Sept. 6, 1966 I. OESTERREICHER 3,270,607

HOLDER FOR A STICK FOR A GUILLOTINE-TYPE PAPER-CUTTER MACHINE

Filed Sept. 30, 1963

FIG. 1

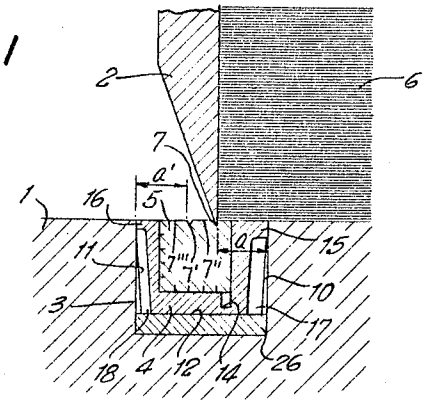


FIG. 2

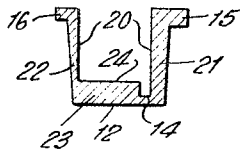
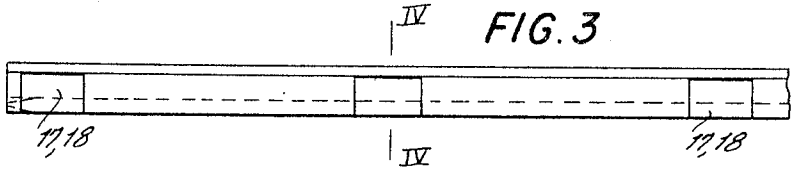


FIG. 3



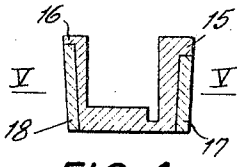


FIG. 4

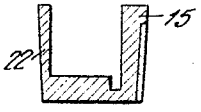


FIG. 6

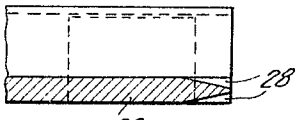


FIG. 8

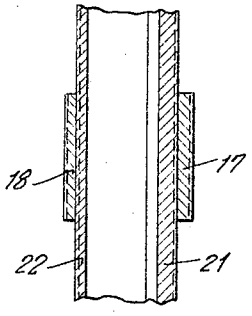


FIG. 5

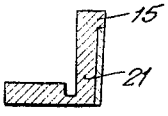


FIG. 7

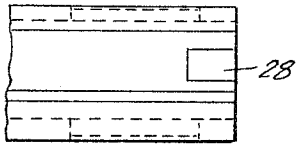


FIG. 9

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United States Patent Office 3,270,607 Patented Sept. 6, 1966

3,270,607

HOLDER FOR A STICK FOR A GUILLOTINE-TYPE PAPER-CUTTER MACHINE

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Filed Sept. 30, 1963, Ser. No. 312,788
Claims priority, application Austria, June 25, 1963, A 5,106/63
6 Claims. (Cl. 83—658)

The present invention relates in general to paper cutting machines of the guillotine type and in particular to a holder for a stick utilized in such machines.

In paper cutting machines of the type to which the present invention relates the paper is stacked on a stick into which the paper cutting knife penetrates after it cuts completely through the stacked pile of paper sheets. The stick is usually formed of a material into which the knife may penetrate and consequently may be formed of wood, a suitable plastic, a reinforced cardboard carton or other suitable material. The holder for the stick or the block is inserted into the table of the paper cutting machine or apparatus so that the upper surface of the holder as well as the upper surface of the stick or the block is level with or in the same plane as the upper surface of the cutting machine table. In well designed and efficient paper cutting machines of the guillotine knife type, the stick or block is formed of relatively expensive material. Pursuant to one object of the present invention provision is made to substantially increase or extend the useful life span of the cutting stick or block.

Various attempts have been made in the past to lower the cost of the cutting sticks or blocks. For example, it has been proposed that the transverse dimension of the stick or block be reduced so as to reduce the quantity of relatively expensive material which is needed therefor. However, due to the fact that the knife actually cuts into or penetrates into the stick or block, the amount by which the transverse dimension can be reduced is greatly limited. For example if the stick does not have sufficient width and if it does not have the necessary resiliency or elasticity, the knife will easily split the stick as it penetrates the stick after cutting through the lowermost sheet of paper in the pile or stack. Moreover, it will be apparent that if the stick is too thin the knife will cut completely through the stick so that the knife itself may well be ruined on the very first cutting operation.

In view of the foregoing, it is another object of the present invention to form sticks or blocks or to provide the sticks or blocks with a sufficiently wide or width-wise dimension so as to obviate the foregoing disadvantages or objections of the prior art but nevertheless to economize in the cost of the stick or block by providing stick holders which permit the stick to be used in a greater number of different cutting positions and thereby to prolong the useful life span of the stick or block.

In order to increase the number of different cutting positions in which the stick or block can be used, it is known in the prior art to prolong the utility or useful life span of the sticks by adding abutting pieces thereto so as to require a stick holder of eccentric construction or conformation. In a stick holder having a centrally symmetrical construction one cutting position can be provided on each side of the stick. In the case of a stick holder having an eccentric construction or conformation, two cuts or cutting positions can be provided in each side of the stick so that by changing the position or orientation of the side another two cuts can be provided therein. In other words, four cuts or cutting positions may be provided on each side of the stick and thereafter by changing the surface of the stick to be subjected to the knife another four cuts or cutting positions can be provided so as to provide a stick having eight cutting positions.

In modern efficient paper cutting machines, the use of additional pieces in the stick holders has never given good results so that stick holders are usually constructed to accommodate rectangular stick or blocks. However such stick holders still have two great disadvantages. In the first place the cutting positions for each stick mounted in such a stick holder is reduced to eight and sometimes even to four cutting positions. The second disadvantage is that in order to mount the sticks in the stick holders, springs or screws are required. This of course increases the cost of the stick holder. In addition, as previously indicated, the stick holder is positioned in a channel formed in the surface of the cutting machine table. Consequently, in order to insert a stick therein or in order to change the position of a stick therein, the stick holder must be first removed from the channel and the springs or screws must be adjusted so as to permit for changing the position of the stick therein. This results in a loss of operating time for the cutting machine while the position of the stick in the stick holder is changed. In addition, the adjoining pieces in the stick holder are frequently not in close surface-to-surface contact therein so that they are not subjected to the pressure of the paper cutting knife with the result that the surface or the upper surface thereof frequently projects above the upper surface of the table. This results in an obstruction of the cutting operation as the position thereof and the stick holder must be corrected.

Pursuant to the present invention, the various disadvantages of the prior art set forth below have been obviated.

Pursuant to the present invention, the stickholder or blockholder is constituted by a single element which is in the form of a hollow prismatic body or member. The hollow space within the body is irregular or eccentric. Pursuant to the basic inventive concept of the present invention, the stickholder constitutes a wedge which is smaller at its lower surface being substantially a resilient trapezoid which is adapted to accommodate quadratic sticks or blocks. As a result of the wedge-like conformation of the stickholder and its ability to receive a quadrilateral stick, the latter can be received within the stickholder and maintained in position therein without the necessity for providing any springs, screws or other securing elements. This eliminates the possibility of splitting the side of the stick being subjected to the knife since it obviates the necessity of utilizing securing elements as in the prior art. In accordance with the basic inventive concept of the present invention, the quadrilateral stick is asymmetrically disposed within the stickholder. As a result four cutting positions are provided on each surface of the stick. Since the stick has four cutting surfaces, there are provided sixteen different and safe cutting positions for each stick so as to at least double the number of cutting positions provided in the prior art which utilized both rectangular sticks and rectangular stickholders.

Pursuant to another feature of the present invention, the stickholder is provided with a strain or stress relieving bend or recess which is disposed below the lower face or surface of the stick. Since the stick is fabricated from resilient material, when the stick is subjected to the pressure of the paper cutting knife, the stick will find a release point for the pressure to which it is subjected at the stress relieving bend or recess in the stickholder.

Pursuant to another feature of the present invention, the side walls of the stickholder are each provided with lateral flanges or extensions the upper surfaces of which are in the same plane as the table of the paper cutting apparatus.

Pursuant to an additional feature of the present invention, the space between the walls of the stickholder and the adjacent surfaces of the channel in the cutting table are filled with expendible elements.

Pursuant to the foregoing features of construction, less material is utilized in the fabrication of a stick pursuant to the present invention, the resiliency of the stickholder is improved, the weight thereof is reduced, the fit of the stickholder in the cutting machine table channel is facilitated and the disposition of the stick in the various different cutting positions thereof is facilitated. In addition, less material is utilized in the fabrication of the stickholder. Moreover, the stickholder can be fabricated from moldable material, as by an injection molding process, which consequently will greately reduce the costs involved in the fabrication of the stickholders.

Other and further objects and advantages of the present invention will be readily apparent to one skilled in the art from a consideration of the following specification taken in connection with the appended drawing.

In the drawing, which illustrates the best mode presently contemplated for carrying out the invention:

FIGURE 1 is a sectional view showing a stickholder pursuant to the present invention mounted within the channel of a paper cutting table;

FIGURE 2 is a cross-sectional view of the stickholder shown in FIGURE 1;

FIGURE 3 is a side elevation of the stickholder, in a reduced scale;

FIGURE 4 is a sectional view taken on line IV—IV of FIGURE 3;

FIGURE 5 is a sectional view taken on line V—V of FIGURE 4;

FIGURES 6 and 7 are sectional views taken through other embodiments of the stickholder for use in narrower channels;

FIGURE 8 is a fragmentary longitudinal view of the end of the stickholder shown in FIGURE 3; and

FIGURE 9 is a top plan view similar to FIGURE 8.

Referring now to FIGURES 1–5 of the drawings in detail, there is shown a table **1** for a paper cutting machine. The table **1** is provided with a recess or channel **3** which is rectangular in cross-section. The channel **3** underlies the guillotine knife **2** of the paper cutting machine and is in parallel relation therewith. The stick or block **5** is inserted into the hollow interior **20** of the stickholder **4**. The opposing walls **21** and **22** of the stickholder **4** are of different thicknesses and as a consequence the stick is asymmetrically or eccentrically positioned within the stickholder **4**. However, it will be noted from FIGURE 1 that the upper surfaces of the stickholder **4**, the stick **5** and the table **1** are all in the same plane.

The pile or stack **6** of the paper or other material which is to be cut by the knife **2**, is disposed on the upper surface of the table **1** so as to partially overlie the stickholder **4** and the stick or block **5**. More specifically, the cutting position or cutting line of the knife **2** is spaced from the right hand surface of the channel **3**, viewing FIGURE 1 by the distance indicated at *a*. Consequently, it will be apparent that after the knife **2** passes through the stack of material **6** it will penetrate the underlying surface of the block **5** to produce a notch which is spaced from the adjacent side wall of channel **3** by the cutting distance *a*. The notch formed by the knife **2** is indicated at the reference numeral **7**. After continued use of the cutting knife **2**, during which the notch **7** continues to get deeper, the notch **7** at the cutting position *a* can no longer be utilized and another notch or surface portion must be provided at the position *a*. It is also essential that after each time that a knife **2** is replaced in the cutting machine, a new cutting surface position must be provided therefor in the underlying stick or block **5**.

When the notch **7** can no longer be utilized at the cutting position, the stickholder **4** with the block **5** in it is removed from the channel **3**. This is accomplished when the knife **2** is in its raised or retracted position, and a suitable instrument, as hereinafter described in

detail, is utilized to remove the stickholder from the channel **3**. The stickholder is then rotated 180° from the position thereof shown in FIGURE 1 and reinserted in said rotated position within the channel **3**. More specifically, assuming that the stickholder is disposed within the channel **3** in the position thereof illustrated in FIGURE 3, the left hand end of the stickholder, viewing said figure is rotated to the right hand end of said figure and the right hand end of the stickholder in said figure is of course rotated to the left hand end of said figure. Thereafter, when the knife **2** is put into operation, there will be defined in the same uppermost surface of the stick or block **5** a second notch **7'** which will be in the cutting position previously occupied by the notch **7**. As shown in FIGURE 1, the notch **7'** is at a distance indicated by *a'* from the adjacent left hand side surface of the channel **3** it being understood that the distance *a'* will indicate the distance between the notch **7'** and the right hand adjacent side wall of the channel **3** in the 180° rotated position of the stickholder from the position thereof shown in FIGURE 1. It will be apparent that the distances *a* and *a'* are equal but due to the fact that the side wall **21** of the stickholder is wider or thicker than the side wall **22** thereof the notch **7'** will be closer to the vertical center line of the stick **5** than the notch **7**, as illustrated in FIGURE 1.

When the notch **7'** can no longer be used, a new cutting surface or position may be provided for the block **5**. For this purpose, the block **5** is removed from the stickholder **4** and rotated by 180° with the same surface thereof uppermost and then reinserted in the stickholder. This will provide a third cutting position at the same uppermost surface to provide a third notch **7''** between the notches **7** and **7'** with the notch **7''** being spaced from the vertical center line of the stick the same distance as the notch **7'** but at the other side of said vertical central line of the stick. After the third notch **7''** can no longer be utilized, a fourth cutting position in the same surface may be provided to form a fourth notch **7'''** therein. This may be accomplished by removing the stickholder with the stick provided therein from the table and rotating the stickholder by a distance of 180° from the last position thereof within the channel and then re-positioning the stickholder in the channel. This will provide a fourth notch **7'''** in the same surface of the stick, said notch being formed by the succeeding or successive cutting operations of the knife **2** and the notch being formed in the same surface of the stick and at the same distance from the vertical center line of the stick shown in FIGURE 1 but at the opposite side of said vertical line, as the distance between the vertical line and the notch **7**. The vertical center line is indicated by the reference numeral **30** in FIGURE 1. From the foregoing, it will be readily apparent that with the stick disposed within the stickholder, two different notches or two different portions of the same surface thereof may be disposed at the cutting position under the knife **2** by the two different positions of the stickholder within the channel **3**, said different positions being displaced by 180° from each other. For each position of the stickholder **4**, a second notch or cutting position for the same surface of the stick **5** may be provided by removing the stick **5** from the stickholder and rotating the stick by 180° with the same surface thereof uppermost and then replacing the stick within the stickholder. Therefore it will be apparent that by the described means, four different portions of the upper surface of the stick may be positioned at the cutting position underlying the cutting edge of the knife **2**. This will provide four different cuts or notches at the surface below the knife **2** said notches being indicated at **7**, **7'**, **7''** and **7'''** in the left hand surface viewing FIGURE 1. Consequently, it will be apparent that through the utilization of the stickholder **4**, it is possible to dispose the stick or block **5** in such a manner under the paper cutting knife **2** so that on each of the four side surfaces of the stick there may be pro-

vided or utilized four cutting positions. After all four cutting positions have been utilized in the uppermost surface of the stick, the next surface may be moved into position by merely removing the stick from the stickholder and rotating the latter along its longitudinal axis by 90° so as to move or dispose a new side surface of the stick in the uppermost surface condition or disposition thereof. This procedure may be followed until all four side surfaces of the stick have been moved into the uppermost surface position underlying the knife **2**. Consequently, it will be apparent that there may be provided in each stick a total of sixteen different surface cutting positions therefor.

Another great advantage of the present invention, resides in the fact that the stick **5** and the stickholder **4** are affixed in position in the table channel **3** as a result of the wedge-like conformation of the stickholder. With the stick securely disposed or fit within the stickholder which in turn is wedged within the channel **3**, it will be apparent that there can be no lateral movement of the stick as a result of the pressure of the knife upon the underlying surface of the stick. This prevents the improper edge cutting of the material **6**. Since lateral shift of the stick **5** under the pressure of the knife **2** is prevented, each cutting notch or crenature can be used for a longer period so that each cutting surface position of the stick can be utilized for a longer period with the result that economy is achieved in the utilization of the material for fabricating the stick and also less time is spent in changing sticks, stickholders and the positions thereof within the channel **3**.

As previously indicated, the opposing side walls **10** and **11** of the stickholder **4** provide a wedge-like conformation to or for the stick. More specifically, it will be noted that the side walls **10** and **11** slope downwardly toward each other forming obtuse angles with the upper and lower surfaces of the stickholder. As a result, the side walls of the prismatic stickholder **4** are wedged against the opposing surfaces of the channel **3** a cross-section of the stickholder with the stick provided therein being in the form or conformation of a trapezoid. Due to the wedge-like conformation of the stickholder, it is fixed or supported in the channel **3** by the wedging action of its own side walls against the adjacent side walls of the channel so as to prevent any lateral displacement of the stickholder. The stick **5** is secured in position in abutment with the inner surfaces of the side walls of the stickholder being secured in position therein due to a relative small degree of resiliency of the material of which the stickholder is formed. Furthermore, it will be understood that the material of which the stick is formed has a greater degree of resiliency than the material of which the stickholder is formed so that the stick is firmly pressed into the stickholder and secured in position therein. Furthermore, it will be apparent that due to the wedge-like conformation of the stickholder, the opposing walls thereof are pressed together when the stickholder is inserted into the channel **3**. Consequently, it will be apparent that the pressure developed within the stick will react against the opposing side walls of the stickholder which in turn will press the stickholder with the stick fixed therein against the confronting side walls of the channel **3**.

In order to increase the resiliency of the stickholder, provision is made for the recess **14** which is defined in the bottom wall **12** thereof adjacent to the thicker side wall **21** thereof. Consequently, it will be apparent that the stickholder **4** of the described embodiment is essentially a one piece hollow prismatic member having opposing side walls of relatively different thicknesses so as to provide for a total of sixteen different cutting surface positions for a stick mounted therein. Furthermore, the provision of the bending recess **14** will facilitate the bending of the wall **21** of the stickholder so as to increase the resiliency thereof depending upon the adherent resiliency of the material of which the stickholder is formed. It will be understood that it is within the scope of the present invention to provide the recessed bending depression **14** at any other point along the stickholder or on the side walls thereof. The side walls of the stickholder **4** are provided with the lateral flanges or extensions **15** and **16** only at the upper ends thereof. Said flanges **15** and **16** abut against the adjacent opposing walls of the channel **3** as will be apparent from FIGURE 1. Below the flanges **15** and **16**, filler pieces **17** and **18**, which abut the side walls, are in turn in abutment with the adjacent side walls of the channel. The filler pieces **17** and **18** are disposed under the lateral flanges **15** and **16** and form a complete unit with the stickholder **4**.

As best shown in FIGURE 2, the stickholder is provided with a hollow interior space **20** which forms a substantially quadratic hollow interior to receive the stick **5**, the side wall **21** being thicker than the side wall **22**. The side walls **21** and **22** converge toward a thicker bottom wall **23** to define the hollow trapezoidal recess **20** said base wall **23**, which is thicker than each of the side walls **21** and **22** having a bottom surface **12** and an upper surface **24** on which the stick **5** is seated. As previously indicated, the bending recess **14** is provided adjacent to the thicker wall **21** and each of the walls is provided with a lateral extension **15** or **16**, as the case may be, so as to fill the space between the opposing walls of the channel **3**. The filler pieces **17** and **18** are affixed to the outer surfaces of the side walls **21** and **22** respectively. As best shown in FIGURES 4 and 5, the filler pieces **17** and **18** are rectangular in conformation and a number thereof which are provided depends upon the length of the stickholder. If the side walls **21** and **22** are in parallel relation in cross-section, the filler pieces **17** and **18** may form a wedge therewith so that the side walls with the filler pieces **17** and **18** define the trapezoidal side walls **10** and **11** of the stickholder.

As shown in FIGURE 1, the bottom of the channel **3** is provided with a filler **26**. The thickness of the filler **26** is calculated so that the upper surface of the stick **5** and the upper surfaces of the lateral flanges **15** and **16** form a single plane with the upper surface of the cutting table **1**. The filler pieces **26** can be affixed to the lower surface **12** of the stickholder so as to prevent any off balance movement of the stickholder under the pressure or weight of the material **6**. If the bottom surface **12** of the stickholder forms a common plane with the adjacent ends of the filler pieces **17** and **18**, the filler piece **26** need not be secured to said surface **12** and this will increase the flexibility of the stickholder resulting from the utilization of the bending recess **14**.

In order to accommodate a channel **3** which has a smaller transverse dimension than that illustrated in FIGURE 1, provision may be made for a stickholder which, as shown in FIGURE 6 is not provided with a lateral flange **16**.

In order to provide desired cutting positions for the stick **5**, it is also within the scope of the present invention to eliminate the narrower side wall **22** to provide a stickholder as illustrated in FIGURE 7 which has only the thicker side wall **21**. This resultant stickholder will also provide the various advantages of the present invention.

In order to facilitate the removal of the stick from the stickholder or the removal of the stickholder from the channel **3**, provision is made to provide openings at the opposite ends of the stickholder in order to facilitate the insertion of removing instruments therein. As best shown in FIGURES 8 and 9, openings or recesses **28** are provided at the opposing ends of the base plate **23**. The dimensions of said access openings should be minimized so as to maintain the required degree of support for the stick **5** within the stickholder and also above the openings **28**. This will obviate any deformation of the stick and it is preferable to provide four sided openings **28**.

While I have illustrated and described the presently preferred embodiment of my invention, it will be appar-

ent that various changes and modifications may be made therein without however departing from the basic inventive concept thereof as set forth in the appended claims.

I claim:

1. A stickholder comprising a member having a base wall and a pair of opposing side walls which define within said member a hollow recess for a rectangular stick, said recess being open opposite said base wall, one of said side walls being thicker than the other of said side walls to provide unequal distances between the vertical center line of a stick disposed in said recess and the outer surfaces of said side walls, the outer surfaces of said side walls sloping downwardly toward said bottom wall, and a bending recess defined in the upper surface of said base wall adjacent to said one side wall.

2. A stickholder comprising a member having a base wall and a pair of opposing side walls which define within said member a hollow recess for a rectangular stick, said recess being open opposite said base wall, one of said side walls being thicker than the other of said side walls to provide unequal distances between the vertical center line of a stick disposed in said recess and the outer surfaces of said side walls, the outer surfaces of said side walls sloping downwardly toward said bottom wall, one of said side walls having a lateral filler flange at the upper end thereof.

3. A stickholder comprising a member having a base wall and a pair of opposing side walls which define within said member a hollow recess for a rectangular stick, said recess being open opposite said base wall, one of said side walls being thicker than the other of said side walls to provide unequal distances between the vertical center line of a stick disposed in said recess and the outer surfaces of said side walls, the outer surfaces of said side walls sloping downwardly toward said bottom wall, each of said sidewalls having a lateral filler flange at the upper end thereof.

4. A stickholder comprising a member having a base wall and a pair of opposing side walls which define within said member a hollow recess for a rectangular stick, said recess being open opposite said base wall, one of said side walls being thicker than the other of said side walls to provide unequal distances between the vertical center line of a stick disposed in said recess and the outer surfaces of said side walls, the outer surfaces said side walls sloping downwardly toward said bottom wall, each of said side walls having a lateral filler flange at the upper end thereof, and filler pieces provided on the outer surfaces of said side walls below the respective flanges, each filler piece having a widthwise dimension substantially equal to the associated flange.

5. A stickholder comprising a member having a base wall and a pair of opposing side walls which define within said member a hollow recess for a rectangular stick, said recess being open opposite said base wall, one of said side walls being thicker than the other of said side walls to provide unequal distances between the vertical center line of a stick disposed in said recess and the outer surfaces of said side walls, the outer surfaces of said side walls sloping downwardly toward said bottom wall, and means at one end of said member defining a recess for the insertion of a tool therein for removing said stickholder from a cutting table channel.

6. A stickholder comprising a member having a base wall and a pair of opposing side walls which define within said member a hollow recess for a rectangular stick, said recess being open opposite said base wall, one of said side walls being thicker than the other of said side walls to provide unequal distances between the vertical center line of a stick disposed in said recess and the outer surfaces of said side walls, the outer surfaces of said side walls sloping downwardly toward said bottom wall, and a balancing filler member in abutment with the lower surface of said base wall.

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