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LISTING BUSINESS MACHINES AND THE LIKE

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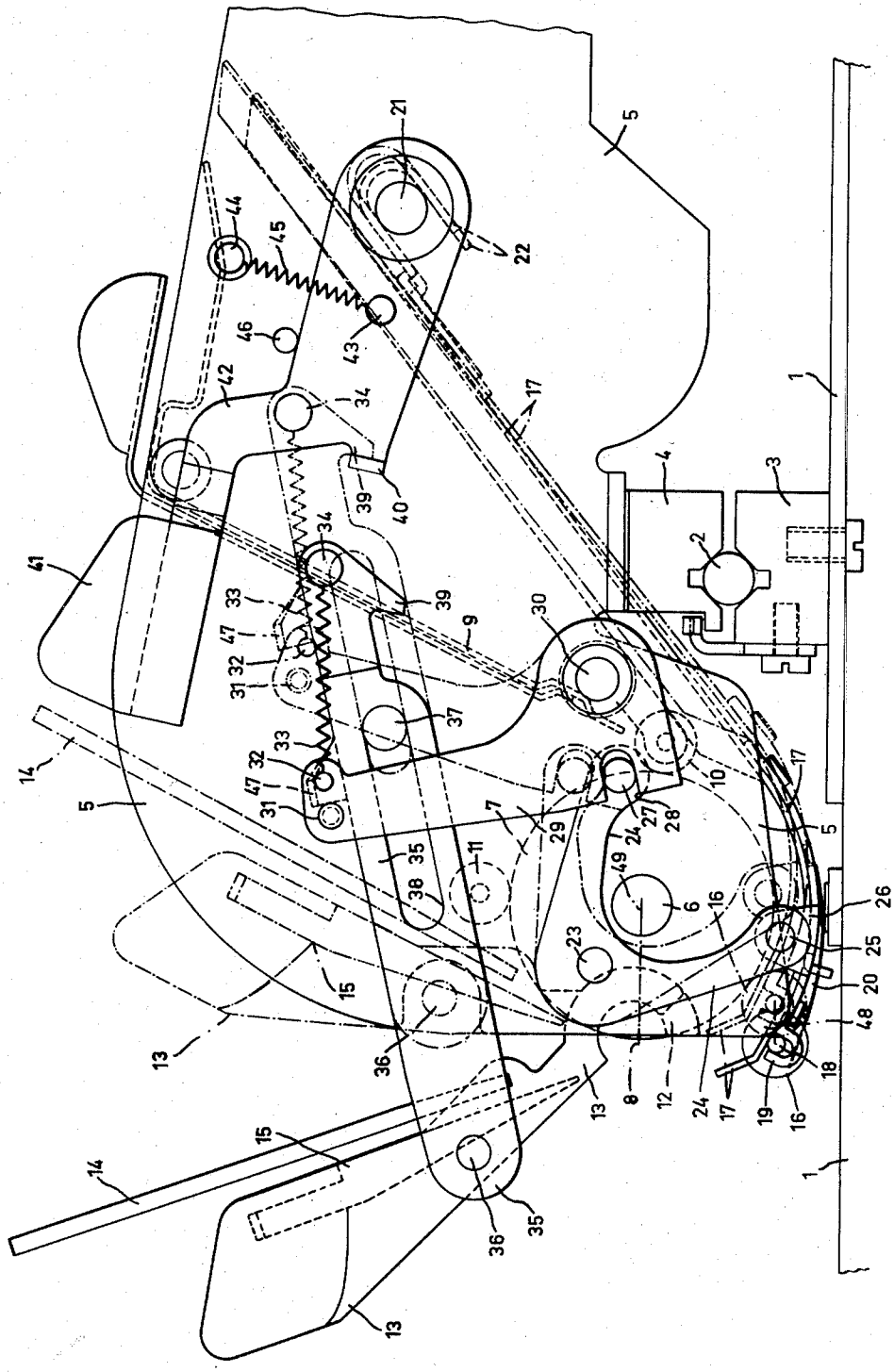

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LISTING BUSINESS MACHINES AND THE LIKE

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5 Claims. (Cl. 197—128)

This invention relates to listing business machines and the like.

An object of the invention is to provide an improved listing business machine or the like comprising frame end walls, a platen mounted in said walls and having a printing position at a front face thereof, a front feed mechanism for a sheet to be typed located above the printing position and movable between a listing position and a front feed position, and sheet pressing roller means located beneath the printing position and movable between a position in which they hold the sheet pressed against the platen, and a position in which they are at a distance from said platen and permit free insertion of the sheet between them and the platen.

A primary object of the invention is to provide a machine of this character in which the parts under the platen take a minimum of space, so as to allow maximum space under the platen for control means associated with program means. This object is attained by novel pressing roller suspension means located above the platen.

The business machine according to the invention is characterized by a device connected to said front feed mechanism for moving, when said front feed mechanism is moved between its listing position and front feed position, said sheet pressing roller means between their corresponding positions in a path substantially parallel to or making a small angle with the connecting line between the printing position of the platen and the axis thereof.

An important advantage of such an arrangement is that, when the pressure rollers are moved against the platen, the paper sheets are swept around the platen in such a manner that the paper sheets are pulled even against the platen.

The device according to the invention can readily be operated, maintains the sheet safely in listing position and requires but little space beneath the platen.

Further objects and advantages of the invention will appear from the following description reference being had to the accompanying drawing illustrating an embodiment of the invention by way of example.

The drawing shows a side view of part of the carriage of a bookkeeping machine which is laterally reciprocable on a machine frame 1. Of the means for mounting the carriage on the machine frame 1, there are shown merely by way of example balls 2 rolling in grooves provided in a rail 3 secured to the frame 1 and a rail 4 secured to the carriage. The carriage has two end walls 5 one of which is visible in the drawing. Mounted for rotation in these end walls is the shaft 6 of a platen 7. On the side facing the operator, or the front side, the platen 7 has a printing position 8 in which types (not shown) by means of a ribbon (not shown) print on paper sheets placed in position around the platen. A journal sheet

with associated carbon paper sheets (not shown) can be moved from the rear around the platen 7 so as to be moved downwardly along a guide plate 9 between rear journal pressing rollers 10 and the platen 7 down below and up in front of the platen past the printing position 8 and between the platen and upper journal pressing rollers 11. For feeding an account sheet (not shown) from the front around the platen 7 there is provided a customary front feed mechanism comprising two side plates 13 pivotally mounted on semi-round pivots 12 on the carriage end walls 5 and having a rear guide plate 14 and a transparent front guide plate 15 between which plates the account sheet can be fed past the printing position 8 between sheet pressing rollers 16 and the platen 7 and upwardly and rearwardly along a sheet guide plate 17 extending beneath and rearwardly of the platen.

The shafts 18 of the sheet pressing rollers 16 are movable towards and away from the guide plate 17 in U-shaped bearing elements 19 thereon, and the shafts are acted upon by leaf springs 20 secured to the guide plate and tending to hold the shafts in bearing engagement with the guide plate. The guide plate 17 and rollers 16 are movable between a front feed position shown by continuous lines and a listing position shown by dash and dot lines, in a manner to be described in the following. Adjacent its rear end the guide plate 17 for this purpose is pivotally and movably suspended on a shaft 21 extending between the carriage end walls 5 by means of a pair of U-shaped bearing elements 22 secured to the guide plate, and in addition said guide plate is hingedly connected with one arm of two two-armed levers 24 with the aid of pins 25 secured in lugs on the side margins of the guide plate. Said two-armed levers 24 are mounted each on one carriage end wall 5 by means of a pivot 23. The other arm of each lever 24 has a pin 27 engaging in a recess 28 provided in an arm 29 which is pivotally mounted on a pivot 30 in the respective carriage end wall 5. At its free end each arm 29 has an abutment pin 31 and a stud 32 to which one end of a pull spring 33 is anchored.

The other end of each pull spring 33 is anchored to a stud 34 on one end of a link 35 whose other end is hingedly connected with the respective side plate 13 of the front feed mechanism by means of a pin 36. Each link 35 is guided on a pin 37 on the respective carriage end wall 5, said pin engaging in a longitudinal slot 38 in the link. The front feed mechanism 13—15 can be pivoted between the front feed position shown by continuous lines in which each link 35—as is shown by full lines—has the rear end of its slot 38 bearing against the pin 37, and a listing position shown by dash and dot lines in which a projection 39 on the rear end of each link 35 engages, as is shown by dash and dot lines, with a lug 40 on an arm 42 which is manually operable by means of a key 41. The two arms 42 are non-rotatively secured to the shaft 21 which is rotatively mounted in the carriage end walls 5, and a pull spring 45 expanded between a pin 43 on the arm 42 and a pin 44 on the carriage end wall 5 tends to hold the arm applied against an abutment pin 46 in position to engage with the projection 39 of the link 35.

When the parts occupy the front feed position shown by full lines, a lug 47 on each link 35 bears against the abutment pin 31 on the respective arm 29 so that the pull of the spring 33 is wholly taken up by parts 29 and 35 without acting upon other parts of the mechanism, and the parts are retained merely by gravity in the front feed position, which is defined by the rear ends

of the slots 38 in the links 35 bearing against the pins 37. After insertion of an account sheet in the manner already described in the front feed mechanism 13—15 is swung manually rearwardly to the listing position shown by dash and dot lines, the links 35 being moved rearwardly to the position shown by dash and dot lines to engage with the lug 40 of the respective arm 42 which retains the parts in listing position. During the first and greater part of the rearward movement of each link 35 the respective arm 29 follows the link and turns around the pin 30 in that the spring 33 retains the abutment pin 31 on arm 29 applied against the lug 47 of the link 35. During this movement of each arm 29 the associated lever 24 is swung counterclockwise around the pivot 23 by the pin 27 of the lever and the recess 28 of the arm engaging with each other, the lever moving the front end of the guide plate 17 substantially horizontally rearwardly and the rear end of the guide plate obliquely rearwardly and upwardly while the sheet pressing rollers 16 are applied against the platen 7. After the rollers 16 have been applied against the platen 7 they prevent the levers 24 and the arms 29 from partaking in the latter part of the rearward movement of the links 35, whereby the lug 47 of the links is moved away from the pin 31 of the arms 29 under compression of the springs 33, the force of which hold the projections 39 of the links 35 safely engaged with the lugs 40 of the key arms 42 and press the rollers 16 with the desired pressure against the platen 7 for safely retaining the inserted account sheet against the journal sheet and intermediate carbon paper sheets passed around the platen 7. For transferring the parts to the feed position for exchanging account sheets it is only necessary to actuate the key 41 so that the links 35 are released from the lugs 40 by a counterclockwise rotation of the key arms 42, the springs 33 moving the lugs 47 and pins 31 together imparting a sufficiently large force to the front feed mechanism 13—15 and the links 35 in order that, after the action of the springs has ceased, the entire mechanism may move up to the front feed position as a result of the lugs 47 meeting the pins 31. Instead of swinging the arms 42 to release the links 35 from the listing position by manually acting upon the keys 41, the arms 42 can be swung automatically with the aid of a control mechanism provided on the carriage, in a manner known and therefore not shown in detail.

The described mechanism moves the sheet pressing rollers 16 towards and away from the platen 7 in a path indicated by a dash and dot line 48 for the axes of the rollers, said path making a small angle with the broken connecting line 49 between the printing position 8 of the platen and the axis thereof. With somewhat other dimensions of the mechanism said path could be made wholly parallel with said connecting line 49.

What I claim and desire to secure by Letters Patent is:

1. In a listing business machine a carriage, frame end walls on said carriage, a platen mounted with its axis horizontal in said walls and having a printing position at a front face thereof, a front feed mechanism for a sheet to be typed located above the printing position and movable between a listing position and a front feed position, suspension means, pivots pivotally mounting said suspension means on said walls above the level of the axis of said platen, depending arms on said suspension means, pressure roller means supported by said depending arms beneath the printing position and the level of the axis of said platen, and connection means connecting said suspension means with said front feed mechanism for swinging said suspension means about said pivots as a result of the movement of said front feed mechanism between its listing position and its front feed position, said depending arms of said suspension means moving said pressure roller means during such swinging movement of said suspension means between a position, in which said pressure roller means hold the sheet pressed against said platen, and a position, in which said pressure roller means are at a distance from said platen, in a path substantially parallel to the connecting line between the printing position of said platen and the axis thereof.

2. In a listing business machine a carriage, frame end walls on said carriage, a platen mounted with its axis horizontal in said end walls and having a printing position at a front face thereof, a front feed mechanism for a sheet to be typed located above the printing position on said platen and movable between a listing position and a front feed position, sheet guide means extending beneath and rearwardly of said platen, supporting means displaceably and pivotally mounting the rear part of said sheet guide means on said end walls, suspension means, pivots pivotally mounting said suspension means on said end walls above the level of the axis of said platen, depending arms on said suspension means connected with the front part of said sheet guide means for assisting said supporting means in mounting said sheet guide means on said end walls, pressure roller means mounted on the front part of said sheet guide means beneath the printing position and the level of the axis of said platen, and connection means connecting said suspension means with said front feed mechanism for swinging said suspension means about said pivots as a result of the movement of said front feed mechanism between its listing position and its front feed position, said depending arms of said suspension means moving said sheet guide means during such swinging movement of said suspension means in such a way that said pressure roller means are moved between a position, in which said pressure roller means hold the sheet pressed against said platen, and a position, in which said pressure roller means are at a distance from said platen, in a path substantially parallel to the connecting line between the printing position of said platen and the axis thereof.

3. In a listing business machine a carriage, frame end walls on said carriage, a platen mounted with its axis horizontal in said end walls and having a printing position at a front face thereof, a front feed mechanism for a sheet to be typed located above the printing position on said platen and movable between a listing position and a front feed position, sheet guide means extending beneath and rearwardly of said platen, supporting means displaceably and pivotally mounting the rear part of said sheet guide means on said end walls, suspension means, pivots pivotally mounting said suspension means on said end walls above the level of the axis of said platen, depending arms on said suspension means connected with the front part of said sheet guide means for assisting said supporting means in mounting said sheet guide means on said end walls, pressure roller means mounted on the front part of said sheet guide means beneath the printing position and the level of the axis of said platen, a lever system journalled on said end walls and operably connected to said suspension means, link means connected to said front feed mechanism, and spring means yieldingly interconnecting said lever system and said link means, said lever system, said link means and said spring means swinging said suspension means about said pivots as a result of the movement of said front feed mechanism between its listing position and its front feed position, and said depending arms of said suspension means moving said sheet guide means during such swinging movement of said suspension means in such a way that said pressure roller means are moved between a position, in which said pressure roller means hold the sheet pressed against said platen, and a position, in which said pressure roller means are at a distance from said platen, in a path substantially parallel to the connecting line between the printing position of said platen and the axis thereof.

4. In a listing business machine according to claim 3 a locking means mounted on said end walls and releasably engaging said link means, when said front feed mechanism is in its listing position, to hold said front

feed mechanism in its listing position and relieve said front feed mechanism from the reaction of said spring means, said spring means being in a tensioned condition to retain said pressure roller means in the position in which they hold the sheet pressed against said platen.

5. In a listing business machine according to claim 3 first abutment means on said link means and second abutment means on said lever system, said first abutment means being arranged to engage said second abutment means when said front feed mechanism is in its front feed position to take up the force of said spring means so that this force is not transmitted to said pressure roller means.

References Cited in the file of this patent

UNITED STATES PATENTS

2,425,172 Britten ---------- Aug. 5, 1947