July 6, 1948. A. THOMAS 2,444,544

MECHANISM FOR FEEDING STATISTICAL RECORD CARDS AND DELIVERING THEM TO A RECEIVER

Filed Dec. 15, 1944 4 Sheets-Sheet 1

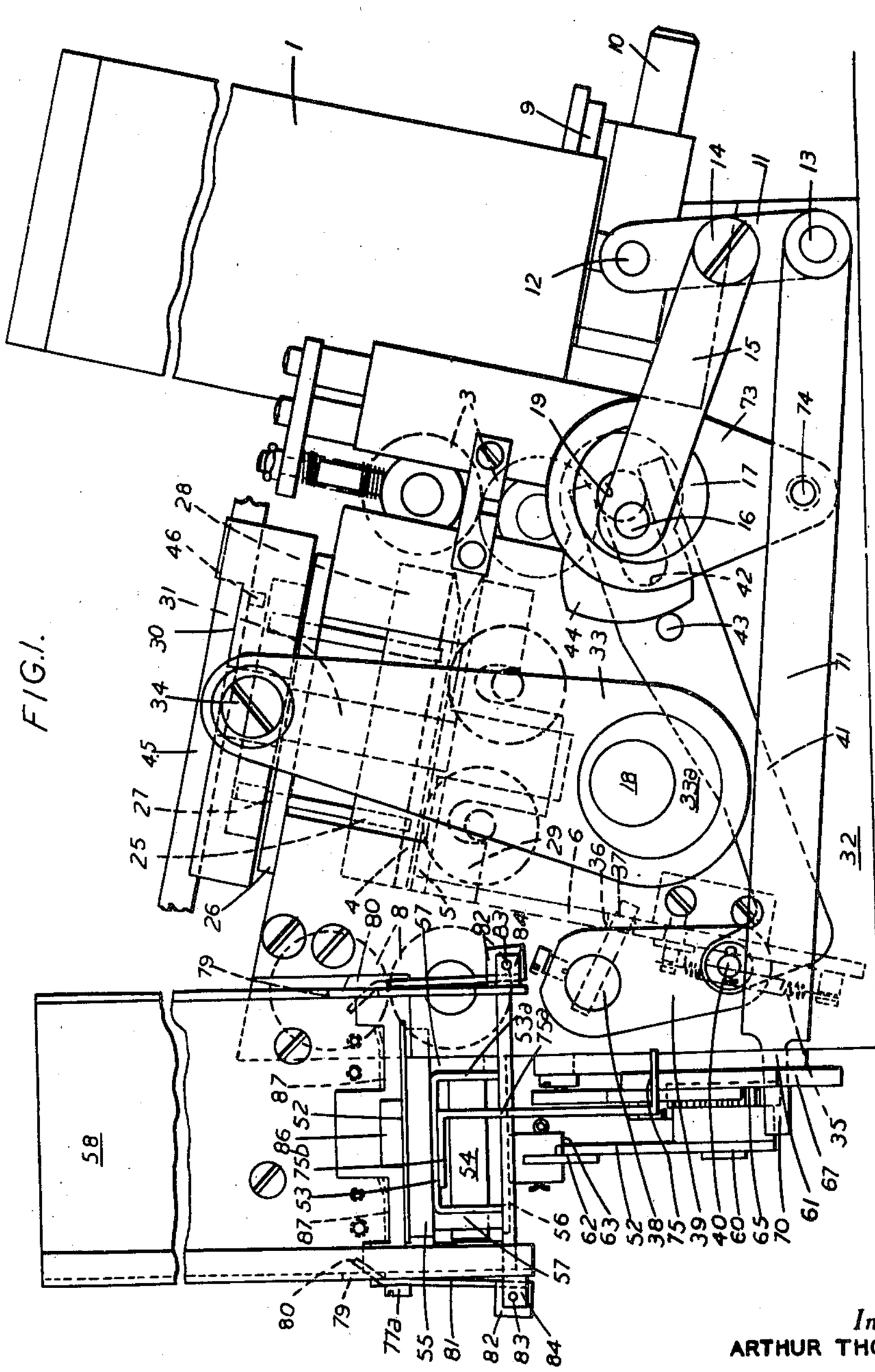


FIG. 1.

Inventor
ARTHUR THOMAS

By Jh L Stirling
Attorney

July 6, 1948. A. THOMAS 2,444,544

MECHANISM FOR FEEDING STATISTICAL RECORD CARDS AND DELIVERING THEM TO A RECEIVER

Filed Dec. 15, 1944 4 Sheets-Sheet 2

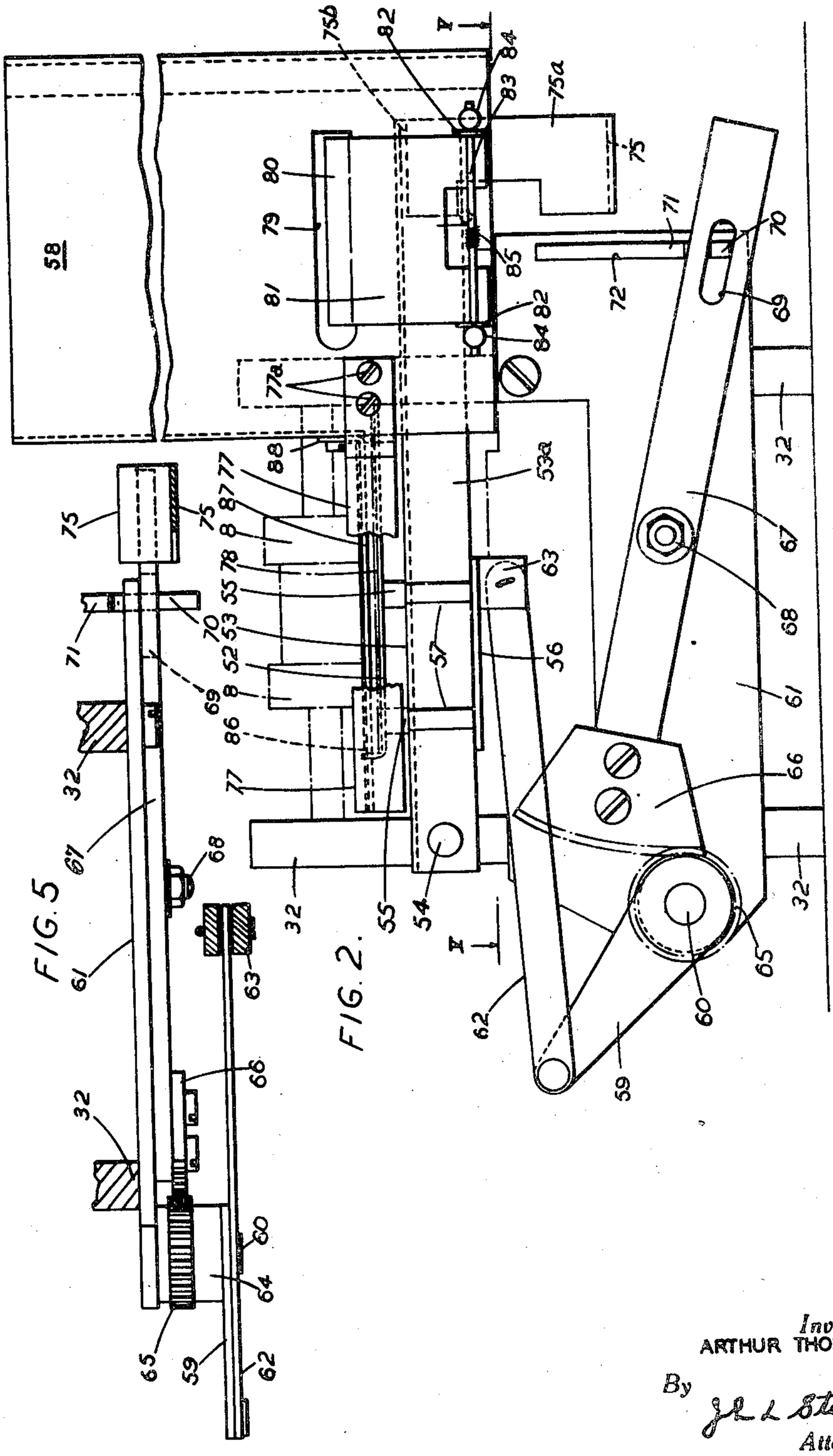


FIG. 5

FIG. 2.

Inventor
ARTHUR THOMAS

By J. L. L. Sterling
Attorney

July 6, 1948. A. THOMAS 2,444,544

MECHANISM FOR FEEDING STATISTICAL RECORD CARDS AND DELIVERING THEM TO A RECEIVER

Filed Dec. 15, 1944 4 Sheets-Sheet 3

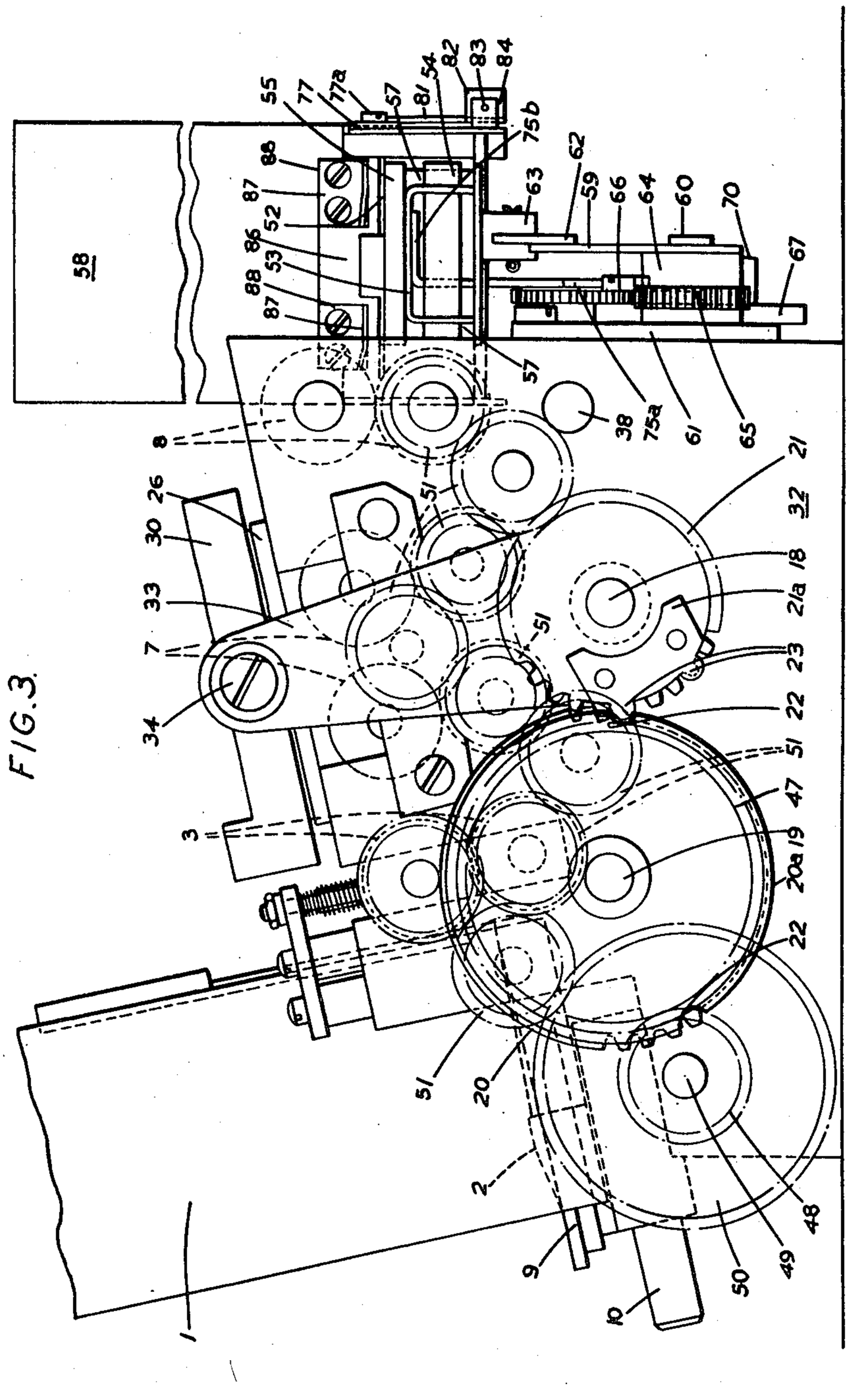


FIG. 3.

Inventor
ARTHUR THOMAS

By J. L. Stuhlman
Attorney

July 6, 1948. A. THOMAS 2,444,544

MECHANISM FOR FEEDING STATISTICAL RECORD CARDS AND DELIVERING THEM TO A RECEIVER

Filed Dec. 15, 1944 4 Sheets-Sheet 4

FIG. 6.

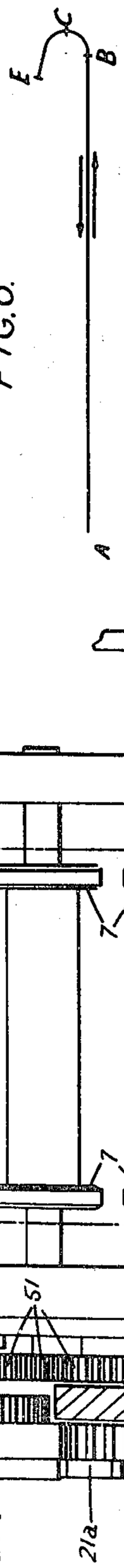
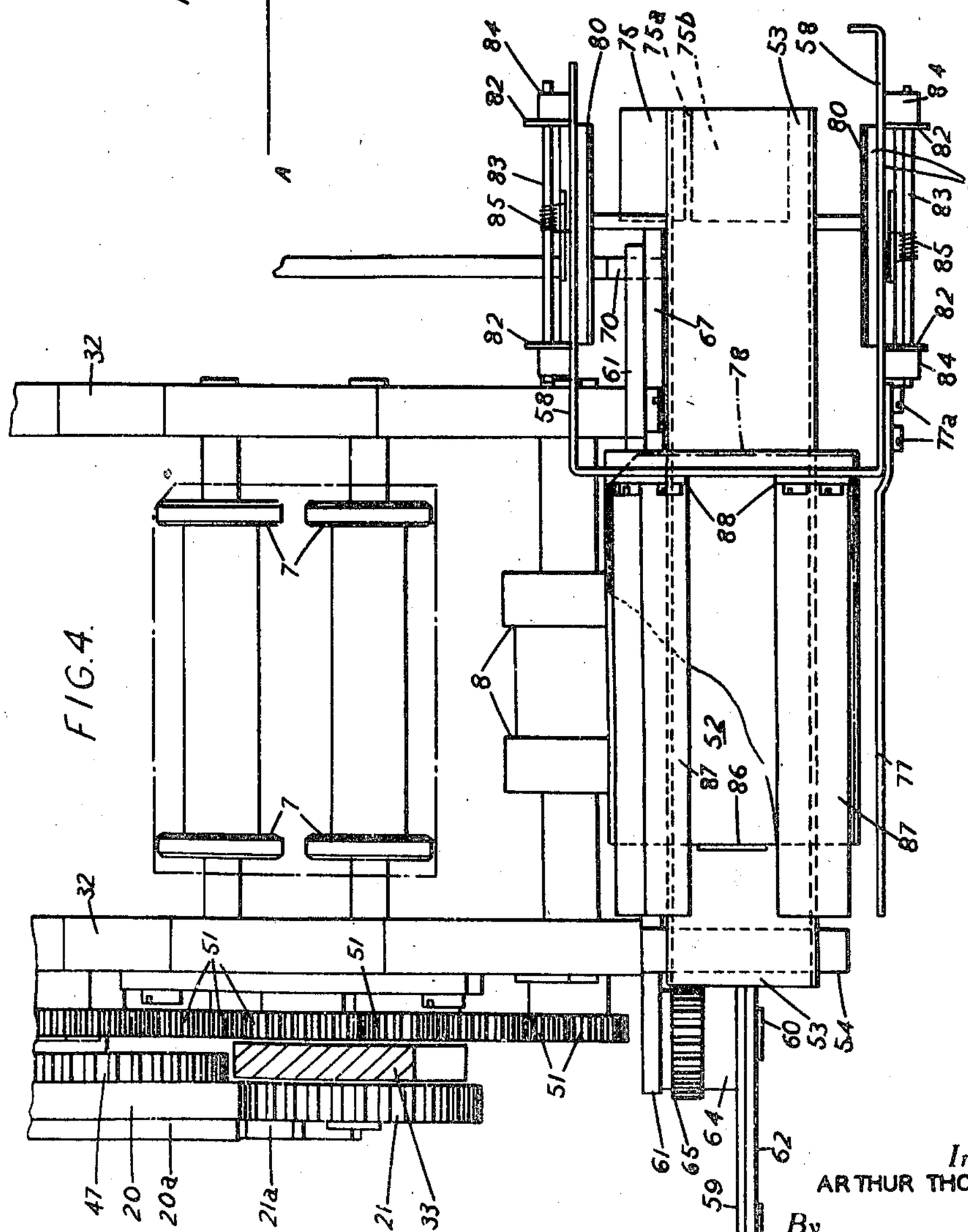


FIG. 4.



Inventor
ARTHUR THOMAS

By John L. Stuling
Attorney

Patented July 6, 1948 2,444,544

UNITED STATES PATENT OFFICE

2,444,544

MECHANISM FOR FEEDING STATISTICAL RECORD CARDS AND DELIVERING THEM TO A RECEIVER

Arthur Thomas, Wallington, England, assignor to Powers Accounting Machines Limited, London, England, a British company

Application December 15, 1944, Serial No. 568,336
In Great Britain December 21, 1943

12 Claims. (Cl. 271—3)

1

This invention relates to mechanism for delivering record cards to a receiver from a machine, such as a punch or tabulator, which has operated on the cards; and has for its object to provide a construction of card delivery mechanism which will deliver each card to the bottom of the stack of cards in the receiver instead of on top of the stack as in known constructions of card delivery mechanism.

To this end, according to the invention, mechanism for taking record cards from a machine which has operated on them and for delivering the cards to a receiver, comprises in combination a device in said machine such as a pair of ejecting rolls for the successive cards, a movable platform in proximity to the rolls on which the ejected cards are deposited, a pair of yielding supports within the receiver for supporting a stack of cards accumulated in the receiver, and means for raising the platform to pass a card deposited thereon between the yielding supports, whereby each successively ejected card is delivered to the bottom of the stack formed in the receiver.

In constructions according to the invention the receiver may be located away from the ejecting device and the apparatus may include mechanism for reciprocating said platform between successive up and down movements of the platform, to convey successively ejected cards to the receiver and return to the ejecting device for taking another card following transport of a previously taken card to the receiver. Such reciprocation of the platform may be in a direction at right angles to the path of the cards through the feed rolls which arrangement is of advantage in cases in which considerations of available space and operating convenience make it necessary to place the card receiver to one side of the eject rolls.

In order that the invention may be more fully understood one construction according thereto will now be described by way of example with reference to the accompanying drawings which illustrate the invention as applied to a machine for punching statistical record cards.

In the accompanying drawings:

Fig. 1 is a side elevation of the machine,

Fig. 2 is a rear elevation, looking toward the right in Fig. 1,

Fig. 3 is a side elevation, looking toward the opposite side of the machine,

Fig. 4 is a top plan view of the mechanism according to the invention with parts above certain rolls removed for a clearer showing,

2

Fig. 5 is a sectional plan on the line V—V in Fig. 2, and

Fig. 6 is a diagram illustrating the movement of the card conveying platform.

In the drawings like reference characters indicate the same or similar parts.

In the construction shown in the drawings the cards are fed seriatim from a magazine 1 by means of a picker knife 2 (Fig. 3) to feed rolls 3 which carry each card between upper and lower punch die plates 4, 5 (Fig. 1), where such card is arrested for punching by means of a card stop 6. After being released by the card stop 6 the constantly revolving skid rolls 7 (Fig. 3) pass the card on to eject rolls 8 which in turn feed it to the mechanism forming the subject of the invention.

The mechanism for picking and punching the cards forms no part of the invention and will therefore be only briefly described herein.

The picker knife assembly 9 (Fig. 1) on which the picker knife 2 is mounted is slidable on a bar 10 along which said assembly is reciprocated by an arm 11 pivoted thereto at 12 and to the machine frame at 13, said arm 11 being also pivoted at 14 to a link 15 the other end of which is pivoted on a crank pin 16 carried by an eccentric 17 secured to the mainshaft 19.

The punches 25 are guided in a fixed plate 26 on which their heads 27 freely rest, and in a guide block 28 carrying the upper die plate 4. The lower die plate 5 is attached to a base member 29, and the block 28 and base member 29 are connected to a relatively thick plate 30 by vertical members 31, one at each side. Only one of these vertical members is shown in the drawings the other being identical therewith.

The base member 29 is mounted for vertical reciprocation in slots (not shown) in the side frame plates 32 of the machine so that the members 28, 29 and 30 connected by vertical members 31 are free to reciprocate as a unit vertically in the machine frame, taking the die plates 4 and 5 with them.

In order to actuate this unit including the die plates 4 and 5 an eccentric link 33 actuated by an eccentric 33*a* secured to a shaft 18 is pivoted at 34 to each side of the plate 30.

The shaft 18 is driven from the mainshaft 19 by an intermittent gear (Fig. 3) comprising mutilated gear wheels 20 and 21 respectively secured to the mainshaft 19 and to the shaft 18, the gear wheel 20 carrying a plate 20*a* having recesses 22 for co-operating with teeth 23 on a plate 21*a* carried by the gear wheel 21. This

form of intermittent drive is well known and needs no further explanation.

The card stop 6 is mounted (Fig. 1) to slide vertically, and is urged upwardly by a spring 35, the upper end of the card stop being guided in the base member 29 so that this end of the card stop can be projected into the path of the card as it passes between the die plates 4 and 5.

In order to actuate the card stop 6 the latter is formed with a slot indicated at 36 into which projects a pin 37 projecting from a shaft 38 to which is secured an arm 39 pivoted at 40 to an operating link 41. The link 41 is guided for longitudinal movement by a slot 42 at its other end through which the shaft 19 passes, said link 41 carrying a roller 43 co-operating with a cam 44 secured to the shaft 19 whereby, as the shaft 19 rotates, the arm 39 and shaft 38 are rocked to withdraw the card stop 6, by positive cam action; the upward motion of the card stop into the path of the card being effected by spring 35.

The punches 25 are selected for operation by means of manually operable setting slides of which one is indicated diagrammatically at 45, these slides being mounted in slots in the plate 30 and each having a downwardly extending projection 46 which can be positioned over a desired one of the punches 25 in the associated column of punches to serve as an abutment for said punch.

The drive to the feed rolls 3 is effected by means of a gear wheel 47 (Figs. 3 and 4) secured to the main shaft 19 and meshing with a pinion 48 (Fig. 3) secured to a stub shaft 49 to which is attached a gear wheel 50 which, through a train of gears indicated at 51 (Figs. 3 and 4), drives the various feed rolls.

In operation the picker knife 2 feeds a card from the magazine 1 to the feed rolls 3 which pass the card between the die plates 4 and 5. During this operation the cam 44 passes away from the roller 43 and allows the spring 35 to move link 41 to the right thereby rocking the shaft 38 to move the card stop 6 into the path of the card, which is thereby arrested between the die plates 4 and 5. The eccentrics 33*a* then lift the links 33, thereby raising the unit comprising the guide block 28, base member 29 and plate 30, including the die plates 4 and 5 with the card between them.

Any punches over which a projection 46 has not been positioned will be lifted idly by the card, but those punches over which a projection 46 has been positioned will be prevented from rising and will accordingly perforate the card.

The unit comprising members 28, 29 and 30 and the die plates 4 and 5 then descends with the card, and cam 44 pushes link 41 to the left thereby withdrawing the card stop 6, whereupon the skid rolls 7 (Fig. 3) feed the card out from between the die plates 4 and 5 to the eject rolls 8.

The rolls 8 eject the card on to a carrier or platform 52 (Figs. 2, 3 and 4) mounted to slide along a support 53 extending along the back of the machine at right angles to the path of the card through the feed rolls. The support 53 is of an inverted U shape in cross section and is pivoted on a stud 54 projecting from one of the frame plates 32. The platform 52 is attached to a carriage comprising two crossbars 55 slidable along the top face of the support 53 and a lower plate 56 connected to the crossbars 55 by four posts 57. The lower plate 56 is in sliding contact with the lower edges of the side walls 53*a* of the U-shaped support 53 and the posts 57 are in sliding

contact with the vertical external faces of said side walls. Accordingly the carriage comprising bars 55, plate 56 and posts 57 is free to slide along the support 53.

This carriage, including the platform or carrier 52, is caused to reciprocate along the slide 53 at right angles to the path of the card through the feed rolls by means of the following mechanism. When the platform is at the left hand end of its travel (Figs. 2 and 4) it is disposed just below the path of the cards as they leave the eject rolls 8, so that a card ejected from said rolls 8 will be received on the platform 52. This position of the platform will hereinafter be referred to as the "receiving" position.

At the right hand end of its travel the platform 52 is located below a receiver 58 into which the punched cards are to be stacked, this receiver being disposed to one side of the path of the cards through the punching mechanism. The position of the platform below the receiver 58 will hereinafter be referred to as the "delivery" position.

The platform 52 is reciprocated by means of a rocking arm 59 (Figs. 2 and 4) freely mounted about a stud 60 projecting from a plate 61 secured across the rear edges of the frame plates 32, said arm 59 being connected by a link 62 to a lug 63 (see also Figs. 1 and 3) on the lower plate 56 of the carriage which supports the platform 52. Fixed to a boss 64 (Fig. 4) on the arm 59 is a pinion 65 meshing (Fig. 5) with a toothed segment 66 fixed to one end of a lever 67 pivoted at 68 to the frame plate 61, and having a slot 69 formed in its other end through which slot passes, at right angles to the lever 67, the reduced end 70 of another lever 71 pivoted (Fig. 1) to the frame plate 32 at 13, and passing through a slot 72 in the plate 61.

The lever 71 is rocked about its pivot 13 by the eccentric 17 which as above explained is secured to the shaft 19 from which the card feeding picker knife 2 is actuated, the eccentric 17 actuating a link 73 pivoted to the lever 71 at 74. Accordingly each time a card is fed the lever 71 is rocked about its pivot 13.

After a card has been deposited on to the platform 52 by the eject rolls 8 the eccentric 17 rocks the lever 71 clockwise about the pivot 13 whereby the lever 67 is rocked counter-clockwise as seen in Fig. 2, thereby rotating the pinion 65 and arm 59 clockwise about the stud 60 and thus moving the platform 52 along the support 53 from the "receiving" position opposite the eject rolls 8 to the "delivery" position below the card receiver 58.

When the platform reaches the "delivery" position below the receiver 58 it remains there during a short dwell period which is brought about by arranging the arm 59, link 62, pinion 65 and lever 67 so that the arm 59 and link 62 reach their dead centre position shortly before the end of the counter-clockwise movement of the lever 67. When the arm 59 and link 62 are in their dead centre position the platform 52 has reached the end of its travel to the right and during the further movement of lever 67 to the end of its counter-clockwise travel the arm 59 and link 62 pass their dead centre position with the result that the platform 52 returns for a short distance, which, however, is insufficient to bring it out of the receiver 58 again.

When the lever 67 rocks back clockwise in Fig. 2 the arm 59 and link 62 move back to their dead centre position thereby moving the platform forwardly to the end of its travel to the right after which the arm 59 and link 62 pass their dead

centre position in the reverse direction and return the platform to its extreme left hand position.

From the foregoing it will be seen that the platform remains effectively under the receiver 58 during a dwell period but that during this period it is not completely stationary but is subjected to a slight reciprocation.

During this dwell period the platform is raised in the manner explained below in order to insert the card into the receiver 58.

Depending from the platform support 53 is a foot member 75 (Figs. 1, 2, and 5) formed by a lug bent off from the bottom of a generally vertical plate 75*a* having its top bent off into another lug 75*b* (Fig. 1) by which it is secured to the underside of the support 53. The foot 75 as seen in Fig. 2 is engaged by the right hand end of lever 67 just as the platform 52 arrives effectively beneath the receiver 58 so that the continued counter-clockwise movement of lever 67 lifts the support 53 about its pivot 54 and thereby lifts the platform also.

The platform 52 is narrower than the card and is so disposed in relation to the eject rolls 8 that a card deposited on the platform overhangs the platform at each side. In order to ensure that the card is correctly positioned on the platform, a fixed vertical guide plate 77 (Figs. 2 and 4) is arranged at right angles to the path of the card leaving the eject rolls 8. This guide plate 77, fixed by screws 77*a* to the receiver 58, acts as a stop to locate the card correctly.

The eject rolls 8, as shown in Fig. 3, are placed with their centres vertically above one another, these centres being approximately in the plane of the outside of the receiver 58 so that the rolls themselves guide the card correctly on to the platform 52.

Projecting through slots 79 in opposite walls of the receiver 58 are two flaps 80 (Figs. 2 and 4) formed by the bent over upper ends of two light plates 81 each having wings 82 and by means of which wings each plate is pivoted on a respective rod 83, the rods 83 being supported in lugs 84 projecting from the walls of the receiver 58. These plates 81 are lightly sprung towards one another by means of torsion coil springs 85 so that the flaps 80 normally are yieldably urged to project through the slots 79 into the interior of the receiver 58.

When the platform 52 arrives beneath the receiver 58 and is lifted in the manner described above, the overhanging edges of the card engage under the flaps 80, which are inwardly and upwardly inclined, and thereby rock the pivoted plates 81 outwards until the card has risen above the flaps whereupon the springs 85 immediately return the flaps beneath the card. The flaps 80 thus act as latch-means for latch-engagement with a card bottom after the latter has been first raised to spread the flaps and then further raised to a point above the flap tops.

In order to explain further the movement of the platform 52 while it is effectively under the receiver 58 attention is drawn to Fig. 6 which illustrates diagrammatically the travel of the platform.

At the point A in this diagram the platform is in the "receiving" position at the extreme left hand end of its travel and adjacent the eject rolls 8 in readiness to receive a card therefrom. As the lever 67 rocks counter-clockwise and the arm 59 rocks clockwise the platform travels to the right reaching the point B when the arm

59 and link 62 have almost reached their dead centre position. At this point the platform is effectively below the receiver 58, and the lifting movement described above commences. At the point C the arm 59 and link 62 have reached their dead centre position and the platform is at the extreme right hand end of its travel the lifting movement being partially completed. The arm 59 and link 62 then move past their dead centre position thereby reversing the movement of the platform and bringing it back to the point E, the lifting movement ceasing at the point E.

At the point E the lever 67 has reached the end of its counter-clockwise movement and commences to rock back clockwise whereby the arm 59 and link 62 return to their dead centre position, bringing the platform forwardly again to the right to the extreme end of its right hand travel at the point C, at the same time the lowering of the platform commences at E and finishes at B. The arm 59 and link 62 then continue moving past their dead centre position whereby the platform is returned to the extreme left hand end of its travel at the point A, the lowering movement being completed at the point B.

It will be understood that the width of the platform 52 is less than the minimum distance between the flaps so that although the platform passes between the flaps in introducing a card into the receiver 58 the return of the flaps to their inmost position does not interfere with the withdrawal of the platform from the receiver.

The platform 52 is preferably provided with a lip or shoulder 86 (Fig. 4) near its rear edge to assist in propelling a card deposited on the platform, and above the platform are disposed two card guides 87 having vertical up bent end prongs 88 by which they are fixed to the receiver 58.

It will be understood that when the receiver already contains a stack of cards, the stack is lifted by the introduction into the receiver of the next card to be delivered to the bottom of the stack, and that the weight of the stack maintains the newly introduced card level and prevents it from tilting in the receiver. In order to avoid any tendency of tilting of the first card to be introduced into the receiver, a card weight may be provided therein.

Constructions according to the invention have the advantage that the overall height of the feeding and delivery mechanism from the top of the magazine to the bottom of the receiver can be considerably reduced in comparison with constructions in which the cards are delivered to the top of the stack. In the latter case the total height must be at least equal to the sum of the heights of the magazine and of the receiver, whereas in constructions according to the invention the total height need be no greater than the sum of the heights of the magazine and the punch die or sensing unit, because the bottom of the receiver can be placed approximately on the same level as the bottom of the magazine.

An advantage of constructions according to the invention in which the card carrying platform travels at right angles to the path of the cards through the feed rolls is that the magazine may be placed, for example, at the front left hand corner of the machine and the receiver just around the corner, an arrangement which is very convenient to the operator from the point of view of charging the magazine and removing cards from the receiver. This advantage is particularly valuable in machines having a relatively great depth

from front to back in which case it is inconvenient for the operator to reach the receiver if it is located in the path of the cards travelling through the feed rolls of the machine, and therefore at the back of the machine.

In receivers into which the cards are delivered on top of the stack carefully calculated and designed springs usually have to be fitted in the endeavor always to meet balancingly the varying weight of the stack and although the cards are guided as well as possible to fall in correct serial order on to the card platform there is always the possibility of a card being misplaced, owing for example to static electricity or to a bent card. Constructions according to the present invention obviate the use of such springs and ensure as far as possible that the cards are delivered consistently in the correct serial order.

Mechanisms embodying the invention are particularly advantageous when employed in a machine which is in the nature of a cash register and in which a card is punched for each transaction entered on the keyboard. In such case it is necessary to keep the interior parts of the machine including the receiver locked up during operation in order to avoid tampering, and consequently the operator is unable to give attention to the delivery of the cards into the receiver, so that the consistent delivery of the cards in correct serial order automatically by the machine becomes of high importance. Further since the receiver is usually only emptied once a day a receiver of relatively large capacity is required, so that the above mentioned reduction in the height of the mechanism which results from the delivery of the cards to the bottom of the stack is of great advantage. Constructions embodying the invention also have the advantage that in machines in which the receiver is accessible to the operator, a batch of cards can be taken from the top of the stack and these cards will always be in serial order.

It will be understood that the delivery of the cards to the bottom of the stack has the effect of reversing the serial order of the cards but this can readily be compensated for by simply arranging the cards in the magazine so that they are fed upside down.

What I claim is:

1. Mechanism for delivering record cards to a receiver from a machine which has operated on the cards, comprising, in combination, means for ejecting the cards seriatim from the machine, a card receiver located away from the ejecting means, a support, a card receiving platform reciprocable along said support, said support extending from the card ejecting means to the receiver and being so located that when the platform is at one end of said support said platform is disposed in proximity to the card ejecting means in position to receive a card ejected therefrom, and when said platform is at the other end of said support said platform is disposed beneath the receiver, a rockable crank for reciprocating the platform along the support, a link connecting said crank to said platform, means operative in timed relation with said ejecting means between successive operations thereof to rock said crank to a dead centre position to bring the platform effectively beneath the receiver, and then slightly beyond the dead centre before returning to move the platform back to the ejecting means, whereby the platform is caused to reciprocate slightly while it is beneath the receiver, thereby affording a dwell in the travel of the platform, latch-means including a pair of relatively movable elements normally yieldably urged to a minimum spacing laterally of the receiver whereby they are adapted to support a card in the receiver when the card is raised to a height such that it may rest on said elements, said latch-means including a camming means responsive to card pressure while the card is being raised toward said height thereby to increase said spacing to allow the card to reach said height, and means under the control of the crank operating means for elevating the platform during said dwell to raise the card to said height.

2. Card delivery mechanism according to claim 1 wherein the end of the support adjacent the ejecting means is pivoted to the machine frame, and the crank operating mechanism includes a horizontal lever, pivoted between its ends to the machine frame, and extending below the platform support, gearing connecting one end of said lever to the crank, means for rocking said lever in one direction to move the platform to the receiver and in the other direction to move the platform back to the ejecting means, and a foot member depending from the free end of the support and disposed to be engaged, as the crank reaches the dead centre, by that end of said lever which rises during the first mentioned rocking movement thereof.

3. Mechanism for delivering record cards to a receiver from a machine which has operated on the cards, comprising, in combination, means for ejecting cards seriatim from the machine, a card receiver located away from the ejecting means, a support, a card receiving platform reciprocable along said support, said support extending from the card ejecting means to the receiver and being so located that when the platform is at one end of said support said platform is disposed in proximity to the card ejecting means in position to receive a card ejected thereby, and when said platform is at the other end of said support said platform is disposed beneath the receiver, a rockable crank for reciprocating the platform along the support, a link connecting said crank to the platform, means operative in timed relation with said ejecting means between successive operations thereof to rock said crank to a dead centre position to bring the platform effectively beneath the receiver, and then slightly beyond the dead centre before returning to move the platform back to the ejecting means ,whereby the platform is caused to reciprocate slightly while it is beneath the receiver thereby affording a dwell in the travel of the platform, two upstanding flaps respectively pivoted at their lower portions along opposite side walls of the receiver, and each flap having an upper portion inclined upwardly for inturn towards the interior of the receiver, said side walls being cut away to pass the upper flap portions into the interior of the receiver, springs urging said upper flap portions into the interior of the receiver, and means, operative under the control of the crank operating means, to raise the platform during said dwell to pass a card thereon between said upper portions of said flaps, whereby on the rise of the platform the card thereon pushes the two flaps apart, whereupon the springs return the flaps to bring their inturned portions under the edges of the card, which remains suspended on the flaps when the platform is lowered.

4. In a statistical machine having a picker for feeding cards seriatim from a magazine to feed rolls which convey the cards through the ma-

chine, and a card stop to arrest the cards successively for operation thereon by the machine, the combination of a card receiver so disposed to one side of the path of the cards through the feed rolls that each card has to travel at right angles to said path in moving from the last pair of feed rolls to the receiver, a support, a card receiving platform reciprocable along said support, said support extending from said last pair of feed rolls to the receiver and being so located that, when the platform is at one end of said support, said platform is disposed in proximity to the last pair of feed rolls in position to receive a card ejected therefrom, and when said platform is at the other end of said support said platform is disposed beneath the receiver, a rockable crank for reciprocating the platform along the support, a link connecting said crank to said platform, means operative in timed relation with said picker and card stop between successive operations thereof to rock said crank to a dead centre position to bring the platform effectively below the receiver, and then slightly beyond the dead centre position before returning to move the platform back to the last pair of feed rolls, whereby the platform is caused to reciprocate slightly while it is beneath the receiver, thereby affording a dwell in the travel of the platform, a pair of yielding supports within the receiver, springs engaging the supports whereby said supports are normally urged toward a minimum spacing and means operative under the control of the crank operating means to raise the platform during said dwell to force said supports to an abnormally great spacing and so pass a card on the platform between the supports and to a placement atop the latter.

5. A statistical machine according to claim 4 wherein the end of the support adjacent the last pair of feed rolls is pivoted to the machine frame and the crank operating mechanism includes a horizontal lever, pivoted between its ends to the machine frame, and extending below the platform support, gearing connecting one end of said lever to the crank, means for rocking said lever in one direction to move the platform to the receiver, and in the other direction to move the platform back to the ejecting means, and a foot member depending from the free end of the support and disposed to be engaged, as the crank reaches the dead centre, by that end of said lever which rises during the first mentioned rocking movement thereof.

6. In a statistical machine having a picker for feeding cards seriatim from a magazine to feed rolls which convey the cards through the machine, and a card stop to arrest the cards successively for operation thereon by the machine, the combination of a card receiver so disposed to one side of the path of the cards through the feed rolls that each card has to travel at right angles to said path in moving from the last pair of feed rolls to the receiver, a support, a card receiving platform reciprocable along said support, said support extending from the last pair of feed rolls to the receiver and being so located that when the platform is at one end of said support, said platform is disposed in proximity to the last pair of feed rolls in position to receive a card ejected therefrom and when said platform is at the other end of said support said platform is disposed beneath the receiver, a rockable crank for reciprocating the platform along the support, a link connecting said crank to said platform, means operative in timed relation with said

card picker and card stop between successive operations thereof to rock said crank to a dead centre position to bring the platform effectively below the receiver and then slightly beyond the dead centre position before returning to move the platform back to the last pair of feed rolls, whereby the platform is caused to reciprocate slightly while it is beneath the receiver, thereby affording a dwell in the travel of the platform, two upwardly extending flaps respectively pivoted at their lower portions along opposite side walls of the receiver, a spring associated with each of said flaps, said flaps having their upper portions convergingly inclined, said flaps being yieldably urged toward a predetermined minimum spacing of their upper portions by said springs, and means operative under the control of the crank operating means to raise the platform during said dwell to pass a card thereon between the inturned portions of said flaps.

7. A statistical machine according to claim 6 wherein the end of the support adjacent the last pair of feed rolls is pivoted to the machine frame and the crank operating mechanism includes a horizontal lever, pivoted means between its ends to the machine frame and extending below the platform support, gearing connecting one end of said lever to the crank, means for rocking said lever in one direction to move the platform to the receiver and in the other direction to move said platform back to said last pair of feed rolls, and a foot member depending from the free end of the support and disposed to be engaged, as the crank reaches the dead centre, by that end of said lever which rises during the first mentioned rocking movement thereof.

8. Mechanism for delivering record cards to a receiver from a machine which has operated on the cards, comprising, in combination, means for ejecting the cards seriatim from the machine, carrier means for receiving the ejected cards including a support pivoted at one end and having its free end disposed in said receiver and a platform slidable longitudinally of said support, means including a yieldable rest within the receiver for having deposited thereon from the platform one card after another to build up a stack of cards within the receiver, and means operative in timed relation with the card ejecting means to guidingly move the platform, between successive operations of the card ejecting means, first through a substantially rectilinear path extending in one direction for moving the card away from the ejecting means and next through a path in another direction to lift the card past said rest for deposit in the receiver below a card or cards previously deposited in the receiver and next through a path back to the ejecting means for receipt of another card from the ejecting means.

9. Mechanism for delivering record cards to a receiver from a machine which has operated on the cards, comprising, in combination, means for ejecting the cards seriatim from the machine, a card receiver spaced away from the ejecting means in a direction more horizontal than vertical, carrier means including a pivoted support and a platform slidably mounted on the support and disposed in proximity to the ejecting means to receive a card ejected therefrom, a pair of yielding flap plates within the receiver, means for reciprocating the card receiving platform from the ejecting means to a position adjacent the receiver and back to the ejecting means between successive operations of the ejecting

means, and means operative while the platform is adjacent the receiver for moving said platform through a path more vertical than horizontal, to pass a card, received by said platform from the ejecting means, between the yielding flap plates.

10. Mechanism for handling record cards seriatim as delivered intermittently by the ejecting means of a machine for operating on the cards, comprising, in combination, a receiver for a stack of cards, means for transporting a card from the ejecting means to the bottom of a stack to be accumulated in the receiver including a support pivoted at one end and having its free end disposed in said receiver and a platform slidable along said support, a pair of movable flap plates normally positioned to engage the underside of the bottom card in the receiver, said flap plates being abnormally positionable to assume clear-away positions to permit a card to be passed upwardly therebetween for placement thereon; means for slidably moving the platform back and forth along one path between the ejecting means and the receiver in timed relation with the operation of the former, a second means for moving the free end of the support back and forth but through a different path when the platform is adjacent the receiver and for raising the card on the platform to a height within the receiver such that the card forces said flap plates to their abnormal positions and for lowering the platform following detention of the card on said flap plates.

11. Mechanism as in claim 10, wherein the platform moving means includes a driving member and a driven member, the speed of movement of the driven member controlling the speed of movement of the platform while moving through the first-named path, and the two members being so coupled and arranged that at a stage of their conjoint operation there is a cessation of movement of the driven member; and wherein said support moving means includes an instrumentality responsive to said driven member and which is inoperative relative to the platform except during such cessation; and means for rendering said connection operative relative to

the support during said cessation, thereby to raise and lower the platform as aforesaid.

12. A card stacking means comprising an open bottomed receiver in which cards are stacked, a card carrier and transfer means including a support pivoted at one end and having its free end in the open bottom of said receiver and a platform on the support to which cards are fed one at a time, said platform being slidable along said support, coacting means for reciprocating said platform along the support to and from a dwell position beneath the receiver and for reciprocating the free end of said support vertically when the platform is beneath the receiver and during said dwell, said receiver having opposite slotted side walls, plates pivoted to said walls and shaped to provide upwardly and inwardly directed flaps at the upper ends thereof passing through said slots to support cards stacked in the receiver, the inner edges of said flaps being interspaced, springs urging said plates pivotally to yieldably retain the edges of the flaps thereof in minimum interspaced relation, the platform of the card carrier and said minimum interspaced relation of the edges of said flaps being narrower than the cards so that upon a vertical rising movement of the platform to lift the stack, the flaps will be oscillated by a card on the platform to pass the card therebetween and engage the card on the underside in supported stacked position prior to vertical lowering movement of the platform for passage between said flaps.

ARTHUR THOMAS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
773,318	Gay	Oct. 25, 1904
1,040,201	Hohl	Oct. 1, 1912
1,516,770	Grunlee	Nov. 25, 1924
2,132,451	Wolff	Oct 11, 1938
2,237,067	Anderson	Apr. 1, 1941
2,282,127	Gabbert	May 5, 1942