United States Patent

[11] 3,616,084

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[54] **PATCH-APPLYING DEVICE FOR DATA CARDS**
2 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **156/514,** 156/261
[51] **Int. Cl.** **B32b 31/18,** B32b 31/20
[50] **Field of Search** 156/261, 262, 505, 506, 513, 514

[56] **References Cited**

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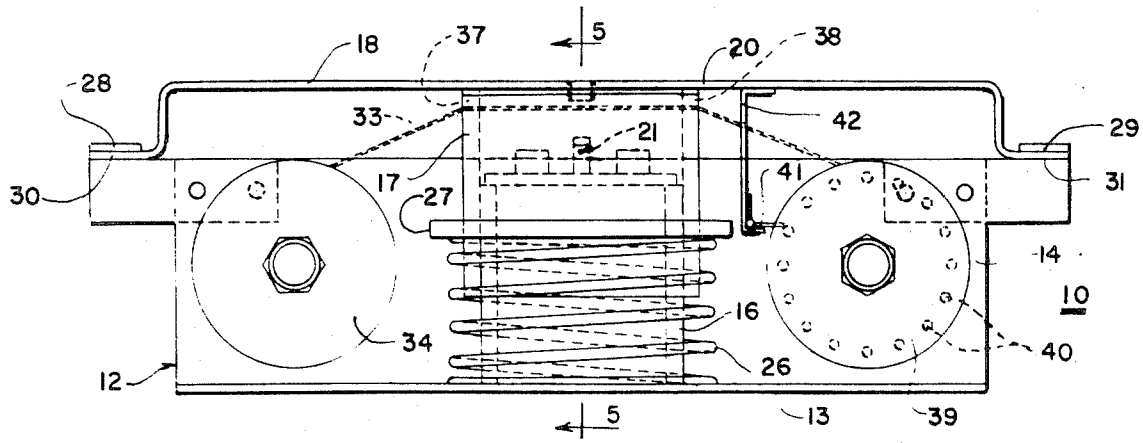
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ABSTRACT: A device for patching a data card to cover and close a perforation therein. A plate is mounted for movement toward and away from a base on which a male die is supported. An opening in the plate overlies the male die. A hollow cutter die surrounding the opening cuts a patch from a strip of tape which is directed between the dies when the plate is advanced toward the male die with a card thereon having a perforation aligned with the opening and the patch is attached to the card overlying the perforation.



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SHEET 1 OF 2

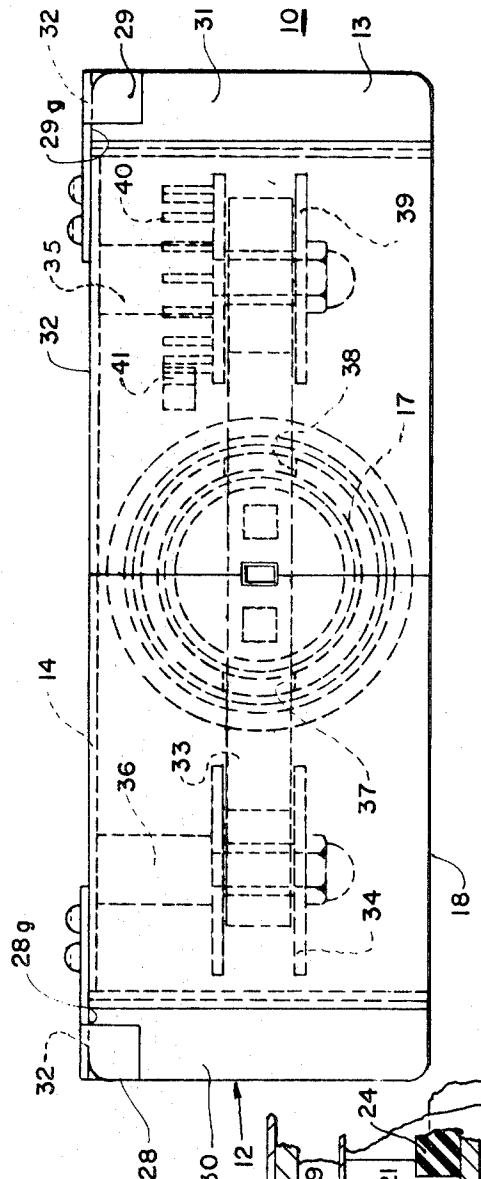


FIG. 2

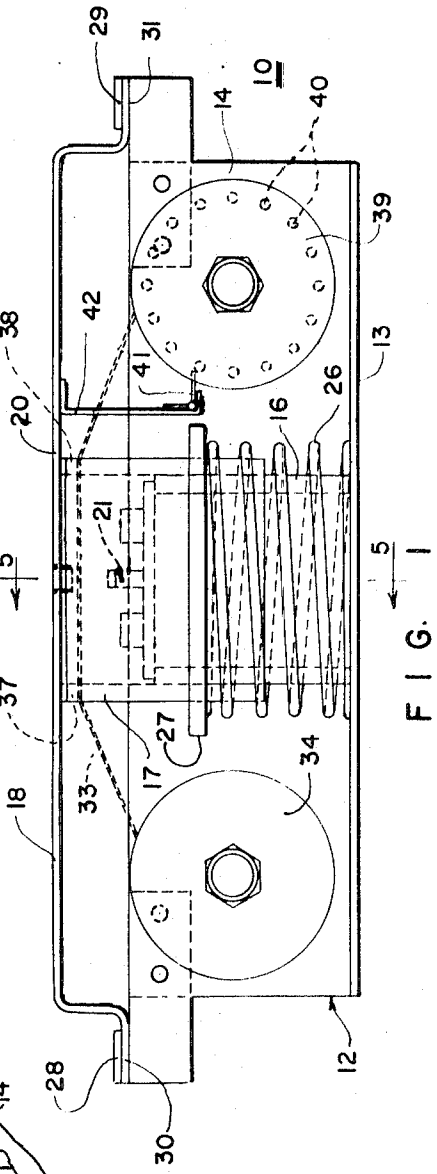


FIG. 1

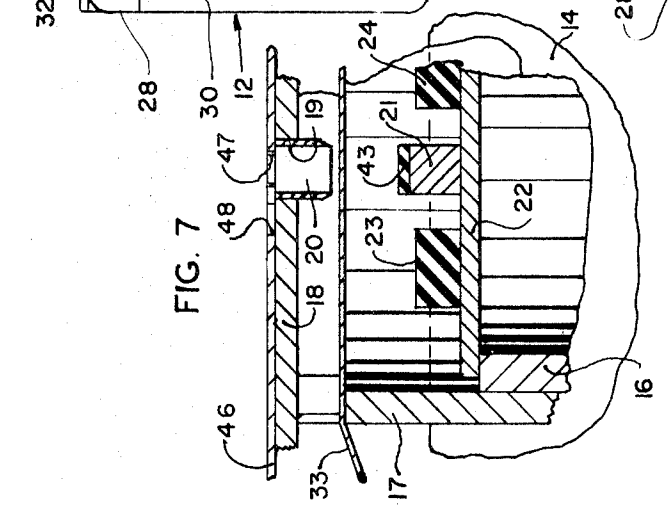


FIG. 7

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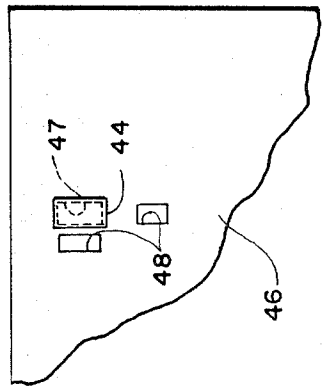


FIG. 6

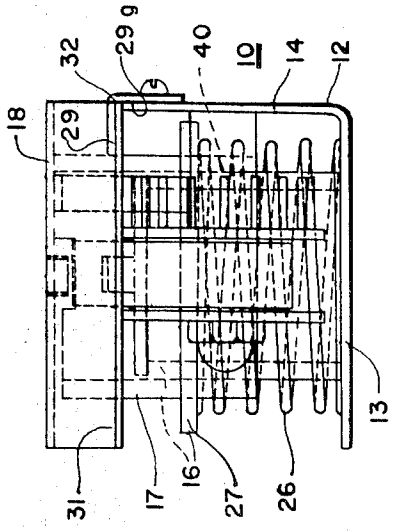


FIG. 4

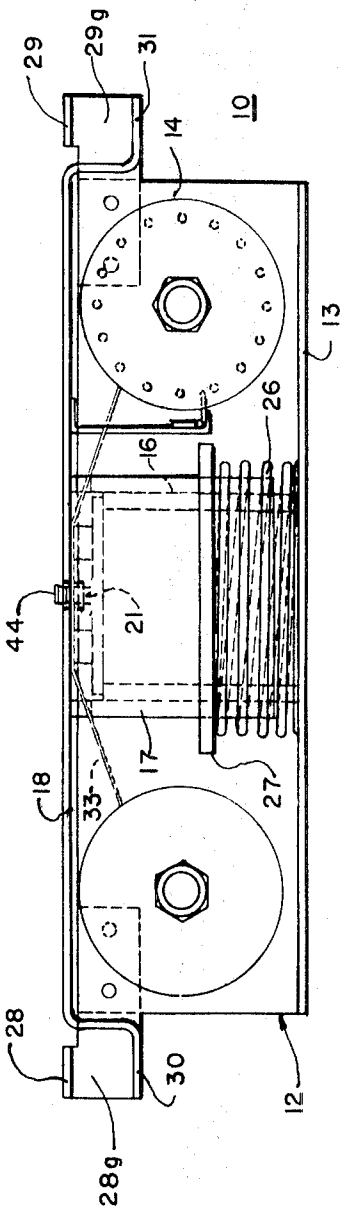


FIG. 3

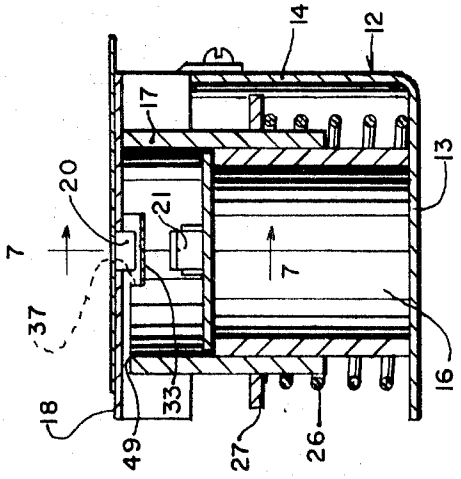


FIG. 5

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PATCH-APPLYING DEVICE FOR DATA CARDS

This invention relates to a device for correcting perforated cards. More particularly, this invention relates to a device for applying a patch to cover an improper or erroneous perforation on a data card.

When a data card is improperly perforated, the improper perforation can be covered with a patch which must be properly placed to cover the improper perforation without covering adjacent perforations.

An object of this invention is to provide a device which punches a patch from a length of adhesive-coated tape and applies the patch to a data card to cover an improper or erroneous perforation.

Briefly, this invention provides a device which includes a plate which moves up and down and upon which a data card can be positioned with an improper perforation in the data card overlying an opening in the plate. A strip of tape having a pressure-sensitive adhesive on an upper face thereof is guided below the opening in the plate. When the plate and card are pressed downwardly, a stationary die is engaged by the tape and a patch is punched from the tape and pressed against the underside of the card as the card and plate move downwardly together. A tape-cutting die is mounted at the opening in the plate and the opening in the plate is sufficiently larger than the improper perforation that edge portions of the patch are attached to the card at edges of the improper perforation. Resilient stop pads on opposite sides of the opening engage the tape and hold the tape in position as the patch is punched from the tape and is applied to the card. The plate can be urged upwardly to a normal position free of the die by a spring. Means can be provided for advancing the tape each time the plate is depressed to present a new section of the tape below the opening.

The above and other objects and features of the invention will be apparent to those skilled in the art to which this invention pertains from the following detailed description and the drawings, in which:

FIG. 1 is a view in front elevation of a patch-applying device constructed in accordance with an embodiment of this invention with a plate thereof in normal position;

FIG. 2 is a top plan view of the patch-applying device shown in FIG. 1;

FIG. 3 is a view in front elevation of the device with the plate thereof in depressed position;

FIG. 4 is a view in end elevation of the device;

FIG. 5 is a view in section taken on the line 5—5 in FIG. 1;

FIG. 6 is a plan view of a fragmentary portion of a data card with a patch covering an improper perforation therein; and

FIG. 7 is a fragmentary view in section on an enlarged scale taken on the line 7—7 in FIG. 5.

In the following detailed description and the drawings, of what is presently believed to be the best mode of practicing the instant invention, like reference characters indicate like parts.

In FIGS. 1–5 inclusive is shown a patch-applying device **10** constructed in accordance with an embodiment of this invention. The patch-applying device **10** includes a base member **12** of generally angle shape including a bottom flange **13** on which the device rests and an upstanding flange **14**. A tubular guide **16** is attached to the bottom flange **13** and extends upwardly therefrom. A sliding tube **17** is mounted on the guide **16** for sliding up and down telescopically with relation to the guide **16**. A plate **18** is mounted at the upper end of the sliding tube **17** for moving therewith. An opening **19** (FIG. 7) is formed in the plate **18** overlying the center of the sliding tube **17** and the tubular guide **16**. A hollow cutter die **20** is mounted inside the opening **19**. A male die **21**, which conforms in shape and size to the cutter die **20**, is mounted on a disc **22** which is attached to the upper end of the tubular guide **16**. The hollow cutter die **20** forms a female die cooperating with the male die **21**. Stops **23** and **24** are also mounted on the disc **22** and are engaged by the plate **18** when the plate **18** is pushed downwardly to the FIG. 3 position in which the male die **21** extends through the cutter die **20**. A compression spring **26** (FIG. 5) urges the sliding tube **17** and the plate **18** to the normal raised position shown in FIG. 1. The spring **26** bears on the bottom flange **13** and on shoulder **27** which is attached to the sliding tube **17** intermediate the ends thereof. Stop members **28** and **29** attached to the upstanding flange **14** and overlying end flanges **30** and **31** of the plate **18** limit upward movement of the plate **18** and also present guide faces **28*g***, **29*g*** with which edge **32** of plate **18** cooperates so as to preclude rotation of tube **17** relative to tube **16** and assure maintenance of male and female die members **21**, **20** in proper alignment.

A ribbon or strip of tape **33** is guided over the male die **21** and under the cutter die **20**. The tape is carried by a reel **34** (FIG. 1) rotatably mounted on a support **36** (FIG. 2) attached to the upstanding flange **14**. From the reel **34**, the tape passes through a slot **37** (FIGS. 1, 2 and 5) in the sliding tube **17**, over the male die **21**, and through a second slot **38** (FIG. 2) in the sliding tube **17** to a takeup reel **39**. The takeup reel **39** is rotatably mounted on a support **35** and is provided with a plurality of circumferentially spaced pins **40** which are engageable by a pawl plate **41**. The pawl plate **41** is hinged to a bracket **42** (FIG. 1) attached to the plate **18**, and, as the plate **18** moves from the FIG. 1 position to the FIG. 3 position, plate **41** swings as it trails past a pin **40** and then swings to horizontal position at the beginning of the return to the FIG. 1 position so the pawl plate **41** engages one of the pins **40** and turns the takeup reel **39** in a clockwise direction as shown in FIG. 1 sufficiently so that following each time the plate **18** is depressed to patch an incorrect perforation as hereinafter described, a new section of the tape is presented above the male die **21** during the return stroke.

As shown in FIG. 7, a resilient pad **43** of rubber or the like is adhesively mounted on the upper end of the male die **21**, and the rubber pad **43** engages the tape **33** and holds the tape as a patch **44** (FIGS. 3 and 6) is cut therefrom. The stops **23** and **24** are also formed of rubber or rubberlike material and engage the tape on opposite sides of the male die **21** to ensure cutting of a proper patch therefrom.

In the use of the device, a data card **46** (FIG. 6) having an incorrect perforation **47** and correct perforations **48** therein is positioned on the plate **18** (as shown in FIG. 7) with the improper perforation **47** centered over the opening **19** therein. The upper face of the plate **18** is exposed so that the card **46** can be positioned and held thereon with the incorrect perforation **47** centered over the passage in cutter die **20**, care being taken that no portion of any correct perforation **48** overlies the passage in cutter die **20**. Then the card **46** and the plate **18** are pushed downwardly so that the patch **44** is cut from the strip of tape and is affixed to the card overlying the improper perforation to cover and close it. The operator can position his thumb on the card **46** so that it covers the improper perforation and can push down with the thumb avoiding displacement of the card so that the patch is properly positioned. The tape can be a thin tape having a pressure-sensitive adhesive coating on the face thereof which is presented to the card so that the adhesive coating adheres to the card surrounding the improper perforation **47**. The dies are rectangular in shape and cut a rectangular patch from the tape which corresponds to the incorrect perforation and overlaps edges of the incorrect perforation only sufficiently for secure attaching to the card and without interfering with any adjacent correct perforation **48**. A polyester film tape having a thickness of 3 mils can be used. As shown in FIG. 5, a slot **49** is formed between the plate **18** and the upper end of the sliding tube **17** at one side of the slots **37** and **38** for ease of threading the tape into the slots **37** and **38**.

The patch applying device is subject to structural modification without departing from the spirit and scope of the invention.

Having described our invention, what I claim as new and desire to secure by Letters Patent is:

1. A device for forming a patch from a strip of pressure sensitive tape and for applying the patch to a data card to cover

and close a perforation therein which comprises a base, a male die supported on said base, a plate mounted for movement toward and away from the base, there being an opening in the plate overlying the male die, a hollow cutter die surrounding the opening, the plate being exposed and unobstructed overlying the opening, means for guiding the strip of tape between the dies, the dies being arranged to cut a patch from the strip of tape when the plate is advanced toward the male die with a card thereon having a perforation centered in alignment with the opening and to attach the patch to the portion of the face of the card overlying the opening and surrounding the perforation, and a resilient pad on the male die for engaging the patch to resiliently hold the patch against the data card surrounding the perforation.

2. A device for forming a patch from a strip of pressure sensitive tape and for applying the patch to a data card to cover and close a perforation therein which comprises a base, a male die supported on said base, a plate mounted for movement toward and away from the base, there being an opening in the plate overlying the male die, a hollow cutter die surrounding the opening, the plate being exposed and unobstructed overlying the opening, means for guiding the strip of tape between the dies, the dies being arranged to cut a patch from the strip of tape when the plate is advanced toward the male die with a card thereon having a perforation centered in alignment with the opening and to attach the patch to the portion of the face of the card overlying the opening and surrounding the perforation, the male die being mounted on a first telescoping member and the plate being mounted on a second telescoping member, there being slots in the second telescoping member receiving and guiding the tape, and resilient pad members mounted on the first telescoping member on opposite sides of the male die engageable with the tape for holding the tape in engagement with the plate on opposite sides of the dies as a patch is cut from the tape and applied to a card.