Sept. 4, 1928.

1,682,765.

R. L. MULLER

COLLATING EQUIPMENT FOR ADDING MACHINES AND THE LIKE

Filed May 16, 1925

4 Sheets-Sheet 1

Fig 2.

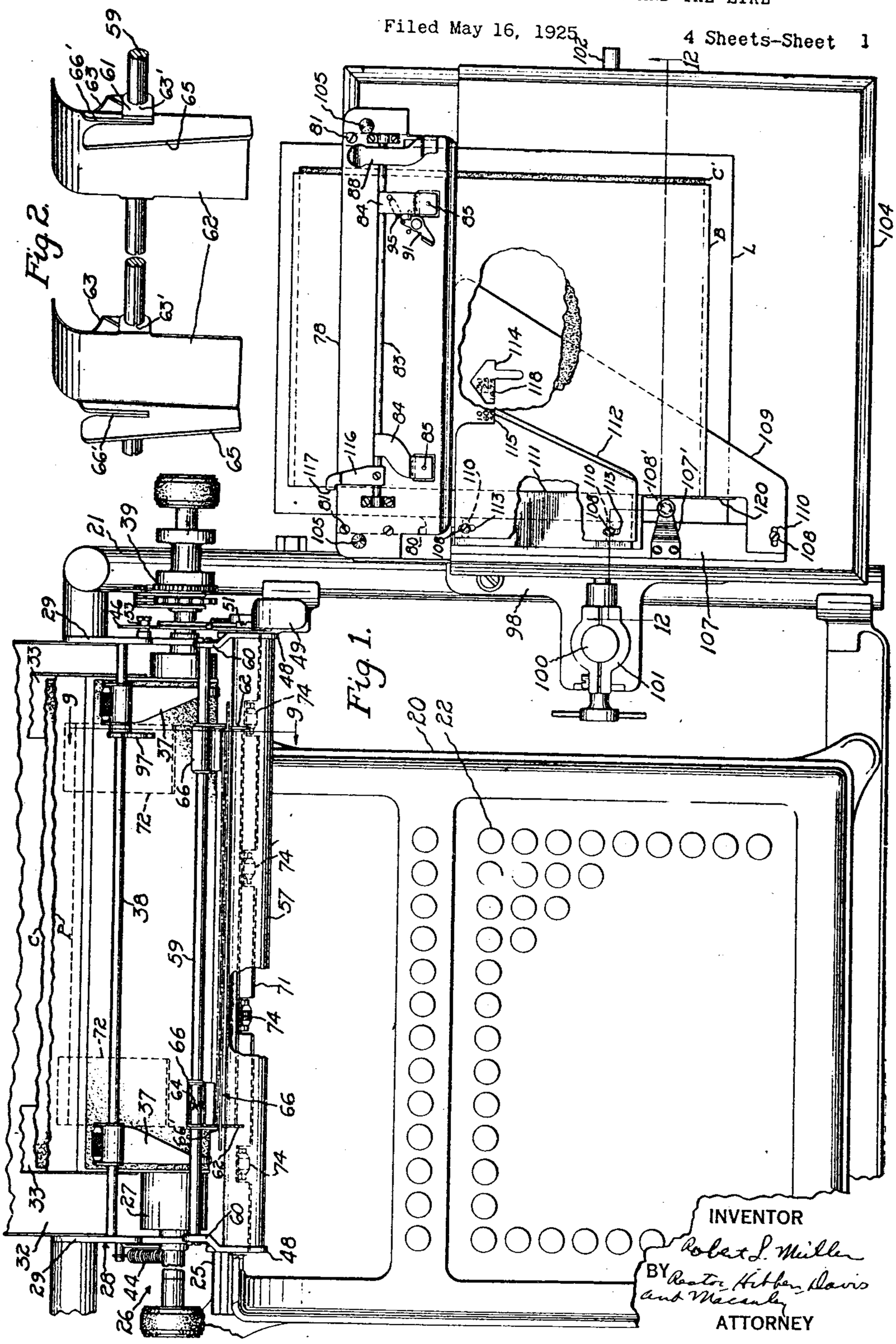

Fig. 1.

INVENTOR

Robert L. Muller

BY Reator, Hibben, Davis and Macauley

ATTORNEY

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4 Sheets-Sheet 2

Fig. 3.

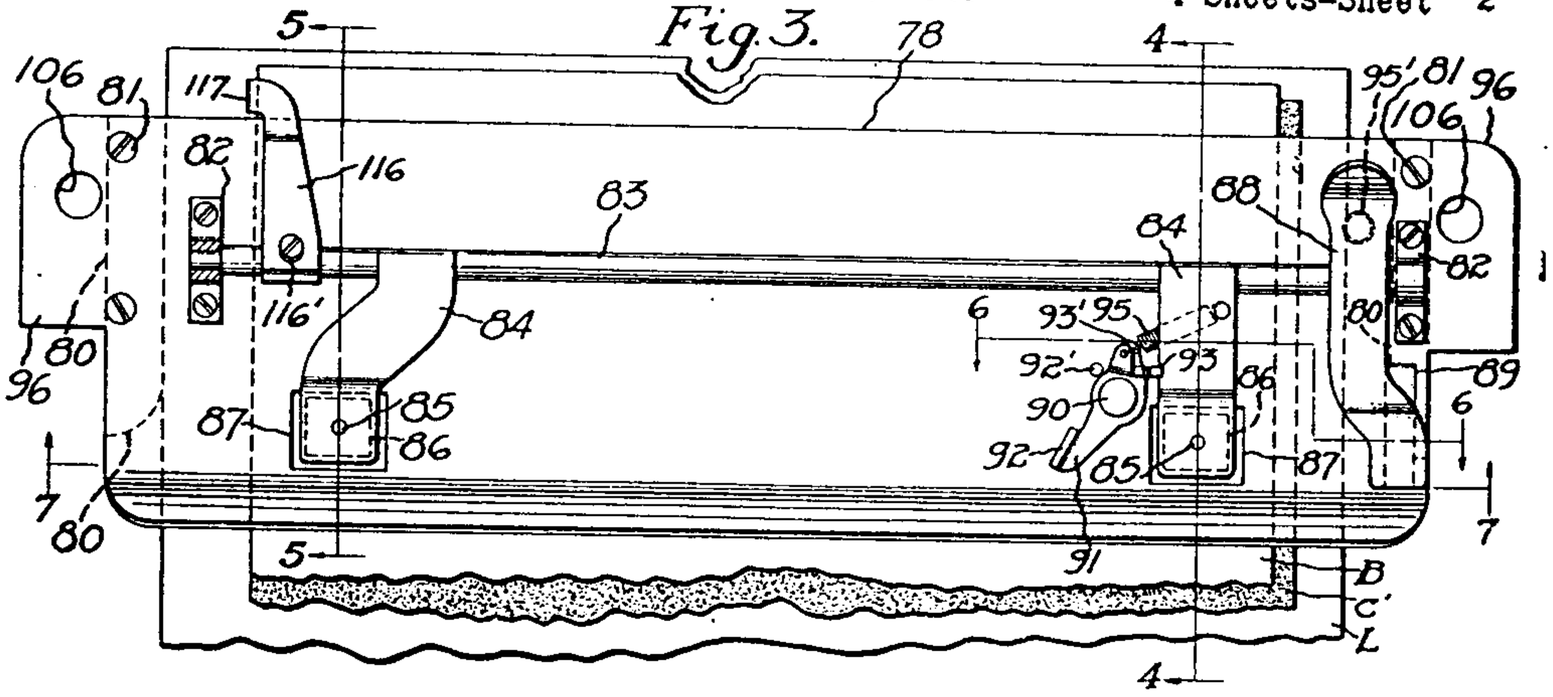


Fig. 4.

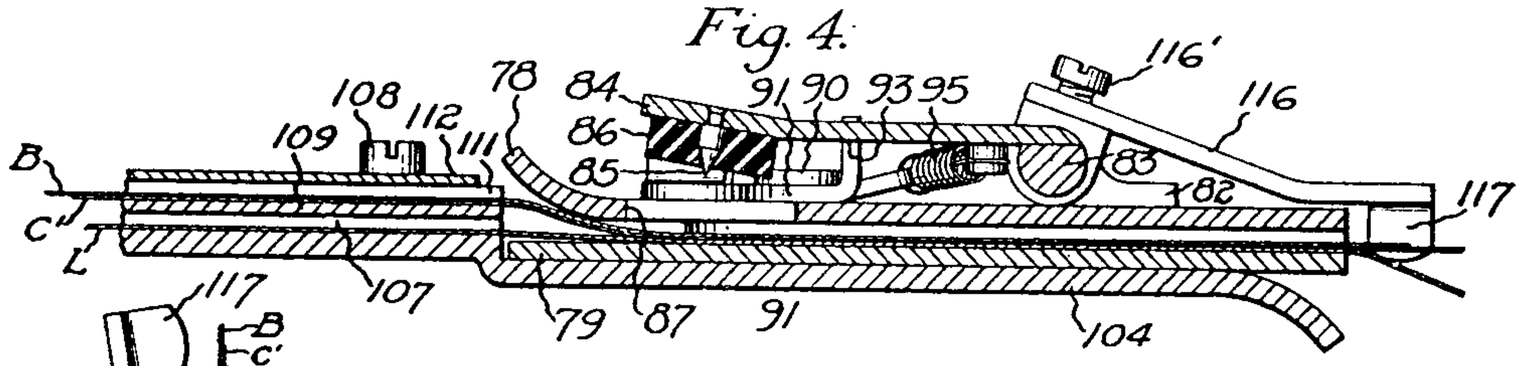


Fig. 5.

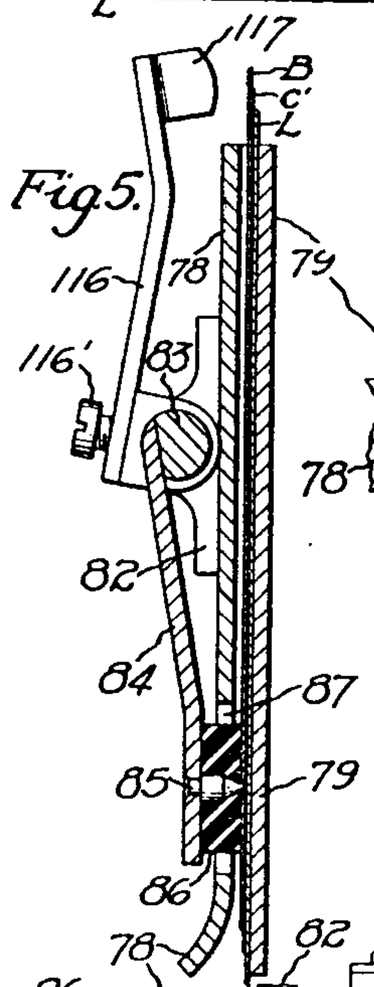


Fig. 6.

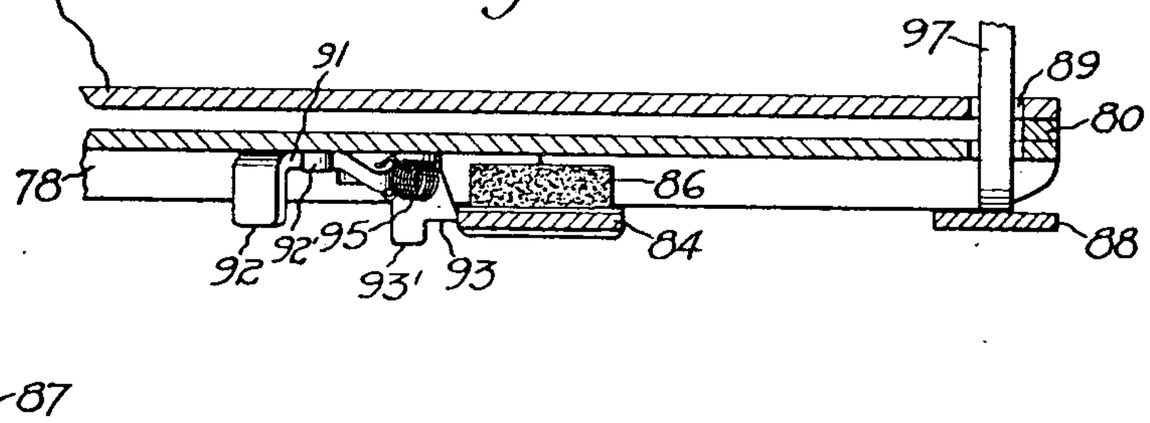


Fig. 7.

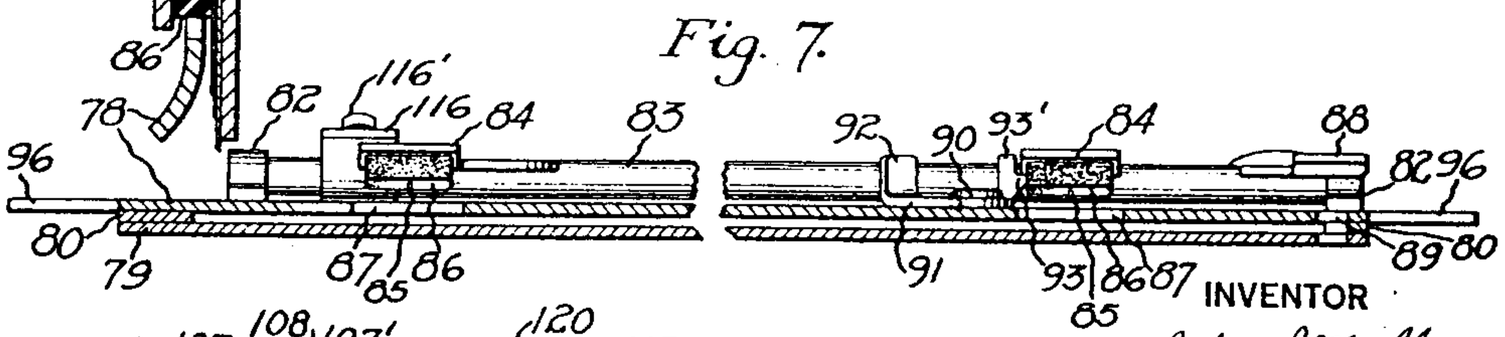
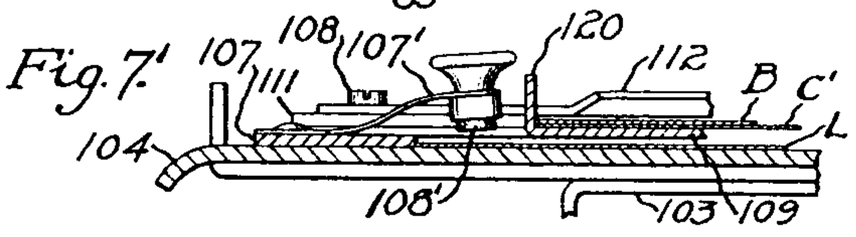


Fig. 7'



INVENTOR

Robert L. Muller

BY Rector, Hibben, Davis and Macauley

ATTORNEY

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4 Sheets-Sheet 3

Fig. 10.

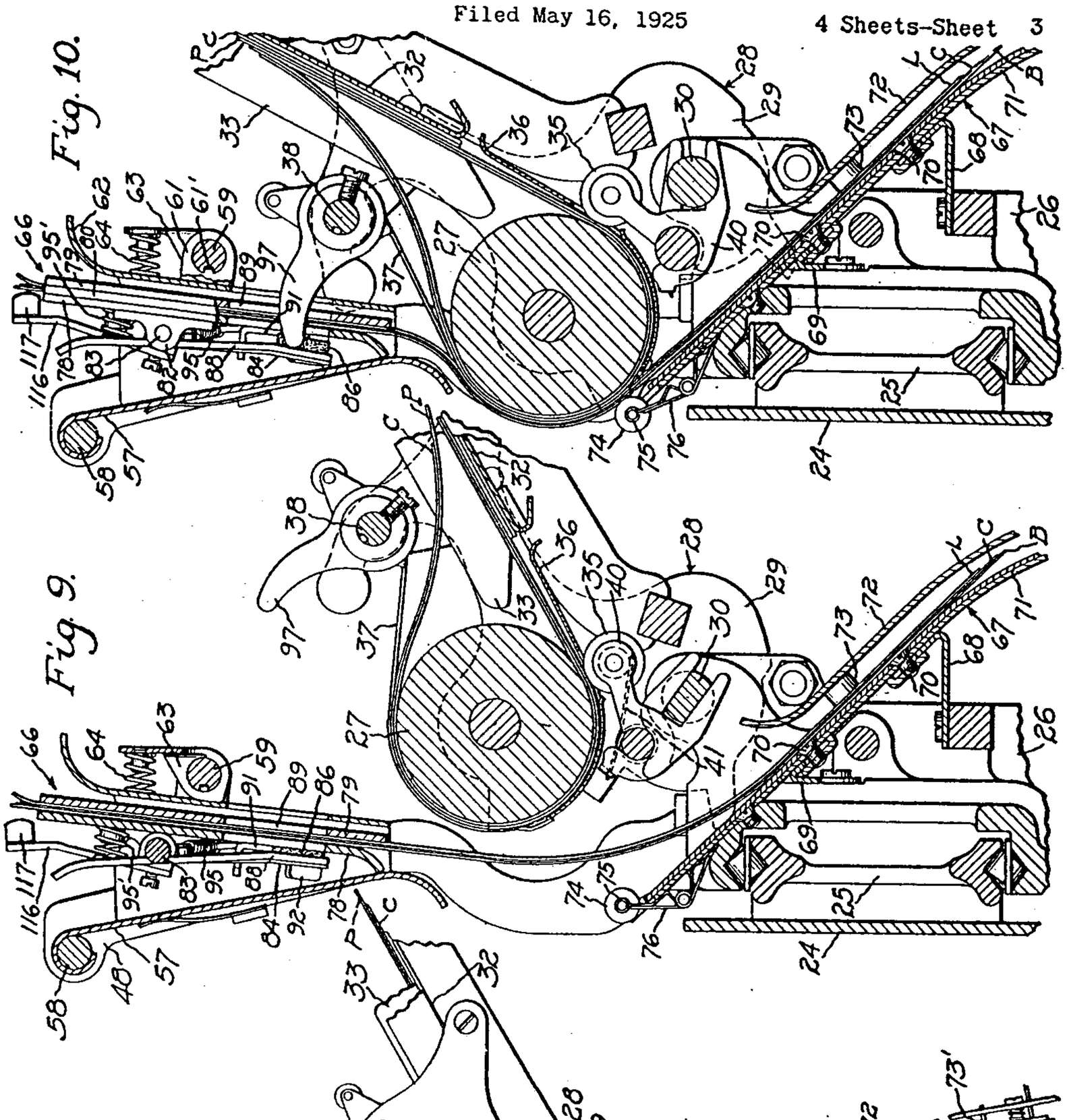
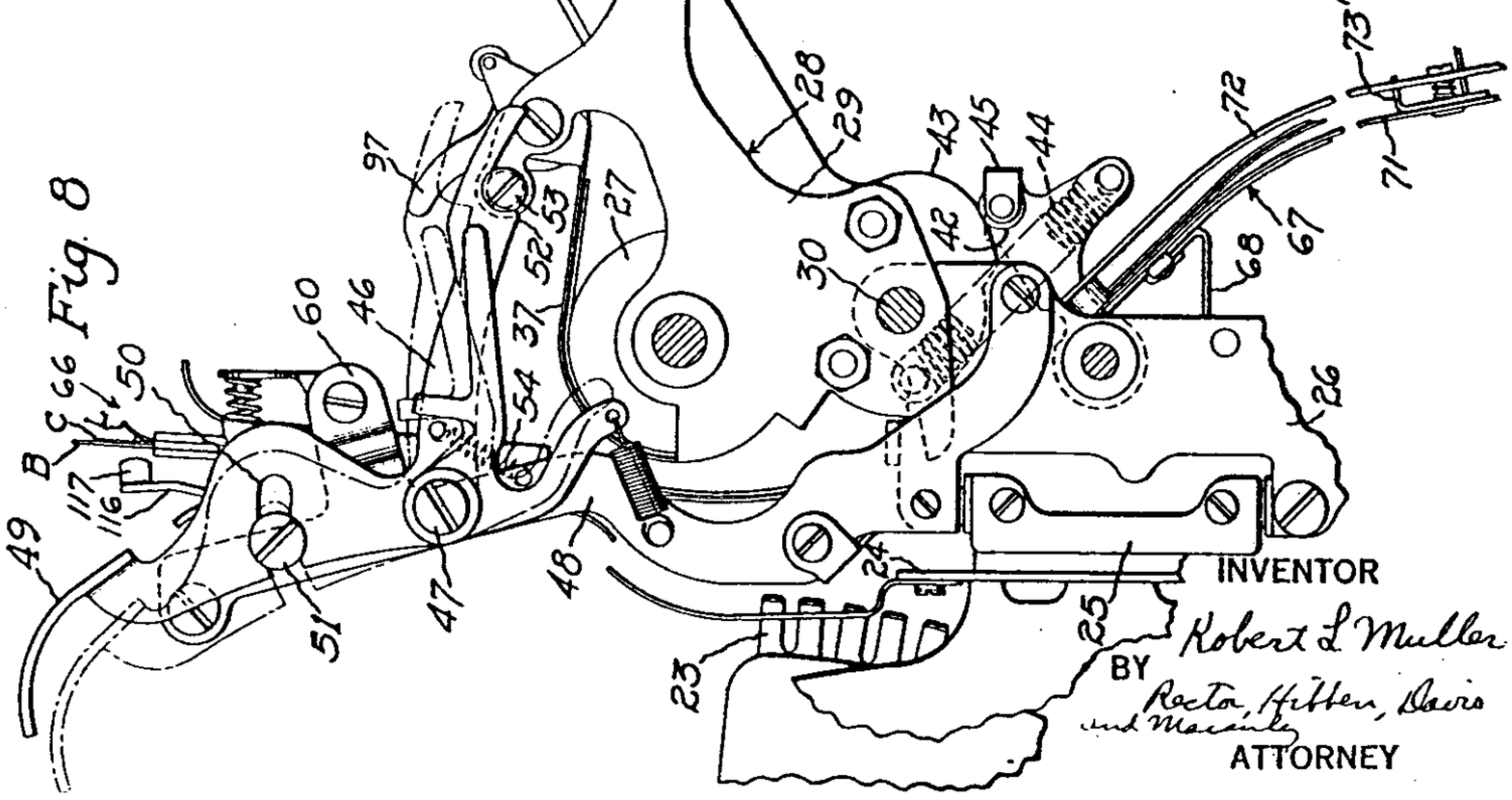


Fig. 9.

Fig. 8



INVENTOR

Robert L. Muller

BY

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4 Sheets-Sheet 4

Fig. 11.

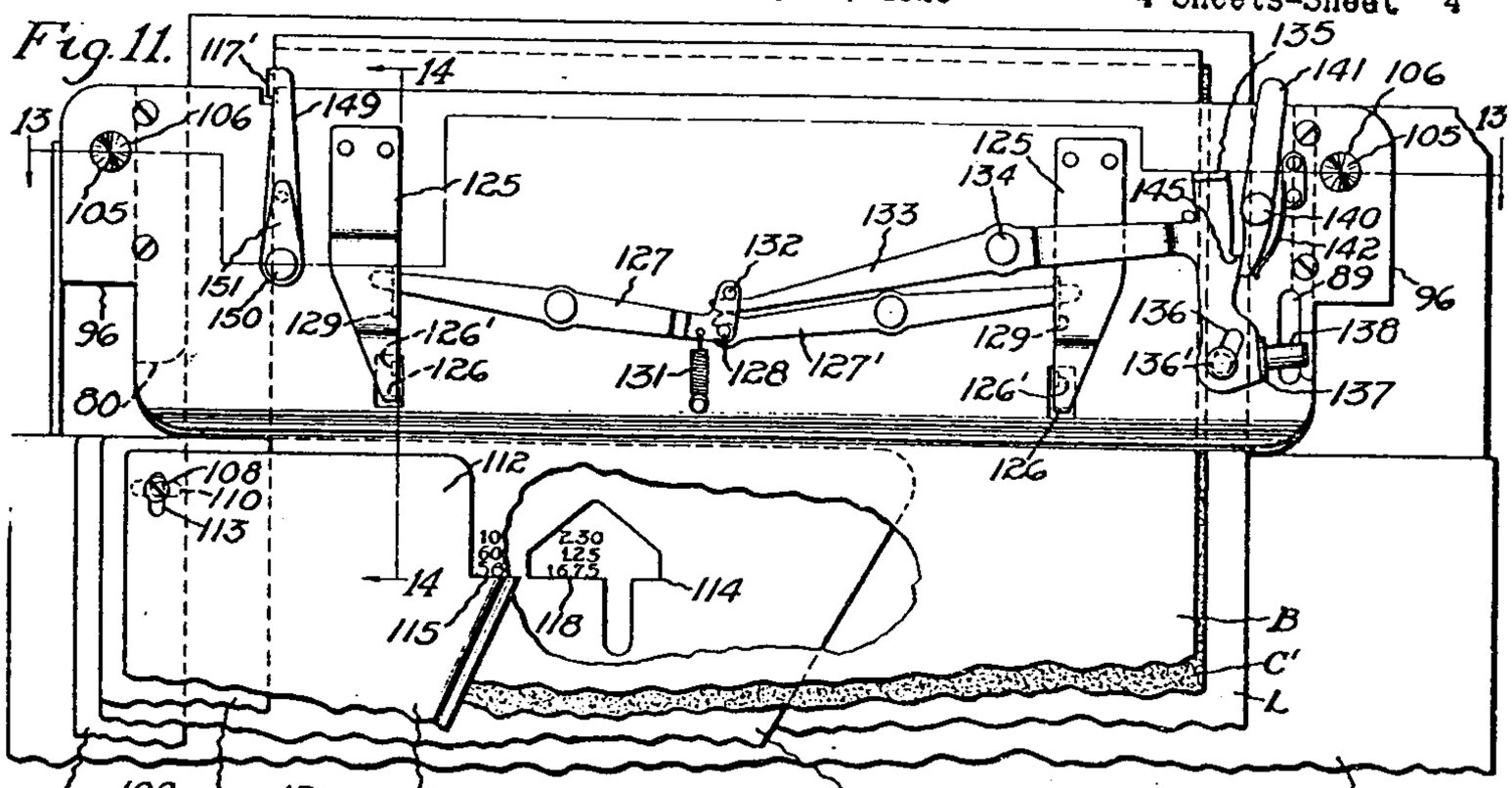


Fig. 12.

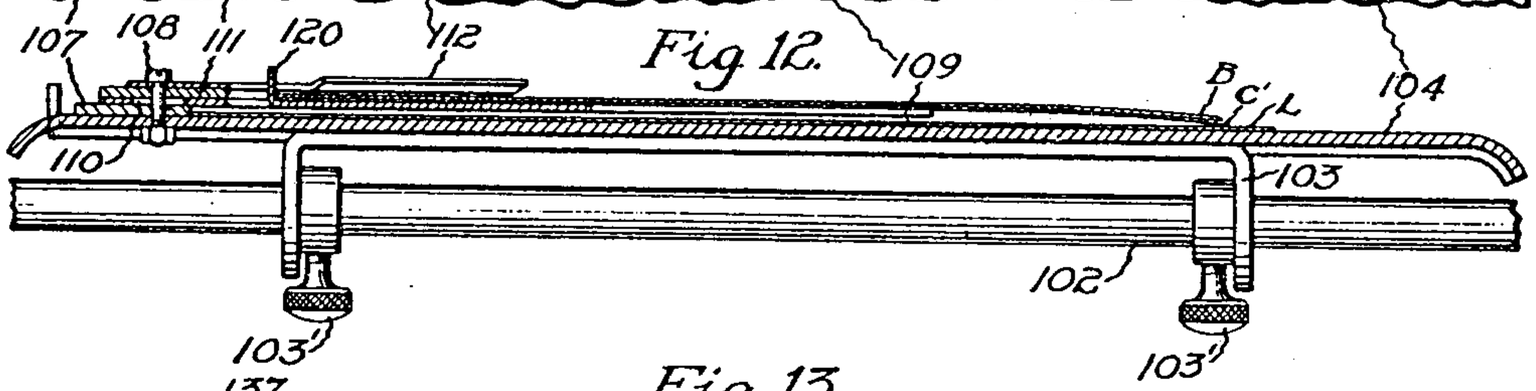


Fig. 13.

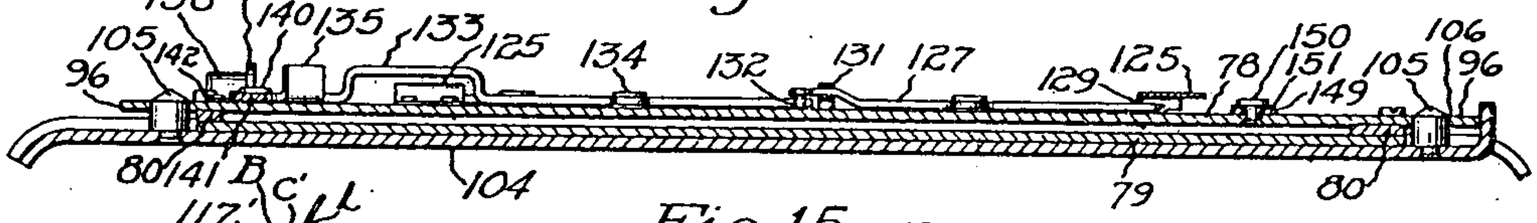


Fig. 15.

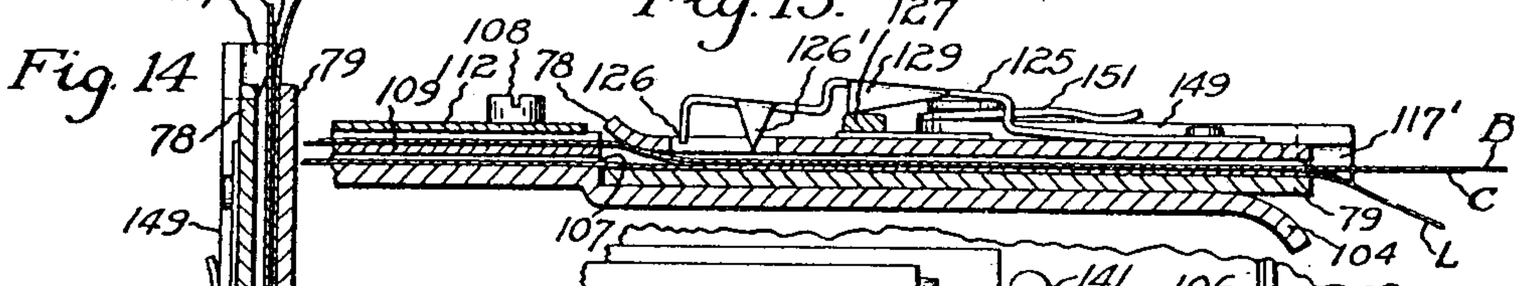


Fig. 14

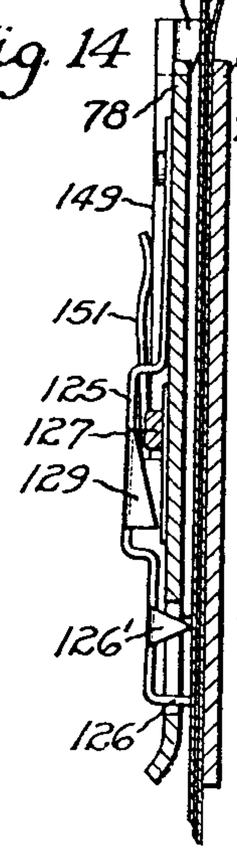
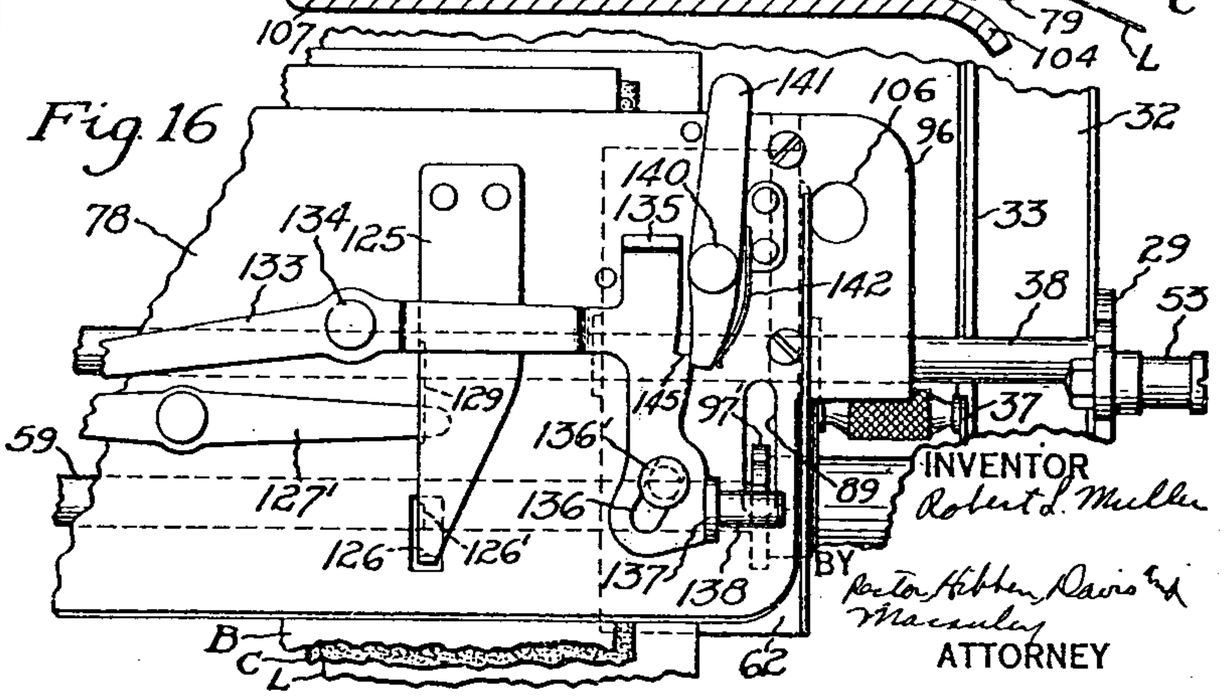


Fig. 16



Patented Sept. 4, 1928. 1,682,765

UNITED STATES PATENT OFFICE.

ROBERT L. MULLER, OF DETROIT, MICHIGAN, ASSIGNOR TO BURROUGHS ADDING MACHINE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

COLLATING EQUIPMENT FOR ADDING MACHINES AND THE LIKE.

Application filed May 16, 1925. Serial No. 30,712.

This invention relates more particularly to the equipment of adding and listing machines and the like for handling various work sheets such, for example, as ledger sheets, bills, record or proof sheets and the like.

It has been customary heretofore to assemble superimposed work sheets in proper relation around the rotatable platen of adding machines, typewriters and the like by separately inserting the sheets and positioning them around the platen, the first sheet being retained in adjusted position while the second is being inserted and properly collated with respect to the first sheet. When three work sheets are to be printed upon the first and second sheets, which are separately adjusted, are restrained from movement while the third is being inserted and adjusted. Various means have been employed for separately feeding the sheets into collated positions on the machine and restraining movement of one while another is being positioned.

The principal object of my invention is to provide equipment whereby the work sheets may be collated in a work-sheet holder while out of the machine, the holder being readily transferred from a collating table to the machine and adapted to hold the sheets in collated condition until the usual feeding means are rendered effective to grip and hold the sheets, the sheets than being fed without disarrangement by the feeding means. To this end, I provide in combination with the machine a collating table constructed to support the work-sheet holder and having finder plates facilitating adjustment of the work sheets in proper assembled relation in the work-sheet holder. The latter is provided with retaining devices for holding the work sheets in their adjusted positions relative to each other. The holder is transferred to the machine and is so supported thereon that the work sheets are located between the platen and cooperating feed rolls, the platen being then in its rear position to permit ready insertion of the holder and sheets. When the platen cradle is rocked forward to bring the platen into printing position and into cooperative relation with the feeding rolls the retaining devices on the holder are automatically disabled by an arm on the platen cradle so that the collated sheets may be fed in unison by the platen and feeding rolls. One of the sheets, for example, the tally or proof sheet, may be curled around and fed by the platen in the usual way.

Another object of the invention is to provide an improved work-sheet holder adapted to retain the work sheets in collated condition.

Still another object of my invention is to provide an improved collating table upon which the work-sheet holder may be supported in proper position and which is provided with means facilitating the positioning of the sheets with respect to each other.

With the above and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, the essential elements whereof are recited in the appended claims and a preferred form of embodiment of which is described in detail hereinafter and illustrated in full in the accompanying drawings which form part of this specification.

Of said drawings, Figure 1 is a top plan view of a Burroughs adding and listing machine, showing my invention applied thereto; Fig. 2 is a perspective view of the paper guides which are adapted to support the detachable work-sheet holder; Fig. 3 is a top plan view of the work-sheet holder, showing portions of the work sheets and the interposed carbon sheet; Fig. 4 is a cross-section taken through the rear portion of the collating table and through the work-sheet holder as on the line 4—4 of Fig. 3; Fig. 5 is a cross-section taken through the work-sheet holder as on the line 5—5 of Fig. 3; Fig. 6 is a fragmentary transverse section taken through the right-hand portion of the work-sheet holder as on the line 6—6 of Fig. 3; Fig. 7 is a transverse section taken through the work-sheet holder as on the line 7—7 of Fig. 3; Fig. 7′ is a fragmentary sectional view showing the ledger sheet pressure device on the collating table; Fig. 8 is a right-hand side elevation of the paper carriage equipment, with parts broken away; Fig. 9 is a vertical section taken through the carriage equipment, as on the line 9—9 of Fig. 1 and shows the work-sheet holder in position on the machine and the platen cradle in its rear position; Fig. 10 is a like view except

that the platen cradle is shown in its forward position; Fig. 11 is a top plan elevation of part of the collating table and a work-sheet holder embodying a modified form of the invention; Fig. 12 is a cross-section taken through the collating table as on the line 12—12 of Fig. 1; Fig. 13 is a longitudinal section taken through the modified work-sheet holder and the collating table as on the line 13—13 of Fig. 11; Fig. 14 is a cross-section taken through the modified work-sheet holder as on the line 14—14 of Fig. 11, the sheets being shown clamped in position; Fig. 15 is a similar view except that it shows a portion of the collating table and the retaining devices are shown released, and Fig. 16 is a fragmentary front view of part of the modified work-sheet holder and the carriage equipment.

The invention is shown herein as applied to the well-known Burroughs adding and listing machine, but it is understood that it is not limited in its application thereto as it is adapted for use on other types of adding and listing machines as well as on typewriters and the like. My invention is also adapted for use in handling various bookkeeping systems, but, for convenience, I will describe its use in connection with handling the bookkeeping work of customers' accounts, in which case three sheets (the customer's bill or statement, the customer's ledger sheet and the proof or tally sheet) are printed upon, the statement and ledger sheet being collated on the collating table, while the proof sheet is curled about and fed by the platen in the usual manner.

In view of the fact that the Burroughs machine is in extensive commercial use and is well known, it will be wholly unnecessary to describe the machine proper or to describe the carriage equipment in any detail. Referring to Fig. 1, the adding machine, designated generally by the reference numeral 20, is supported on the usual stand or rack 21. The usual numeral keys 22 are employed for setting up the various items and controlling the extent of movement of the customary actuating levers which carry type plates 23 (Fig. 8) for presenting items and totals to the printing line. A back panel 24 (Figs. 8, 9 and 10) of the supporting frame work of the machine has secured to it the usual track 25 upon which the laterally shiftable paper carriage 26 runs, the track and carriage having the usual raceways in which roller bearings are mounted. A rotating platen 27 is supported in the rock frame or cradle 28, which comprises end plates 29 journaled on a cross-shaft 30 carried by the end plates of the carriage 26. The cradle 28 carries a paper support or back 32 upon which are mounted laterally adjustable guides 33, as shown or described more fully in my Patent No. 1,208,375, granted December 12, 1916, and to which reference may be had with respect to this and other wellknown features of the Burroughs carriage equipment. The proof sheet P and also the carbon paper C through which the items are printed on the proof sheet, are placed on the table 32 and are guided by the pre-set paper guides 33 when they are fed around the platen upon rotation of the latter and by coaction of the platen with the usual pressure rolls 35. The forward ends of the proof sheet and carbon are guided by a floating pan 36 carried by the platen cradle, and are also guided by wellknown guide fingers 37, supported at their rear upper ends on a cross-rod 38 and having their forward lower edges offset to slightly overlap the upper forward edge of the floating pan 36. The rod 38 is supported in extensions of the side plates 29 of the platen cradle. Upon each operation of the machine, the platen 27 is rotated to linespace the proof sheet, and also the statement and ledger sheet, as will be described later, the platen being rotated by the usual linespacing mechanism which is only shown generally in Fig. 1 and which is designated by the reference numeral 39. The pressure or feed rolls 35 are supported by levers 40 and are pressed against the carbon and proof sheet by the usual springs 41, (Fig. 9) as is customary in this type of Burroughs machine.

The platen cradle 28 may be rocked so that it is either in its forward printing position, shown in Fig. 10, or in its rearward position illustrated in Figs. 8 and 9. In order to hold the platen firmly in its printing position, a roller 42 (Fig. 8) is firmly held against the cam edge 43 of the left hand plate 29 by a spring 44 connected to the arm 45 carrying the roller, this construction being also common to this type of Burroughs machine.

In order to latch the platen cradle in its rearward position I employ the latching mechanism illustrated in Fig. 8, the platen being there shown latched in its rearwardly tilted position by a latch 46, pivoted at 47 to the right-hand vertically extending side plate or arm 48, the arms 48 being secured to the side plates of the paper carriage. The vertical arm of the latch carries an operating finger piece 49 and is provided with a slot 50 through which the shouldered stud 51 projects, the stud serving as a stop for limiting the forward or releasing movement of the latch. The rear end of the horizontal arm of the latch has a shoulder 52 which, when the platen cradle is tilted back, engages a headed stud 53 on the right side plate 29 of the platen cradle, the latch being moved to such latching position by a spring 54.

In addition to the paper table 32, the paper

carriage is provided with another paper guide or plate 57 which extends above the platen and has its upper end rolled about a cross-rod 58, carried by the side arms 48, while the lower edge is curved forwardly to avoid interference with the platen when the platen is in its printing position. A cross-rod 59 is supported at its ends in rearwardly extending arms 60 integral with the side plates 48. The rod 59 projects through rearwardly extending ears 61 of two paper guides 62, best shown in Fig. 2. As shown in Figs. 8 and 9, arms or yokes 63 are slidably mounted on the rod 59 and the ears 61 have keys 63′ projecting into a groove on the rod 59 to prevent rotation of the guides. These yokes are slidable with the guides 62 and springs 64 are compressed between the arms 63 and the rear sides of the guides 62, thereby normally pressing the forward cam edges of the side arms of the yokes against the rear sides of the guides to cause the keys 61′ to bind in the groove in the rod 59 and thus frictionally retain the guides against accidental displacement. The sides 65 are provided with slots 66′ for the reception of projecting portions of the detachable holder 66 in which the statement and ledger sheet are collated, as will be described later, and which is illustrated diagrammatically in Fig. 1.

The work-sheet holder is shown in position on the machine in Fig. 9 and it will be noted that when the holder is in the machine, with the bill B and ledger sheet L, together with an interposed carbon C′ held in position thereon, and the platen cradle in its rearwardly tilted position, the lower portions of the bill and ledger sheet are guided by a table 67, which is mounted on the carriage 26 by suitable brackets 68 and 69 and screws 70. The table comprises a curved plate 71 and two parallel plates 72, which are supported on and over the edge portions of the lower plate 71 through spacing collars 73 located along the edges of the plates. Equally spaced along the upper edge of the plate 71 are four spring-pressed feeding rolls 74, the rolls being mounted on arms 75 which are engaged by leaf springs 76 normally tending to press the rolls towards the platen. It might be stated here, that when the ledger sheet and bill have been positioned in the machine and the platen cradle is rocked forwardly to the printing position shown in Fig. 10, the ledger sheet and bill are released from the work sheet holder, as will be described presently, and these work sheets are then gripped between the platen and the feed rolls 74 and are fed in unison thereby when the platen is rotated.

The carriage equipment, described above, is very similar to that more fully shown and described in the copending application filed by Arthur S. Trew on July 3, 1924, and bearing Serial No. 724,086, and is also embodied in Burroughs machines now on the market. My invention has been shown applied to this type of equipment. Sometimes it may be desirable to use the machine for printing on ledger sheets or other work sheets which are not to be collated in the work-sheet holder, and in such cases the ledger sheet may be inserted between the guides 62, (when the work-sheet holder is out of the machine) and be supported in the desired position, when the platen is in its rear position, by adjustable supports 73′ (Fig. 8) which are mounted on the plate 71 and on which the bottom edge of the ledger sheet is adapted to rest, as more fully explained in said Trew application.

Work-sheet holder.

The work-sheet holder, shown in Figs. 3 to 7, comprises two parallel plates 78 and 79 separated at their side edges by interposed spacing strips 80 and secured together by screws 81. Journaled in brackets 82, secured to the plate 78, is a shaft 83 to which two arms 84 are secured. The arms 84 carry pointed pins 85 projecting through pressure pads 86, formed of rubber or other compressible material. The pads 86 extend through openings 87 formed in the plate 78. Fast on the shaft 83 is an operating lever 88 having its rear end shaped for operation by the finger of the operator while its forward end is offset laterally and projects over registering slots 89 formed in the plates 78 and 79. Pivoted at 90 on the plate 78 is a latch 91 having a finger piece 92 on its longer arm. Its shorter arm has a struck-up ear which is provided with a shoulder 93 and a spring 95 is secured at one end to the latch and at its other end to the right-hand arm 84.

While the ledger sheet and statement are being positioned and collated in the holder, the pins 85 and pads 86 are in the elevated position illustrated in Fig. 4 and are retained in such position by engagement of the shoulder 93 with the under side of the right-hand arm 84. A projecting nose 93′ then engages the side edge of this arm to limit the movement of the latch 91 in one direction while a pin 92′ limits movement of the latch in the other direction. After the ledger sheet and the statement have been properly positioned, the latch 91 is moved by the finger-piece 92 to carry the shoulder 93 from under the arm 84, whereupon a spring 95′, compressed between the plate 78 and the upper arm of the lever 88, rocks the arms 84 and shaft 83 to move the pads 86 into firm engagement with the work sheets to press them against the plate 79, as shown in Fig. 5. The pointed ends of the pins 85 pierce the work sheets and thus the pads and pins hold the work sheets in their

collated condition. After these work sheets have been collated, with the carbon C′ interposed between them, and the latch 91 is released, the holder and these work sheets are transferred to the machine.

The plate 78 has laterally extending projecting portions 96 which are adapted to engage in the slots 66′ formed in the paper guides 62 and thus hold the work-sheet holder and the ledger sheet and statement in the positions illustrated in Fig. 9. When the platen is moved from its rear position, shown in Figs. 8 and 9, to its printing position, shown in Fig. 10, a dog or arm 97, secured to the shaft 38, is moved through the slots 89 and into engagement with the rear side of the longer arm of the lever 88, thus rocking the lever, shaft 83 and arms 84 in opposition to the spring 95′ and thereby raising the pads 86 and the pins 85 from contact with the statement. In this way the ledger sheet and the statement are released from the work-sheet holder and they may then be fed by rotation of the platen, the rolls 74 then being in contact with the statement. Thus the ledger sheet and statement sheet, as well as the proof or record sheet, are fed in unison by rotation of the platen and the collated condition of the ledger sheet and statement is maintained.

When the platen is moved to printing position, the arm or dog 97 rocks the arms 84 to move the pads 86 and pins 85 out of engagement with the work sheets but not sufficiently to permit the shoulder 93 of the latch 91 to snap under the right-hand arm 84 so that when the work sheets are to be removed from the machine the platen cradle is rocked rearwardly carrying the dog 97 out of engagement with the lever 88 to permit the spring 95′ to rock the arms 84 and move the pads 86 and pins 85 into engagement with the work sheets in the work-sheet holder. Thus, when the platen is moved away from the feed rolls 74, the ledger sheet and bill are again clamped in the work-sheet holder before they are released from the platen and feed rolls 74 and may be removed from the machine with the holder. Then to release the work sheets from the holder the arms 84 may be rocked manually through the lever 88.

Collating table.

Mounted on one of the side bars of the stand 21 is a bracket 98 (Fig. 1) which is firmly secured in position on the bar by any suitable means. The bracket 98 carries a vertical pin 100 to which a split collar 101 is secured. The collar carries a laterally extending rod 102 on which is secured a yoke 103 (Fig. 12), the yoke being secured in adjusted position on the rod 102 by means of set screws 103′ carried by the collars on the arms of the yoke. Secured to the yoke 103 is the collating table 104. The work-sheet holder is adapted to be positioned on the rear depressed portion of the table, as illustrated in Fig. 4, and is aligned thereon by pins 105 (Fig. 1) projecting upwardly from the table and into holes 106 formed in the projecting portions 96 of the plate 78.

Positioned along the left-hand edge of the table is a strip 107 (Figs. 1 and 12) through which three bolts 108 project. A triangular-shaped finder plate 109 is supported along its left-hand edge on the bar 107 and the bolts 108 project through transverse slots 110 in the finder plate 109 to permit lateral adjustment of this plate. Mounted on the left-hand end of the finder plate is a strip 111 which supports a second finder plate 112. Two elongated slots 113, extending at right angles to the slots 110, are formed in the plate 112 and permit adjustment of the plate. The finder plate 109 has an opening 114 and the finder plate 112 has a finder shoulder 115.

In order to collate the ledger sheet and the statement, the ledger sheet L is first placed on the collating table and under the plate 109, the rear portion of the ledger sheet being inserted in the work-sheet holder. The left-hand edge of the ledger sheet is brought into contact with the right-hand edge of the strip 107 and also with the right-hand edge of the left-hand spacing strip 80 on the holder in order to align the ledger sheet straight in the holder. Riveted or otherwise secured to the strip 107 is a spring arm 107′ (Figs. 1 and 7ª) carrying a pressure pad 108′, the arm being pressed down by the finger of the operator to force the pad against the ledger sheet and hold it while the statement and carbon are being adjusted.

The shaft 83, mounted on the holder, is provided with an arm 116 provided with a downwardly extending guide lug 117 which has its lower end curved so that when the ledger sheet is inserted its rear end engages the curved edge of the guide and is deflected downwardly as indicated in Fig. 4. The last line printed on the ledger sheet is brought into line with the straight edge 118 of the opening 114. The statement B with the carbon C′ is now inserted over the plate 109 and under the finder plate 112 with their left-hand edges in engagement with a vertical flange 120 on the plate 109 and also in engagement with the side of the guide lug 117. The last line printed on is brought into alignment with the shoulder 115. The plate 109 is adjustable laterally, due to the slots 110, and the arm 116 may be slid on the shaft 83 and secured in adjusted position thereon by a set screw 116′, in order to accommodate statements of different widths. When the latch 91 is tripped and the arm 116 rocked to the position shown in Fig. 5

the guide lug 117 is moved out of engagement with the ledger sheet and statement and when the shaft 83 and arm 116 are rocked by the dog 97, upon movement of the platen to printing position, the lug 117 is not moved sufficiently to engage these work sheets and hence cannot interfere with the feeding of the work sheets by the platen.

Modified form of work-sheet holder.

I have illustrated a modified form of work-sheet holder in Fig. 11 and Figs. 13 to 16. The frame of this holder comprises parallel plates 78 and 79 as in the preferred form. In this modified form two strips 125 of spring metal are riveted or otherwise secured to the plate 78 and their forward ends are provided with inwardly extending points 126 and 126′, which are adapted to engage and retain the work sheets in collated condition. Levers 127 and 127′ are centrally pivoted on the plate 78 and their respective outer ends are adapted to engage with the lower inclined or cam edges of downwardly extending flanges 129 formed on the respective strips 125. The inner end of the lever 127 carries a pin 128 projecting into a recess formed in the inner end of the other lever 127′. A spring 131, connected at one end to the lever 127, tends to hold the levers in the positions shown in Fig. 11 so that their outer ends are out of contact with the flanges 129, as indicated in Fig. 14. The inner end of the lever 127 carries a downwardly projecting stud 132 in front of which projects one end of the lever 133 pivoted at 134 to the plate 78.

The right-hand end of the lever 133 is of irregular shape, being provided with a rearwardly extending portion having a vertical finger-piece 135 and with a forwardly extending portion provided with a slot 136 through which projects a stud 136′ in order to assist in guiding the lever in its movements. This forwardly extending portion is also provided with an ear 137 from which laterally projects a roller stud 138 extending over the slots 89 formed in the plates 78 and 79. Pivoted at 140 on the plate 78 is a latch 141, the rear end of which projects beyond the holder in order to permit manual operation of the latch. A leaf spring 142 engages the latch and tends to rock it in a clockwise direction.

While the ledger sheet and statement are being adjusted on the collating table, the parts are in the condition illustrated in Fig. 15, the points 126 and 126′ then being elevated out of engagement with the work sheets. At this time the forward end of the latch 141 engages behind a shoulder 145 on the lever 133, thus latching the levers 127 and 127′ in such condition that their outer ends are under the forward ends of the flanges 129 to hold the forward ends of the spring arms 125 in elevated position with their points 126 and 126′ out of contact with the ledger sheet and statement. The latch 141 is now tripped by the operator, whereupon the spring 131 moves the parts to the positions shown in Figs. 11 and 14, in which condition of the parts the outer ends of the levers 127 and 127′ have been moved rearwardly out of engagement with the flanges 129, so that the forward ends of the strips or arms 125 spring downward and thus cause their points 126 and 126′ to partially pierce the work sheets and interposed carbon. The work-sheet holder, with the work sheets held in position, is now transferred to the machine, and when the platen is moved to printing position the dog 97′ (Fig. 15) which is similar to the dog 97 shown in Figs. 8, 9 and 10, is projected through the slots 89 and engages over the roller stud 138, forcing it downwardly with the result that the lever 133 is rocked clockwise to the position shown in Fig. 16. It will be noted, by observing this figure, that the lever 133 is not rocked sufficiently by the dog 97′ to permit the latch 141 to snap behind the shoulder 145, so that when the dog 97′ is moved out of engagement with the roller stud 138, the spring 131 rocks the levers 127 and 127′ to raise their outer ends whereupon the points 126 and 126′ again pierce the ledger sheet and statement which may then be removed from the machine with the work-sheet holder. The ledger sheet and statement may next be released from these retaining devices by manually operatng the lever 133 which is then latched in releasing condition by the latch 141.

An arm 149 (Figs. 11, 14 and 15) corresponding to the arm 116 of the preferred form, is loosely mounted on a pin 150 and is normally pressed against the plate 78 by a leaf spring 151. The guide lug 117′ on the arm directs the rear or top edge of the ledger sheet downwardly when the ledger sheet is inserted in the holder and the left-hand edge of the statement engages the side of the lug to aid in aligning the statement. The arm 149 is spring-pressed against the plate 78 so that it may yield when the ledger sheet and statement are fed by the platen in case there is undue friction between the ledger sheet and the guide lug 117′, and thus the arms 149 does not interfere with the feeding movement of the work sheets.

It is to be understood that the embodiments of the invention herein described, are susceptible to various modifications without departure from the scope and spirit of the invention as defined in the appended claims.

I claim:

1. In a machine of the class described, the combination of a platen, a feed roll cooperating with the platen, the platen being mov-

able out of and into cooperative relation with the feed roll, means independent of the platen for retaining superimposed work sheets in collated condition between the platen and feed roll when the platen is out of cooperative relation with the feed roll, and means for disabling said retaining means as an incident to the movement of the platen into cooperative relation with the feed roll.

2. In a machine of the class described, the combination of a platen, a feed roll cooperating with the platen, the platen being movable out of and into cooperative relation with the feed roll, means independent of the platen for retaining superimposed work sheets in collated condition between the platen and feed roll when the platen is out of cooperative relation with the feed roll, and means for enabling said retaining means when the platen is moved out of cooperative relation with the feed roll.

3. In a machine of the class described, the combination of a platen, a feed roll cooperating therewith, a cradle carrying said platen and movable to carry the platen away from and toward said feed roll, means for retaining superimposed work sheets in collated condition between the feed roll and platen, and a device carried by said cradle for disabling said retaining means when the platen is moved toward said feed roll.

4. In a machine of the class described, the combination of a platen, a feed roll cooperating therewith, a cradle carrying said platen and movable to carry the platen away from and toward said feed roll, means for retaining superimposed work sheets in collated condition between the feed roll and platen, and a device carried by said cradle for disabling said retaining means when the platen is moved toward said feed roll, the retaining means being enabled when the platen is moved away from the feed roll.

5. In a machine of the class described, the combination of a platen, a feed roll cooperating with the platen, a guide for directing a work sheet around the platen, a pivoted cradle carrying the platen and adapted to be moved to carry the platen out of and into cooperative relation with said feed roll, a device for supporting, independently of said guide or platen, superimposed work sheets between the feed roll and platen when the latter is out of cooperative relation with the feed roll and comprising means for retaining said work sheets in collated condition on said device, and means on said cradle for disabling said retaining means when the platen is moved into cooperative relation with the feed roll.

6. In a machine of the class described, the combination of a platen, a feed roll cooperating with the platen, means for moving the platen out of and into cooperative relation with the feed roll, means for retaining superimposed work sheets in collated condition between the platen and feed roll when the platen is out of cooperative relation with the feed roll, means for disabling said retaining means as an incident to the movement of the platen into cooperative relation with the feed roll, and a latch for holding said retaining means in disabled condition.

7. In a machine of the class described, the combination of a platen, a feed roll cooperating with the platen, a guide for directing a work sheet around the platen, a pivoted cradle carrying the platen and adapted to be rocked to move the platen out of and into cooperative relation with said feed roll, a device for supporting, independently of said guide or platen, superimposed work sheets between the feed roll and platen when the latter is out of cooperative relation with the feed roll, means for retaining said work sheets in collated condition on said device, an arm on said cradle for disabling said retaining means when the platen is moved into cooperative relation with the feed roll, and latch for retaining said retaining means in disabled condition.

8. The combination in a machine of the class described of a work sheet feeding means, a detachable holder in which work sheets may be collated when it is removed from the machine, supporting means for detachably supporting said holder on the machine to position the work sheets in feeding relation to the feeding means, and means for simultaneously enabling the feeding means and releasing the work sheets from the holder.

9. The combination in a machine of the class described of a platen movable to and away from printing position, a work sheet feeding means cooperating with said platen when the latter is in printing position but being inoperative when the platen is out of printing position, a detachable holder in which work sheets may be collated when the holder is removed from the machine, means on the holder for retaining the sheets in collated condition, means for retachably supporting the holder on the machine, and means operating automatically as an incident to the movement of the platen to printing position and into cooperative relation with the feeding means for releasing the retaining means on the holder to permit the work sheets to be fed by the feeding means.

10. The combination in a machine of the class described of a platen movable to and away from printing position, a work sheet feeding means cooperating with said platen when the latter is in printing position but being inoperative when the platen is out of printing position, a detachable holder in which work sheets may be collated when the

holder is removed from the machine, means on the holder for retaining the sheets in collated condition, means for detachably supporting the holder on the machine, and means operating automatically as an incident to the movement of the platen to printing position for releasing the retaining means, said releasing means also serving to enable the retaining means when the platen is moved away from printing position.

11. In a machine of the class described, a platen, a feed roll adapted to cooperate therewith, one being movable into and out of cooperative relation with the other, a detachable holder in which work sheets may be collated, means on the holder for retaining the work sheets in collated condition, supporting means on the machine for receiving said detachable holder, and means operated as an incident to the establishment of cooperative relationship between the feed roll and the platen for disabling the retaining means on the holder to release the work sheets to permit them to be grasped and fed by the platen and feeding roll.

12. In a machine of the class described, a platen, a feed roll adapted to cooperate therewith, one being movable into and out of cooperative relation with the other, a detachable holder in which work sheets may be collated, means on the holder for retaining the work sheets in collated condition, supporting means on the maching for receiving said detachable holder, and means operating as an incident to the establishment of cooperative relationship between the feed roll and the platen for disabling the retaining means on the holder, said releasing means also acting to enable the retaining means as an incident to the disestablishment of the cooperative relationship between the platen and feed roll.

13. In a machine of the class described, a platen, a feed roll adapted to cooperate therewith, means for effecting relative movement between the platen and feed roll to establish and disestablish cooperative feeding relation between them, a detachable holder on which work sheets may be collated while the holder is separated from the machine, means on the holder for holding the sheets in collated condition, supporting means on the machine for detachably supporting the holder with the work sheets between the platen and feed roll, and means for causing the holder to release the work sheets to permit them to be held in position by and fed by said platen and feed roll, said latter means also serving to cause the holder to grasp the work sheets when cooperative relation between the platen and feed roll is disestablished.

14. In a machine of the class described, the combination of a platen, a feed roll cooperating therewith, the platen being movable out of and into cooperative relation with the feed roll, means for retaining superimposed work sheets in collated condition between the platen and feed roll when the platen is out of cooperative relation with the feed roll, means for disabling said retaining means as an incident to the movement of the platen into cooperative relation with the feed roll, the retaining means being enabled as an incident to movement of the platen away from the feed roll, manual means for disabling said retaining means, and latching means for latching said retaining means in disabled condition when the latter is manually disabled.

15. In a machine of the class described, the combination of work feeding means adapted to be enabled and disabled, supporting means, a work sheet holder, removable from the machine to permit work sheets to be positioned in said holder and adapted to be supported in the machine by said supporting means, means on the holder for retaining the work sheets in collated condition, and means for disabling said retaining means as an incident to the enablement of said feeding means, the retaining means being enabled as an incident to the disablement of said feeding means.

16. In a machine of the class described, the combination of work feeding means adapted to be enabled and disabled, supporting means, a work sheet holder, removable from the machine to permit work sheets to be positioned in said holder and adapted to be supported in the machine by said supporting means, means on the holder for retaining the work sheets in collated condition, means for disabling said retaining means as an incident to the enablement of said feeding means, the retaining means being enabled as an incident to the disablement of said feeding means, means for manually disabling said retaining means when the holder is out of the machine, and means for latching the retaining means in disabled condition when the latter is manually disabled.

17. In a machine of the class described, the combination of a platen and a cooperating feed roll, a work-sheet guide below the platen, work-sheet guides above the platen, a removable work-sheet holder adapted to be supported by the guides above the platen with the lower portions of said work sheets engaging the guide below the platen, means on the holder for retaining the work sheets in collated condition, and means for disabling said retaining means to permit the work sheets to be fed by said platen.

18. In a machine of the class described, the combination of a platen and a cooperating feed roll, a work-sheet guide below the platen, work-sheet guides above the platen,

a removable work-sheet holder adapted to be positioned between the guides above the platen with the lower portions of the work sheets engaging the guide below the platen, means on said holder for retaining the work sheets in collated condition, a movable frame carrying said platen to permit the platen to be moved away from and toward said feed roll, and a device on said frame for disabling said retaining means.

19. In a machine of the class described, the combination of a platen and a cooperating feed roll, a cradle carrying the platen and adapted to move the platen into and out of cooperative relation with the feed roll, a work-sheet holder having a slot, means on said holder for retaining the work sheets in collated condition thereon, and an arm on said frame adapted to project through said slot, when the platen is moved into cooperative relation with the feed roll, to disable said retaining means.

20. A work-sheet holder for supporting superimposed work sheets in collated condition, comprising parallel plates between which the work sheets are positioned, a shaft, arms mounted on said shaft and having retaining means adapted to project through openings in one of said plates and press the work sheets against the other plate, an operating lever on said shaft, and a latch for latching said retaining means out of retaining position.

21. A work-sheet holder, for supporting superimposed work sheets in collated condition, comprising parallel plates between which the work sheets are positioned, one of said plates having projecting portions with aligning holes, a shaft on one plate, arms mounted on said shaft and having retaining means adapted to press the work sheets against one of said plates, an operating lever on said shaft, and a latch for latching said retaining means out of retaining position.

22. A work-sheet holder, for supporting superimposed work sheets in collated condition, comprising parallel plates between which the work sheets are positioned, a shaft, arms mounted on said shaft and having retaining means adapted to press against the work sheets, an operating lever on said shaft, a latch for latching said retaining means out of retaining position, and an aligning member on said shaft.

23. In a work-sheet holder adapted to be removed from a machine, the combination of a frame on which the work sheets are adapted to be positioned, arms on the frame provided with means adapted to press against the collated work sheets, means for moving said arms to release the work sheets, and latching means for latching the arms in released condition.

24. A work sheet holder adapted to be removed from the machine, and comprising two parallel plates between which the work sheets are adapted to be positioned, one of the plates having projecting portions, arms mounted on one plate and provided with means adapted to press the collated work sheets against the other plate, means for moving said arms to release the work sheets, and latching means for latching the arms in released condition.

25. In a collating device, the combination of a table, a plate mounted over the table and provided with a finder to permit a work sheet to be positioned under the plate, a second plate mounted over the first plate and having a finder to permit a second work sheet to be positioned between said plates, a work-sheet holder, means for securing the work sheets in collated condition in the holder, and aligning means for aligning the holder on the table.

26. In a collating device, the combination of a table having a depressed portion, a plate mounted over the table and provided with a finder to permit work to be positioned under the plate, a second plate mounted over the first plate and provided with a finder to permit a second work sheet to be positioned between said plates, a work-sheet holder adapted to be positioned on said depressed portion, and means for aligning said holder on said table.

27. In combination, a machine of the class described having cooperating work-sheet feeding elements and supporting means, a detachable work-sheet holder adapted to be mounted on said supporting means so that the work sheets are positioned between said feeding elements, means on said holder for retaining superimposed work sheets in collated condition thereon, and a collating table adapted to support the work sheet holder and having means for aligning the work sheet holder thereon and finder means to aid in collating the work sheets on the table and in the holder.

28. In a collating device, the combination of a table, a plate mounted over the table and provided with a finder to permit a work sheet to be adjusted under the plate, a second plate mounted over the first plate and having a finder to permit a second work sheet to be positioned between the plates, a pressure pad movable into engagement with the first work sheet while the second is being adjusted, a work sheet holder, and aligning means for aligning the holder on the table.

29. The combination in a machine of the class described of a platen movable to and from printing position, a work-sheet feeding means cooperating with said platen when the latter is in printing position but being inoperative when the platen is out of printing position, means for retaining superimposed work sheets in collated condition and

in feeding relation to the platen when the latter is out of printing position, and means operated automatically by the platen as it moves to printing position or moving the retaining means to position to cause it to release the work sheets.

30. The combination in a machine of the class described of a platen movable to and away from printing position, a work-sheet feeding means cooperating with said platen when the latter is in printing position but being inoperative when the platen is out of printing position, means for retaining superimposed work sheets in collated condition and in feeding relation to the platen when the latter is out of printing position, and means operated automatically by the platen as it is moved to printing position for moving the retaining means to release the work sheets, said automatic means also acting as the platen is moved away from printing position to release the retaining means to permit it to again grasp the work sheets to hold them in collated condition.

ROBERT L. MULLER.