

Nov. 7, 1950

D. H. JOHNSON
 DEVICE FOR BINDING THE EDGES OF LANTERN
 SLIDE ASSEMBLIES OR SIMILAR ARTICLES

2,528,754

Filed Aug. 11, 1948

3 Sheets-Sheet 1

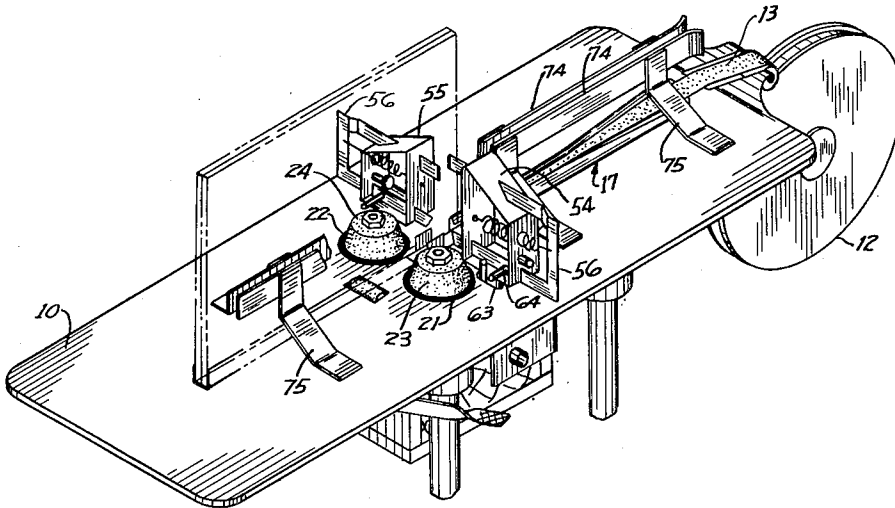


Fig. 1.

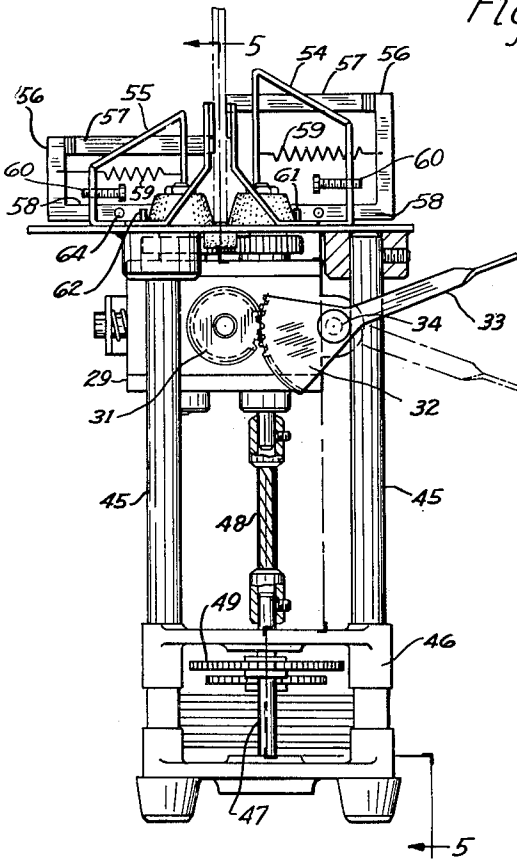


Fig. 2.

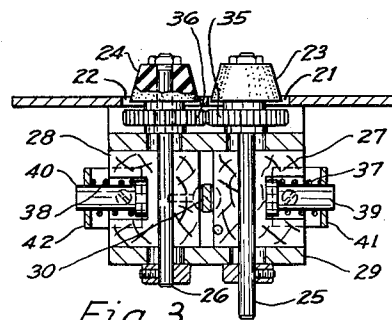


Fig. 3.

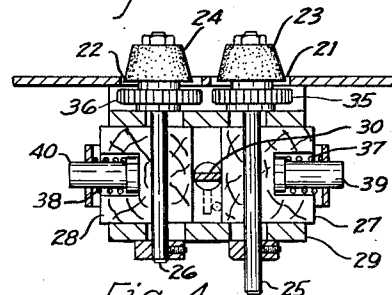


Fig. 4.

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3 Sheets-Sheet 2

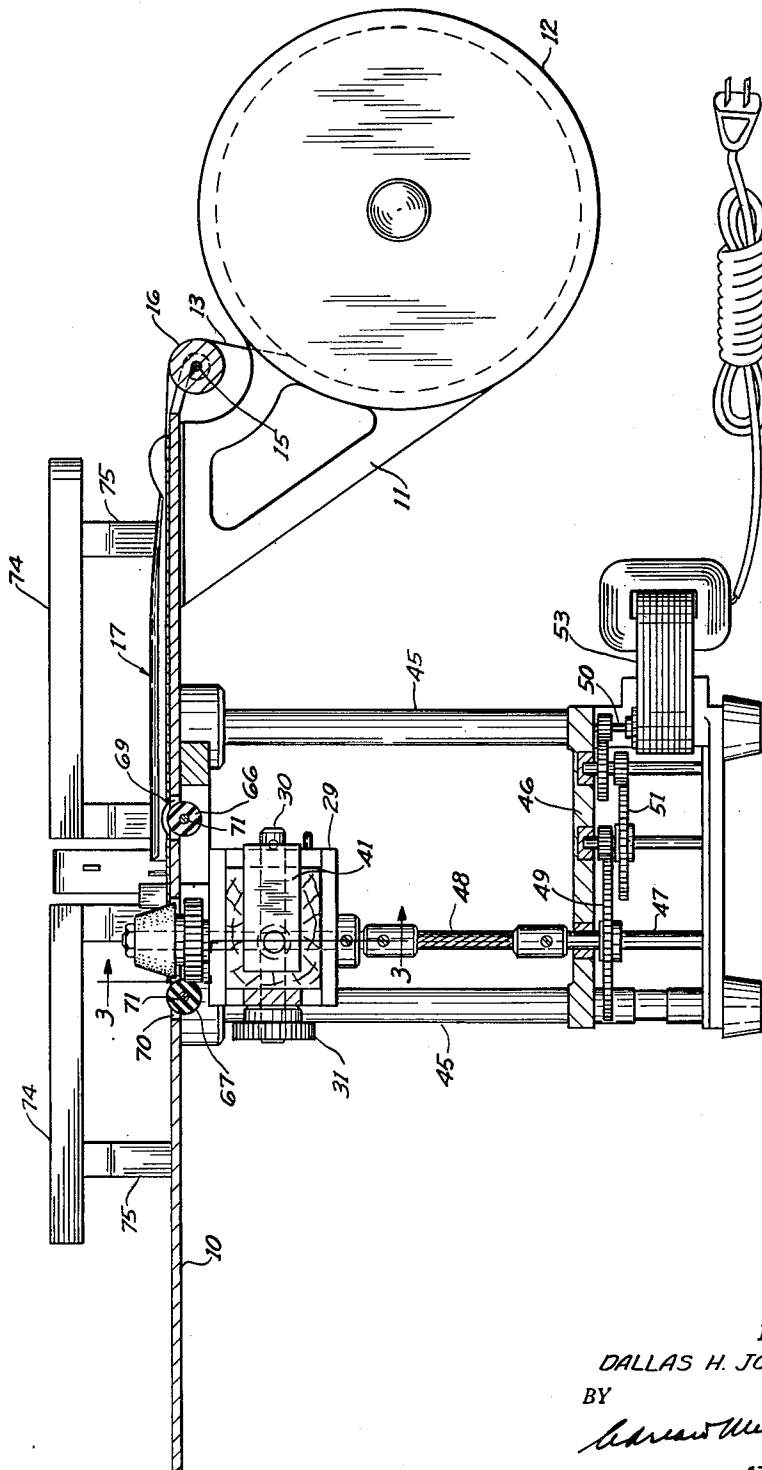


Fig. 5.

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3 Sheets-Sheet 3

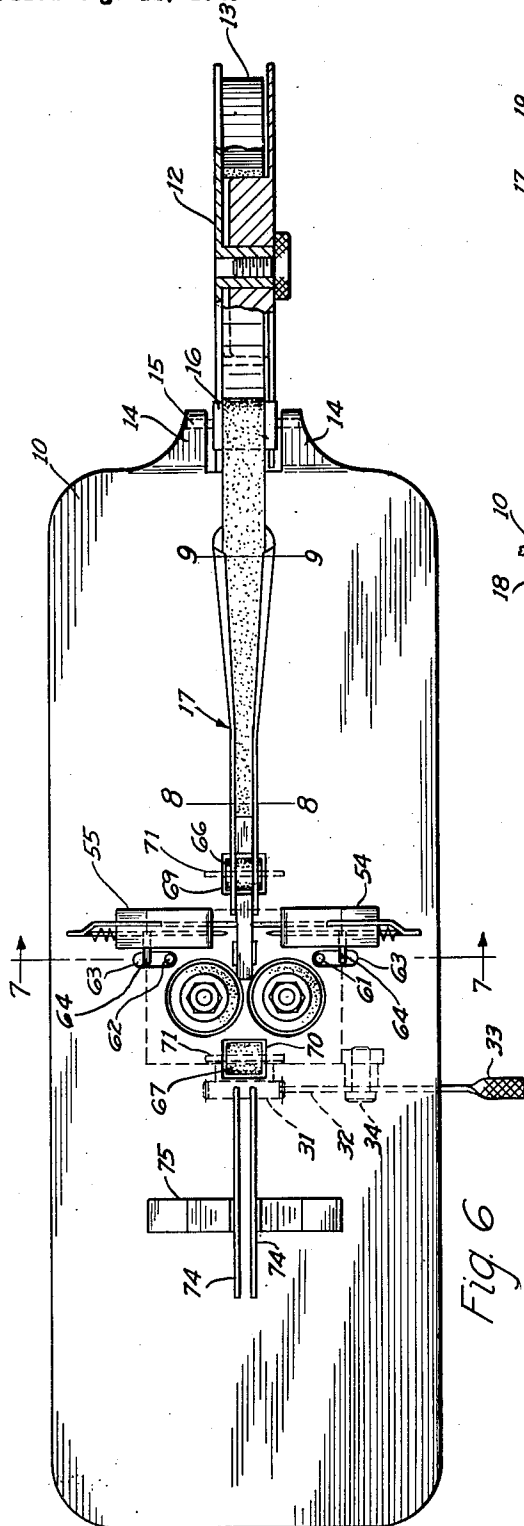


Fig. 6

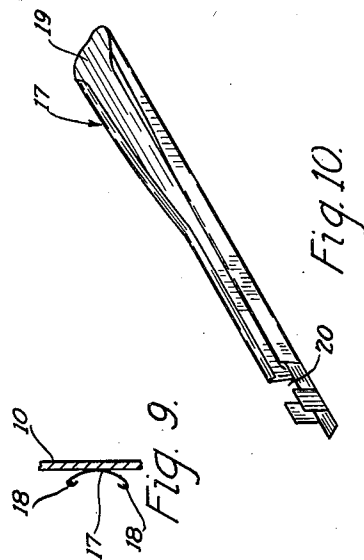


Fig. 9.

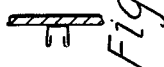


Fig. 8.

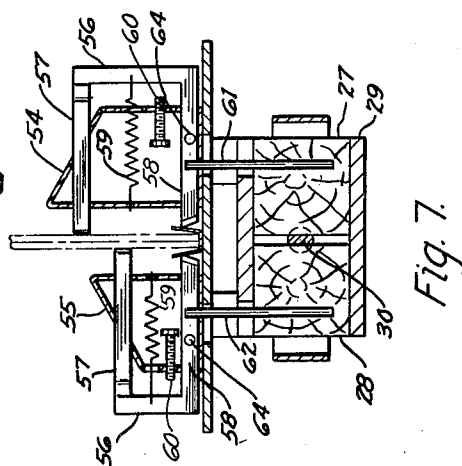


Fig. 7.

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UNITED STATES PATENT OFFICE

2,528,754

DEVICE FOR BINDING THE EDGES OF LANTERN SLIDE ASSEMBLIES OR SIMILAR ARTICLES

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Application August 11, 1948, Serial No. 43,646

12 Claims. (Cl. 216—22)

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This invention relates to a device sometimes called an edging machine for applying binding tape to the edge portions of sheet material, and more particularly to a new and improved device for binding lantern slide assemblies or similar articles with a binding tape.

It is the practice in making lantern slides to first assemble a negative and mask between two pieces of cover glass and then secure the assembly together by covering the edge portions of the assembly with a suitable binding tape. The application of the binding tape has been done by hand, the tape being meticulously placed along the edges overlapping the sides, and at the corners the tape was cut and folded. This practice embodied many drawbacks which made it undesirable from a commercial standpoint. For example, the application of the binding tape to the lantern slide edges by hand resulted in a non-uniformly bound edge, was tedious, and entailed a great number of steps resulting in the expenditure of considerably more time than was warranted. As a result, the prior practice was not only relatively expensive but the resulting product had much to be desired from an appearance standpoint.

It is among the objects of the present invention to provide a device for binding the edges of lantern slides and similar articles which avoids the drawbacks and inconveniences of the prior practice, and serves to uniformly, economically and speedily bind the edge portions of the article. It is another object of the invention to provide a motor driven device which applies binding tape to the edges of an article and folds the tape at the corners in one continuous operation for each lantern slide or article. It is a further object of the invention to provide a device of the character described which embodies a binding tape holding and folding attachment which insures the uniform application of the tape to the edges of a lantern slide or similar article. A further object of the invention is to provide a device of the character described which embodies means for automatically cutting the tape upon completion of the binding of each edge portion of an article. It is a still further object of this invention to provide an improved edge binding device which is simple and inexpensive in its construction, and yet provides a device which will effectively and efficiently apply the tape to the edge portions of an article such as a lantern slide.

The foregoing and other objects of the invention will become more apparent and better understood from the following detailed description

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taken in conjunction with the accompanying drawings, wherein like reference characters denote corresponding parts, and wherein:

5 Figure 1 is a fragmentary perspective view of a device constructed in accordance with the teachings of the present invention,

Figure 2 is an end elevational view of the device,

10 Figures 3 and 4 are sectional views taken on the line 3—3 of Figure 5 and illustrating respectively, tape sealing rolls in operative and in-operative position,

Figure 5 is a longitudinal sectional view taken on the line 5—5 of Figure 2,

15 Figure 6 is a top plan view of the device shown in Figure 1,

Figure 7 is a sectional view taken on the line 7—7 of Figure 6,

20 Figures 8 and 9 are detail sectional views taken on the lines 8—8 and 9—9 respectively, of Figure 6, and

Figure 10 is a perspective view of the apparatus for folding and guiding the binding tape.

25 With reference to the accompanying drawings, the improved device or machine for binding the edge portions of lantern slide assemblies or similar articles made in accordance with the present invention comprises a base plate 10 adapted to be supported in any suitable manner (not shown), having secured at one end thereof a bracket member 11. The bracket 11 extends beyond the end of the base plate 10 and is adapted to support thereon a reel 12 carrying a supply of adhesive binding tape 13. The end of the base plate 10 immediately above the bracket member 11 is formed with spaced outwardly extending ears 14 having journaled there-
30 in the ends of a shaft 15 upon which there is rotatably mounted an idler roller 16. The binding tape 13 as it is drawn from the reel 12 passes over the idler roll 16 and is received in a guiding and forming trough 17 mounted on the upper surface of the base plate 10.

45 The guiding and forming trough 17 which is best shown in Figures 6 and 10 of the drawings comprises an elongated sheet of metal having the longitudinal edge portions thereof reversely bent to form opposed grooves or slots 18 adapted to receive the edge portions of the binding tape 13. The distance between the base of the grooves 18 is substantially the width of the binding tape 13. The outer end 19 of the trough 17 is substantially flat and the longitudinal edges thereof in which the grooves are formed are gradually curved upwardly until the trough is substantially U-shape
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in cross-section, as shown in Figure 8. The distance between the sides of the trough 17 at this point (Figure 8) is slightly greater than the thickness of the lantern slide or other article to be bound in the device. It is to be understood that the trough 17 may be readily replaced if it is desired to accommodate lantern slide assemblies of greater or lesser thicknesses or to employ tape of different widths. Adjacent the discharge end of the trough 17 the sides thereof are cut away as at 20 to permit the operation of the tape severing device which will be described hereinafter. Beyond the portion 20 the sides of the trough 17 are flared to guide the article after it has passed beyond the tape severing apparatus.

Adjacent the discharge end of the trough 17 there are provided in the plate 10 openings 21 and 22 through which extend driving and compression rolls 23 and 24 mounted upon the upper ends of shafts 25 and 26 respectively. The rolls 23 and 24 are frustro-conical in form and are made of a suitable rubber or other flexible material so that they may frictionally grip the glass cover plates of the lantern slide passing therebetween without marring the surface of the plates. The rolls also serve to press the binding tape firmly against the edge portions of the plates. The shafts 25 and 26 are suitably journaled in blocks 27 and 28, respectively, which are slidably mounted within a supporting housing 29 secured to the lower surfaces of the plate 10. As shown in Figures 3 and 4 of the drawings, the blocks 27 and 28 are slidable transversely in opposite directions within the housing 29 and are normally spaced apart to receive therebetween a shaft 30. The portion of the shaft 30 disposed between the blocks 27 and 28 is cut away to a substantially rectangular cross-section, while the ends of the shaft are round and are journaled in the housing 29.

One end of the shaft 30 projects beyond the housing 29 and is provided with a pinion 31 meshing with a rack 32 formed on the end of a lever 33, which is pivotally mounted upon a stub shaft 34 projecting outwardly from the housing 29. The shafts 25 and 26 are operatively connected together for rotatable movement through intermeshing gear wheels 35 and 36 mounted on the shafts 25 and 26, adjacent the rolls 23 and 24, respectively. The gear wheels 35 and 36 are maintained in operative engagement by means of springs 37 and 38 mounted upon pins 39 and 40 disposed in recesses formed in the respective blocks 27 and 28. The springs 37 and 38 are disposed between the respective blocks with which they are associated and angulated members 41 and 42 secured to the housing 29. The pins 39 and 40 are adapted to pass through suitable openings in the members 41 and 42 when the blocks are in their extended or open position. The gear wheels 35 and 36 may be disengaged by depressing the lever 33, which through the pinion 31, rotates shaft 30 to bring the flattened portion thereof into a horizontal position, thereby separating the blocks 27 and 28 and disengaging the gear wheels as shown in Figure 4 of the drawings.

Depending from the base plate 10 are a plurality of rods 45 which serve to support a frame 46. Journaled within the frame 46 is a shaft 47 which is operatively connected with the shaft 25 through a flexible connecting shaft 48. Mounted on the shaft 47 is a gear 49 which is operatively connected to motor shaft 50 through reducing

gear train 51. The motor shaft 50 is driven by a suitable electric motor 53.

Referring now to Figures 1, 2 and 7 of the drawings, the device for severing the binding tape 13 upon the passage of one edge of a lantern slide assembly through the device comprises opposed frames 54 and 55 secured on the upper surface of the base plate 10 upon opposite sides of the trough 17 adjacent the cutaway portion 20 of the latter. The frames 54 and 55 support, for transverse movement across the path of travel of the tape 13, U-shaped members 56. The outer extremities of the upper arms 57 of the members 56 bear against the opposite surfaces of the lantern slide assembly, as the same is passing therealong. On the outer extremity of lower arm 58 of the members 56 is formed a knife edge which serves to cut the sides of the binding tape 13 when the end of the slide has passed beyond the ends of the upper arms 57. Suitable spring members 59 extending between the outer portion of the members 56 and the respective frames 54 and 55 supporting the same normally urge the members 56 across the path of travel of the binding tape 13. The extent of this movement is restricted by means of adjusting pins 60 carried by the frames 54 and 55 and engageable with the members 56.

Pins 61 and 62 secured to the blocks 27 and 28 and projecting upwardly through elongated openings 63 formed in the base plate 10 engage projecting lugs 64 on the members 56 and move the latter outwardly as the blocks 27 and 28 are separated in response to downward movement of the lever 33.

To facilitate the movement of the slide along the surface of the plate 10 there are provided spaced rollers 66 and 67 positioned in slots 69 and 70 and rotatably mounted on shafts 71 journaled in suitable brackets secured to the lower surface of the plate 10. To support the lantern slide assembly in edge-wise position as it passes along the trough 17 and then beyond the rolls 21 and 22, there is provided guides which may take any suitable form. As illustrated in Figure 1 of the drawings, these guides comprise spaced members 74 which receive the slide assembly therebetween and are supported from the surface of the plate 10 in alignment with trough 17 by brackets 75.

In using the device of the present invention to bind the edge portions of lantern slide assemblies or similar articles the binding tape 13 is threaded through the trough 17 to the cut-away portion 20 thereof and the motor 53 is started to drive the rolls 23 and 24. The lantern slide assembly is then made by placing a negative and a mask between two pieces of cover glass. The assembly is manually held together and inserted edgewise between the guide members 74 and the lower edge thereof is seated upon the adhesive binding tape disposed in the trough 17. The lever 33 is then depressed separating rolls 23 and 24 and the opposed knife edges. The slide is manually moved along the trough drawing with it the binding tape which adheres to the edge thereof to a point between the rolls 23 and 24 at which point the lever 33 is released and the rolls are adapted to simultaneously move the slide assembly along the base 10 together with the binding tape through the guiding and forming trough 17 and securely press the binding tape into engagement with the edge portions of the lantern slide assembly. The extremities of the arms 57 bear against the sides of the slide assembly as the same is moved along. At the point where the

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slide passes the ends of the arms 57 the knife edges on the arms 58 are caused to move across the path of the tape by the springs 59 and to cut the upstanding portions of the binding tape. At this point the lever 33 is depressed and the slide released from the rolls 23 and 24. The slide assembly is rotated edgewise through ninety degrees and the adjacent edge thereof is brought into contact with the binding tape 13. The edge of the slide is moved between the rolls 23 and 24 and the lever 33 released and the rolls are caused to move the slide assembly along until the knife edges are released to cut the binding tape. The foregoing is repeated until all four edges of a slide are bound with the tape.

It is to be noted that by the use of the present device the edges of the slide are uniformly bound, the tape overlapping an edge portion the same distance on both sides and on all edges. At the corners the tape is neatly lapped automatically as the plate is rotated to bind successive edge portions. When all four edge portions of the slide have been bound and the tape cut, the device is ready to receive the next cover plate.

Having thus described my invention, what I desire to obtain by Letters Patent is defined in the appended claims.

I claim:

1. A device of the class described for applying adhesive tape to the edge portions of a flat article comprising a supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for guiding and folding said tape as it moves across said supporting member, opposed rolls adapted to engage opposite sides of the article and move it along said supporting member, opposed knife means for severing said tape after the passage of the article therebetween, and means for simultaneously separating said driving rolls and said knife means.

2. A device of the class described for applying adhesive tape to the edge portions of a lantern slide assembly comprising a supporting member, means arranged at one end of said supporting member for holding the roll of adhesive tape to be applied, means for guiding and folding said tape into substantially U-shape in cross section as it moves across said supporting member, opposed rolls carried by said supporting member adapted to engage opposite sides of a lantern slide being bound, means independent of the lantern slide assembly for rotating said rolls, manually actuated means for moving said rolls away from and toward each other, said rolls adapted to simultaneously move the slide along the supporting member together with the binding tape through the guiding and forming means and securely press the tape into engagement with the edge portions of the slide, and opposed knife means positioned rearwardly of said rolls for severing said tape after the passage of the slide therebetween.

3. A device of the class described for applying adhesive tape to the edge portions of an article comprising a supporting member, means for supporting and guiding the article edge-wise along said supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, opposed rolls carried by said supporting member adapted to engage opposite sides of the article being bound, means for rotating said rolls, means for moving said rolls away from and toward each other, said rolls adapted to simultaneously move the article along the sup-

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porting member together with the binding tape through the guiding and forming means and securely press the tape into engagement with the edge portions of the article, and means for cutting said tape upon the binding of one edge of the article.

4. A device of the class described for applying adhesive tape to the edge portions of a lantern slide assembly comprising a supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for guiding and folding said tape, opposed rolls carried by said supporting member engageable with opposite sides of a lantern slide being bound, means for rotating said rolls, means for moving said rolls away from and toward each other, said rolls adapted to simultaneously move the slide along the supporting member together with the binding tape through the guiding and forming means and securely press the tape into engagement with the edge portions of the slide, and opposed knife means positioned rearwardly of said rolls and movable transversely of the path of the tape for cutting the same.

5. A device of the class described for applying adhesive tape to the edge portions of an article comprising a supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for guiding and folding said tape into substantially U-shape in cross section, opposed rolls engageable with opposite sides of the article, means for rotating said rolls, said rolls adapted to simultaneously move the article along the supporting member together with the binding tape through the guiding and forming means and securely press the tape into engagement with the edge portions of the slide, opposed knife means positioned rearwardly of said rolls and movable transversely of the path of the tape for cutting the same, and means for simultaneously moving said rolls and knife means away from each other.

6. A device of the class described for applying adhesive tape to the edge portions of a lantern slide assembly comprising a supporting member, means for supporting and guiding a lantern slide in edge position along said supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for guiding and folding said tape into substantially U-shape in cross-section, opposed rolls engageable with opposite sides of a lantern slide being bound, means for rotating said rolls in opposite directions, said rolls adapted to simultaneously move the slide along the supporting member together with the binding tape through the guiding and forming means and securely press the tape into engagement with the edge portions of the slide, opposed knife means positioned rearwardly of said rolls, said knife means being responsive to the movement of the slide through the said tape guiding and forming means and movable to cut the tape upon movement of the slide beyond the knife means, and means for simultaneously moving said rolls and knife means away from each other.

7. A device of the class described for applying adhesive tape to the edge portions of a lantern slide assembly comprising a supporting member, means for supporting and guiding a lantern slide assembly in edge position along said supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for continuously guiding and folding said tape from a flat condition into substantially

U-shape in cross-section, opposed rolls engageable with opposite sides of a lantern slide being bound, means for rotating said rolls in opposite directions, said rolls adapted to simultaneously move the slide along the supporting member together with the binding tape through the guiding and forming means and securely press the tape into engagement with the edge portions of the slide, opposed knife means positioned rearwardly of said rolls, means for moving said knife means transversely of the path of the tape and cutting the same upon movement of the slide past the knife means.

8. A device of the class described for applying adhesive tape to the edge portions of a lantern slide assembly comprising a supporting member, means for supporting and guiding a lantern slide assembly in edge position along said supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for continuously forming said tape from a flat into substantially U-shape in cross-section, opposed rolls engageable with opposite sides of a lantern slide being bound, means for rotating said rolls in opposite directions, said rolls adapted to simultaneously move the slide along the supporting member together with the binding tape through the guiding and forming means and securely press the tape into engagement with the edge portions of the slide, opposed knife means positioned rearwardly of said rolls and movable transversely of the path of the tape for cutting the same, means associated with said knife means and engageable with opposite sides of a lantern slide for controlling the movement of the knife means upon movement of the slide past said means, and means for simultaneously moving said rolls and knife means away from each other.

9. A device of the class described for applying adhesive tape to the edge portions of a lantern slide comprising a supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for guiding and folding said tape into substantially U-shape in cross section, said guiding and folding means arranged to receive one edge of a lantern slide for movement therealong, a roller adapted to engage the article and seal the tape thereon, and knife means positioned at the discharge end of said guiding and folding means resiliently urged into a position transversely of the path of travel of the tape and arranged to sever the tape after the passage of the lantern slide from the said guiding and folding means.

10. A device of the class described for applying adhesive tape to the edge portions of a flat article comprising a supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for guiding and folding said tape into substantially

U-shape in cross section as it moves across said supporting member, said guiding and folding means being arranged to receive one edge of the flat article, roll means aligned with and spaced beyond the guiding means and adapted to engage opposite sides of the article and seal the tape thereon, knife means positioned at the discharge end of said guiding and folding means said knife means being resiliently urged into a position traversing the path of travel of the tape for severing the same, and means engageable with the side of the flat article and serving to maintain the knife means in its retracted position until the flat article has passed the discharge end of the guiding and folding means.

11. A device of the class described for applying adhesive tape to the edge portions of a flat article comprising a supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for guiding and folding said tape as it moves across said supporting member, roll means adapted to engage opposite sides of the article and seal the tape thereon, knife means positioned at the discharge end of said guiding and folding means said knife means being resiliently urged into a position traversing the path of travel of the tape for severing the same, and means engageable with the side of the flat article and serving to maintain the knife in its retracted position until the flat article has passed the discharge end of the guiding and folding means.

12. A device of the class described for applying adhesive tape to the edge portions of a lantern slide comprising a supporting member, means arranged at one end of said supporting member for holding a roll of adhesive tape, means for guiding and folding said tape, said guiding and folding means adapted to receive one edge of the lantern slide which in turn engages the tape and carries it along as the slide is manually moved along said guiding means, a roller adapted to engage the article and seal the tape thereon, and knife means positioned at the discharge end of said guiding and folding means adapted to traverse the path of travel of the tape for severing the same, and means engageable with the side of the lantern slide and serving to maintain the knife in its retracted position until the slide has passed the discharge end of the guiding and folding means.

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