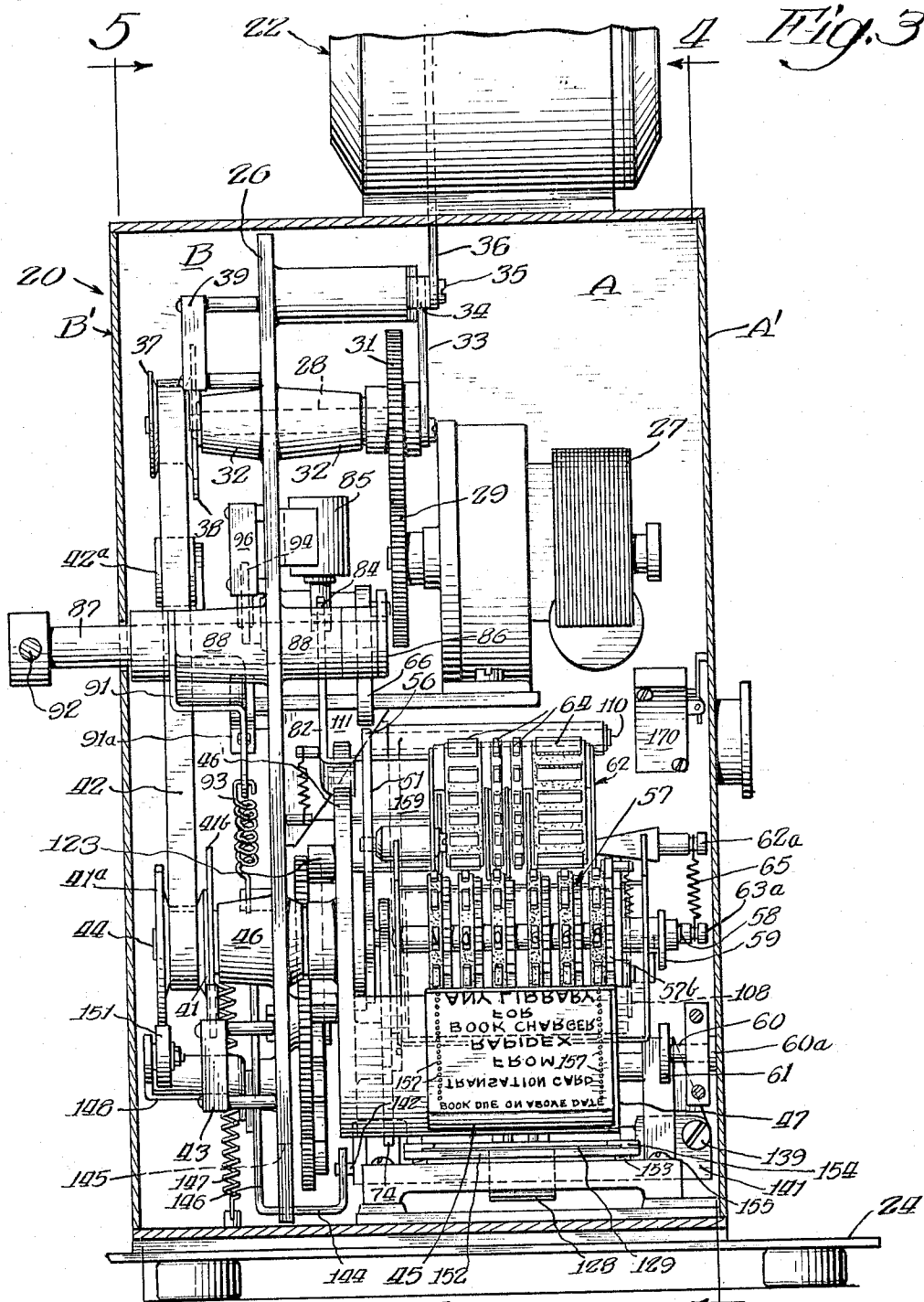
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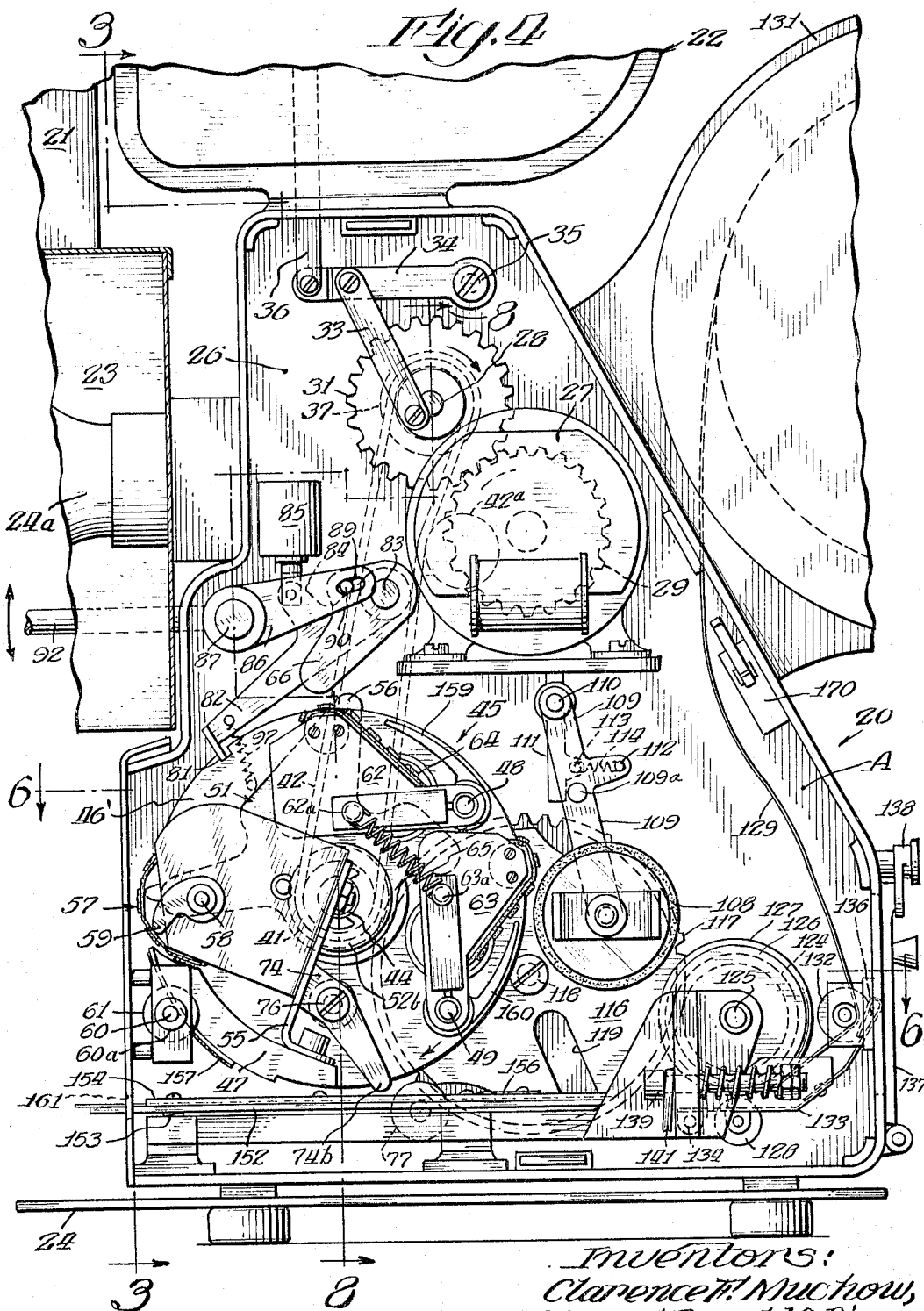
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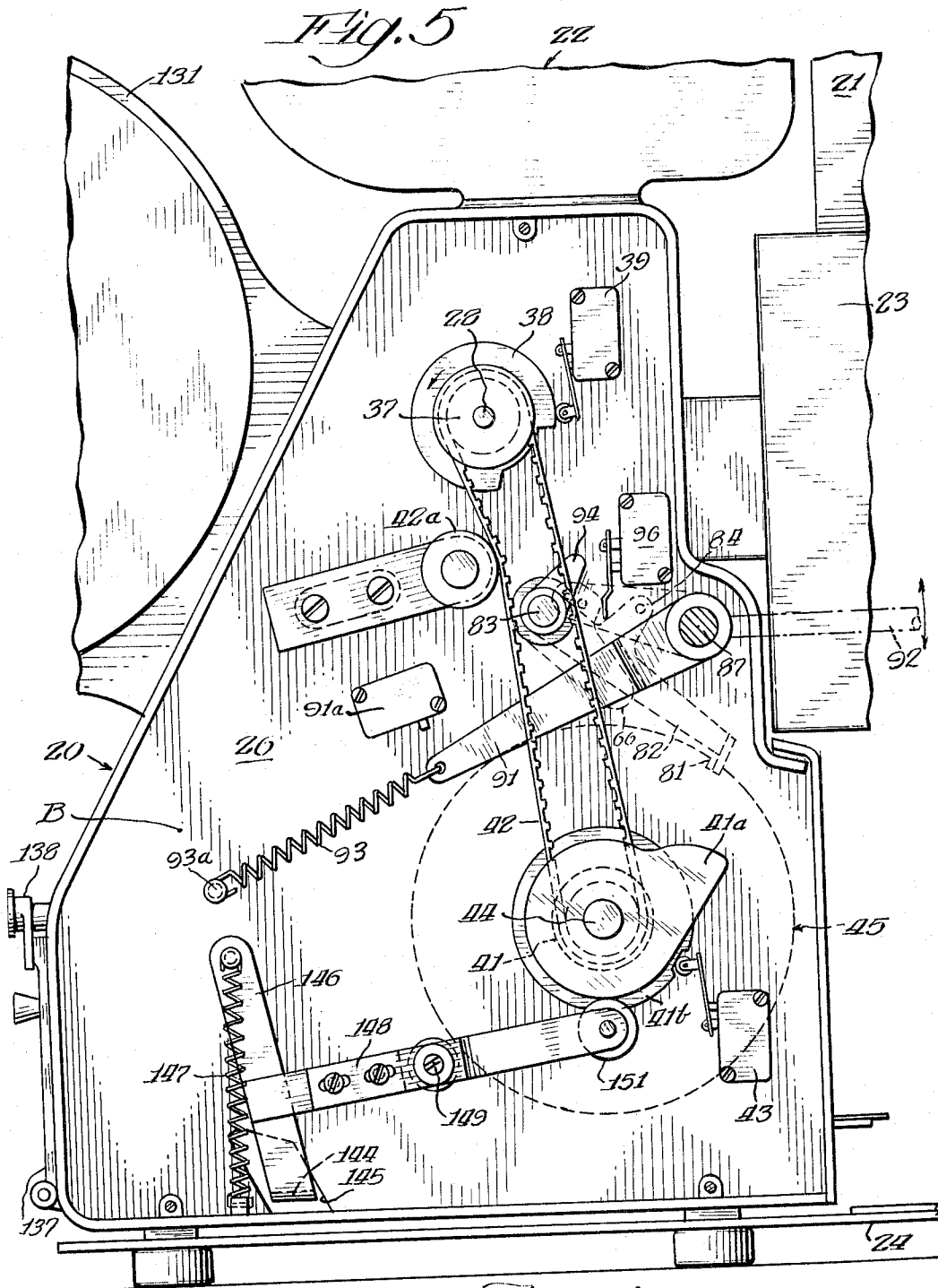
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11 Sheets-Sheet 4



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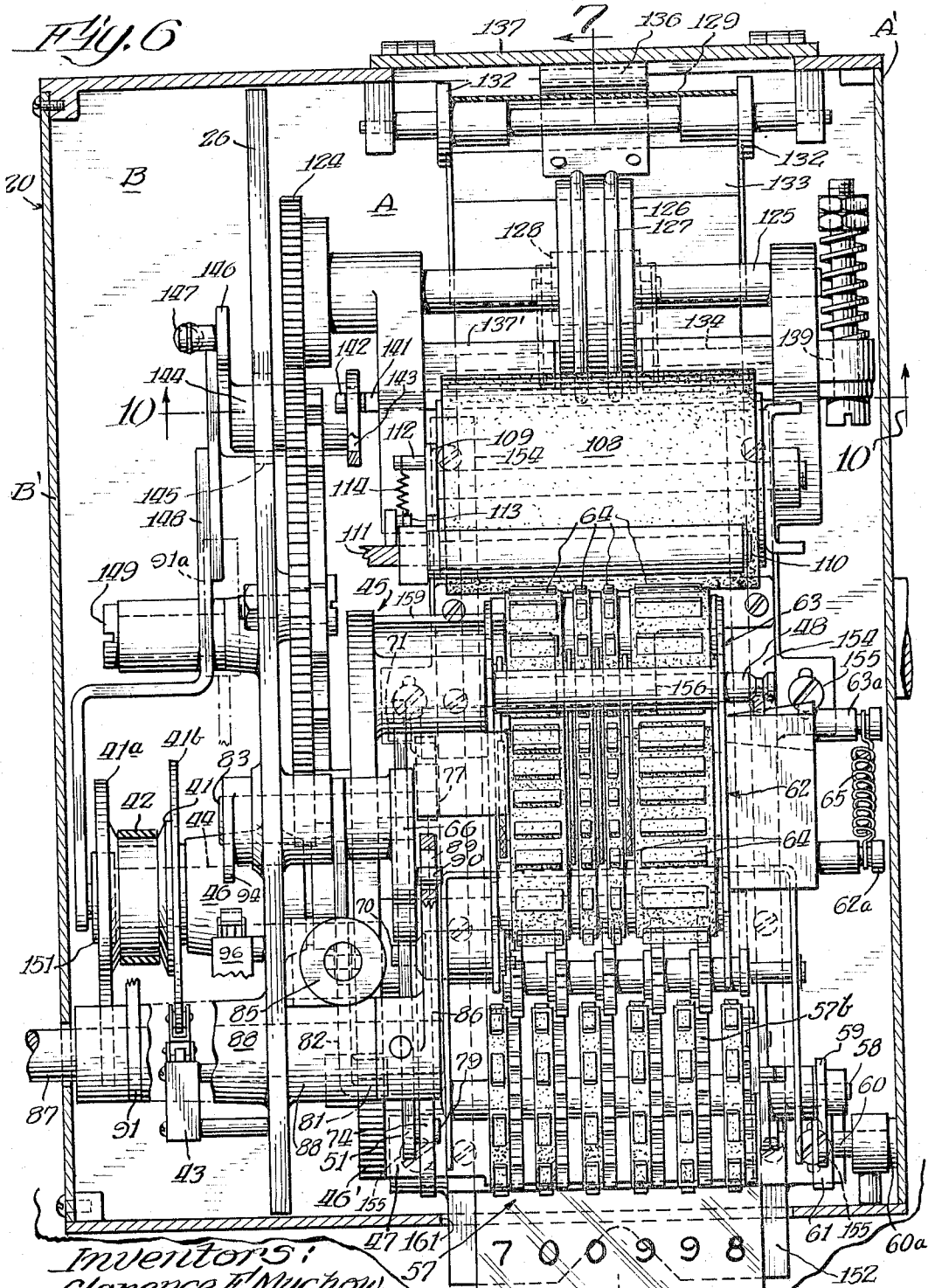
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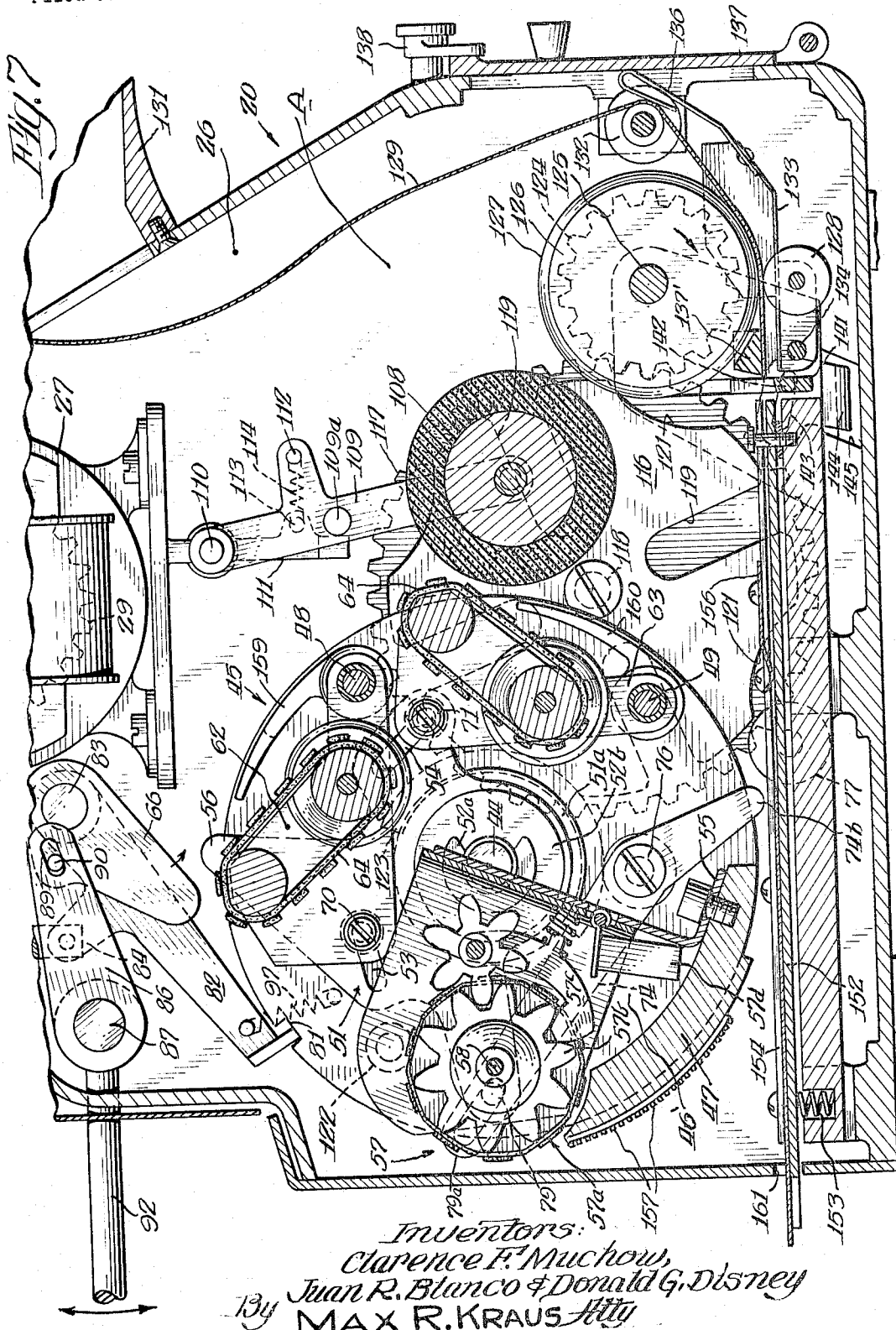
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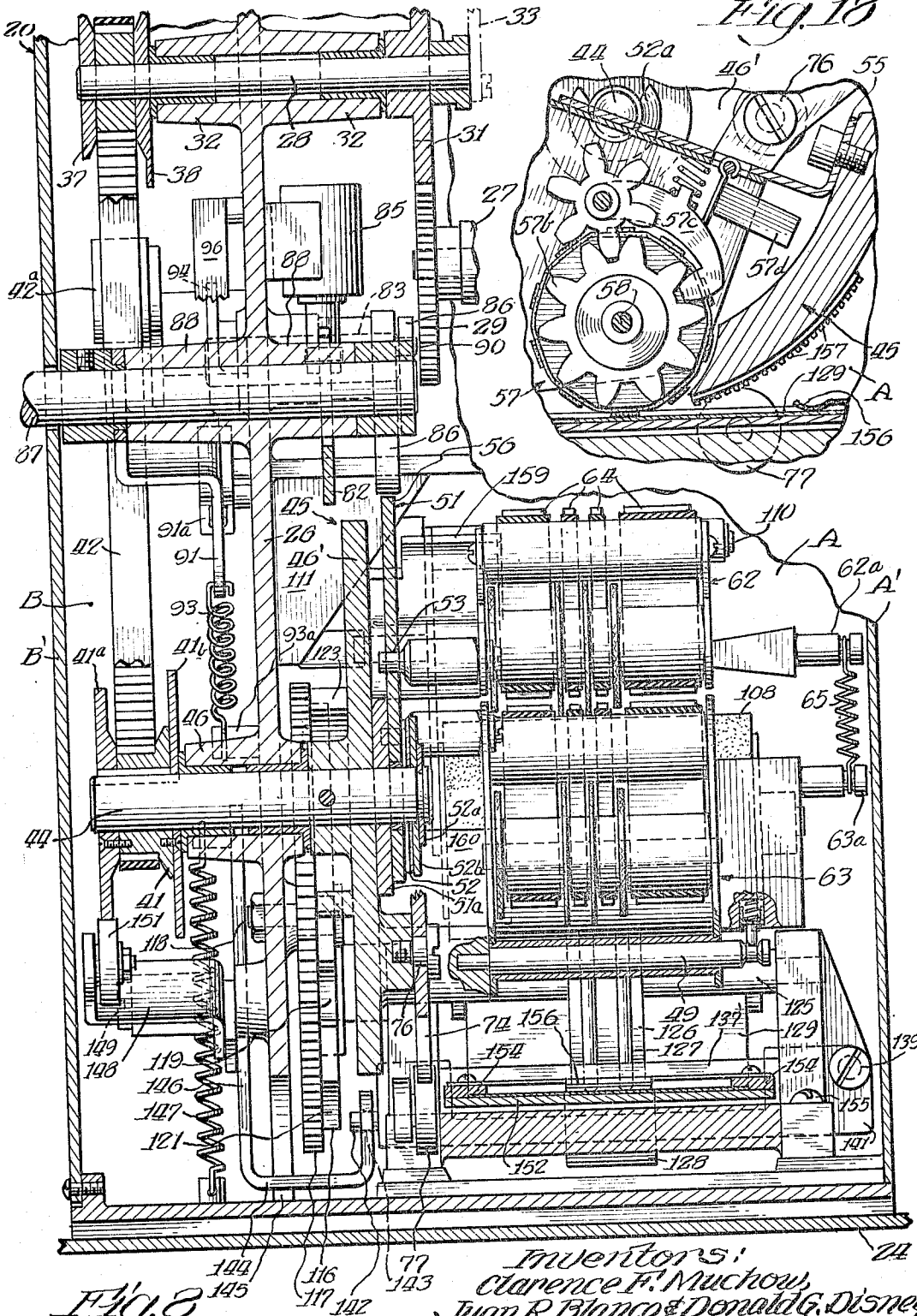
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11 Sheets-Sheet 7



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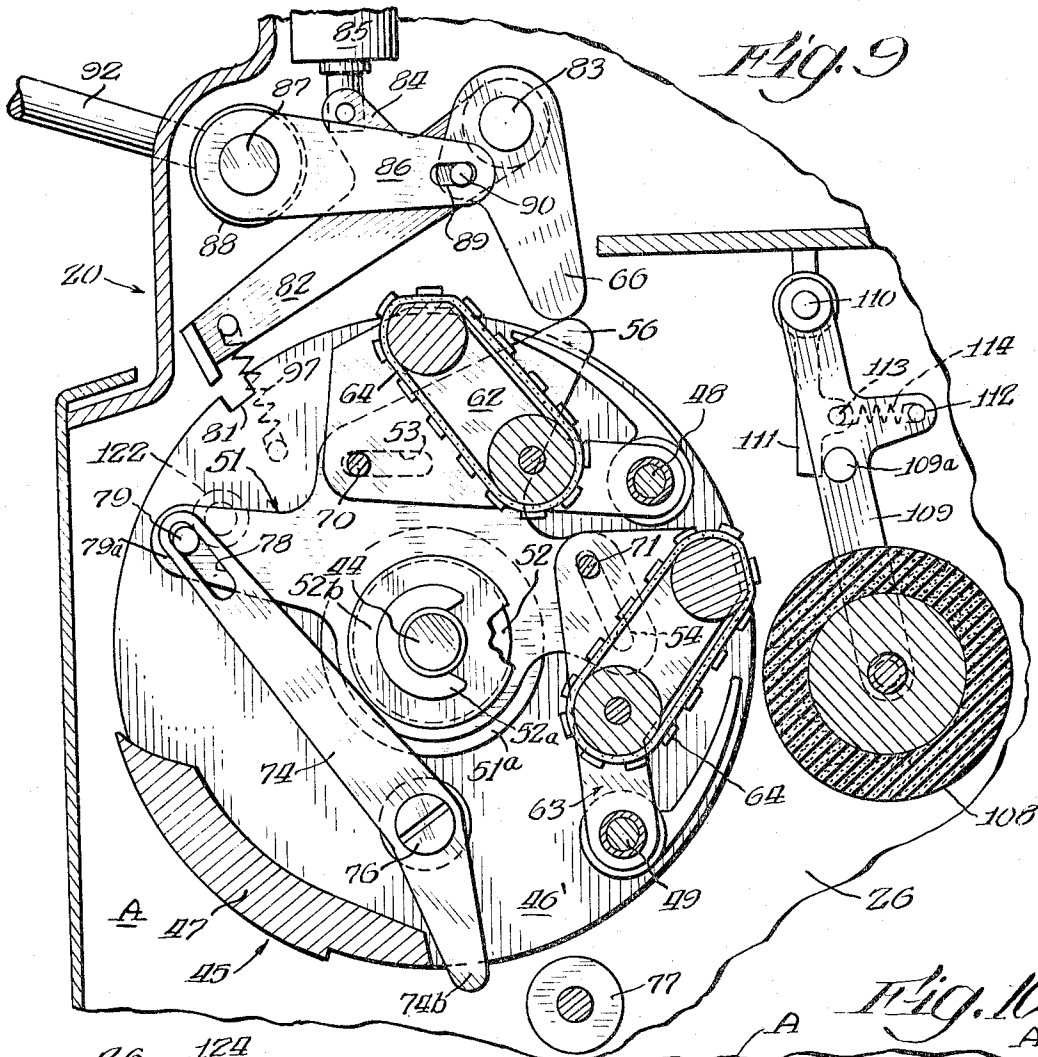
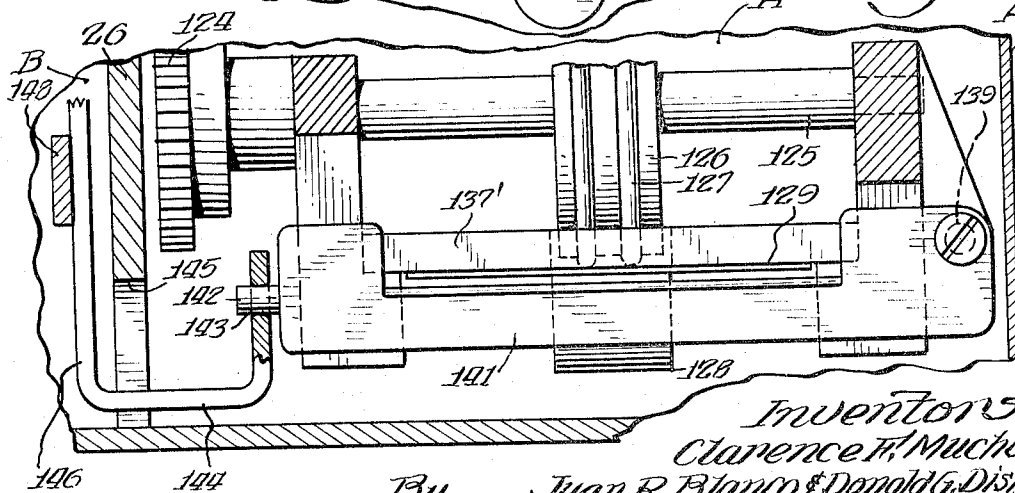
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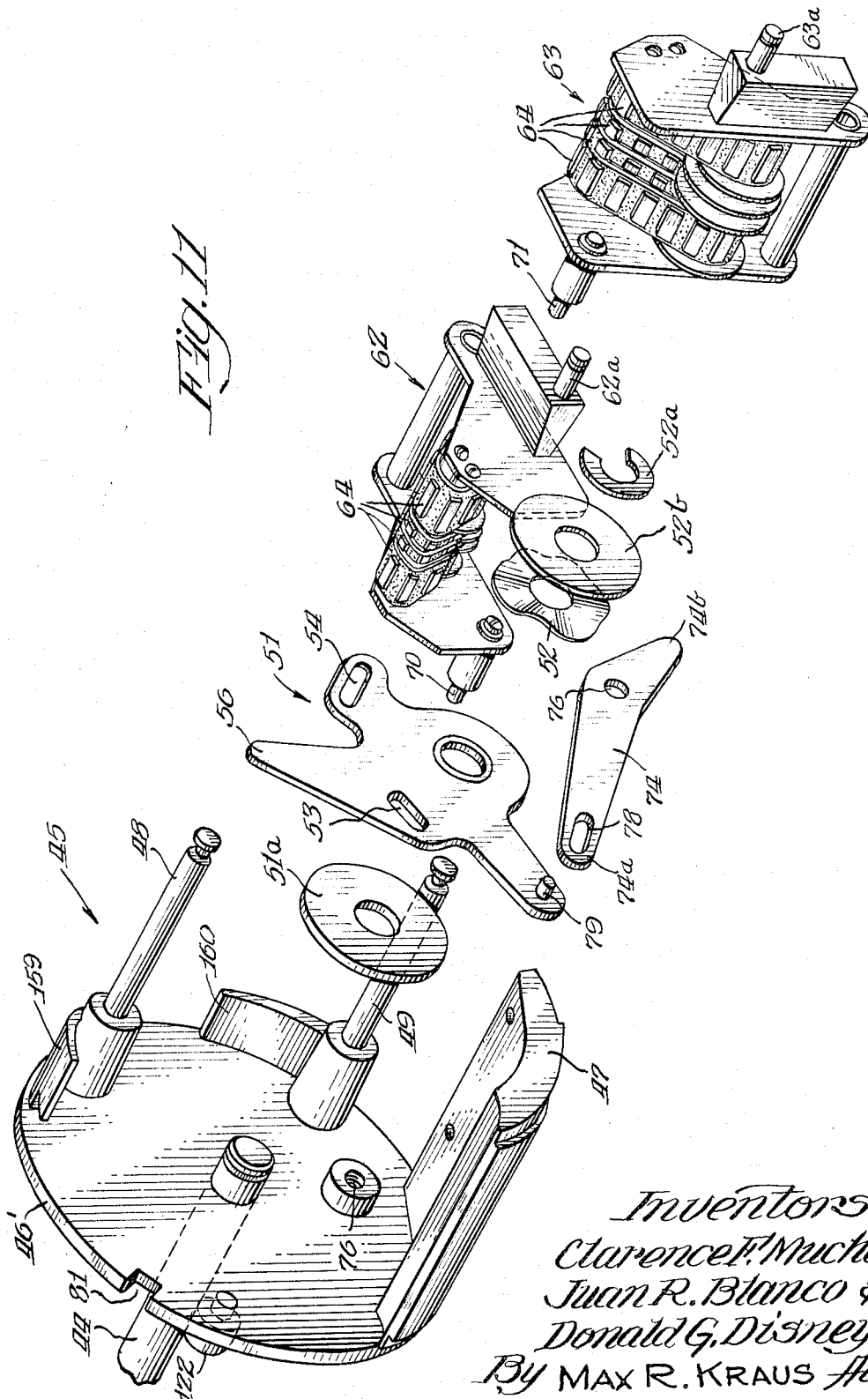
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FIG. 11



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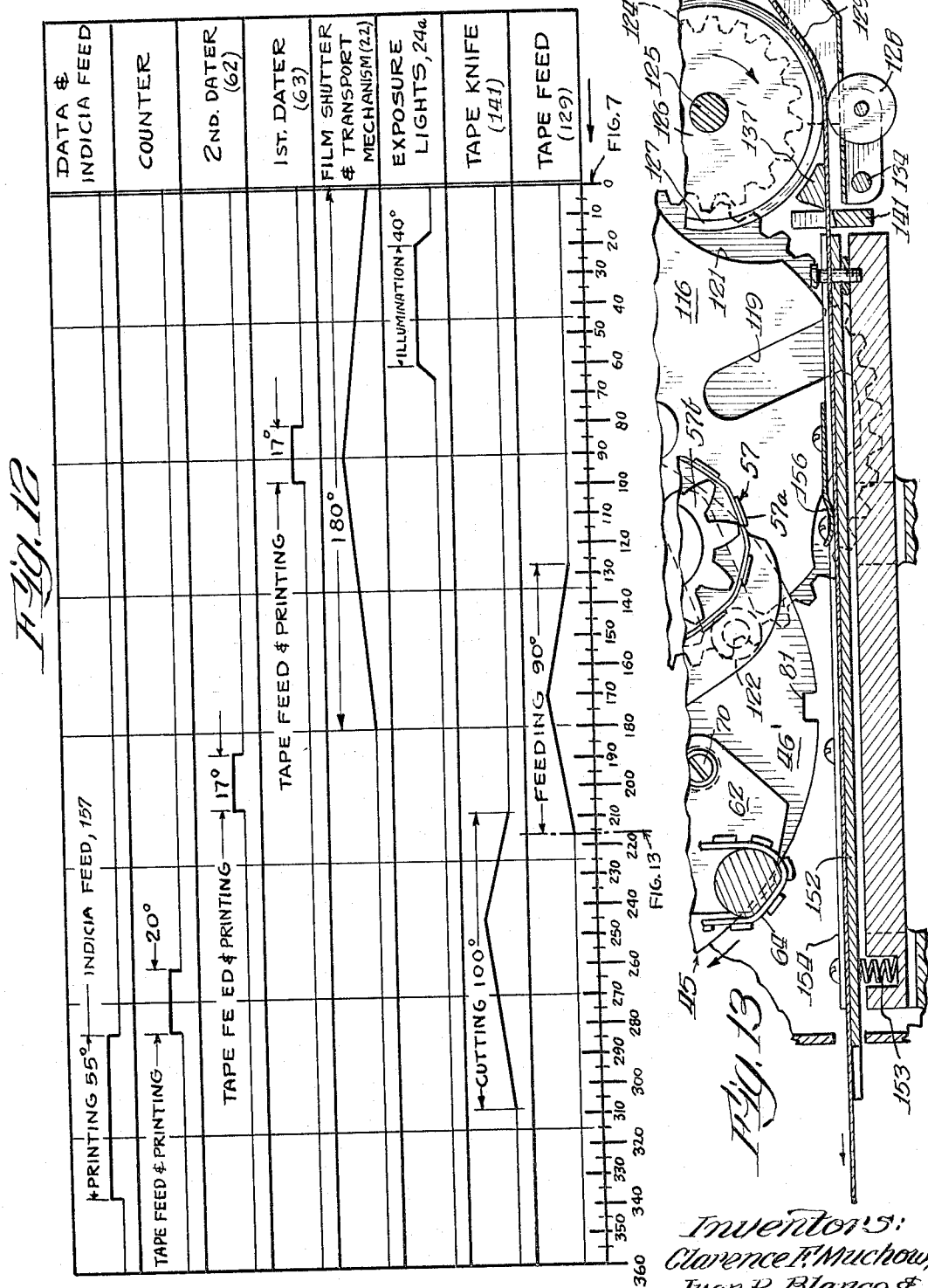
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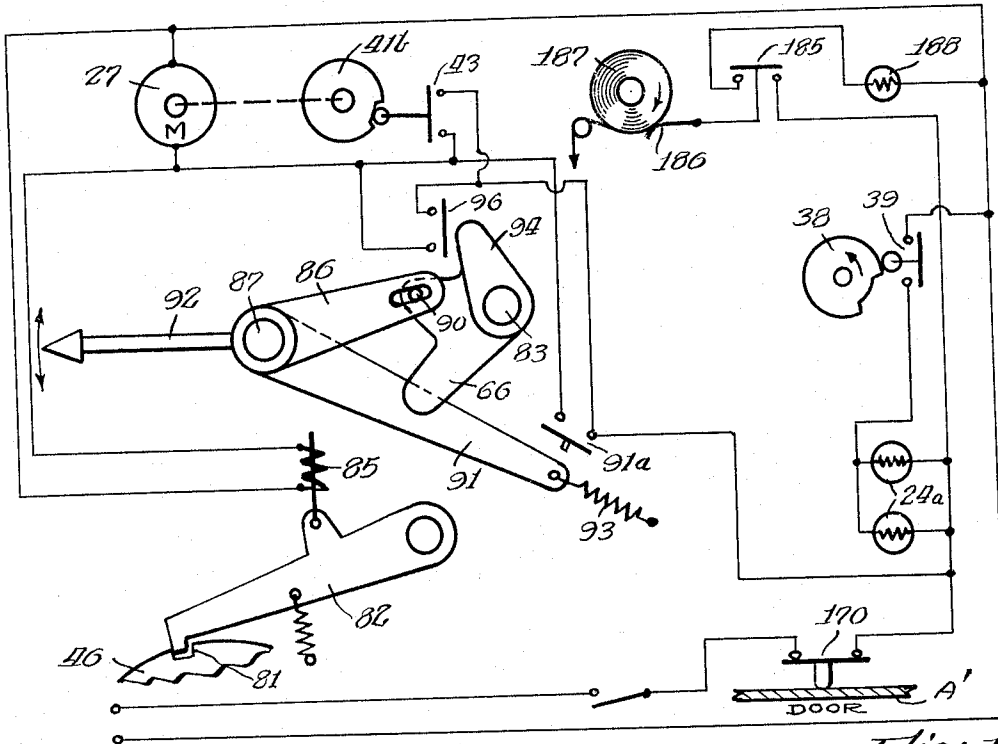


Fig. 14

Fig. 15

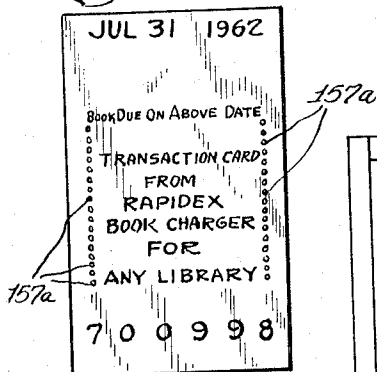


Fig. 17

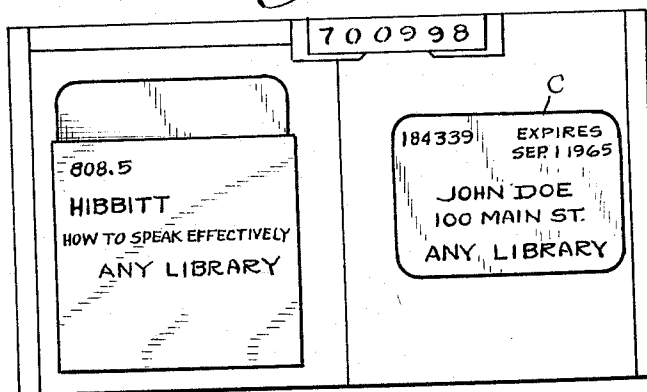
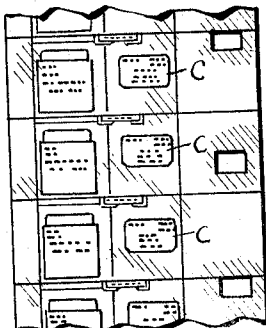


Fig. 16

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3,274,607
**COMBINATION MICROFILM PHOTOGRAPHIC
AND PRINTING APPARATUS FOR PHOTO-
GRAPHICALLY RECORDING TRANSACTIONS
AND DISPENSING PRINTED MEMORANDA
OF THE SAME**

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23 Claims. (Cl. 346—24)

This invention relates to a combination microfilm photo-
graphic and printing apparatus for photographically re-
cording transactions and dispensing printed memoranda of
the same.

One of the objects of this invention is the provision of
a combination microfilm camera and printing apparatus
for photographically recording a transaction, such as the
issuance of a library book, and concurrently dispensing a
printed section of paper tape or a ticket bearing memo-
randa indicating, for example, the identification number of
the transaction, together with the due date, as well as other
desired information or identification.

Another object of this invention is the provision, in an
apparatus of the foregoing character, of means for print-
ing on a section of paper tape desired information pertinent
to the character of the transaction and severing and eject-
ing such section from the apparatus so that one of the par-
ties to the transaction may have a printed record of the
same.

Another object of this invention is the provision of an
apparatus of the foregoing character having dual means,
each selectively operable to print different information or
memoranda on the tape or ticket section.

Still another object of this invention is the provision,
in an apparatus of the foregoing character, of means for
printing an identification number on the leading edge of
a section of tape or ticket, the leading edge being exposed
outwardly of the apparatus, and of other means for print-
ing a current date on the trailing end of the ticket so that
only an immediate transaction is recorded.

Still another object of this invention is the provision of
means for maintaining the inking roller out of engagement
with the printing type during intervals of non-use so as to
avoid bleeding of ink on the type with resultant smudging
of the printed tape section.

A further object of this invention is the provision of
means for insuring correct assembly of the dater mecha-
nism into the apparatus, in a predetermined relationship,
so as to avoid malfunctioning of the apparatus.

A further object of this invention is the provision of an
apparatus of the foregoing character which is foolproof
and efficient in operation.

Still another object of this invention is the provision of
novel means for effecting the above objectives.

Other and further objects and advantages of this inven-
tion will become apparent from the following description
when the same is considered in connection with the accom-
panying drawings, in which:

FIG. 1 is a top plan view of a combination photographic
camera and printing apparatus in accordance with the in-
vention;

FIG. 2 is a side elevational view thereof taken substan-
tially on line 2—2 of FIG. 1;

FIG. 3 is a cross-sectional view taken substantially on
line 3—3 of FIG. 4;

FIG. 4 is an elevational view taken substantially on line
4—4 of FIG. 3, with the cover panel removed;

FIG. 5 is an elevational view taken substantially on line
5—5 of FIG. 3;

FIG. 6 is an elevational view taken substantially on line
6—6 of FIG. 4;

FIG. 7 is a cross-sectional view taken substantially on
line 7—7 of FIG. 6;

FIG. 8 is a cross-sectional view taken substantially on
line 8—8 of FIG. 4;

FIG. 9 is a fragmentary elevational view similar to FIG.
7, with a number of parts removed to more clearly reveal
the remaining parts of the mechanism which are in differ-
ent operative relationships from those illustrated in FIG. 7;

FIG. 10 is a cross-sectional view, on an enlarged scale
taken substantially on line 10—10 of FIG. 6;

FIG. 11 is an exploded view of the printing cylinder of
the apparatus;

FIG. 12 is the timing chart showing the sequence of
operations taking place during an operational cycle of the
apparatus;

FIG. 13 is a fragmentary elevational view similar to
FIG. 7, showing the relationship of the parts correspond-
ing to line 13—13 of FIG. 12;

FIG. 14 is a wiring diagram of the electrical circuit of
the apparatus of the invention;

FIG. 15 is a plan view of a tape section or ticket illustrat-
ing a representative transaction which is dispensed by the
apparatus of the invention;

FIG. 16 is a fragmentary plan view of a section of 16
mm. film illustrating a consecutive series of transactions
as recorded on the film;

FIG. 17 is an enlarged plan view of a single frame of
exposed film, and

FIG. 18 is a cross-sectional view of a structural detail
showing the same in a different position of operation from
that illustrated in FIG. 7.

Referring to the drawings, the numeral 20 indicates a
housing containing the apparatus of the invention, herein-
after to be described. A camera and film magazine 21
and 22 respectively, of generally conventional construc-
tion, are mounted on said housing, and a hood 23 enclos-
ing a light source 24a is arranged above a platform 24 on
which the object to be photographed is supported. The
camera 21 is operatively connected to the mechanism of
the apparatus, as is the light source 24a, so that both the
camera and the light source are activated in synchronism
with the operation of the apparatus, as will be hereinafter
explained.

The housing 20 is shaped substantially as illustrated and
is provided with an intermediate vertical wall 26 which
divides the housing into two compartments A and B, hav-
ing removable side wall closures A' and B' respectively.
Housed in compartment A is a motor 27 which drives a
shaft 28 through intermediate gears 29 and 31. The shaft
28 is journaled in bosses 32 integral with the wall 26. A
link 33 is connected to an eccentric point on gear 31 and
also to a lever 34 pivoted as at 35 and connected by a link
36 to the film transport and shutter mechanism of the
camera 21. On the opposite end of shaft 28, which ex-
tends into compartment B, is fixed a sprocket wheel or
pulley 37, having one flange thereof provided with a cam-
ming portion 38 arranged to activate microswitch 39 con-
trolling the circuit to the light source 24a. The sprocket
wheel 37 drives a sprocket wheel 41 through transmission
belt 42. Proper tension on belt 42 is maintained by an
adjustable roller 42a. The sprocket wheel 41 is mounted
on shaft 44 journaled in boss 46 integral with the wall 26
and has a camming portion 41a on one of its flanges.
Fixed contiguously to the other flange of sprocket wheel 41
is a cam plate 41b arranged to cooperate with a follower
arm operatively connected to a microswitch 43. The
arrangement provides means for maintaining the circuit
to the motor 27 closed for one complete revolution of shaft
44 (FIG. 14). The shaft 44 extends into compartment

A and fixed on its end is a printing cylinder, indicated generally by the numeral 45.

The printing cylinder 45 (FIG. 11) comprises a circular end member 46' fixed on shaft 44 and having a laterally extending arcuate arm 47 whose center of radius of curvature is coincident with the axis of shaft 44. A pair of spaced posts 48 and 49 are supported in bosses on end member 46' and extend laterally thereof in the same direction as the arcuate arm 47. A camming member 51 is adapted to rock or pivot through a limited angle about shaft 44 and is spaced from end member 46' by a washer 51a. A spring washer 52 interposed between camming member 51 and a washer 52b provides a desired degree of friction to prevent inadvertent movement between camming member 51 and end member 46'. A retaining ring 52a received in a groove at the end of shaft 44 maintains the parts in assembled relation. The camming member 51 is provided with a pair of slots 53 and 54 and a projection 56 which under certain conditions of operation, as will be hereinafter explained, extends beyond the periphery of end member 46'.

Fixed on arm 47 is a bracket 55 (FIG. 7) which supports a number head 57 arranged to advance automatically one digit with each operational cycle. The number head 57 includes a plurality of number wheels 57a, six in this instance, each carrying a series of type numerals for purposes of printing, as will be hereinafter explained. It will be understood that instead of numerals one or more of the wheels 57a may employ letters of the alphabet or other indicia so as to afford desired combinations. The wheels are manually resettable.

Each number wheel 57a includes a conventional contiguous gear 57b which cooperates with a spring biased pivoted pawl 57c which serves to restrain the number wheel against inadvertent rotation, but permits the number wheel to advance step by step to consecutive positions. A weighted lock member 57d is pivotally supported on bracket 55 and is arranged during rotation of the printing cylinder 45 to swing in a position of engagement with all of the pawls 57c, thereby to lock the number wheels 57a against movement in the course of a printing operation, as illustrated in FIG. 18.

Fixed on the end of the main shaft 58 of number head 57 is a cam finger 59 which in the course of each revolution of the number head 57, as will be hereinafter explained, engages a stationary roller 61 and is thereby caused to effect rotation of shaft 58 to advance the units or digits wheel to the next consecutive number. Roller 61 is supported on an axially slidable shaft 60 having an enlarged head 60a. The roller 61 may be moved out of the path of travel of finger 59 when closure panel A' is open to prevent actuation of number head 57, in cases when it is desired to operate the apparatus for testing purposes and it is not desired to advance the numbering during such intervals.

A pair of date printers 62 and 63 of identical construction are pivotally supported on posts 48 and 49 respectively. Each date printer includes a plurality of endless bands 64 carrying printing indicia to indicate the days, months and years, the bands being manually movable to effect a desired setting. Pins 70 and 71 carried on the date printers 62 and 63 respectively, engage in the slots 53 and 54 respectively, of the camming member 51. The projection 56 is adapted to engage against a manually movable cam element 66 supported on rocking shaft 83 when the element 66 is moved manually into the path of travel of the projection 56 to effect rocking of the camming member 51 in relation to the end member 46. Through the medium of the pins 70 and 71 cooperating with the slots 53 and 54 respectively, the date printers 62 and 63 are correspondingly rocked, but in relatively opposite directions, the date printer 62 being thus moved to operative position while the date printer 63 is moved to inoperative position. In normal operation the date printer 63 generally is disposed in operative or printing position.

A reset lever 74 is pivotally mounted on end member 46', as at 76. The inner end portion 74a of the lever is provided with an elongated slot 78 in which is received a pin 79 fixed on an extension of camming member 51. The outer end portion 74b of the reset lever in normal operation is disposed out of the path of stationary roller 77 so that it cannot engage the same. However, when date printer 62 is rendered operative by reason of the camming member 51 being rocked upon engagement with cam element 66, reset lever 74 is correspondingly rocked through the medium of slot 78 and pin 79 to project lever portion 74b into the path of roller 77. Engagement of this lever portion with roller 77 effects a reverse rocking of the reset lever 74 which returns the camming member 51 to normal position and in turn rocks date printer 62 to inoperative position and date printer 63 to operative position. A spring 65 stretched between posts 62a and 63a carried on date printers 62 and 63 respectively, biases the date printers in directions towards each other and facilitates movement to operative and inoperative positions.

End member 46 is provided with a peripheral notch 81 arranged to receive one end of a pivoted dog 82. When the dog is received in the notch, as illustrated in FIG. 7, the printing cylinder 45 is locked against rotational movement. The dog 82 is pivotally supported on shaft 83 and is provided with a pierced ear 84 which is connected to the armature of a solenoid 85 which when energized draws the dog 82 out of the notch 81 freeing cylinder 45 for rotation. A spring 97 normally urges the dog 82 into engagement in the notch 81 locking cylinder 45 against rotation.

An actuating member 86 is fixed on one end of shaft 87 journaled in bearing bosses 88 integral with wall 26. Member 86 is provided in its end portion with a slot 89 in which is received a pin 90 fixed on cam element 66. An actuating lever 92 extending outside of the housing, is rigidly connected at one end to shaft 87 and is arranged to be manually operated. The cam element 66 responds to movement of the lever 92. When lever 92 is rocked upwardly cam element 66 is caused to assume the position illustrated in FIG. 9, where it is disposed in a position to engage with the projection 56 of camming member 51 to move the date printer 62 to operative position and date printer 63 to inoperative position. When lever 92 is rocked downwardly cam element 66 is caused to assume the position illustrated in FIG. 7, out of contact with projection 56. In such condition date printer 63 is in operative position.

Shaft 87 projects into chamber B (FIG. 5) and fixed thereon is an arm 91 to the free end of which is connected a coiled tension spring 93 anchored to a stud 93a fixed in wall 26. Arm 91 when rocked upwardly by lever 92 engages microswitch 91a, actuating the same to close the electrical circuit to the solenoid 85, effecting energization of the same to release dog 82 from notch 81 so that printing cylinder 45 may rotate.

Fixed on rocking shaft 83 is an arm 94 which is arranged to engage microswitch 96 which also is connected in electrical circuit with solenoid 85. Accordingly, when lever 92 is rocked upwardly to rock cam element 66 to the position illustrated in FIG. 9, arm 94 will be rocked into engagement with microswitch 96, thereby effecting release of the printing cylinder for rotation. As will be apparent by reference to the circuit diagram (FIG. 14), actuation of either microswitch 91a or 96 will result in closing of the circuit to the motor 27 so that the printing cylinder 45 will make one complete revolution. Thus, it will be apparent that when the operator moves the actuating lever 92, either up or down, and immediately releases it, lever 92 and associated mechanism are caused to return to normal inoperative position, as illustrated in FIG. 5.

An inking roller 108 is rotatably supported on the lower end of arm 109 which is pivotally supported as at 110 on a bracket 111. The arm 109 is provided with a lateral extension carrying a pin 112. The bracket 111

similarly carries a pin 113 and a spring 114 stretched between the pins urges the roller 108 in a direction to engage against the printing elements of the several components of the printing cylinder when said components are moved into engagement with the roller. A pin 109a projects laterally from an arm 109 and is arranged to engage bracket 111 to limit movement of the arm 109 and roller 108 in a clockwise direction of rotation. Referring to FIGS. 7 and 9, it will be seen that roller 108 is separated from the dater printer 63 during the intervals of non-operation of the apparatus, thus avoiding bleeding of ink from the roller on to the printing elements and precluding the possibility of smudging the printed material.

A Geneva mechanism includes a four station disk 116 fixedly mounted on gear 117 in adjacent parallel relationship, the gear being freely rotatable on shaft 118. The disk 116 includes four slots 119 spaced 90° apart, with four locking arcs 121 disposed intermediate the slots 119. As the printing cylinder 45 rotates in its cycle, a roller 122 carried on the rearward face of end member 46 is caused to engage consecutively in one of the slots 119 and effect rotation of the disk 116 and correspondingly the gear 117. Rotation of the gear 117 is arrested when the lock ring 123 which is integral with the rearward face of end member 46 and concentric with its rotational axis, is caused to engage one of the locking arcs 121 of disk 116. The operation of the Geneva mechanism is well known and will not be described in detail. Suffice it to say that gear 117 is intermittently driven and correspondingly drives gear 124 which is fixed to shaft 125 carrying feed roller 126. The feed roller 126 is provided with a pair of spaced circumferentially extending O-rings 127 and operates against a back-up roller 128.

A roll of paper tape 129 is supported within a housing extension 131 supported on a rearward wall of the housing 20. The roll of paper 129 passes through an opening in said rearward wall, into the interior of compartment A, is trained over a flanged guide roller 132 and passes between the feed roller 126 and back-up roller 128. Referring to FIG. 7, it will be seen that the back-up roller 128 is supported on an arm 133 which is pivoted as at 134. The terminal portion of arm 133 has fixed thereto a flat spring 136, the end portion of which is arranged to frictionally engage against the tape 129 and to tension the same so as to eliminate slack. The lower portion of the rearward wall of housing 20 is open and is provided with a pivoted closure panel 137 and a locking element 138. When the closure panel 137 is rocked clockwise, as viewed in FIG. 7, to open position, the spring 136, which when in operative position normally engages against the paper tape, is caused by gravity to swing in a clockwise direction lowering roller 128 so as to permit threading of the tape in the space between the rollers 126 and 128.

A stationary cutter blade 137' is disposed adjacent to the roller 126 and arranged so that the paper tape 129 in its movement wipes the cutting edge of said cutter blade. A movable cutter blade 141 is disposed in co-operative relationship to cutter blade 137' and is pivotally supported at one end as at 139. At the opposite end the cutter blade 141 has a pin 142 which engages in a camming slot 143 provided in a bracket 144. Said bracket extends transversely through an opening 145 in the intermediate wall 26 into compartment B terminating in an upwardly directed arm 146 to which is connected a tension spring 147 which tends to bias the bracket in a downward direction, thereby maintaining the cutter blades in separated relation. Rigidly connected to the bracket 144 is an offset arm 148 pivotally supported on wall 26, as at 149. The arm 148 terminates in a follower roller 151 which engages against cam 41a. Spring 147 normally biases the roller 151 against cam 41a. It will be seen that when the high point of cam 41a acts on

roller 151, arm 148 is caused to rock in a clockwise direction and effect upward movement of the bracket 144. This movement influences the cutter blade 141 to cut through the paper tape 129 passing between the co-operating knife blades.

The paper tape section, after cut off, is caused to travel on a flat printing platen 152 which is supported on a plurality of springs 153, the paper tape section being confined between two longitudinally extending guide members 154 to insure accurate location of the paper section. A resilient finger 156 bears upon the paper tape section as it passes on the supporting platen for the purpose of maintaining the section in flat condition and preventing transverse buckling. The springs 153 afford compensation for dimensional variations in the different printing components and the adjusting screws 155 provide for adjustment of the length of the paper sections to be cut from the tape 129.

The arcuate arm 47 of the printing cylinder 45 carries on its outer surface two spaced lines of printing indicia elements 157 with adjacent indicia elements being longitudinally contiguous to each other so as to afford substantial continuity throughout the full line of elements. This is essential, since it is the engagement of the lines of indicia with the paper tape section which advances the paper section through the apparatus. As seen in FIG. 15 which illustrates a printed paper tape section, the indicia elements 157a may be in the form of a series of short dash lines or any other suitable form or design. The arm 47 additionally may carry type characters arranged between the parallel lines of indicia elements 157 to print any desired legend or information on the ticket which is ejected from the machine.

It is noted that the back-up supports for the type characters of the number head 57 and the date printers 62 and 63 have curved surfaces, the radius of curvature in each case being identical with that of the back-up support mounted on the surface of the arcuate arm 47. Thus, all of the type characters and indicia of the several printing components of the printing cylinder 45 are all on the same circle and all equidistant from the axis of rotation of the printing cylinder when the components are in operative position.

As was hereinbefore noted, the date printers 62 and 63 are designed for removal from the printing cylinder 45 for the purpose of the changing of the date settings. This, of course, may be a daily procedure. In order to insure proper reassembly of the date printers on the printing cylinder, wings 159 and 160 are provided on end member 46. Said wings serve as guides and abutments to limit the rotational movement of each date printer about its respective post in the course of assembly and insure that the pins 70 and 71 of the respective date printers will be engaged in the slots 53 and 54 respectively, of the camming member 51. The date printers are secured in assembled position by spring biased detent means.

A normally open switch 170 mounted on the rear wall of the housing 20 is arranged to be closed by engagement with the closure panel A' when the same is disposed in closed position. This insures that the electrical circuit to the motor 27 will remain open during the interval in which the panel A' remains open so that inadvertent operation of the apparatus under such conditions is prevented.

Within the film magazine 22 there is provided a micro-switch 185 (FIG. 14) arranged to be actuated by a finger 186 which is adapted to bear on the supply reel of film 187. When the film supply is exhausted or nearly so, switch 185 is caused to be closed to energize a signal lamp 188 to warn the operator that a new film supply is required for continued operation.

While the operations of the various elements have been set forth as part of the description, for a clearer understanding of the complete operation of the apparatus it is

deemed desirable to review the operating characteristics in proper sequence.

Assuming that the number head 57 and date printers 62 and 63 have been adjusted and paper tape 129 has been threaded through the apparatus, the parts are in the non-operative relationship illustrated in FIG. 7. The item to be recorded is placed on platform 24 below the camera 21. In the example illustrated, the item to be recorded is a library book (FIG. 17) which has been opened to display the identification of the book, for example, the number, author and title shown on the left hand side. In recording a transaction, the operator places the library identification card C of the borrower on the right hand side of the book before initiating operation of the apparatus. The number shown at the top of the film frame (FIG. 17) identifies the transaction and will be hereinafter explained.

To initiate an operational cycle, lever 92 is moved downwardly and immediately released. Arm 91 thereby is rocked clockwise, as viewed in FIG. 5, to actuate switch 91a which closes the circuit to motor 27 and solenoid 85 which withdraws dog 82 from notch 81 and permits the motor to rotate the printing cylinder 45. Cam 41b acting on microswitch 43 maintains the circuit to motor 27 closed for one complete revolution of the printing cylinder 45, after which dog 82 again drops into notch 81. Cam element 66 occupies the position illustrated in FIG. 7 wherein it is out of engagement with projection 56 so that date printer 63 is disposed in operative printing position.

Operation of motor 27 effects rotation of gear 31 which through connecting links 33 and 34 actuates arm 36 which operates the film transport and shutter mechanism of camera 21. Sprocket wheel 37 with its camming portion 38 is concurrently rotated effecting actuation of microswitch 39 which closes the circuit to the light source 24a energizing the lights thereof, said lights remaining illuminated only during the interval in which the follower on the microswitch 39 rides in the valley portion of cam portion 38. During this interval a single frame of film is advanced and exposed to photographically record a transaction.

As the printing cylinder 45 rotates in a clockwise direction, as viewed in FIG. 7, the date printer 63 which is in operative position is carried into printing engagement with the paper tape 129 lying on platform 152. The type characters of date printer 63 engage the surface of the paper tape, printing the date thereon. The tape which at this point has been severed, as will be hereinafter explained, is urged by the rotational movement of the printing cylinder 45 outwardly through slot 161 so that it may be accepted by the borrower of the book as a record of the transaction. The tape section thus ejected from the apparatus will carry the indicia, as illustrated in FIG. 15.

As roller 122 is caused to be revolved it engages in one of the slots 119 of the Geneva disk 116 and effects rotation of the same, causing gear 117 to drive gear 124 and feed roller 126, thereby advancing the paper tape towards slot 161 in a position to be contacted by the type characters on the printing cylinder. Disk 116 can only rotate 90° because lock ring 123 will engage in a corresponding locking arc 121 to lock the Geneva disk 116 against movement. At substantially that point the lower knife blade 141 is actuated, as was hereinbefore described, to sever the tape lying across the blade. The leading end of the severed paper tape section is disposed in a position so that it is in printing engagement with the type characters of the number head 57 which print the transaction number on the leading end of the tape section. During such engagement the number wheels 57a are locked against rotation, as previously described, and the tape section is caused to be moved to the left, as viewed in FIG. 7. Immediately thereafter said tape section is again engaged by the indicia elements 157 carried on the printing cylinder which,

in the course of printing as said cylinder rotates, further advance the tape section to the left. It will be seen that the parallel lines of indicia elements 157 serve to effect continuity of movement of the severed paper section through its prescribed travel. At the point where the indicia elements 157 separate from the severed paper section, the section has been moved to the left to a point where only the transaction number printed on the leading end portion of the paper section extends through slot 161 and is exposed to view, while the remaining portion of the paper section is still disposed within the apparatus. The printing cylinder 45 will continue to rotate in its cycle to a point where dog 82 under the influence of spring 97 will again engage in slot 81 to lock the printing cylinder against rotation.

After each operational cycle the leading end portion of each severed paper section bearing the transaction identification number is disposed as hereinbefore described, in such position that the operator may place a book immediately thereunder and photograph the combination in the manner illustrated in FIG. 17. It will be understood that before an operational cycle is initiated by manipulation of the actuating lever 92, the printing of the transaction number and the other informational material, except the date, will have been completed on the tape section. It is not intended that this tape section be removed until it is automatically ejected from the apparatus, subsequent to the photographic operation, when it is contacted by the date printer which, in addition to printing the date on the trailing end of the tape section, also effects ejection of the section. Thus, in any one operational cycle, a date is printed on the trailing edge of a tape section which already bears the transaction number and other informational material and, as this section is ejected from the apparatus, a succeeding tape section is being imprinted with a number and the informational material and is caused to be moved into the position occupied by the preceding section, in readiness for the next transaction. In each operational cycle the number head 57 is caused to be advanced one unit or digit by the cam finger 59 engaging against roller 61.

Should the operator desire to render the second date printer 62 operative for the purpose of printing a different date on the severed tape section, for example, a date two weeks later than that set on date printer 63, then the operator merely actuates the lever 92 upwardly (FIG. 14), causing arm 94 to be rocked to engage against microswitch 96 closing the circuit to motor 27 and solenoid 85, similarly as in the first instance, thereby releasing printing cylinder 45 for rotation. With such movement cam element 66 assumes the position illustrated in FIG. 9, where the end thereof is disposed in the path of travel of the projection 56 of camming member 51, so that said projection engages against the cam element 66 and rocks camming member 51 to the position illustrated. This movement projects date printer 62 to operative position and date printer 63 to inoperative position so that only the type characters of date printer 62 may print on the tape section. It will be understood that when the date printer 62 is in the position illustrated in FIG. 9, the portion 74b of reset lever 74 is so disposed that in the rotation of the printing cylinder it will engage against roller 77 and will be rocked thereby in a counterclockwise direction, as viewed in FIG. 9. Correspondingly, camming member 51 is rocked so that it effects repositioning of the date printers 63 and 62 to operative and inoperative positions respectively.

It will be understood that various changes and modifications may be made from the foregoing without departing from the spirit and scope of the appended claims.

What is claimed is:

1. Recording apparatus comprising in combination a rotatable printing cylinder having a plurality of printing components, a first printable medium disposed adjacent said printing cylinder, drive means for rotating said cylin-

der, means operative during a first portion of each rotational cycle to effect printing and ejection of said first medium by one of said components, and means operative during a second portion of said rotational cycle to effect printing on a second printable medium by another one of said components and to linearly advance said second medium substantially tangential to and in the direction of rotation of said cylinder.

2. Recording apparatus according to claim 1, wherein said first and second printable media comprise a severed portion and an unserved portion of a single tape, respectively.

3. Recording apparatus according to claim 2, including means operative during a predetermined portion of the rotational cycle to effect severance of said second printable media from said tape.

4. Recording apparatus according to claim 1, in combination with a camera adapted for photographing a desired object and means operative in synchronism with rotation of said cylinder to effect actuation of said camera once during each rotational cycle.

5. Recording apparatus according to claim 1, wherein the printing components each have type characters and are pivotally supported on said cylinder, cam means are operatively connected to said printing components and are operative to rock said components alternately to operative and inoperative positions, and manually actuated means are operatively connected to said cam means for selectively rocking said components to operative position.

6. Recording apparatus according to claim 1, wherein one of said printing components comprises a plurality of rotatable wheels, each having on its periphery a plurality of circumferentially spaced type characters, and means automatically operative to lock said wheels against rotation during the interval of such printing engagement.

7. Recording apparatus according to claim 6, including a pawl cooperating with each of said wheels to control the rotational movement thereof, a pivotally supported member arranged to be rocked into engagement with said pawls to lock said wheels against rotation during an interval when certain of said type characters are in printing engagement with said printable media.

8. Recording apparatus according to claim 1, wherein said printing components are circumferentially spaced about said cylinder and include a number head, a date printer and a section carrying a series of contiguous type characters disposed circumferentially about said cylinder, said section being disposed in trailing relation to said number head.

9. Recording apparatus according to claim 1, including a circumferential section carrying a series of contiguous type elements disposed circumferentially of said cylinder, said section being disposed in trailing relation to one of said printing components, said type elements being effective to continue movement of said printable media while in printing engagement therewith.

10. Recording apparatus according to claim 1, wherein said printing cylinder includes a circular end member having a pair of posts arranged in spaced relation and extending laterally of the plane of said end member, a pair of arcuate wing members fixed on said end member substantially at the periphery thereof and extending laterally of said end member, each wing member being adjacent a respective post, a pair of said printing components being each removably supported on a respective post for pivotal movement about the axis of the post, said wing members being operative to accurately align said components in the course of assembly on respective posts so as to insure proper assembly.

11. Recording apparatus according to claim 1, wherein said rotatable printing cylinder has a circular end portion having a peripheral notch, a dog is normally biased in a direction to engage in said notch to lock said cylinder against rotation, solenoid operated means are opera-

tively connected to said dog and are arranged when actuated to disengage said dog from said notch to permit rotation of said cylinder, means for initiating operation of said drive means and for momentarily energizing said solenoid, separate means for continuing operation of said drive means through one complete rotational cycle of said cylinder, said last mentioned means rendering said drive means ineffective upon completion by said printing cylinder of a rotational cycle whereby said dog is caused to engage in said notch to lock said printing cylinder against rotation.

12. In a recording apparatus, a rotatable printing cylinder carrying a plurality of circumferentially spaced printing components each having type characters, a printable tape movable over a surface into engagement with said printing cylinder, drive means for rotating said cylinder through one complete rotational cycle, manually operated means for initiating operation of said drive means and continuing operation of the same through one complete rotational cycle of said cylinder, means for severing a section from said tape, means operative during a portion of the rotational cycle to effect printing by one of said components on the trailing end portion of said severed tape section and simultaneous ejection of said tape section from said apparatus, means operative during another portion of the rotational cycle to feed said tape over said surface and to effect severance of a section therefrom and printing by at least one of the other components on the leading end portion of said tape section, the severed section being moved linearly by said cylinder in the direction of its rotation.

13. The invention as defined in claim 12 in which one of the printing components is a number head arranged to increase automatically by one digit with each rotational cycle of said printing cylinder.

14. The invention as defined in claim 12 in which the second mentioned component is a date printer.

15. The invention as defined in claim 12 in which the type characters are arcuately formed, the radius of curvature in each case corresponding to the radius of curvature of the printing cylinder.

16. The invention as defined in claim 12 in which certain of the components are removably mounted and there being means on said printing cylinder for insuring accurate alinement of said components upon reassembly on said cylinder.

17. The invention as defined in claim 12 in which two of the printing components are selectively movable alternately to inoperative and operative positions and the manually operated means is selectively actuable to position either one of the printing components in operative position.

18. In a recording apparatus, a rotatable printing cylinder carrying a plurality of circumferentially spaced printing components each having type characters, a printable tape movable over a surface into engagement with said printing cylinder, drive means for rotating said cylinder through one complete rotational cycle, manually operated means for initiating operation of said drive means, means for continuing operation of said drive means through one complete rotational cycle of said cylinder, means for severing a section from said tape, means operative during a portion of the rotational cycle to effect printing by one of said components on the trailing end portion of said severed tape section and simultaneous ejection of said tape section from said apparatus, means operative during another portion of the rotational cycle to feed said tape over said surface and to effect severance of a section therefrom and printing by at least one of the other components on the leading end portion of said tape section, the severed section being moved linearly by said cylinder in the direction of its rotation, means for inking said type characters and means for maintaining said inking means in non-operative relationship to

said printing cylinder during non-operation of the apparatus.

19. Recording apparatus comprising a camera, a light source, means disposed within the range of said camera for supporting an object to be photographed, a rotatable printing cylinder carrying type characters, a printable tape movable over a surface into engagement with said printing cylinder, means for feeding said tape over said surface, drive means including an intermittently operating motor, means operatively connected to said drive means for operating said camera and said light source during a portion of the rotational cycle of said printing cylinder, means for automatically arresting rotation of said printing cylinder upon completion of a single rotational cycle, means connecting said drive means to said tape feeding means, means for inking said type characters, means for maintaining said inking means in non-operative relationship to said printing cylinder during non-operation of the apparatus, a cutter blade disposed transversely to the direction of movement of said tape for cutting said tape, and means operatively connected to said drive means for actuating said cutter blade.

20. Recording apparatus comprising a camera, a light source, means disposed within the range of said camera for supporting an object to be photographed, a rotatable printing cylinder carrying type characters, a printable tape movable over a surface into engagement with said printing cylinder, means for feeding said tape over said surface, drive means including an intermittently operating motor, means operatively connected to said drive means for operating said camera and said light source during a portion of the rotational cycle of said printing cylinder, means for automatically arresting rotation of said printing cylinder upon completion of a single rotational cycle, means connecting said drive means to said tape feeding means, means for inking said type characters, means for maintaining said inking means in non-operative relationship to said printing cylinder during non-operation of the apparatus, a cutter blade disposed transversely to the direction of movement of said tape for cutting said tape, means operatively connected to said drive means for actuating said cutter blade, and a Geneva mechanism operatively connecting said printing cylinder and tape feeding means for feeding said tape only during a fractional part of the rotational cycle of said printing cylinder.

21. Recording apparatus comprising a camera, a light source, a rotatable printing cylinder carrying a plurality of circumferentially spaced printing components each having type characters, a printable tape movable over a surface into engagement with said printing cylinder, drive means for rotating said cylinder through one complete rotational cycle, separate control means for said camera and said light source operatively connected to said drive means, means for feeding said tape over said surface, means connecting said drive means to said tape feeding means, means for severing a section from said tape, said tape severing means being operatively connected to said drive means, manually operated means for initiating operation of said drive means whereby sequentially during a first portion of the rotational cycle said camera and light source will be operated and one of said printing components will print on the trailing end portion of a severed tape section and simultaneously will eject said tape section from said apparatus, and during a later portion of the rotational cycle a tape will be fed over said surface and will be severed and the leading end portion of the severed tape section will be printed by one of the other printing components, said severed tape section being moved linearly by said cylinder in the direction of its rotation during said last mentioned printing operation.

22. Recording apparatus comprising a camera, a light source, a rotatable printing cylinder carrying a plurality of circumferentially spaced printing components each having type characters, a printable tape movable over a sur-

face into engagement with said printing cylinder, drive means for rotating said cylinder through one complete rotational cycle, said drive means including an intermittently operating motor, separate control means for said camera and said light source operatively connected to said drive means, means for feeding said tape over said surface, means connecting said drive means to said tape feeding means, means for severing a section from said tape, means for inking said type characters, means for maintaining said inking means in non-operative relationship to said printing cylinder during non-operation of the apparatus, said tape severing means being operatively connected to said drive means, and manually operated means for initiating operation of said drive means whereby sequentially during a first portion of the rotational cycle said camera and light source will be operated and one of said printing components will print on the trailing end portion of a severed tape section and simultaneously will eject said tape section from said apparatus and during a later portion of the rotational cycle a tape will be fed over said surface and will be severed and the leading end portion of the severed tape section will be printed by one of the other printing components, said severed tape section being moved linearly by said cylinder in the direction of its rotation during said last mentioned printing operation.

23. Recording apparatus comprising a camera, a light source, a rotatable printing cylinder carrying a number head and a pair of date printers and having a circumferential section carrying a series of contiguous type characters disposed circumferentially of said cylinder and in trailing relation to said number head, a printable tape movable over a rigid but yieldable surface and arranged to be engaged by said number head, date printers and contiguous type characters, said number head having a plurality of rotatable wheels, each having on its periphery a plurality of circumferentially spaced type numbers, and means automatically operative to lock said wheels against rotation when certain of said type members are in printing engagement with said tape, said date printers being selectively movable alternately to printing and non-printing positions, drive means for rotating said cylinder through one complete rotational cycle, said drive means including an intermittently operating motor, separate control means for said camera and said light source operatively connected to said drive means, means for feeding said tape over said surface, means connecting said drive means to said tape feeding means, means for severing a section from said tape, means for inking said type characters, said tape severing means being operatively connected to said drive means, and manually operated means for initiating operation of said drive means whereby sequentially during a first portion of the rotational cycle said camera and light source will be operated and one of said date printers will print a date on the trailing end portion of a severed tape section and simultaneously will eject said tape section from said apparatus and during a later portion of the rotational cycle a tape will be fed over said surface and will be severed and the leading end portion of the severed tape section will be engaged for printing by said number head, said severed tape section being thereafter engaged by said contiguous type characters and being moved linearly thereby to dispose the printed leading end portion bearing a printed number within the range of the camera.

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