Oct. 8, 1957 A. FRÖBEL 2,808,919

TEAR BAR DEVICES IN BUSINESS MACHINES

Filed March 30, 1954 4 Sheets-Sheet 1

FIG. 1.

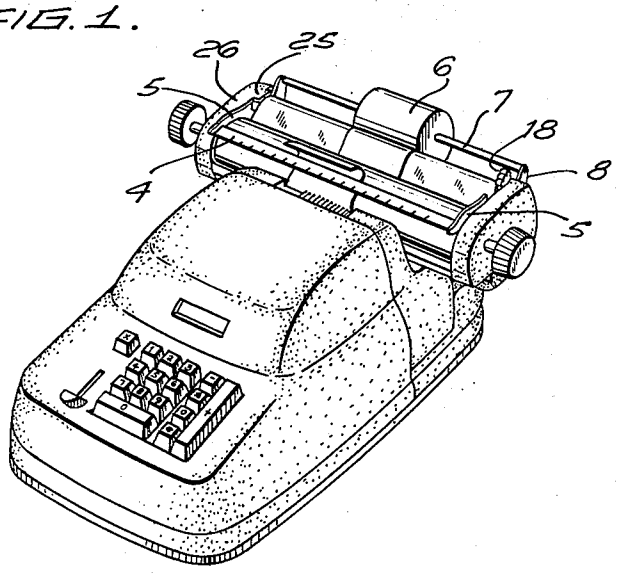
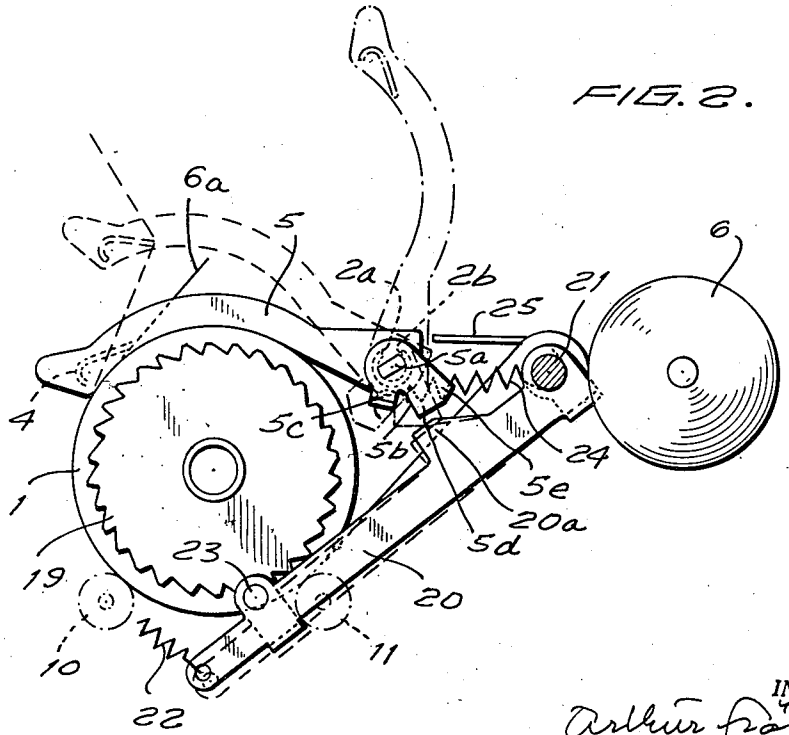


FIG. 2.



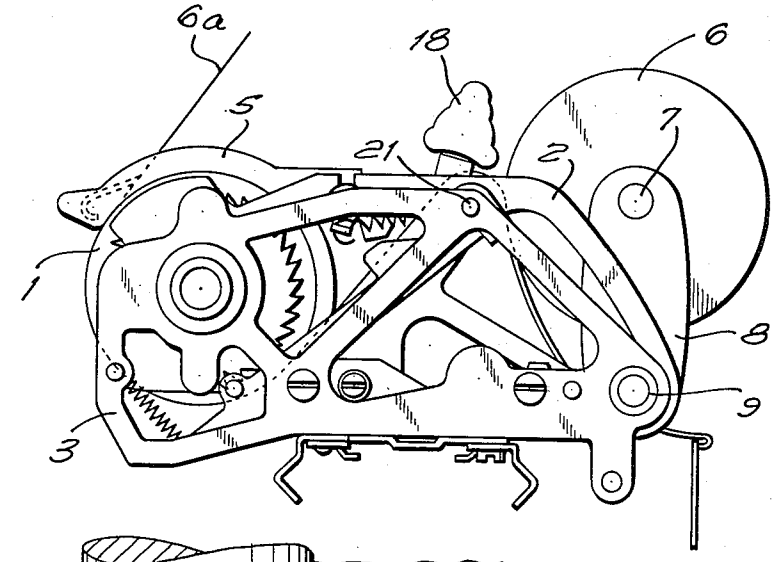
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TEAR BAR DEVICES IN BUSINESS MACHINES

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FIG. 2a.



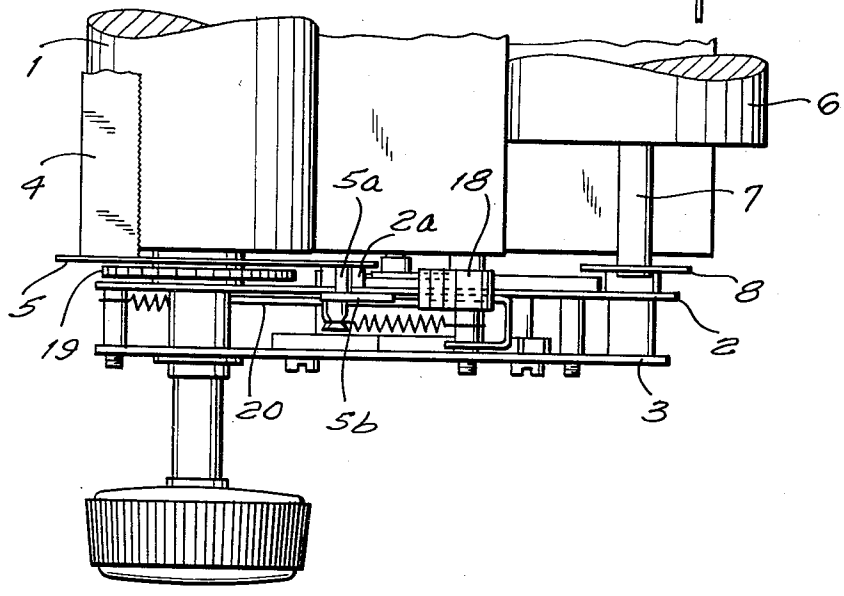


FIG. 2b.

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FIG. 2c.

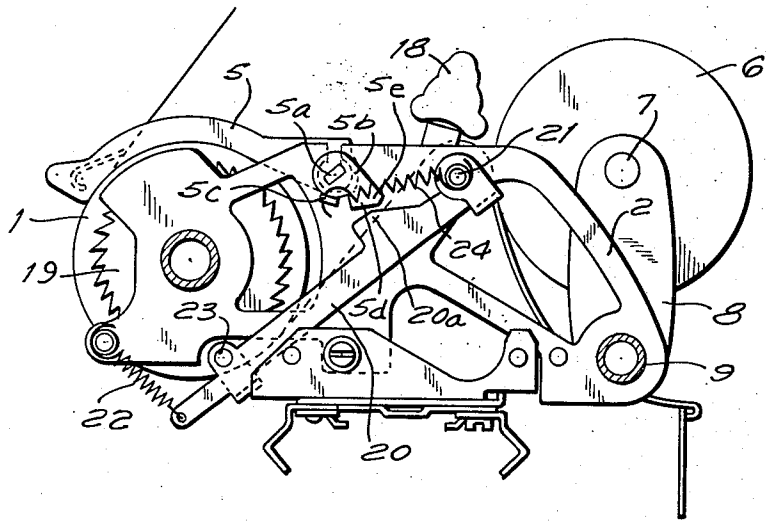
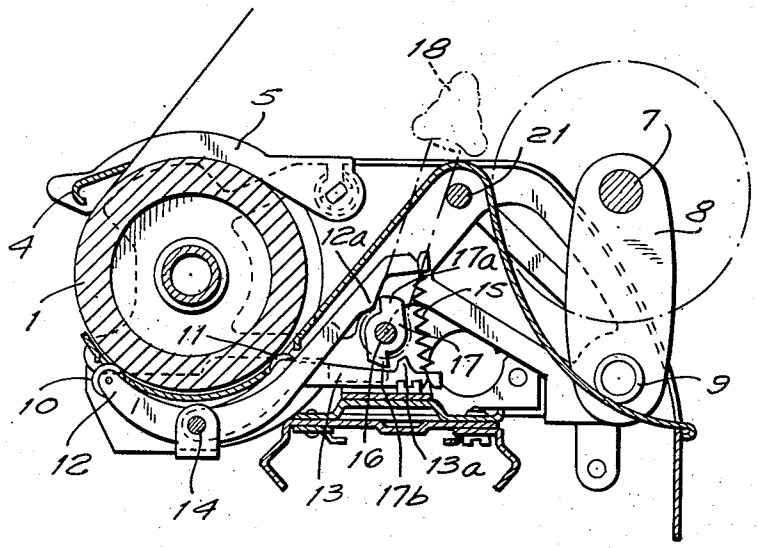


FIG. 2d.



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FIG. 3.

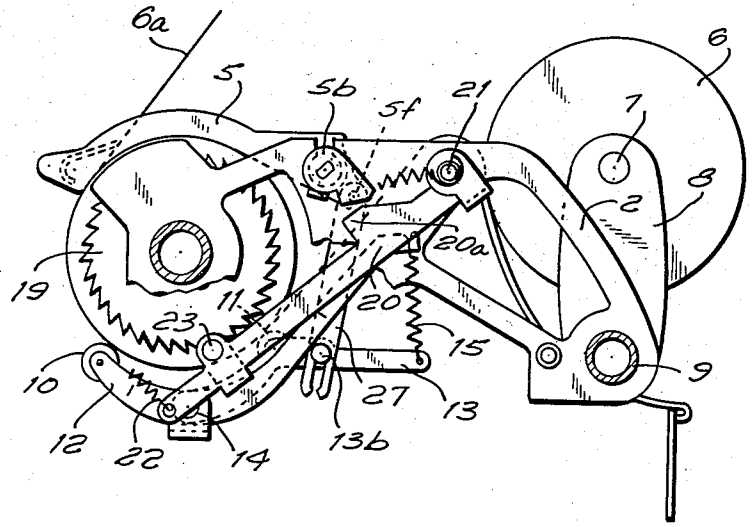
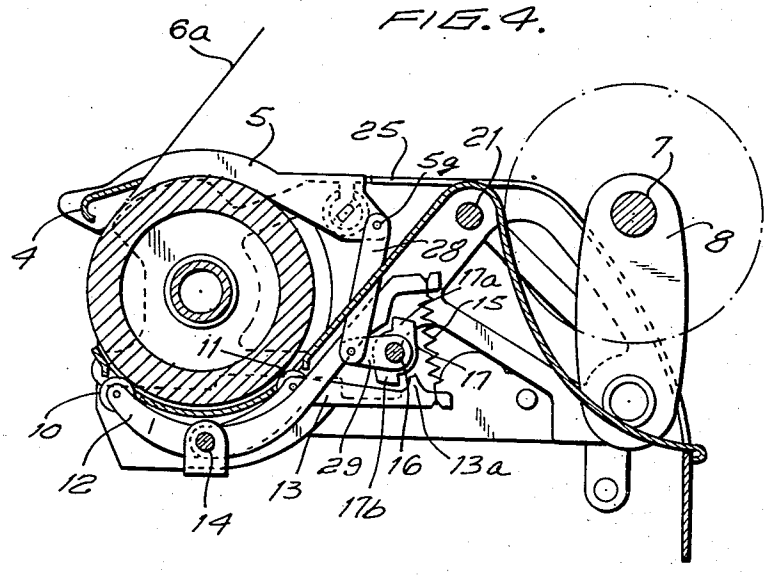


FIG. 4.



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United States Patent Office 2,808,919 Patented Oct. 8, 1957

2,808,919

TEAR BAR DEVICES IN BUSINESS MACHINES

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Application March 30, 1954, Serial No. 419,820

Claims priority, application Germany March 31, 1953

14 Claims. (Cl. 197—133)

The present invention relates to business machines of all types, such as calculating machines and other office machines which include a turnable platen and structure for locating the platen in predetermined angular positions at which lines of information are either printed or typed on a sheet of paper by the machine and which further include a member against which the paper is torn.

With machines of this type an extremely disturbing noise is made when the paper is pulled so as to rotate the platen due to the engagement between a roller member or the like and the ratchet wheel which rotates together with the platen. This noise can be eliminated if the operator takes the trouble to disengage the pressure rolls from the platen or to separate the above-mentioned roller member from the ratchet wheel, but such an operation usually takes up too much time for the operator to bother with it.

It is accordingly an object of the present invention to overcome the above drawbacks by providing a means for eliminating the disturbing noise produced by the rotating platen when the paper is pulled.

A further object of the present invention is to eliminate this noise in a fully automatic manner requiring the operator only to pull the paper in the usual manner.

Another object of the present invention is to make the paper much easier to pull while at the same time accomplishing the above objects of automatically eliminating the disturbing noise.

An additional object of the present invention is to provide a means for removably mounting a tearing member, against which the paper is torn by the operator, on a calculating machine and in such a way that the noise produced with conventional machines when the paper is pulled is eliminated when with the machine of the invention the paper is pulled against the tearing member.

With the above objects in view the present invention mainly consists of a business machine which includes a support means on which a platen means is mounted for rotation about its axis. A pressure structure, for pressing sheet material against the platen means, is mounted on the support means for movement between an operative position in engagement with the platen means and an inoperative position out of engagement with the platen means. A locating structure, for locating the platen means in a given angular position, is mounted on the support means for movement between an operative position in engagement with the platen means and an inoperative position out of engagement with the platen means. A tearing member is located next to the platen means and the operator tears the sheet material against this tearing member, the latter being mounted on the support means for movement in a predetermined direction when the sheet material is pulled and engages the tearing member. A motion transmitting means extends between the tearing member and at least one of the pressure and locating structures for automatically moving this one structure from its operative into its inoperative

position when the tearing member moves in the above-mentioned predetermined direction.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of one possible machine constructed in accordance with the present invention;

Fig. 2 is a schematic side view of one embodiment of the present invention;

Fig. 2*a* is a side view of a machine having the construction shown in Fig. 2 and showing the side walls of the machine;

Fig. 2*b* is a fragmentary top plan view of the structure shown in Fig. 2*a*;

Fig. 2*c* is a view of the structure shown in Fig. 2*a* with one of the side walls removed;

Fig. 2*d* is a sectional view of the structure of Figs. 2–2*c*, Fig. 2*d* being taken along a vertical plane which passes transversely through the platen to the rear of the machine;

Fig. 3 is a fragmentary side elevational view of a second embodiment of the present invention; and

Fig. 4 is a fragmentary side elevational view of a third embodiment of the present invention.

As is shown in Fig. 1, the invention is illustrated in the drawings as applied to an adding machine, although it is to be understood that the invention is applicable to all types of business machines, as will be evident from the description which follows. As is shown in Figs. 2*a* and 2*b*, the platen 1 of the machine is turnably carried at each end of the machine by the side walls 2 and 3 which are located in spaced relation to each other at each side of the machine. A tearing member 4 is located next to the platen 1 and extends parallel thereto, this tearing member 4 being in the form of an elongated rail which is serrated along one of its side edges. Each end of the tearing rail 4 is fixed to a side arm 5 which is turnably carried in the tubular bearing member 2*a* which is fixed to each side wall 2, as is evident from Figs. 2 and 2*b*. The arms 5 are carried in the bearing members 2*a* through the medium of pivot pins 5*a* fixed to each arm 5 and extending respectively into the tubular bearing members 2*a*. Each pivot pin 5*a* is formed with a pair of opposite flats, as is particularly evident from Fig. 2, and each bearing member 2*a* is formed in an upper portion thereof with a cutout 2*b* extending inwardly from its free end, distant from the side wall 2, by a distance at least equal to the length of the pivot pin 5*a*. Each of these cutouts 2*b* has a width corresponding to the distance between the flats of each pivot pin 5*a*. Thus, when the tearing member 4 and the arms 5 are turned slightly beyond the uppermost dot-dash line position shown in Fig. 2, the flats of the pivot pins 5*a*, which are aligned with each other, are located next to the edges of the cutout 2*b* of each bearing member 2*a* so that when the tearing member 4 is beyond the uppermost position shown in Fig. 2, the entire tearing member with the arms 5 and pivot pins 5*a* may be removed from the bearings 2*a*, and of course, the tearing member 4 with the arms 5 and pivot pins 5*a* may be replaced through the reverse of the above operations.

A length of sheet material is guided in a conventional manner over the platen 1, and in the particular example illustrated a strip of sheet material 6*a* is shown as being drawn from a roll 6 and guided over the platen 1. As is evident from Figs. 2*a* and 2*b*, the roll 6 is turnably carried by a shaft 7 which is itself carried at each of its ends in a

lever 8 which is turnably carried by each pair of side walls 2 and 3 through the medium of a pin 9 fixed to each pair of walls 2 and 3 and turnably carrying the lever 8. Beneath the platen 1 there are located, as is conventional, the pressure rollers 10 and 11 (Fig. 2) at each end of the platen 1, and the rollers 10 are carried by a pair of levers 12, respectively, one of which is shown most clearly in Fig. 2*d*, while the pressure rollers 11 are carried by the levers 13 one of which is shown in Fig. 2*d*. Each pair of levers 12 and 13 are mounted for turning movement about a common shaft 14 which is fixed to the supporting structure of the machine and extends parallel to the platen 1. The free ends of levers 12 and 13 are drawn toward each other by a spring 15, as shown in Fig. 2*d*, so that in this way the spring 15 simultaneously urges the pressure rollers 10 and 11, at each end of the machine, against the platen 1. A shaft 16 is turnably carried by the supporting structure of the machine (Fig. 2*d*) and also extends parallel to the platen 1, this shaft 16 having fixed thereto between the free ends of each pair of levers 12 and 13 a cam 17 which is provided with a pair of opposite camming portions 17*a* and 17*b*. On the right side of the machine (Figs. 1 and 2*d*) there is located a manually operable arm 18 which is also fixed to the shaft 16. When the operator engages the top end of arm 18 and moves it forwardly, then the shaft 16 and cams 17 turn in a counterclockwise direction, as viewed in Fig. 2*d*, so that the camming portion 17*a* bears against the projection 12*a* of lever 12 while the camming portion 17*b* bears against the projection 13*a* of the lever 13 so that the lever 12 is turned about shaft 14 in a counterclockwise direction while the lever 13 is turned about shaft 14 simultaneously in a clockwise direction, and in this way the pressure rolls 10 and 11 are moved away from the platen 1.

Next to an end of the platen 1 there is located a ratchet wheel 19 which is coaxial with the platen and fixed thereto for rotation therewith, this ratchet wheel 19 serving to locate the platen in predetermined angular positions as well as to turn the latter through predetermined angles through the medium of a pawl which is moved into engagement with the ratchet wheel 19 only when the platen 1 is to be turned between the lines which are printed or typed on the strip 6*a*. At all other times this pawl is out of engagement with the ratchet wheel 19. This pawl structure for engaging the ratchet wheel 19 to turn the platen 1 through a predetermined angle forms no part of the present invention and may have the construction shown in Fig. 6 of U. S. Patent No. 2,114,604. The structure for locating the platen means 1, 9 in any one of a number of predetermined angular positions after the platen 1 has been turned through the line spacing structure takes the form of a roller 23 which is turnably carried by a lever 20 and which bears between a pair of the teeth of ratchet wheel 19 when the platen 1 is stationary. The lever 20 which turnably carries the roller 23 is mounted for turning movement about a shaft 21 which is parallel to platen 1 and which is carried by the supporting structure of the machine. A spring 22 engages the lever 20 to urge the roller 23 into engagement with the teeth of the ratchet wheel 19.

When the operator wishes to move the strip 6*a* to a position where it is convenient to tear this strip away from the machine, the operator pulls the strip 6*a* against and past the tearing member 4 which is raised in this way to the dotted line position shown in Fig. 2 just above the solid line position of the tearing member 4. The arms 5 of course move with the tearing member 4 at this time. As is evident particularly from Figs. 2 and 2*b*, the arm 5 shown in these figures is connected to one end of the pivot pin 5*a* shown therein, while the opposite end of the pivot pin 5*a*, which extends through the bearing 2*a* and an opening in the wall 2, has fixed thereto a lever 5*b* located between the walls 2 and 3 and also located in the same plane as the lever 20, so that when the tearing member 4 is raised upwardly by pulling of the strip 6*a*, as shown in Fig. 2, the lever 5*b* necessarily turns in a clockwise direction, as viewed in Fig. 2.

This lever 5*b* includes a projection 5*c* which is fixed to one end of a spring 24 the opposite end of which engages the shaft 21 so that this spring 24 lightly urges the tearing member 4 to the solid line position shown in Fig. 2. The lever arm 5*b* further includes a pair of camming faces 5*d* and 5*e* which are inclined to each other. Opposite these camming faces is located a projection 20*a* of lever 20 which forms a cam to cooperate with the camming faces of the lever or cam 5*b*. This cam projection 20*a* of lever 20 also has a pair of inclined camming faces. When the tearing member 4 is raised to the dotted line position shown in Fig. 2 by pulling of the strip 6*a*, the cam 5*b* turns in a clockwise direction and its camming face 5*d* first engages the cam 20*a* at its right hand camming face, as viewed in Fig. 2, to turn the lever 20 against the action of the spring 22 in a counterclockwise direction about shaft 21 away from the platen 1 so as to move the roller 23 out of engagement with the ratchet wheel 19. Then the camming face 5*e* of cam 5*b* engages the left camming face of cam portion 20*a* of roller 20, and these camming faces bear against each other in such a way that the spring 22, which is stronger than the spring 24, holds the tearing member 4 in the dotted line position shown in Fig. 2, so that the roller 23 is maintained in the dotted line position of Fig. 2 away from the ratchet wheel 19. Thus, when the strip 6*a* is pulled against the tearing member 4 preparatory to pulling the strip 6*a* along the platen 1 for tearing off a length of the strip 6*a*, the tearing member 4 is turned to the dotted line position shown in Fig. 2 and maintained in this position, after which the strip 6*a* is pulled through the length desired to be torn, and during this time the roller 23 does not engage the ratchet wheel 19 so that the disturbing noise is eliminated in a completely automatic manner with the apparatus of the invention. Then the strip is torn along the serrated edge of the tearing member 4, and the latter is returned to the solid line position shown in Fig. 2. Since the camming face 5*e* cooperates with the uppermost camming edge of cam portion 20*a* to maintain the lever 20 in the dotted line position shown in Fig. 2, the tearing member 4 may simultaneously serve as a lever for moving the roller 23 out of engagement with the ratchet 19 when it is desired to originally pass the strip 6*a* about the platen 1.

A stop 25 is provided, as shown in Figs. 1 and 2, to prevent turning of the arms 5 beyond the dot-dash line position shown in Fig. 2 until the stop 25 is removed from the machine, so that the member 4 and the parts connected thereto cannot be removed from the bearings 2*a* until the stop 25 is removed. This stop 25 advantageously forms part of the left cover member 26 (Fig. 1) which surrounds the left end of the platen 1, so that when this cover member 26 is removed in any known way as by being moved to the left, as viewed in Fig. 1, the member 4, arms 5 and pivot pins 5*a* together with cam 5*b* may be removed from the machine, spring 24 being disconnected from extension 5*c* of cam 5*b* for this purpose. When the arms 5 are in the dot-dash line position shown in Fig. 2, the extension 5*c* is located above the turning axis of the arms 5 so that the spring 24 moves beyond its dead center position and urges the arms 5 toward the stop 25. Otherwise, that is, when the cover 26 is located in the position shown in Fig. 1, the stop portion 25 of cover 26 prevents the arms 5 from being turned beyond the uppermost dot-dash line position shown in Fig. 2, so that the tearing member 4 cannot be removed from the machine.

It will be noted from Fig. 2 that when the arms 5 are turned upwardly beyond the dotted line position in Fig. 2 to the dot-dash line position, the cam 5*b* moves beyond the cam 20*a* to again release the lever 20 to the influence of spring 22 so that the roller 23 then moves again into engagement with the ratchet wheel 19, so that

the lines on the strip 6a may be adjusted with respect to the lines at which the roller 23 locates the platen 1 in cooperation with the ratchet wheel 19, while the arms 5 are thus raised, the left arm 5, as viewed in Fig. 1, resting against the stop 25 in this position of the apparatus. Of course, lever 18 is actuated to move rollers 10 and 11 away from platen 1 when the paper is to be adjusted. Fig. 2c shows the above described structure with the side wall 3 removed, so that the structure between the walls 2 and 3 is clearly illustrated in Fig. 2c.

Fig. 3 shows a second embodiment of the invention which renders the strip 6a easier to move by automatically moving one of the pressure rollers at each end of the platen away from the latter simultaneously with movement of the roller 23 away from the ratchet wheel 19, the particular example in Fig. 3 being capable of moving the pressure rollers 11 away from the platen 1 simultaneously with the movement of roller 23 away from ratchet wheel 19 so that with the embodiment of Fig. 3 only the pressure rollers 10 press the strip against platen 1 when the tearing member 4 is raised. All of the above described structure is included in Fig. 3, but in addition a link 27 is pivotally connected at 5f to the cam 5b, and this link has a slotted lower end portion located about a pin 13b fixed to the lever 13. A pair of these levers 27 are pivotally connected to the pair of arms 5, respectively, and these levers 27 engage the pair of levers 13, respectively, in the manner shown in Fig. 3. Thus, as is evident from Fig. 3, when the arms 5 are turned upwardly, the levers 27 move downwardly and move the pins 13b downwardly to simultaneously move the levers 13 in a clockwise direction about shaft 14 so as to turn the rollers 11 away from the platen 1. It will be noted that the slotted lower end portions of links 27 enable the levers 13 to be turned by the cams 17 in the manner described above. It should be noted that while a pair of the links or levers 27 are provided to cooperate with the pair of levers 13, respectively, only one cam 5b is provided since there is only one lever 20 and only one roller 23. With the embodiment of Fig. 3 the paper will be properly guided by the cooperation between the pressure rollers 10 and platen 1 even when roller 23 is out of engagement with ratchet wheel 19 and pressure rollers 11 are turned away from the platen 1, so that with the embodiment of Fig. 3 the objectionable noise is eliminated and at the same time the paper is easily drawn around the axis of platen 1 and properly guided by the pressure rollers 10.

Fig. 4 shows a further embodiment of the invention according to which an arm 5 does not transmit its movement to the lever 20 so that with the embodiment of Fig. 4 the roller 23 always remains in engagement with the ratchet wheel 19. According to the embodiment of Fig. 4, instead of moving the roller 23 away from the ratchet wheel 19, the pressure rollers 10 and 11 are simultaneously moved away from the platen 1 so that with the embodiment of Fig. 4 the platen 1 remains stationary while the strip 6a is pulled around the same to eliminate the noise in this manner. As is shown in Fig. 4, one of the arms 5 has pivotally connected thereto a link 28 which is pivotally connected to this arm 5 at 5g, the lower end of link 28 being pivotally connected to the free end of lever 29 which is fixed to the shaft 16 which carries the pair of cams 17, described above, for simultaneously turning the pressure rollers 10 and 11 away from the platen 1. Thus, with the embodiment of Fig. 4, when the tearing member 4 is raised to turn the arms 5 in a clockwise direction, as viewed in Fig. 4, the link 28 moves downwardly to turn the lever 29 and the shaft 16 and cams 17 therewith in a counterclockwise direction, as viewed in Fig. 4, so that the pressure rollers 10 and 11 are simultaneously moved out of engagement with the platen 1 when the tearing member 4 is moved upwardly in the manner described above. Only one link 28 and lever 29 is required at one side of the platen 1 since the turning of the shaft 16 turns both the cams 17 to actuate the levers 12 and 13 at both ends of the machine.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of business machines differing from the types described above.

While the invention has been illustrated and described as embodied in means for eliminating noise from business machines, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a business machine in combination, support means; platen means mounted for rotation about its axis on said support means; a pressure structure, for pressing sheet material against said platen means, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means, said pressure structure constituting the sole means in the machine for pressing sheet material against said platen means; a locating structure, for locating said platen means in any one of a plurality of predetermined angular positions about its axis, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means; a tearing member located next to said platen means and against which the sheet material is torn by the operator, said tearing member being mounted on said support means for movement in a predetermined direction away from said platen means when the sheet material is pulled against said tearing member with a force sufficient to move it away from said platen means; and motion transmitting means extending between said tearing member and at least one of said structures for automatically moving the latter from said operative into said inoperative position thereof when said tearing member moves in said predetermined direction.

2. In a business machine, in combination, support means; platen means mounted for rotation about its axis on said support means; a pressure structure, for pressing sheet material against said platen means, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means; a locating structure, for locating said platen means in any one of a number of predetermined angular positions about its axis, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means; a tearing member located next to said platen means and against which the sheet material is torn by the operator, said tearing member being mounted on said support means for movement in a predetermined direction away from said platen means when the sheet material is pulled against said tearing member with a force sufficient to move it away from said platen means; and motion transmitting means extending between said tearing member and said locating structure for automatically moving the latter from said operative into said inoperative position thereof when said tearing member moves in said predetermined direction.

3. In a business machine, in combination, support means; platen means mounted for rotation about its axis

on said support means; a pressure structure, for pressing sheet material against said platen means, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means, said pressure structure constituting the sole means in the machine for pressing sheet material against said platen means; a locating structure, for locating said platen means in any one of the number of predetermined angular positions, mounted on said support means for movement between and operative positions about its axis in engagement with said platen means and an inoperative position out of engagement with said platen means; a tearing member located next to said platen means and against which the sheet material is torn by the operator, said tearing member being mounted on said support means for movement in a predetermined direction away from said platen means when the sheet material is pulled against said tearing member with a force sufficient to move it away from said platen means; and motion transmitting means extending between said tearing member and said pressure structure for automatically moving the latter from said operative into said inoperative position thereof when said tearing member moves in said predetermined direction.

4. In a business machine, in combination, support means; platen means mounted for rotation about its axis on said support means; a pressure structure, for pressing sheet material against said platen means, including a pair of pressure rollers adjacent each end of said platen means mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means; a locating structure for locating said platen means in any one of a number of predetermined angular positions about its axis, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means; a tearing member located next to said platen means and against which the sheet material is torn by the operator, said tearing member being mounted on said support means for movement in a predetermined direction away from said platen means when the sheet material is pulled against said tearing member with a force sufficient to move it away from said platen means; and motion transmitting means extending between said tearing member and said locating structure and one of said rollers adjacent each end of said platen means for automatically moving said locating structure and the latter rollers from said operative into said inoperative position thereof when said tearing member moves in said predetermined direction.

5. In a business machine, in combination, support means; platen means mounted for rotation about its axis on said support means; a pressure structure, for pressing sheet material against said platen means, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means, a locating structure, for locating said platen means in any one of a number of predetermined angular positions about its axis, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means; a tearing member located next to said platen means and against which the sheet material is torn by the operator, said tearing member being mounted on said support means for movement in a predetermined direction away from said platen means when the sheet material is pulled against said tearing member with a force sufficient to move it away from said platen means; motion transmitting means extending between said tearing member and said locating structure for automatically moving the latter from said operative into said inoperative position thereof when said tearing member moves in said predetermined direction; and manually operable moving means operatively connected to said pressure structure for moving the latter from said operative to said inoperative position thereof.

6. In a business machine, in combination, support means; platen means mounted for rotation about its axis on said support means; a pressure structure, for pressing sheet material against said platen means, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means; a locating structure, for locating said platen means in any one of a plurality of predetermined angular positions about its axis, mounted on said support means for movement between an operative position in engagement with said platen means and an inoperative position out of engagement with said platen means; a tearing member located next to said platen means and against which the sheet material is torn by the operator, said tearing member being removably connected to said support means and mounted on said support means for movement in a predetermined direction away from said platen means when the sheet material is pulled against said tearing member with a force sufficient to move it away from said platen means; and motion transmitting means extending between said tearing member and at least one of said structures for automatically moving the latter from said operative into said inoperative position thereof when said tearing member moves in said predetermined direction.

7. In a business machine as defined in claim 6, said tearing member being in the form of an elongated rail extending parallel to said platen means; a pair of arms respectively fixed to opposite ends of said rail and extending rearwardly therefrom; a pair of pivot pins fixed respectively to end portions of said arms distant from said rail, said pivot pins being aligned with each other and each having opposed flats, the flats of one pivot pin being respectively aligned with the flats of the other pivot pin; and a pair of tubular bearing members fixed to said support means and respectively surrounding said pivot pins to support the latter and said arms for turning movement about a predetermined axis, each of said bearing members having a free end and being formed in an upper portion with a cutout extending inwardly from said free end thereof at least to the same extent that the pivot pin in said bearing member extends into the same, said cutouts also being aligned with each other and having a width at least as large as the distance between the flats of each pivot pin, so that said pins may be inserted into and removed from said tubular bearing members through said cutouts thereof, respectively.

8. In a business machine as defined in claim 7, a stop member removably fixed to said support means and engaging at least one of said arms before said tearing member reaches a position where said pivot pins can be removed from said bearing members so that said tearing member and said arms and pivot pins therewith cannot be removed from the machine while said stop member is fixed to said support means.

9. In a business machine as defined in claim 2, said platen means including a platen and a ratchet wheel fixed thereto for turning movement therewith, said locating structure including a bar turnably carried by said support means, a roller turnably carried by said bar and located opposite the teeth of said ratchet wheel, and a spring connected to said bar for urging said roller into engagement with said teeth; an arm carrying said tearing member and being turnably mounted on said support means; and a cam forming part of said motion transmitting means, being fixed to said arm, and extending toward and located adjacent to said bar for engaging the latter during movement of said tearing member in said predetermined direction to turn said bar and said roller therewith against the action of said spring away from said ratchet wheel.

10. In a business machine as defined in claim 2, said

platen means including a platen and a ratchet wheel fixed thereto for turning movement therewith, said locating structure including a bar turnably carried by said support means, a roller turnably carried by said bar and located opposite the teeth of said ratchet wheel, and a spring connected to said bar for urging said roller into engagement with said teeth; an arm carrying said tearing member and being turnably mounted on said support means; a pair of cams forming part of said motion transmitting means, being respectively fixed to said bar and said arm and extending toward each other, each of said cams having a pair of camming faces which are inclined with respect to each other and the camming faces of one cam successively engaging the camming faces of the other cam during movement of said tearing member in said predetermined direction to turn said bar and said roller therewith against the action of said spring away from said ratchet wheel and to then maintain said tearing member in a raised position distant from said platen.

11. In a business machine as defined in claim 3, said pressure structure including a pair of levers mounted on said support means for turning movement about a common axis adjacent and parallel to said platen means, a pair of rollers respectively mounted turnably on said levers and being respectivly located on opposite sides of said common turning axis, and a spring connected at opposite ends to said levers for urging the same in opposite directions about said common axis and in those directions which urge said rollers against said platen means; said motion transmitting means including a shaft parallel to said axis and turnably carried by said support means, a cam fixed to said shaft and located between said levers, said cam having a pair of opposite camming portions which respectively engage said levers during turning of said shaft to simultaneously turn said levers and said rollers therewith away from said platen means, an arm turnably carried by said support means and fixed to said tearing member to carry the latter, a first link pivotally connected at one end to said arm, and a second link pivotally connected to the opposite end of said first link and being fixed to said shaft so that movement of said tearing member in said predetermined direction is transmitted to said cam to turn the latter for simultaneously moving said levers away from said platen means.

12. In a business machine as defined in claim 5, said pressure structure including a pair of levers mounted on said support means for turning movement about a common axis adjacent and parallel to said platen means, a pair of rollers respectively mounted turnably on said levers and being respectively located on opposite sides of said common turning axis, and a spring connected at opposite ends to said levers for urging the same in opposite directions about said common axis and in those directions which urge said rollers against said platen means; said manually operable moving means including a shaft parallel to said axis and turnably carried by said support means, a cam fixed to said shaft and located between said levers, said cam having a pair of opposite camming portions which respectively engage said levers during turning of said shaft to simultaneously turn said levers and said rollers therewith away from said platen means, and an arm, adapted to be actuated by the operator, fixed to said shaft for turning the latter to turn said cam for moving said levers away from said platen means.

13. In a business machine as defined in claim 4, said platen means including a platen and a ratchet wheel fixed thereto for turning movement therewith, said locating structure including a bar turnably carried by said support means, a roller turnably carried by said bar and located opposite the teeth of said ratchet wheel, and a spring connected to said bar for urging said roller into engagement with said teeth; an arm carrying said tearing member and being turnably mounted on said support means; and a cam forming part of said motion transmitting means, being fixed to said arm, and extending toward and located adjacent to said bar for engaging the latter during movement of said tearing member in said predetermined direction to turn said bar and said roller therewith against the action of said spring away from said ratchet wheel; said pressure structure including a pair of levers mounted on said support means for turning movement about a common axis adjacent and parallel to said platen means, said pressure rollers being respectively mounted turnably on said levers and being respectively located on opposite sides of said common turning axis, and a spring connected at opposite ends to said levers for simultaneously urging the same in opposite directions toward said platen means; and said motion transmitting means including a link pivotally connected at one end to said arm and at opposite end to only one of said levers for moving the latter away from said platen means when said tearing member moves in said predetermined direction.

14. In a business machine as defined in claim 5, said platen means including a platen and a ratchet wheel fixed thereto for turning movement therewith, said locating structure including a bar turnably carried by said support means, a roller turnably carried by said bar and located opposite the teeth of said ratchet wheel, and a spring connected to said bar for urging said roller into engagement with said teeth; an arm carrying said tearing member and being turnably mounted on said support means; and a cam forming part of said motion transmitting means, being fixed to said arm, and extending toward and located adjacent to said bar for engaging the latter during movement of said tearing member in said predetermined direction to turn said bar and said roller therewith against the action of said spring away from said ratchet wheel; said pressure structure including a pair of levers mounted on said support means for turning movement about a common axis adjacent and parallel to said platen means, a pair of rollers respectively mounted turnably on said levers and being respectively located on opposite sides of said common turning axis, and a spring connected at opposite ends to said levers for urging the same in opposite directions about said common axis and in those directions which urge said rollers against said platen means; said manually operable moving means including a shaft parallel to said axis and turnably carried by said support means, a cam fixed to said shaft and located between said levers, said cam having a pair of opposite camming portions which respectively engage said levers during turning of said shaft simultaneously said levers and said rollers therewith away from said platen means, and an arm, adapted to be actuated by the operator, fixed to said shaft for turning the latter to turn said cam for moving said levers away from said platen means.

References Cited in the file of this patent

UNITED STATES PATENTS

719,300	Briggs et al.	Jan. 27, 1903
1,157,276	Yaw	Oct. 19, 1915
1,250,883	Hoyt	Dec. 18, 1917
1,280,886	Smith	Oct. 8, 1918
1,281,087	Smith	Oct. 8, 1918
1,591,442	Seib	July 6, 1926
1,603,928	Waldheim	Oct. 19, 1926
1,653,025	Smith	Dec. 20, 1927
2,053,578	Pfeiffer	Sept. 8, 1936
2,360,196	Brumhill	Oct. 10, 1944