April 12, 1960 E. H. SCHIEFER 2,932,421

FLAT TAPE APPLICATOR

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FIG. 1.

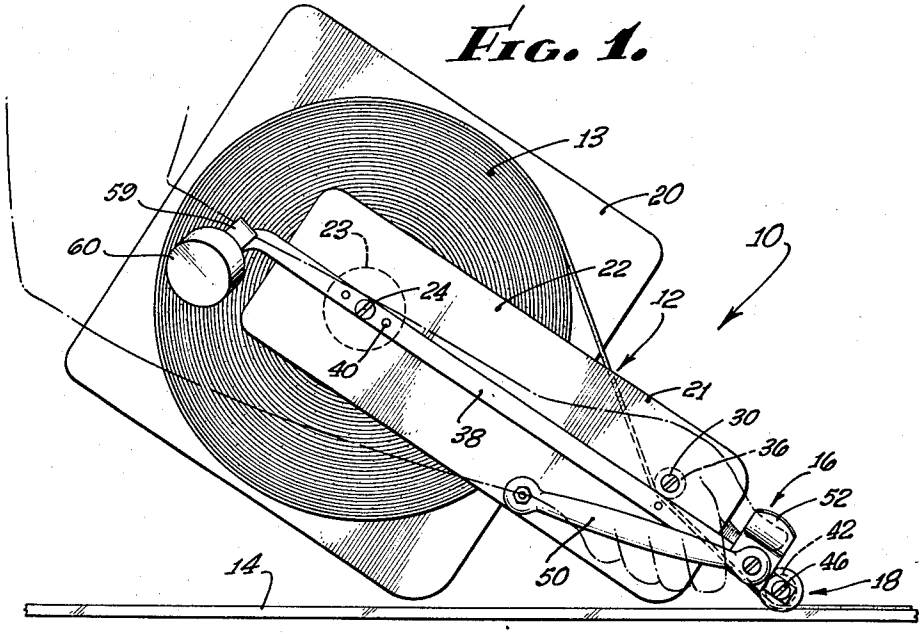


FIG. 2.

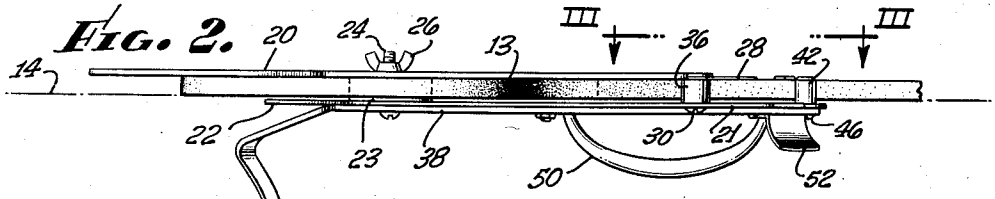
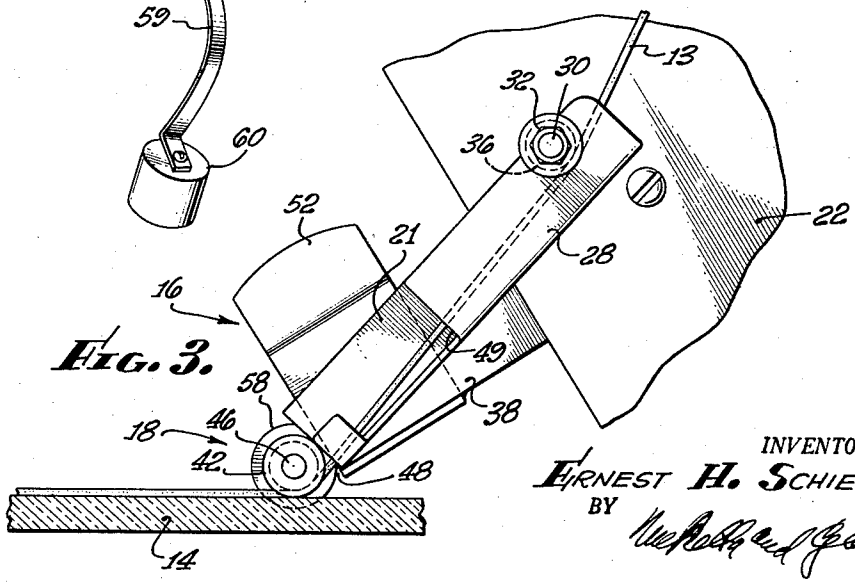


FIG. 3.



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FLAT TAPE APPLICATOR

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4 Claims. (Cl. 216—20)

The present invention relates to a portable, hand-operated, flat tape applicator and more particularly to the type which applies adhesive tape along the edge of a sheet of material.

There is a great need for a portable means of applying adhesive tape to the edge of a sheet of material, other than by hand. For example, in the glass industry various kinds of tapes are applied to the edges of the glass to prevent chipping caused by vibration, to compensate for temperature variations, and to generally weather proof the channel or other means which receives the edge of the glass. These various kinds of tapes are also applied to sheets of metal, wood, plastic, or fiberboard, but regardless of the material the same problems of applying the tape are present. When tape is applied to the edge of a sheet material by hand, it is very difficult to have the edge of the tape follow the exact outline of the edge of the material. Generally, the tape is applied in a wavy condition with respect to the edge of the sheet of material when the hand method is used. Another problem in applying tape by hand is that the tape breaks very easily which may destroy its intended function. In addition, the time consumed in applying tape by hand is quite lengthy which can be very expensive on a large job.

In the present invention, a tape applicator is provided which overcomes all of the problems of the hand method discussed above. The applicator is portable allowing it to be used in the field, shop, etc. and thus is not limited to use in any one central location. The tape applied by the tape applicator follows the exact outline of the edge of the sheet of material thus providing a uniform seal for the material. Also, the tape will not easily break when applied by the tape applicator, and the applicator can be operated by using only one hand. Moreover, the time involved for applying the same amount of tape by hand is greatly reduced when the tape applicator is used.

The portable, hand, tape applicator of the present invention includes a tape-supporting means for rotatably supporting a roll of tape having an adhesive side adapted to be applied to an edge of a sheet of material and a pressure means mounted on the supporting means for receiving and applying pressure to the free end of the unadhesive side of the tape to force the adhesive side of the tape to adhere to the edge of the sheet of material. The tape-supporting means has a forward extension to which is attached a guiding means which is adjacent the pressure means for engaging the edge of the sheet of material and guiding the application of the tape so that it will follow the outline of the edge of the sheet of material. The pressure means is also attached to the extension and includes a gripping handle and a thumb rest which are grasped by the operator who can press downwardly, applying pressure on the tape as the applicator is moved along the edge of the sheet material. The tape is pulled off of the roll of tape which is rotatably supported on a reel or hub which spaces a pair of plates included in the tape-supporting means previously mentioned. In addition, a pressure arm bracket and a counterbalancing means extends from the rear portion of the applicator on the same side as the gripping handle and thumb rest and is adapted to fit over the arm of the operator to enable him to more easily operate the applicator when tape is being applied to the edge of the sheet of material.

An object of the present invention is the provision of a tape applicator which is portable.

Another object is to provide a portable, hand-operated, tape applicator that will apply adhesive tape to the edge of a sheet of material following the exact outline of the edge.

A further object of the invention is the provision of a portable, hand-operated, tape applicator that is adapted to apply tape to the edge of a sheet of material in a minimum amount of time.

Still another object is to provide a portable, hand-operated, tape applicator which is easy to operate and inexpensive to produce.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Fig. 1 shows a side elevation of one embodiment of the present invention in position for applying tape to the edge of a sheet of material.

Fig. 2 is a top view of the device shown in Fig. 1.

Fig. 3 is an enlarged side elevation view along plane III—III of Fig. 2.

Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in Figs. 1 and 2 a relatively narrow, thin, substantially planar, portable, hand-operated, tape applicator **10** being held by a phantom hand in the position for applying tape to the edge of a sheet of material.

The applicator **10** has a tape-supporting means **12** for rollably supporting a roll of tape **13** having an adhesive side adapted to be applied to an edge of a sheet of material **14**, and pressure means **16** mounted on the supporting means **12** for receiving and applying pressure to the free end of the unadhesive side of the tape **13** to force the adhesive side of the tape **13** to adhere to the edge of the sheet of material **14**. A guiding means **18** is mounted adjacent the pressure means **16** for engaging the edge of the sheet of material **14** and guiding the application of the tape **13** so that it will be positioned along the edge of the sheet of material **14**.

The tape-supporting means **12** includes a pair of plates **20** and **22** which are spaced by means of a reel or hub **23** which is adapted to rotatably receive and support the roll of tape **13**. The plates **20** and **22** are secured on either side of the reel or hub **23** by means of a screw **24** and wing nut **26**. By substituting a reel or hub having different widths, various width rolls of tape can be positioned between the plates **20** and **22**. The particular shape of the plates **20** and **22** may be varied from that shown in Fig. 1, as the shapes shown are only illustrative of a preferred embodiment. However, the plates should be made of relatively thin, lightweight, material in order to present an applicator which is easily handled and not bulky.

The supporting plate **22** is elongated and extends forwardly beyond the margin of the end of the plate **20** to present a forward extension **21**. As best seen in Figs. 2 and 3, an upwardly facing tape guide channel **28** is formed from or fixed to the extension **21** by any suitable means, such as a screw **30** and nut **32**. A guide roller **36** is rotatably mounted on a bushing surrounding a portion of the screw **30** within the channel **28**. In Fig. 3,

it is seen that the roller 36 is spaced above the bottom of the guide channel 28 to urge the tape 13 downwardly towards the forward end of the guide channel 28.

Referring to Fig. 1, an elongated bar 38 is fixed on the plate 22 by means of rivets 40 or any other suitable fastening means. The forward end of the bar 38 extends beyond the forward end of the extension 21 and beyond the forward end of the guide channel 28. The pressure means 16 is mounted on the forward end of the bar 38 (Fig. 3) and includes a pressure roller 42 rotatably mounted on the forward end of the bar 38 by any suitable means, such as a stud bolt or pin 46. The roller 42 is mounted forwardly of the forward end of the guide channel 28 and slightly below the bottom of the channel 28, as best seen in Fig. 3, to provide a space 48 for the tape 13 coming down from beneath the roller 36 and the feed-roll. The guide channel 28 is provided with a side opening 49 adjacent its forward end which enables the operator to thread the free end of the tape 13 into the space 48.

A gripping handle 50 and thumb rest 52 are provided on the extension 21 or bar 38 adjacent the pressure roller 42 and fixed thereto by any suitable means, the handle being on that side of extension 21 which is away from plate 20 and channel 28.

To aid the operator of the applicator 10 to apply the tape 13 in a straight line along an edge of the material 14, guiding means 18 is provided which is mounted adjacent the pressure roller 42 and on the forward end of the bar 38. The guiding means 18 may be a fixed guide or downwardly extending flange 58 mounted on the end of bar 38 and extending below the roller 42 (Fig. 3) or it could be an integral flange on the roller 42 for rotation therewith. The lower end of the guide or flange 58 engages the edge of the material 14 and causes the edge of the tape to conform to the exact outline of the edge of the material 14.

Referring to Figs. 1 and 2, a transverse pressure arm bracket 59 and counterbalancing means 60 are provided on the rear portion of the applicator 10 on the same side as the gripping handle 50. The arm bracket 59 may be formed by the rear end of the bar 38, the counterbalancing means 60 being attached to the outermost end of the arm bracket. The arm bracket is suitably curved to fit over an operator's forearm and the counterweight 60 balances the applicator 10 when the operator's hand is gripping the handle 50. Counterbalances of different weights compensate for differences in weight of different width rolls of tape being used or the particular characteristics desired by the operator.

In operation, the roll of adhesive tape 13 is mounted on the reel or hub 23 between the plates 20 and 21; the free end of the tape 13 is pulled downwardly beneath the roller 36 along the guide channel 28, through the space 48 beneath the roller 42; the operator with one arm grasps the applicator 10 by means of the handle 50 with the weight of the applicator supported by the forearm by the arm bracket 59, and with his free hand places the free end of the tape 13 into engagement with the edge of the material 14. The guide 58 is placed against the edge of the material 14 and is continually urged into this position while the applicator 10 is moved along the edge of the material 14. The applicator 10 is held in a position with the roller 42 being continuously urged downwardly against the unadhesive side of the tape 13 to force the adhesive side of the tape 13 into binding engagement with the edge of the material 14. Once the tape 13 is stuck on to the material 14 the operator need only use one arm to operate the applicator 10, as shown in Fig. 1. The applicator 10 is then pulled toward the operator and if need be, the operator will back up as the tape is being applied. There is no preferred angle that the applicator 10 must be held with respect to the material 14 when the tape is being applied, as long as the operator can apply sufficient pressure to the tape 13 by means of the roller 42.

It should be understood, when different width rolls of tape are desired to be used in the applicator 10, then the hub 23, the rollers 32 and 42, and the guide channel 28 may be changed to similar means having an operative width corresponding to the width tape being used. However, narrow tapes can be used in guide channels of wider width, by skilled operators. By using the applicator 10 of the present invention, it has been found that the time for applying adhesive tape to the edge of a sheet of material has been reduced by more than half the time required by any previously known device. Moreover, the tape has been applied in a manner which follows the exact outline of the edge of the sheet of material and without any tears or breaks in the tape.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

I claim:

1. A portable, lightweight, hand-operated, tape applicator for applying tape along the edge of a sheet of material comprising: a pair of rigid plates, a tape-roll hub means spacing said plates and adapted to rotatably receive and support a roll of adhesive tape, one of said plates extending forwardly beyond the margin of the end of the other plate to form an extension; an open upwardly facing tape guide channel positioned on said extension to slidably receive the adhesive side of a free end of tape from a roll mounted on said hub; a pressure roller rotatably mounted on said extension beyond the forward end of said channel and below the bottom of said channel to allow tape passing from the forward end of said channel to travel beneath said pressure roller, whereby pressure may be applied to the unadhesive side of the free end of the tape to press the adhesive side of the tape onto the edge of a sheet of material, said channel having a side opening adjacent the forward end there of for allowing the tape to be threaded beneath said pressure roller; said hub means, pressure roller and said being of the same approximate width as the width of the adhesive tape; an edge guide extending below and in the plane of one side of said pressure roller; a gripping handle and thumb rest carried by said extension adjacent to said pressure roller; an arm bracket extending transversely to said plates from the rear portion of said applicator on the same side as the gripping handle, and a weight provided on said bracket for counterbalancing the weight of a roll of adhesive tape on said hub means.

2. A portable, hand-operated, tape applicator for applying tape along the edge of a sheet of material comprising: a relatively narrow, substantially planar pair of rigid plates, a tape-roll hub means spacing said plates and adapted to rotatably receive and support a roll of adhesive tape, one of said plates having a forward extension having a gripping handle attached thereto, a pressure arm bracket extending transversely to said plates from the rear portion of said one of said plates on the same side as the gripping handle, a weight provided on said bracket for counterbalancing the weight of the roll of adhesive tape, an open upwardly facing tape guide channel on said extension to slidably receive a free end of tape from a taperoll on the hub; and a pressure roller mounted on said extension beyond the forward end of said channel and below the bottom of said channel to allow tape passing from the forward end of said channel to travel beneath said pressure roller to permit said roller to apply pressure to the unadhesive side of the free end of the tape to force the adhesive side of the tape onto the edge of a sheet of material, said channel having a side opening adjacent the forward end thereof for allowing the tape to be threaded beneath said pressure roller.

3. A portable, hand-operated, tape applicator for applying tape along the edge of a sheet of material comprising: a pair of rigid plates; a tape-roll hub means spac-

ing said plates and adapted to rotatably receive and support a roll of adhesive tape, one of said plates extending forwardly beyond the margin of the end of the other plate; an open upwardly facing tape guide channel mounted on said extension to slidably receive the adhesive side of a free end of tape from a roll mounted on said hub; a pressure roller rotatably mounted on said extension beyond the forward end of said channel and below the bottom of said channel to allow tape passing from the forward end of said channel to travel beneath said pressure roller and apply pressure to the unadhesive side of the free end of the tape to force the adhesive side of the tape onto the edge of the sheet material, said channel having a side opening adjacent the forward end thereof for allowing the tape to be threaded beneath said pressure roller, said pressure roller, tape-roll hub means and channel being of the same width as the width of the adhesive tape; an edge guide in the plane of one side of and extending below said pressure roller for engaging one edge of the tape and the aligned, sheet material edge; and means mounted on said extension adjacent said pressure roller for allowing said pressure roller to be moved downwardly against the unadhesive side of the tape to force the adhesive side of the tape into contact with the edge of sheet material.

4. A lightweight, portable, hand-operated device for applying tape to an edge area of a sheet of material comprising: an elongated, thin, rigid plate-like supporting means provided with a hub for rotatably supporting a roll of adhesive tape adjacent one end portion of said supporting means; a pressure roller rotatably mounted on the other end of said supporting means and adapted to receive a free end of tape from a roller on such hub; a rotatable edge guide in the plane of one side of and extending below said pressure roller; handle means mounted on said plate-like supporting means and extending therefrom in a direction opposed to that of the hub and pressure roller for forcing said roller downwardly against the tape into contact with the edge of a sheet of material; an arm bracket carried by the supporting means in spaced relation to said handle means and extending in the same direction as said handle means and a counterweight carried by the arm bracket.

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