Oct. 29, 1940. J. J. BOSCH 2,219,678

APPARATUS FOR THE PROTECTION OF EDGES OF FLAT SHEETS, AS PAPER, LINEN, OR THE LIKE

Filed Feb. 12, 1936 2 Sheets-Sheet 1

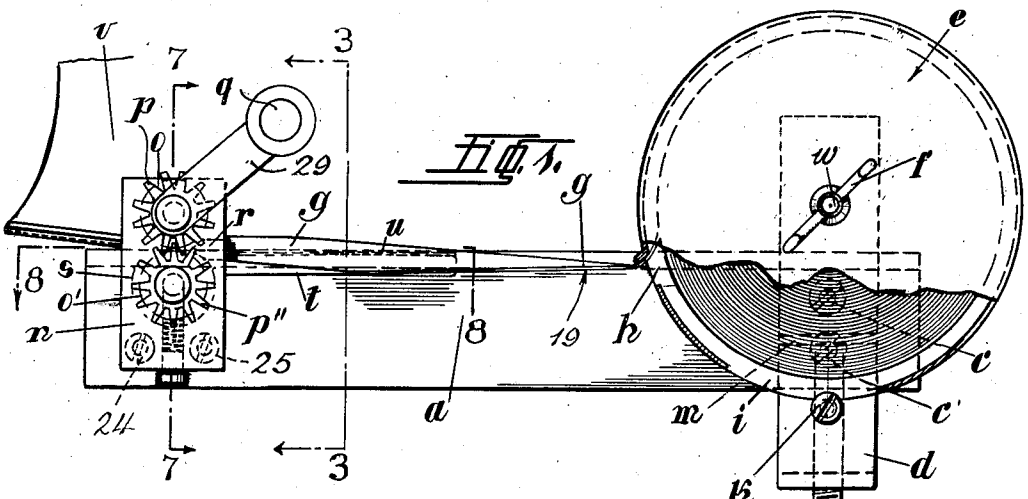


Fig. 1.

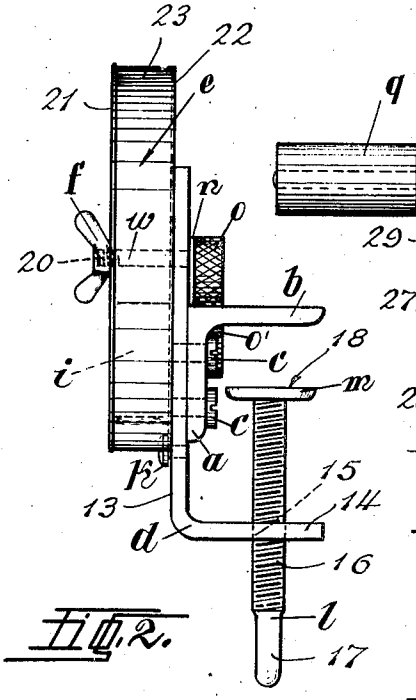


Fig. 2.

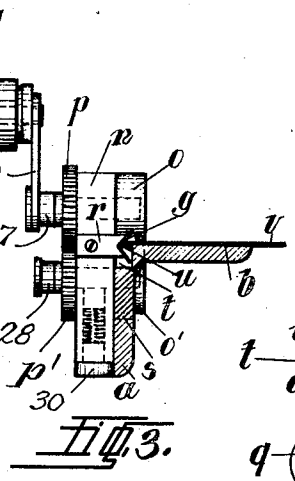


Fig. 3.

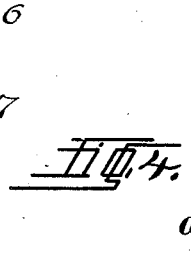


Fig. 4.

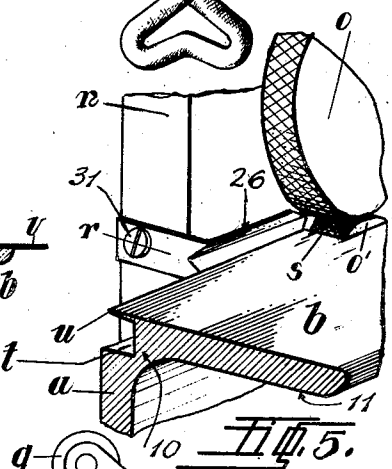


Fig. 5.

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Fig. 6.

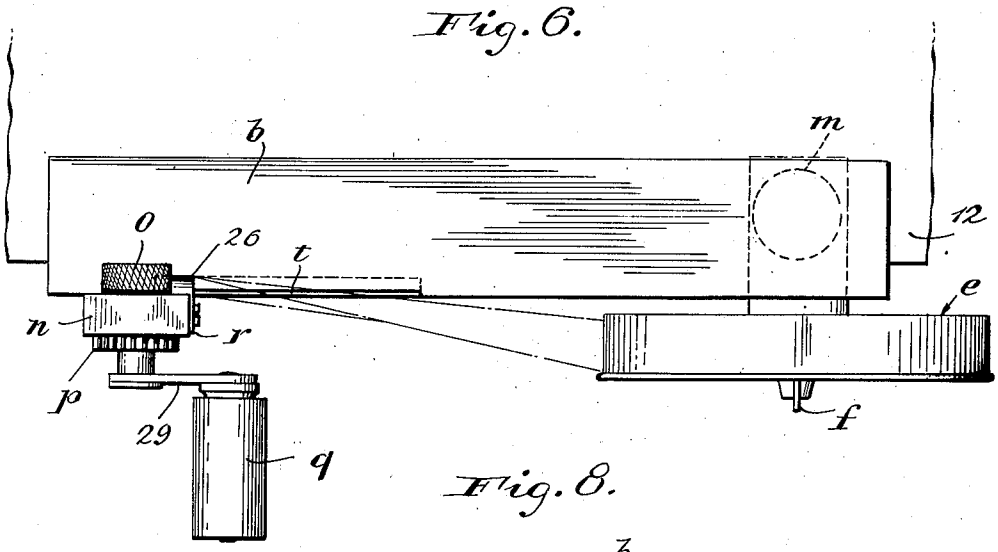


Fig. 8.

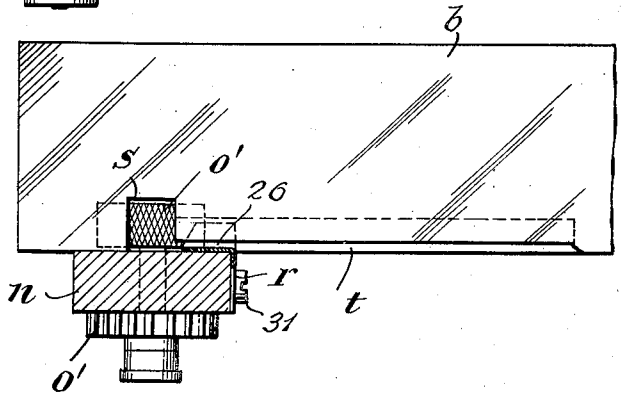
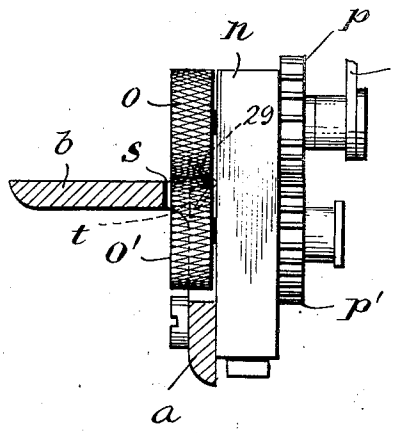


Fig. 7.



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UNITED STATES PATENT OFFICE

2,219,678

APPARATUS FOR THE PROTECTION OF EDGES OF FLAT SHEETS, AS PAPER, LINEN, OR THE LIKE

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Application February 12, 1936, Serial No. 63,670

2 Claims. (Cl. 93—1)

This invention relates to a device for protecting the edges of thin sheets of paper, cardboard, cloth and the like and it refers more particularly to means for strengthening such edges by covering them with adhesive strips.

A device used in prior art for this purpose comprises a roller upon which the folded adhesive strip is wound and a pair of cooperating rollers which are adapted to apply the adhesive strip to an edge of a sheet of paper or the like.

Practical experience has shown that a device of this type is comparatively expensive in manufacture and inconvenient to handle and that in many instances the device does not operate properly in that the adhesive strip is not folded in the required manner over the edge of the sheet.

An object of the present invention is to improve the construction of the device of the above-mentioned type and to provide it with means which will insure the proper feeding of the adhesive strip and the proper application of this strip to the edges of a sheet of paper or the like.

Another object is the provision of an edge-strengthening device which is inexpensive to manufacture, which is reliable and durable in operation, and which can be placed upon a support and firmly attached thereto in any desired position.

The above and other objects of the present invention may be realized through the provision of an edge-strengthening device which comprises a V-shaped folding member which cooperates with the walls of a channel formed in the supporting rail and which is situated adjacent the pair of pressure rollers; the adhesive strip folded by these means and the edge of the sheet to be strengthened are passed between these pressure rollers which cause the strip to adhere firmly to the edge.

In accordance with the present invention, the adhesive strip extends substantially horizontally from the time it leaves its roller until it is folded by the above means. The supporting rail which carries the rollers has the form of an angle, of normal profile and it is provided with a single clamping bolt by means of which the device may be attached to the edge of a table or the like in any convenient position.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing by way of example a preferred embodiment of the inventive idea.

In the drawings:

Figure 1 shows the device constructed in accordance with the principles of the present invention in front elevation.

Figure 2 shows the device in side elevation.

Figure 3 is a section along the line 3—3 of Figure 1.

Figure 4 is a fragmentary rear view illustrating the pressure rollers.

Figure 5 is a fragmentary perspective view illustrating the folding and guiding means.

Figure 6 is a top view of the device.

Figure 7 is a section along the line 7—7 of Figure 1.

Figure 8 is a section along the line 8—8 of Figure 1.

The edge-strengthening device illustrated in the drawings comprises a supporting rail 10 consisting of a vertical portion *a* and a horizontal portion *b*. The inner surface 11 of the horizontal portion *b* is adapted to be placed upon the upper surface of a table 12 or any other suitable supporting means.

The means for supporting the rail 10 upon the table 12 comprise an angular lug or supporting member *d* having a vertical portion 13 which is attached by two bolts *c* and *c'* to the vertical portion *a* of the supporting rail 10. The horizontal portion 14 of the lug *d* is substantially shorter than the vertical portion 13 and is provided with a circular opening 15 having inner screw threads which are not shown in the drawings.

The lug *d* carries a clamping bolt *l* which passes through the opening 15 and which is provided with outer screw threads 16 meshing with the inner screw threads formed in the walls of the opening 15. The lower end of the bolt *l* is provided with a handle 17 which may be conveniently grasped by the operator. The upper end of the bolt *l* has the form of a flat disc or plate *m* having a surface 18 which is brought in contact with the lower surface of the table or other support for the device.

It is apparent that by turning the handle 17 in such manner that the bolt *l* is moved upwardly, the edge of the table or other supporting means may be held firmly between the lower surface 11 of the portion *b* of the rail 10, and the upper surface 18 of the end member *m* of the bolt *l*.

The adhesive strip *g* which is applied over the edges of the sheet to be strengthened is made of textile material or the like; one of the surfaces of the strip *g* is covered by any suitable adhesive material 19. The strip *g* is wound in the form of a roll upon a shaft *w*. As shown in Figure 1,

the adhesive 19 is situated upon the lower surface of that portion of the strip *g* which extends substantially horizontally adjacent an edge of the supporting rail 10.

The shaft *w* may be rotatably mounted in the vertical member 13 of the lug *d*, so that the shaft *w* will rotate along with the wound portion of the adhesive strip *g* as this strip is gradually being unwound.

The free end 20 of the shaft *w* carries a winged nut *f* which is screwed upon the threaded end of the shaft *w* and which is in contact with a wall 21 of the cylindrical casing *e* containing the wound portion of the strip *g*. Another wall 22 of the casing *e* extends parallel to the wall 21 and is attached to the portion 13 of the lug *d* by the bolt *k*, the head of which is situated within a slot *i* formed in the intermediate curved wall 23 interconnecting the walls 21 and 22 of the casing *e*.

The winged nut *f* may be set to any suitable position upon the end 20 of the shaft *w* and serves as an adjustable brake which presses against the wall 21 of the casing *e* and thereby prevents a too rapid rotation of the shaft *w* which rotates while the wound portion of the strip *g* is being unwound.

The slot *i* may be used conveniently for the purpose of inspecting the interior of the casing *e* in order to ascertain the amount of the wound strip *g* situated within the casing *e*. Any other suitable means may be used for the same purpose. The wall 21 or the wall 22 are made removable in relation to the other walls of the casing *e* for instance, through the provision of clamps carried by the removable walls and engaging the other walls, to enable the insertion of the wound strip *g* into the interior of the casing *e*.

The round wall 23 and the casing *e* are provided with another slot *h* used for the purpose of removing the strip *g* from the casing *e*.

A rectangular block *n* is attached by the bolts 24 and 25 to the portion *a* of the supporting rail 10 and is situated at a distance from the casing *e* and the lug *d* adjacent the other end of the rail 10. The middle portion of the block *n* is cut out and is filled by a guide bar *r* which is attached by one or more bolts 31 to the block *n*. The guide bar *r* is provided with a V-shaped groove 26 which faces the supporting rail 10 which is situated adjacent that edge of the rail 10 which is common to its two portions *a* and *b*.

Two shafts 27 and 28 are rotatably mounted in the block *n*, one above the other. A toothed wheel *p* is mounted upon the shaft 27 and is rotatable therewith. Another toothed wheel *p'* is mounted upon the shaft 28 and rotates along with that shaft.

One end of a lever 29 is firmly attached to the shaft 27. The opposite end of the lever 29 carries a handle *q*.

The pressure roller *o* is firmly attached to the shaft 27 and is rotatable along with this shaft. Another pressure roller *o'* which is rotated along with the shaft 28, is situated underneath the roller *o* and is in frictional engagement therewith. The two rollers *o* and *o'* are situated on that side of the block *n* which is nearest to the supporting rail 10. The roller *o'* passes through a slot *s* formed in the supporting rail 10 for that purpose.

The shaft 28 is situated within an opening formed in the block *n*, said opening being larger than the shaft. The position of the shaft 28 relatively to the shaft 27 may be adjusted by the set screw 30 supporting the shaft 28 and provided with a resilient portion. Due to this arrangement the relative pressure between the pressure rollers *o* and *o'* may be adjusted at will.

The supporting rail 11 is provided with a groove *t* which is situated substantially between the portions *a* and *b* of the rail 11 and extends adjacent and parallel to that edge of the rail 11 which is common to its two portions *a* and *b*, so that a fairly sharp edge *u* having the shape of a blade is formed in the supporting rail 10. The groove *t* is rectangular in cross-section and extends from the rollers *o* and *o'* to a point substantially midway between the block *n* and the casing *e*.

The device is operated in the following manner:

The free end of the wound strip *g* is removed by hand from the casing *e* through the slot *h* and is inserted between the pressure rollers *o* and *o'*. When the lever 29 is rotated clockwise by the operator holding the handle *q*, the rollers *o* and *o'* will grip the strip *g* and pull it over the rail 10, gradually unwinding the wound portion of the strip *g* which is carried by the shaft *w*.

The unwound portion of the strip *g* will extend substantially horizontally over the rail 10, the adhesive 19 being situated upon the lower surface of the strip.

The relative position of the rollers *o* and *o'*, the slot *h* and other parts of the device is such that the strip *g* extending horizontally between the rollers *o* and *o'* and the casing *e* is brought in contact with the blade-like edge *u* and that at a point near the block *n* the edge *u* is situated substantially in the middle of the strip *g*, so that this portion of the strip *g* tends to fold over the edge *u*. In the course of the movement of the strip caused by a rotation of the rollers *o* and *o'*, this partly folded portion of the strip *g* is brought in contact with the walls of the V-shaped groove 26 which completes the following of the strip.

Due to this cooperation of the edge *u* with the V-shaped groove 26, the strip reaching the two rollers *o* and *o'* is neatly folded in the middle thereof, the adhesive 19 being situated upon the inner, adjacent surfaces of the strip.

A sheet *v* of paper or the like is placed upon the upper surface of the portion *b* of the supporting rail 10. That edge of the sheet *v* which is to be protected by the strip *g* is pushed inside the folded strip *g* just in front of the two pressure rollers *o* and *o'*. Then the sheet *v* and the folded strip *g* which rides upon an edge of the sheet *v* are both passed between the pressure rollers *o* and *o'*. The pressure of these two rollers completes the folding of the strip *g* and causes the adhesive 19 to provide a permanent connection between the strip *g* and the sheet *v*.

The device is so constructed that the operator can hold the handle *q* and rotate the lever 29 with his left hand, and guide the sheet *v* toward the strip *g* and the rollers *o* and *o'* with his right hand.

Any suitable means, not shown in the drawings such as guide bars, fences or the like, may be attached to the upper surface of the supporting rail 10 for the purpose of guiding the sheet *v*.

The use of a supporting rail 10 having the form of an angle of normal profile makes it possible to employ a single clamping bolt *l*, since angle iron of normal profile is sufficiently strong to

prevent the device from shaking and being damaged while it is being operated. Due to the provision of this single bolt *l* the device may be held upon the table 12 in any suitable position in relation to the direction of light.

What is claimed is:

1. In an edge-protecting device, in combination with means carrying a strip, one of the surfaces of which is provided with an adhesive, a pair of pressure rollers adapted to apply said strip to an edge of a sheet to be strengthened, and means connected with said rollers for rotating the same; a supporting rail consisting of an angular member carrying the first-mentioned means and the second-mentioned means, a groove being formed in said rail adjacent said pressure rollers, a wall of said groove and an edge of said rail forming a blade-like edge, a grooved guide-bar opposite said blade-like edge, said strip being folded by said blade-like edge and said grooved guide bar before it is passed between said pressure rollers.

2. In an edge-protecting device, in combination with means carrying a strip, one of the surfaces of which is provided with an adhesive, a pair of pressure rollers adapted to apply said strip to an edge of a sheet to be strengthened, separate shafts carrying said rollers, and a block carrying said shafts; a supporting rail consisting of an angular member carrying the first-mentioned means and said block, a groove being formed in said rail adjacent said pressure rollers, a wall of said groove and an edge of said rail forming a blade-like edge, said strip being folded by said blade-like edge before it is passed between said pressure rollers, and means connected with said block and forming a V-shaped groove which is situated substantially opposite said blade-like edge and which is adapted to cooperate with said blade-like edge to fold said strip before it is passed between the pressure rollers.

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