Oct. 19, 1965 MASATOMO SUGIYAMA 3,212,617

PAPER HANDLING EQUIPMENT FOR ADDING AND SIMILAR ACCOUNTING MACHINES

Filed May 1, 1963 2 Sheets-Sheet 1

FIG. 1

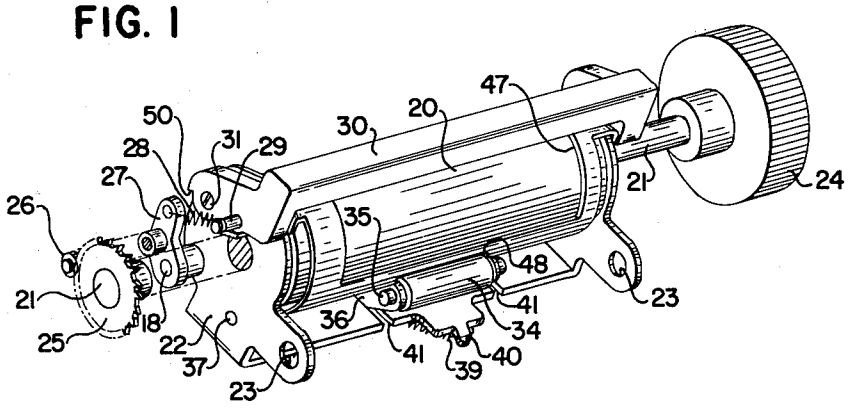
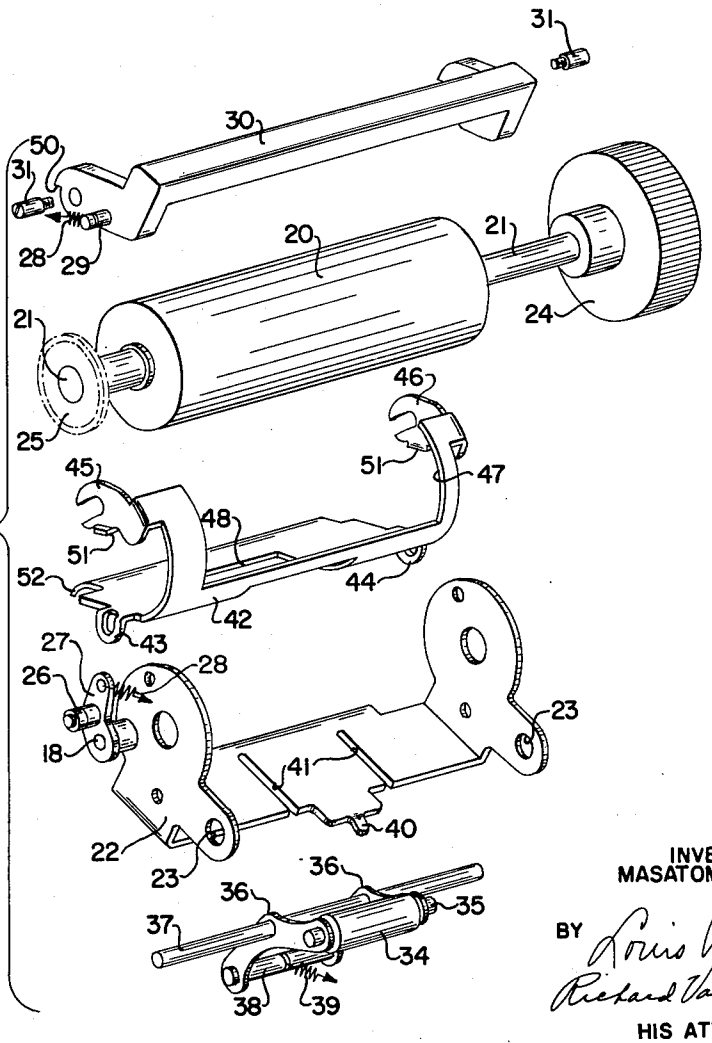


FIG. 2



INVENTOR
MASATOMO SUGIYAMA

BY Louis A. Kline
Richard Van Braum

HIS ATTORNEYS

Oct. 19, 1965 MASATOMO SUGIYAMA 3,212,617
PAPER HANDLING EQUIPMENT FOR ADDING AND SIMILAR ACCOUNTING MACHINES
Filed May 1, 1963 2 Sheets-Sheet 2

FIG. 3

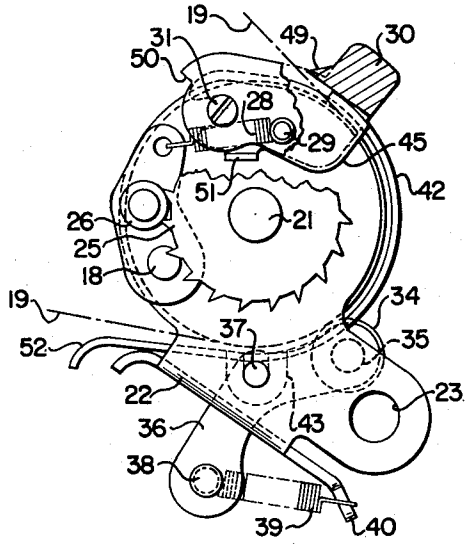


FIG. 4

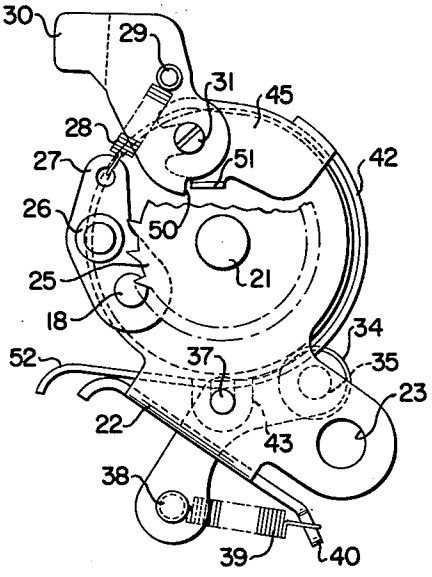


FIG. 5

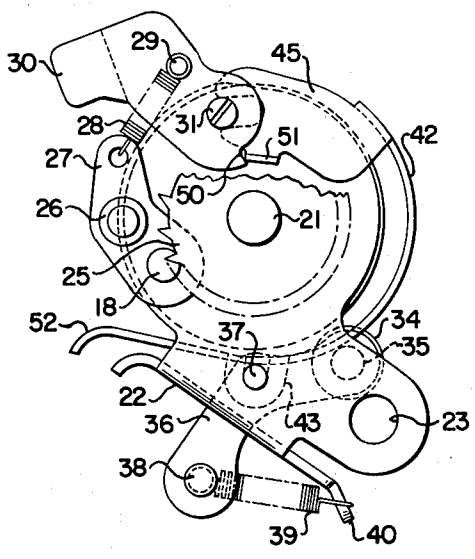
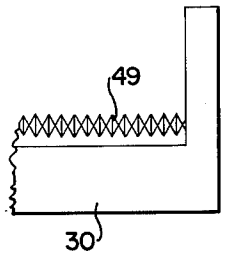


FIG. 6



INVENTOR
MASATOMO SUGIYAMA

BY Louis A. Kline
Richard Van Busum

HIS ATTORNEYS

United States Patent Office 3,212,617 Patented Oct. 19, 1965

3,212,617

PAPER HANDLING EQUIPMENT FOR ADDING AND SIMILAR ACCOUNTING MACHINES

Masatomo Sugiyama, Hiratsuka City, Japan, assignor to The National Cash Register Company, Dayton, Ohio, a corporation of Maryland

Filed May 1, 1963, Ser. No. 277,148
3 Claims. (Cl. 197—133)

This invention relates to adding and similar accounting machines, and is directed particularly to the paper-handling equipment of such machines.

The present invention is directed to the paper-handling equipment of adding and similar accounting machines of small external dimensions and economical construction, said machines having the usual rotatable platen roll with corresponding pressure means to retain the record material in resilient feeding contact with the face of said platen roll, and with corresponding detent means for retaining such platen roll in those positions to accurately line-space the record material wound therearound, said platen roll serving as a means for presenting said record material, in the form of a detail or journal strip, to the printing mechanism for recording the values involved in various computations performed on said machines.

The invention comprises a manipulative member which normally serves as a means for severing the printed portion of the record strip from the unprinted web thereof, said member movable from a normal severing position to an intermediate position to disable the detent means for the platen roll, to permit manual rotation of said platen roll in either direction to fast-feed the record strip, said member movable from intermediate position to an extreme position to retain such platen roll detent means disabled and at the same time to further disable the platen roll pressure means to free the record strip for unrestricted removal from or insertion around such platen roll.

Generally it is an object of this invention to provide improved means to facilitate the insertion and removal of strip record material around and from around the platen roll of an adding or similar accounting machine.

Another object is the provision of a manipulative member to serve normally as a means for severing a printed portion of a record strip from the web thereof, said member movable to an intermediate position to disable the line-space retaining detent means from the platen roll, so that said roll may be freely rotated either clockwise or counter-clockwise to fast-feed the record strip, said member movable to an extreme position to retain such detent means disabled and to simultaneously move the pressure means out of engagement with the record strip and the platen roll, to permit unrestricted insertion of the web of the record strip around said platen roll and unrestricted removal of the strip from around said platen roll.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

In the drawings:

FIG. 1 is a perspective view showing the platen roll and associated parts forming a unit for presenting strip record material to the printing means.

FIG. 2 is a disassembled perspective view showing in detail the parts of the platen roll mechanism, shown assembled in a complete unit in FIG. 1.

FIG. 3 is a left side elevation showing the multi-purpose severing member in normal, or home, position, in which it serves as a means for severing the printed portion of the record strip from the web thereof.

FIG. 4 is a left side elevation showing the movable severing member in its intermediate position, in which the detent retaining means for the platen roll is disabled, so that said roll may be freely rotated in either direction for unrestricted feeding of the record material wound therearound.

FIG. 5 is a left side elevation showing the severing member in its extreme rearward position, which, in addition to maintaining the platen-roll-retaining means disabled, also moves the pressure means out of engagement with the record strip and the periphery of the platen roll to permit unrestricted removal and insertion of said record strip from and around said platen roll.

FIG. 6 is an enlarged fragmentary view showing a portion of the toothed severing surface of the record material severing member.

Description

Referring to the drawings, in the different figures of which similar reference numerals refer to similar parts, the present invention comprises a rotatable platen roll **20**, made of rubber or other suitable material, secured on a shaft **21** journaled in the similar side plates of a platen frame **22**, said side plates having forward extensions of similar outline with axially-aligned holes **23**, which engage a shaft (not shown) supported in the machine framework, for rockably supporting the platen frame **22**. Secured on the right-hand end of the shaft **21** is a turning knob **24** for rotating said platen to feed a strip **19** of record material supported thereby. Secured on the left-hand end of the shaft **21** is a feed and retaining ratchet **25**, the teeth of which are normally engaged by a retaining roller **26** free on a stud secured in a detent arm **27** rotatably supported on a stud **18** secured in the left side plate of the frame **22**. A spring **28**, tensioned between the upper end of the detent arm **27** and a stud **29** in a record-strip-severing member or bar **30**, normally urges said arm **27** clockwise to maintain the roller **26** in yielding engagement with the teeth of the ratchet **25** to permit line-spacing movement of said platen roll.

Feeding mechanism (not shown) coacts with the teeth of the ratchet **25**, as the frame **22** is rocked back and forth from viewing position to printing position, to advance said ratchet, the shaft **21**, and the platen roll **20** counter-clockwise to line-space the record material supported by said platen roll.

The severing or tearing bar **30** is preferably made of transparent plastic material and has rearwardly-disposed side arms which straddle the side plates of the platen frame **22** and are pivotally supported on axially-aligned trunnion screw studs **31**, threaded into corresponding holes in said side plates of the frame **22**.

The record material is retained yieldingly in engagement with the periphery of the platen roll **20**, for feeding purposes, by a pressure roller **34** rotatably supported on a short shaft **35** extending between a pair of similar arms **36**, in turn rotatably supported on a rod **37** extending between the side plates of the frame **22**. The pressure roller **34** fits snugly between the inside surfaces of the arms **36**, and a stud **38**, secured between rearward extensions of said arms, assists the shaft **35** in maintaining said arms **36** in proper spaced relationship to each other. A spring **39**, tensioned between a slot formed in the center of the stud **38** and a bent-over tongue **40** formed on the frame **22**, urges, through the arms **36**, the pressure roller **34** into yielding engagement with the record material **19** and the platen roll **20**, so that rotation of said platen roll will feed the record material. As shown best in FIGS. 1 and 2, the rearward extensions of the arms **36** extend through corresponding parallel clearance slots **41** formed in the cross member of the frame **22**.

Referring to the various figures of the drawings, a guide plate and shield **42** is provided for guiding the record material **19** around the platen roll and for shielding said record material from the inking ribbon to prevent it from being blurred thereby. The guide **42** fits inside the side plates of the frame **22** and is provided with downwardly-extending ears **43** and **44**, having slots which freely engage the rod **37**. The guide **42** has rearward bent-over extensions **45** and **46**, which fit between the outside surfaces of the side plates of the frame **22** and the inside surfaces of the side arms of the severing bar **30**. Each of the extensions **45** and **46** has an open-ended slot which freely engages the corresponding trunnion stud **31**, to shiftably mount said guide **42** in the platen frame **22**. The guide **42** has, in its front, an opening **47**, which provides clearance for the inking ribbon and the printing type wheels, when the platen assembly is rocked forwardly to engage the record material **19** with said inking ribbon and said type wheels, to record data on said record material. The guide **42** likewise has an opening **48** located beneath the opening **47**, which provides clearance for the pressure roller **34** to permit yielding engagement of said pressure roller **34** with the platen roll **20**, for the purpose of feeding the record material.

As previously explained, the severing bar **30** has three positions, a forward or normal record-strip-severing position, as shown in FIGS. 1 and 3; an intermediate, ratchet and detent arm disabling position, as shown in FIG. 4; and an extreme rearward position, as shown in FIG. 5, for disengaging the pressure roller from the record material and the platen roll to open the throat formed by the guide shield **42**, so that said record material may be freely removed from or threaded around said platen roll.

When the severing bar **30** is in its normal position, the record strip **19** passes beneath said bar, as shown in FIG. 3, so that its upper end is in severing relationship with a series of severing teeth **49** (FIGS. 3 and 6) formed on the inside surface of said bar. The printed portion of the record strip **19** may be severed from the web thereof by pulling said printed portion forwardly against the teeth **49**. Moving the severing bar **30** from its normal, or home, position, as shown in FIG. 3, to its intermediate position, as shown in FIG. 4, causes the spring **28** to be shortened and relieved of its tension and to function as a link to push the detent arm **27** and its roller **26** rearwardly, or counter-clockwise, to disengage said roller **26** from the teeth of the ratchet **25**, to permit the platen roll **20** to be freely turned in either direction, by use of the knob **24**, to fast-feed the record strip **19**. Moving the severing bar **30** from its intermediate position, as shown in FIG. 4, to its extreme rearward position, as shown in FIG. 5, causes shoulders **50**, formed on the side arms of said severing bar, to engage the rearward edges of corresponding ears **51**, formed on the extensions **45** and **46**, to rock the record strip guide **42** forwardly, or clockwise, on the rod **37**.

By referring to FIGS. 1 and 2, it will be seen that the ends of the shaft **35** for the pressure roller **34** extend outwardly beyond each of the supporting arms **36**, and likewise extend beyond opposite edges of the opening **48** in the guide shield **42**, whereupon full counter-clockwise movement of the severing bar **30** to its extreme position, shown in FIG. 5, causes the edges of said opening **48** to engage the extending ends of the shaft **35** and rock said shaft, the pressure roller **34**, and the arms **36** clockwise, against the tension of the spring **39**, to move said pressure roller out of engagement with the record strip **19** and the platen roll **20**, as shown in FIG. 5. In this case, the pressure roller **34** no longer obstructs the opening or throat formed by the inner surface of the guide shield **42** and the outer surface of the platen roll **20**, so that the record strip **19** may be freely removed from or inserted around said platen roll.

It will be noted, by referring to FIG. 5, that the detent roller **26** is retained out of engagement with the teeth of the ratchet **25** when the severing bar **30** is moved to its extreme rearward position. It will likewise be noted that the rear edge of the guide shield **42** is curved downwardly as indicated by the reference numeral **52**, to facilitate inserting the end of the record strip **19** between said guide shield and the outer surface of the platen roll **20**.

It is believed that a full understanding of the operation of the comparatively simple mechanism disclosed herein will have been obtained from reading the foregoing description; therefore no further description of operation is deemed necessary.

While the form of mechanism shown and described herein is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form or embodiment disclosed herein, for it is susceptible of embodiment in various forms, all coming within the spirit and scope of the invention.

What is claimed is:

1. In a device of the character described for presenting a strip of record material to the printing mechanism of an adding or similar accounting machine, the combination of a platen roll to present the record strip to the printing mechanism; guide means to guide the record strip around the platen roll; pressure means to retain the record strip in resilient feeding engagement with the platen roll; a manipulative member movable to three positions, said member being normally positioned to serve as a means for severing the printed portion of the record strip; means including an arm and a roller to restrain the platen roll against free rotation; yieldable means between the arm and the manipulative member and effective when said member is in its normal position to yieldingly urge said arm and the roller into restraining position, said yieldable means effective when the manipulative member is moved from its normal position to a second position, to function as a link to move the arm and the roller out of restraining position to free the platen roll for unrestrained rotation in either direction to permit fast-feeding of the record strip; and coacting means on the manipulative member and the guide means, and on the guide means and the pressure means to cause, when said member is moved from its second position to a third position, said guide means to disable the pressure means to free the record strip for unrestricted removal from or insertion between said guide means and the platen roll.

2. In a device of the character described for presenting a strip of record material to the printing mechanism of an adding or similar accounting machine, the combination of a platen roll for supporting the record strip in printing position; a frame to rotatably support the platen roll; a ratchet mounted integral with the platen roll; a detent mouned on the frame and coacting with the ratchet to restrain the platen roll against free rotation; a record material severing member mounted on the frame and positionable to first, second, and third positions, said member being normally positioned in its first position where same provides for selective severing of the printed portion of the record strip; pressure means mounted in the frame for retaining the record strip in resilient feeding engagement with the platen roll; guide means to guide the record strip around the platen roll and into coacting relationship with the member and the pressure means, said guide means being shiftably mounted in the frame; yieldable means interconnecting the detent and the member and effective when said member is in its first position to yieldingly urge the detent into restraining relationship with the ratchet, said yieldable means functioning as a link when the member is moved from its first position to its second position to move the detent out of restraining relationship with the ratchet to free the platen roll for unrestrained rotation in either direction to permit fast-feeding of the record strip; and coacting means on the severing member and the guide,

and on said guide and the pressure means, and effective when said severing member is moved from its second position to its third position to disable said pressure means to free the record strip for unrestricted movement in either direction between the guide and the platen roll.

3. In a device of the character described for presenting a strip of record material to the printing mechanism of an adding or similar accounting machine, the combination of a platen roll for presenting the record strip to the printing mechanism; a frame to rotatably support the platen roll; a ratchet integral with the platen roll; an arm pivotally mounted on the frame; a roller supported by the arm and coacting with the ratchet to normally restrain the platen roll against free rotation; a severing member mounted on the frame and movable to second and third positions from a normal, record material severing position; a pressure roller for retaining the record strip in resilient feeding engagement with the platen roll; a shaft to rotatably support the pressure roller; means to rockably support the shaft and the roller in the frame; yieldable means coacting with the supporting means to urge the pressure roller into resilient engagement with the record strip and the platen roll; guide means shiftably mounted in the frame and constructed and arranged to guide the record strip around the platen roll and into coacting relationship with the pressure roller and the severing member; yieldable means tensioned between the arm and the severing member and effective when said member is in its normal position to urge the restraining roller into yielding engagement with the ratchet, said yieldable means functioning as a link when the member is moved from its normal position to its second position, to move the arm and the roller out of restraining relationship with the ratchet to free the platen roll for unrestricted rotation in either direction to facilitate manual transporting of the record strip; coacting surfaces on the severing member and the guide means, and effective to shift said guide means when said member is moved from its second position to its third position; and surfaces on the guide means coacting with the shaft for the pressure roller, when said guide means is shifted, to rock said roller out of engagement with the record strip and the platen roll to free said record strip for unrestricted movement between the guide means and the platen roll, for the purpose of inserting or removing said record strip.

References Cited by the Examiner

UNITED STATES PATENTS

1,426,804	8/22	Adams	197—133
2,241,357	5/41	Paschke	197—133
2,399,369	4/46	McFarland	197—138 X
2,510,626	6/50	Geisheck	197—138 X
2,808,919	10/57	Frobel	197—133

ROBERT E. PULFREY, *Primary Examiner.*