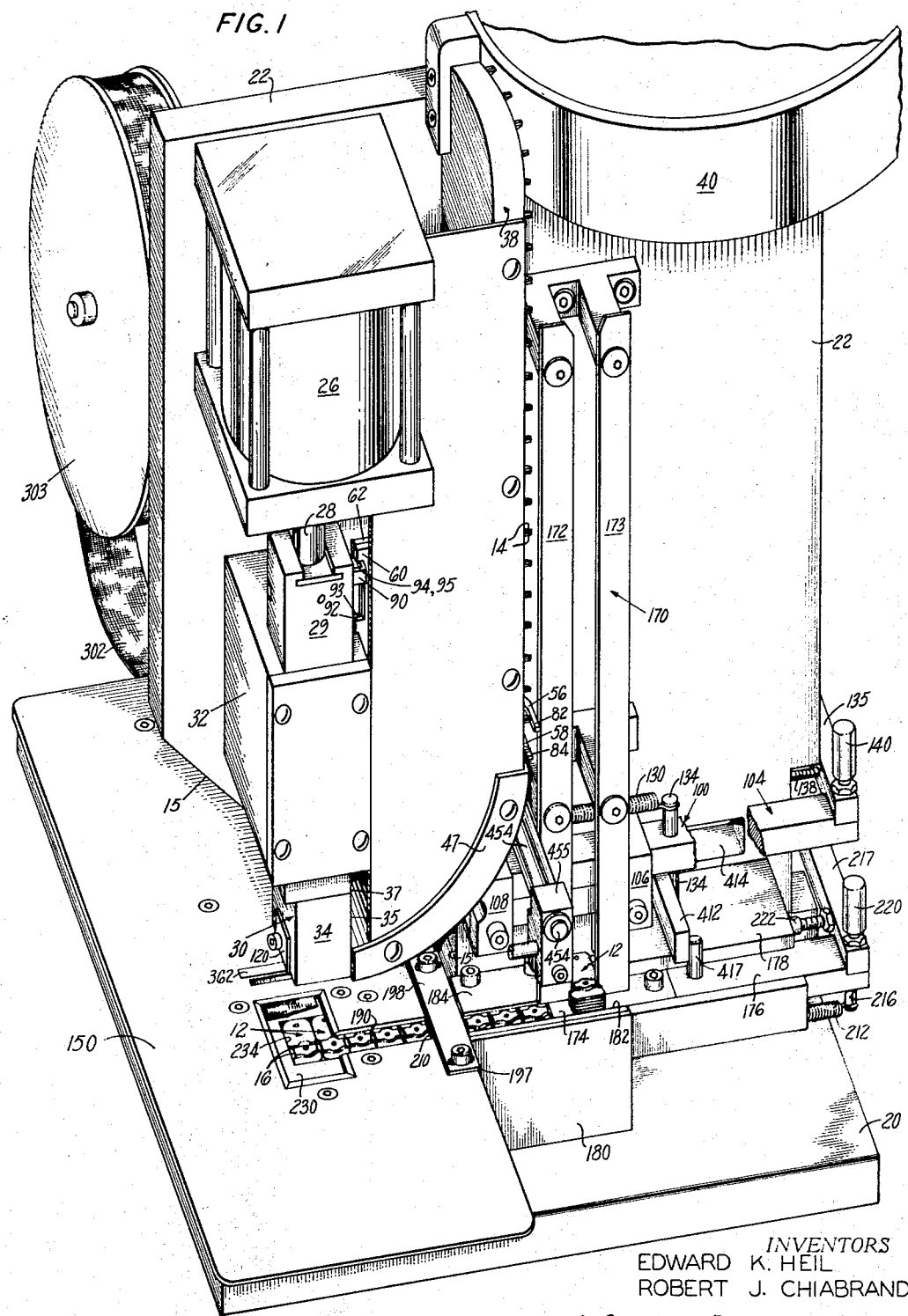
Dec. 20, 1966 E. K. HEIL ETAL 3,292,837

STAPLING MACHINE

Filed March 19, 1965 5 Sheets-Sheet 1

FIG. 1



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STAPLING MACHINE

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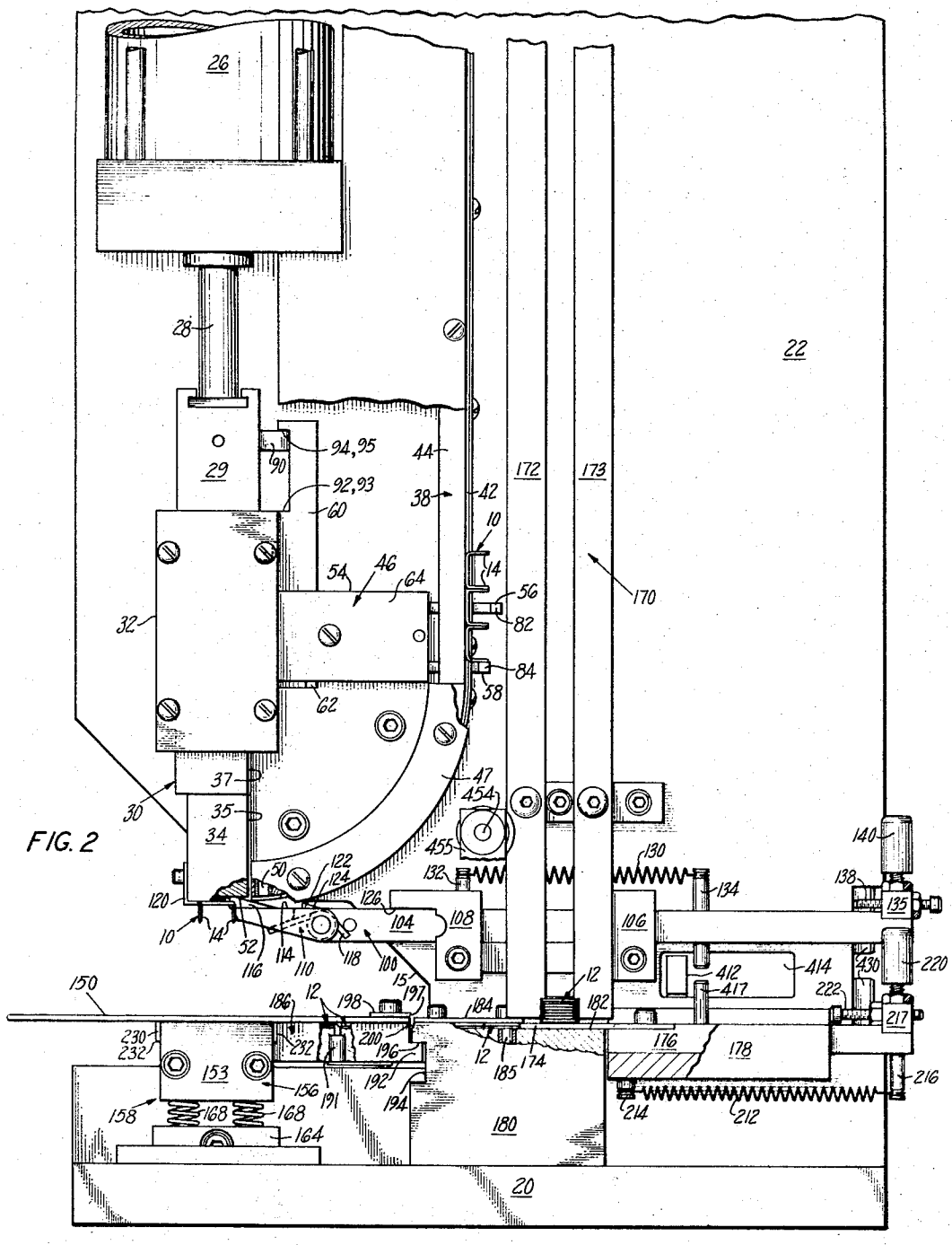


FIG. 2

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STAPLING MACHINE

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FIG. 3

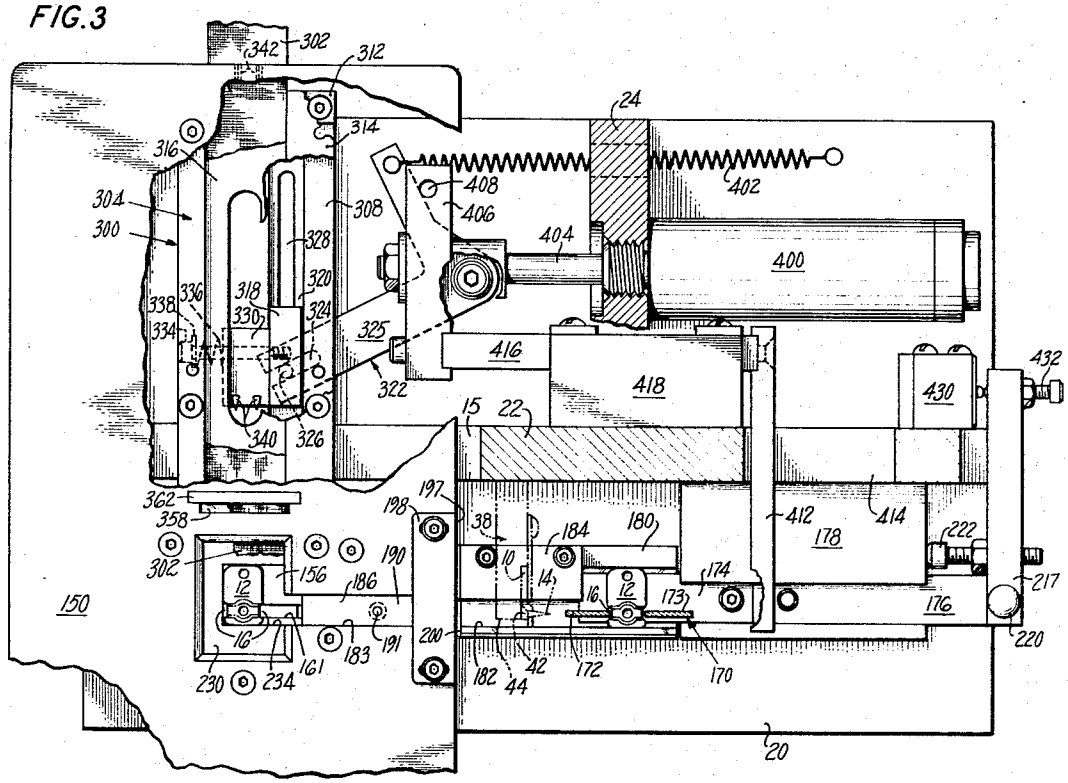
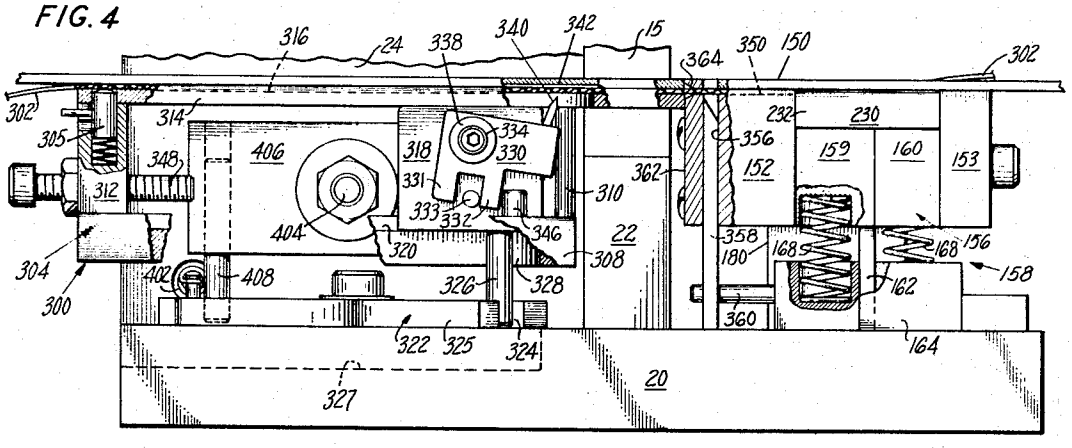


FIG. 4



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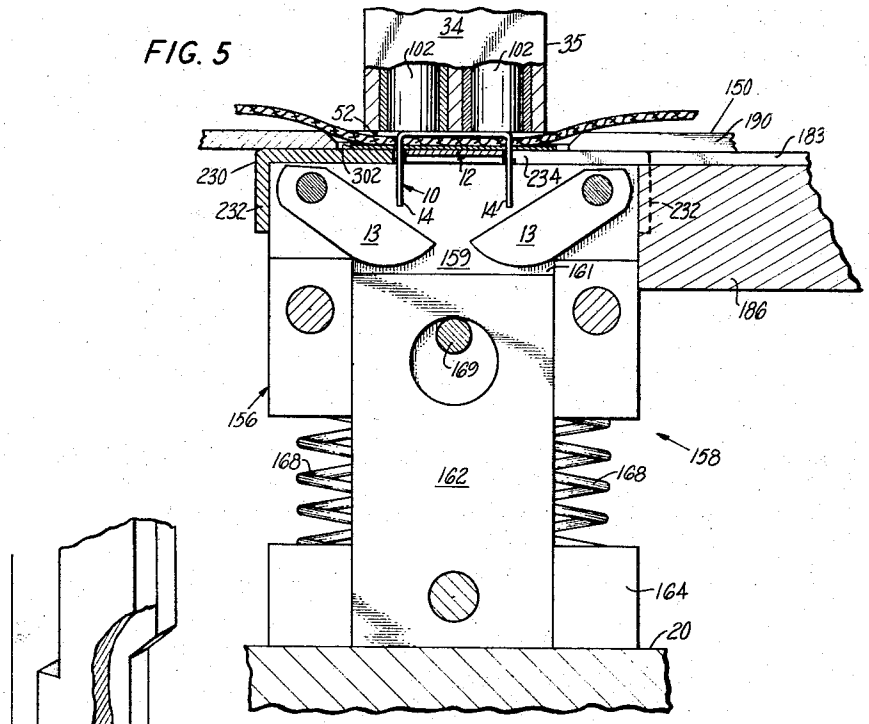
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STAPLING MACHINE

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FIG. 5



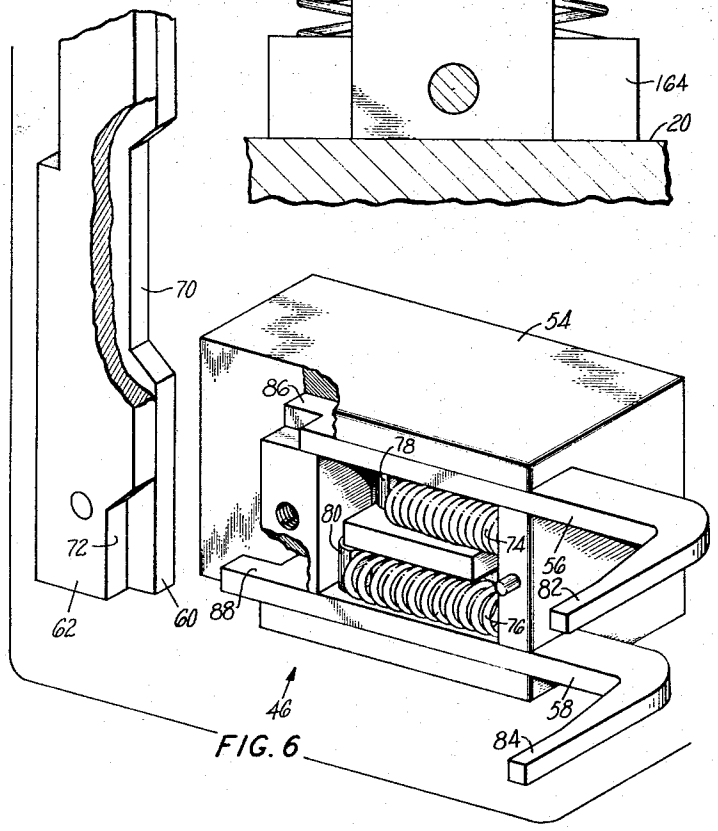


FIG. 6

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STAPLING MACHINE

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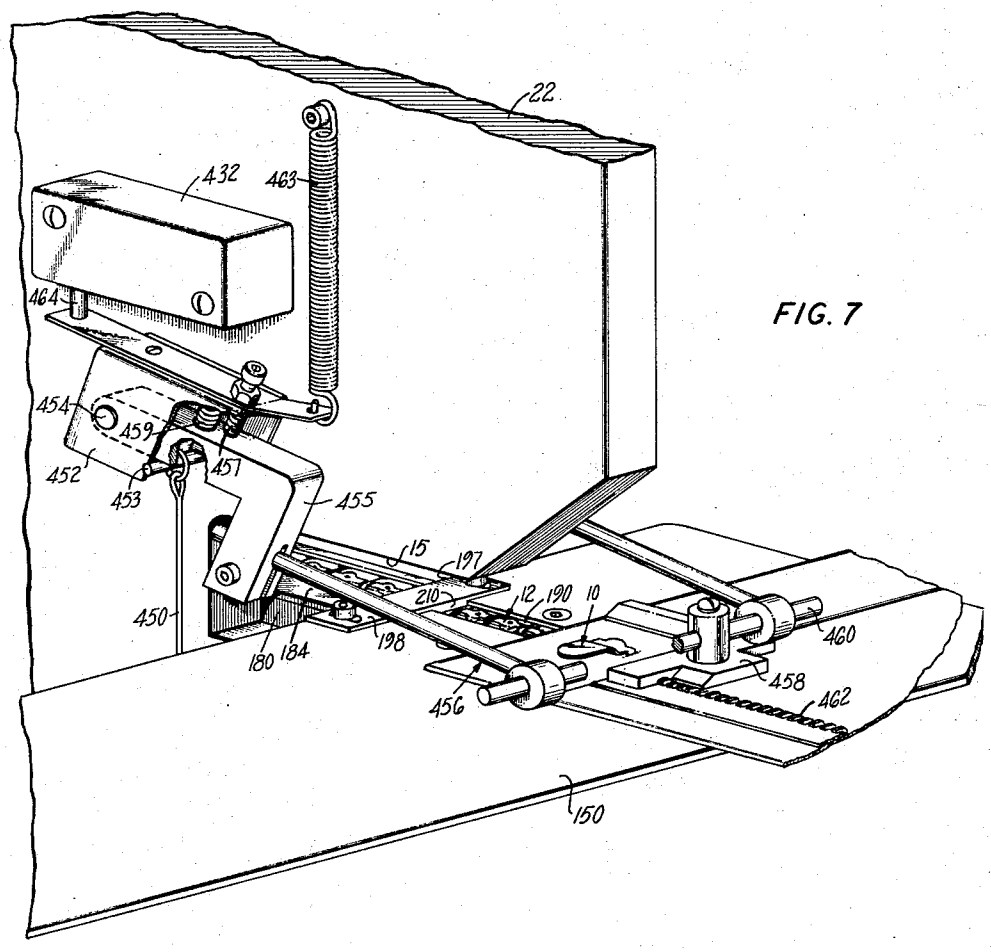


FIG. 7

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United States Patent Office 3,292,837
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3,292,837

STAPLING MACHINE

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Filed Mar. 19, 1965. Ser. No. 441,003
26 Claims. (Cl. 227—16)

The present invention relates to stapling machines of the type having notable utility in the application of hook and eye fastener parts to the fabric of a garment.

It is a principal object of the present invention to provide a new and improved stapling machine for automatically stapling a fastener with a backing plate and a strip of reinforcing material to the fabric of a garment.

It is another aim of the present invention to provide a new and useful tape feed mechanism for feeding a strip of tape into association with the fabric for reinforcing the fabric in the area of the applied fastener.

It is another aim of the present invention to provide a new and useful tape feed mechanism for feeding a strip of tape into overlying relationship with a backing plate positioned for receiving the projecting prongs of a fastener in timely relationship with the stapling by the stapling machine of a fastener with the backing plate.

It is a further aim of the present invention to provide an improved reinforcing tape feed mechanism for automatically feeding a strip of tape for reinforcing the fabric in the area of the staple which is adjustable for varying the length of the strip of tape in accordance with the fastener application, and which is adapted for timely shearing of the reinforcing strip from the remaining tape after the strip is retained in association with the fabric by the projecting prongs of the fastener and before the stapling of the fastener is completed.

It is another aim of the present invention to provide a new and improved anvil assembly of the type described in United States Patent No. 2,794,981, dated June 11, 1957, and entitled Machine for Applying Eye Fasteners. In more particularity it is an aim of the present invention to provide a new and improved anvil assembly of the type having a die for locating a fastener backing plate in cooperative association with the anvil assembly, wherein the anvil assembly may be readily adapted for use with or without an automatic mechanism for feeding the backing plates to the die and for use with backing plates of varying configuration.

It is another aim of the present invention to provide a new and improved anvil assembly of economical manufacture and flexible utility.

It is a further aim of the present invention to provide a new and improved stapling machine having mechanisms for automatically feeding the backing plates individually and sequentially to the die of the anvil assembly, for automatically feeding fasteners individually and sequentially to the usual fastener-apply ram, and for operating the ram to apply the fastener with the backing plate in the die to the fabric only after the backing plate and the fastener have been properly positioned in the die and on the ram respectively.

It is a further aim of the present invention to provide a new and improved mechanism for automatically feeding a single fastener to the ram for each cycle of the ram.

It is another aim of the present invention to provide a new and improved mechanism for automatically feeding the backing plates to the die of the anvil assembly.

It is a further aim of the present invention to provide a new and improved backing plate feed mechanism having notable utility with stapling machines of the type having anvil assemblies with dies displaceable downwardly during the application of the fastener.

It is a still further aim of the present invention to provide a new and improved backing plate feed mechanism adapted for feeding backing plates to the die of the anvil assembly with precision and reliability.

It is another aim of the present invention to provide a new and improved mechanism for timely operating the backing plate and fastener feed mechanisms in conjunction with the operation of the ram and for timely feeding a reinforcing tape into association with the backing plate prior to the operation of the ram.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth, and the scope of the application of which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a perspective view, partly broken away and partly in section, of an embodiment of a stapling machine of the present invention;

FIG. 2 is an enlarged front elevation view, partly broken away and partly in section, of the stapling machine;

FIG. 3 is an enlarged plan section view, partly broken away and partly in section, of the stapling machine showing a reinforcing tape feed mechanism of the machine;

FIG. 4 is an enlarged elevation section view, partly broken away and partly in section, of the stapling machine showing the reinforcing tape feed mechanism and an anvil assembly of the machine;

FIG. 5 is an enlarged elevation section view, partly broken away and partly in section, of a portion of the ram and anvil assembly of the stapling machine showing the application of a fastener with a backing plate and a reinforcing tape to a textile fabric;

FIG. 6 is an enlarged partly exploded perspective view, partly broken away and partly in section, showing an escapement mechanism of the stapling machine; and

FIG. 7 is an enlarged fragmentary perspective view showing an operating switch and safety guard of the stapling machine.

Referring now to the drawings in detail, the stapling machine of the present invention is of the type generally shown and described in United States Patent No. 2,936,454, dated May 17, 1960, entitled Hook Stay Setting Machine, and in United States Patent No. 2,939,145, dated June 7, 1960, entitled Eye Setting Machine, and having notable utility in the application of hook or eye fasteners to the fabric of a garment. For illustrative purposes, an exemplary embodiment of the stapling machine of the present invention is shown adapted for applying a hook fastener or staple **10** with a stay or backing plate **12**, the hook fastener **10** being provided in a conventional manner with a pair of projecting pointed prongs **14** adapted for receipt within a pair of opposed recesses **16** in the stay plate **12** and to be thereafter bent inwardly along the underside of the stay plate for securely attaching the hook fastener with the stay plate to the fabric of a garment.

The exemplary embodiment of the stapling machine of the present invention is shown to comprise a frame having a base plate **20**, a transversely extending upstanding plate **22**, and a rearwardly extending upstanding plate **24** which are secured together to provide a rigid support for the various components of the machine. Mounted on the forward face of the transverse plate **22** is an air cylinder **26** having a vertically reciprocable rod **28** for reciprocating a generally rectangular slide **29** of a ram **30** within a sup-

port guide **32** fixed to the plate **22**. The slide **29** is provided at its lower end with a holder **34**, designed in the shown embodiment for holding a hook fastener **10** and having a lateral flat edge **35** in the plane of the corresponding flat edge **37** of the slide **29**. The ram is driven downwardly by the air cylinder **26** to drive a hook fastener through the fabric of a garment (FIG. 5) and into cooperative association with a backing plate **12** positioned for receiving the fastener part and to thereafter force the fastener prongs into engagement with a pair of anvil links **13** for bending the fastener prongs about the backing plate.

A gravity chute or magazine **38** is provided for conveying the hook fasteners **10** from a hopper **40** to adjacent the ram **30**. The chute **38** provides a track for the hook fasteners having an elongated guideway for receiving the body of the hook fasteners and an elongated opening **42** along the guideway adapted for receiving the fastener prongs **14** which therefore project outwardly from the chute as seen in FIGS. 1 and 2. The chute **38** has an upright portion **44** for conveying the fastener parts downwardly from the hopper to an escapement mechanism **46** which functions to check the fasteners against further downward travel in the chute and which releases the fasteners individually in cooperation with the operation of the ram. The chute additionally includes a lower arcuate portion **47** with a generally horizontally extending terminus for conveying the hooks downwardly from the escapement mechanism and to the left as seen in FIG. 2 to adjacent the ram **30** where they are retained by a permanent magnet **50** in lateral alignment with a lower or supporting face **52** of the holder when it is in its fully withdrawn position shown in FIG. 2.

Referring to FIGS. 2 and 6, the escapement mechanism **46** comprises a support block **54** secured to the plate **22**, a pair of cam-actuated slides **56, 58** horizontally reciprocable in suitable guide slots in the support block **54** and a pair of bar cams **60, 62** vertically reciprocable within a guideway formed by the support block **54**, the ram support guide **32** and a cover **64** for the support block. The slides **56, 58** are urged to the left as seen in the drawings against the cam edges **70, 72** of the bar cams **60, 62**, respectively, by compression springs **74, 76**, respectively, received within chambers in the support block and compressed between an inner face of the support block and pins **78, 80** secured to the slides. The slides **56, 58** are formed with forwardly projecting fingers **82, 84** which, with the slides **56, 58** in their withdrawn position as shown by the slide finger **84** in FIG. 2, lie in the path of the fastener prongs **14** to check the downward travel of the hook fasteners in the chute. The slides **56, 58** have lateral projections **86, 88**, respectively, at their inner ends which engage the respective cam edges **70, 72** of the bar cams **60, 62** and are accordingly laterally controlled by the bar cams between their withdrawn positions and their extended positions clear of the path of the fastener prongs **14**, shown by the slide finger **82** in FIG. 2. The bar cams **60, 62** are mounted within their supporting guideway so as to be frictionally retained against downward movement from their own weight and are actuated by a laterally projecting lug **90** secured to the ram **30** and engageable with the opposing spaced shoulders **92, 93** and **94, 95** of the cam bars to reciprocate the cam bars in timely sequence with the reciprocable movement of the ram **30**. Accordingly, when the ram **30** is actuated downwardly from its withdrawn position, the holder **34** is displaced downwardly from its withdrawn position before the lug **90** engages the shoulders **92, 93** to actuate the cam bars and thereby to actuate the upper slide **56** to retract the finger **82** into the path of the hook prongs **14**, and to subsequently actuate the lower slide **58** to extend the finger **84** and thereby release the single hook fastener between the fingers **82, 84**. The released hook fastener then slides down the chute **38** into engagement with the lateral edge of the ram **30** where it is retained by the permanent magnet **50**. After the ram is partially withdrawn the lug **90** engages the shoulders **94, 95** to retract the cam bars and to thereby sequentially actuate the slides to retract the lower escapement finger **84** and to extend the upper escapement finger **82** whereupon the succeeding hook fastener part slides into engagement with the lower escapement finger **84**. Thus it can be seen that the escapement mechanism **46** provides for feeding the hook fastener individually and sequentially and for feeding a single fastener part to a station adjacent the ram **30** during each cycle of the ram and during the downward stroke of the ram.

A fastener transfer mechanism **100** is provided for timely transferring the hook fastener at the lower end of the chute onto the face **52** of the holder **34** after the ram has been fully withdrawn where the hook fastener is retained by suitable permanent magnets **102**. The transfer mechanism **100** includes a slide **104** laterally reciprocable within guides **106, 108** secured to the plate **22** and a transfer pawl **110** pivotally mounted on the forward end of the slide **104** for engagement with the lower arcuate end of the chute and therefore for engagement with the fastener at its lower end. The pawl **110** is provided with an upper face **114** engageable with the lower arcuate edge of the chute and a narrow upstanding lug **116** receivable within the elongated opening **42** of the track and which is thereby adapted to engage the body of the hook fastener. Additionally, the forward end of the pawl is contoured to engage the projecting prongs and thereby assist in providing firm engagement with the fastener. A torsion spring **118** provides for biasing the transfer pawl in the clockwise direction as seen in FIG. 2 into engagement with the arcuate portion of the chute, and accordingly as the slide **104** is actuated to its forward or extended position shown in FIG. 2 the transfer pawl is adapted to feed the hook fastener from the chute onto the face **52** of the holder **34** and against a locating stop **120** secured to the side of the holder. The transfer pawl **110** is also provided with an upstanding lug **122** having a rearwardly tapered edge **124** engageable with an edge **126** of the guide **108** to pivot the feed pawl downwardly free of the chute as the slide **104** is retracted to its fully withdrawn position. The lower arcuate end of the chute track is thereby cleared to allow the hook fastener subsequently released by the escapement mechanism **46** to slide to adjacent the lower end of the chute.

A tension spring **130** connected between a post **132** fixed to the guide **108** and a post **134** secured to the slide **104** provides for actuating the slide **104** from its withdrawn position to its forward or extended position shown in the drawings. For limiting the forward movement of the slide **104**, an arm **135** is fastened to the outer end of the slide and an adjustable stop screw **138** is threaded through the arm **135** for engagement with an edge of the transverse plate **22**. Also, handle **140** mounted on the arm **135** is provided for manually retracting the slide as for clearing the hook feed mechanism.

A work supporting table **150**, preferably of sheet metal construction, is positioned below the holder **34** for supporting the fabric for stapling, and the transverse plate **22** of the machine frame is partially cut away at **15** to provide greater access to the work table. The plate **150** is detachably secured by suitable fasteners to the upper face of a pair of end supports or posts **152, 153** of a support block **156** of an anvil assembly **158** of the type generally shown and described in United States Patent No. 2,794,981, dated June 11, 1957, and entitled Machine for Applying Eye Fasteners. In a known manner, the support block **156** comprises a pair of supports **159, 160** intermediate the end supports **152, 153**, which are formed to provide a vertical slot **161** for receiving a thrust or anvil plate **162** that is securely retained on the base plate **20** of the frame by a suitable anvil support frame **164**. The levers or links **13** are mounted within the slot **161** for pivotal movement in the plane of the thrust plate **162** and are thereby

adapted to be pivoted upwardly by the thrust plate to engage and thereby bend the downwardly projecting prongs **14** of a hook fastener to secure the hook fastener **10** with a stay plate **12** to a garment. Compression springs **168** are mounted between the support block **156** and the anvil support frame **164** to urge the support block **156** upwardly to its normal or fully raised position shown in FIG. 4 which is determined by a transverse limit pin **169** secured to the support block **156** and received within an opening in the thrust plate **162**. Accordingly, for applying a fastener to a fabric the hook fastener **10** is forced downwardly by the ram **30** into cooperative association with a stay plate previously positioned on the support block and thereafter into engagement with the links **13** as the support block **156** is depressed by the ram **30** against the compression springs **168**.

The stay plates **12** are timely conveyed to the support block **156** from an upright magazine **170** having a pair of elongated laterally spaced plates **172, 173** with a thickness suitable for receipt within the recesses **16** in the stay plates to maintain the stay plates in stacked alignment. The stay plates are individually stripped from the lower end of the magazine **170** and individually and sequentially fed to the support block **156** by a feed and stripping finger or blade **174** mounted on a slide **176** laterally reciprocable within a guide **178** fixed to the plate **22**. A block **180** mounted beneath the stay plate magazine **170** on the base plate **20** is provided with a suitable track portion **182** for receiving the blade **174** and for conveying the stay plates individually and in sequence from the magazine. A cover plate **184** is adapted to retain the stay plates within the track portion **182** and a permanent magnet **185** (FIG. 2) is provided for restraining the stay plates against rearward movement in the track portion **182** when the blade **174** is withdrawn. A block **186** secured to the underside of the table **150** provides an additional track portion **183** for guiding the stay plates from the track portion **182** to the support block **156**. The table **150** overlies the track portion **183** in part to retain the stay plates therein and is provided with a suitable elongated opening **190** to provide access to this track portion. Also, as seen in FIGS. 2 and 3 a spring biased catch **191** is mounted for vertical reciprocable movement in the block **186** beneath the track portion **183**. The catch **191** is adapted to be received within opposed recesses **16** in adjacent stay plates and is thereby adapted to positively restrain the stay plates against rearward movement in the track portion **183**. For vertically aligning the track portion **183** with the track portion **182** when the table **150** and the anvil assembly are in their fully raised position shown in FIG. 2, the block **186** is provided with a transverse extension or lug **192** and the block **180** is provided with a suitable recess **194** receiving the lug **192** and forming a shoulder **196** engageable by the lug **192** to align the blocks.

To avoid interference between the forwardmost stay plate **12** in the track portion **182** and the table **150** when the table is lowered by the ram **30**, the forwardmost stay plate is displaced rearwardly from the line of separation between the blocks **180, 186** by a cam edge **197** formed on a wiper blade **198** secured to the upper face of the table **150**. The block **180** is chamfered at **200** to receive the cam edge of the wiper blade when the table is depressed, and therefore upon downward movement of the table the wiper blade functions to cam the forwardmost stay plate in the track portion **182** to the right as seen in FIG. 2. The wiper blade **198** has a depending projection **210** received within the elongated opening **190** in the table and is transversely adjustable on the table **150** for accurately positioning the wiper blade with respect to the line of separation between the track portions.

A tension spring **212** connected between a fixed post **214** on the guide **178** and a post **216** secured to the slide **176** provides for actuating the slide from its withdrawn position to its fully extended position shown in FIG. 2. In the manner of the slide **104**, a cross bar **217** is secured to the outer end of the slide **176**, and a handle **220** is secured to the cross bar **217** to provide for manually clearing the stay plate feed mechanism. Also, an adjustable stop screw **222** is threaded through the cross bar **217** for engagement with the guide **178** for limiting the forward travel of the blade **174**.

The upper faces of the intermediate blocks **159, 160** of the anvil assembly **158** are recessed to provide a substantially planar supporting face for receiving the stay plates from the track portion **183**. For properly locating each stay plate on this supporting face, a sheet metal nesting plate or die **230** is securely retained within the recess between the intermediate blocks and the work supporting plate, for which purpose the die plate is provided with a pair of depending or downwardly turned ends **232**. The die plate **230** is formed with a generally rectangular opening **234** extending to a lateral edge of the die plate for communication with the track **183** and is dimensioned to provide a pocket for positioning a stay plate in appropriate alignment with the slot **161** in the support block and in alignment for receiving the hook fastener driven downwardly by the ram **30**. In order to retain the stay plate in the pocket in its proper position as the table **150** and the support block **156** are depressed, it is preferred that the distance from the lateral edge of the opening **234** and the line of departure between the track portions **182, 183** substantially equals a multiple of the length of the stay plates. As a result the stay plates in the die pocket and the track portion will be maintained in edge-to-edge contact as the table is depressed to keep the stay plate within the pocket and therefore in position for receiving the hook fastener. It can be seen therefore that by merely replacing the die plate **230** in the anvil assembly **158**, the anvil can be readily adapted for stapling with a stay plate of a different configuration or adapted for manual insertion of the stay plates where the automatic feed is not used. Where the automatic feed feature is employed and a stay plate of a different length is used, it is preferred that the blocks **180, 186** be replaced with blocks providing a track portion reciprocable with the table which provides with the die plate a combined opening and track length equal to a multiple of the dimension of the stay plate along the track.

A tape feed mechanism **300** is fixed to the underside of the table **150** for feeding a tape **302** across the die plate **230** and thereby provide a protective strip for reinforcing the fabric in the area of the applied fastener. As best seen in FIGS. 3 and 4, the tape feed mechanism comprises an elongated frame **304** mounted in alignment with the access opening in the table, and having an elongated base plate **308**, a pair of spaced forward posts or supports **310**, a rear support **312**, and an elongated cover plate **314** overlying the base plate **308** and in engagement with the underside of the table **150**. The cover plate **314** is provided with an elongated groove **316** having substantially the same width as and in alignment with the access opening in the table, and which thereby provides with the work table **150** an elongated guideway through which the tape **302** is fed as from a reel of tape **303** (FIG. 1), the tape being preferably lightly restrained within the guideway as by a spring-biased plunger **305**. A slide **318** is reciprocable within the frame **304** adjacent to and along the tape guideway and between the base plate **308** and the cover plate **314**, for which purpose the base plate is provided with an elongated groove **320** for guiding the slide. A bell crank **322** is pivotally mounted on the plate **20** of the machine frame and is connected to the slide **318** through a radial slot **324**

formed in the end of an arm 325 of the bell crank and a pin 326 fixed to the slide 318 and received within the slot 324. The base plate 308 is provided with an elongated slot 328 for receiving the pin 326 and the base plate 20 of the frame is provided with a slot 327 for receiving the pin 326 when the work table 150 is depressed. Accordingly, the slide 318 can be reciprocated back and forth within the frame 304 with the bell crank 322. A rocker 330 is pivotally mounted on the slide 318 by a pivot screw 334 and is provided with a bifurcated projection with angularly spaced lugs 331, 332 adapted for receiving a pin 333 therebetween and is thereby adapted to provide a stop for limiting the angle of pivotal movement of the rocker. As seen in FIG. 3, a compression spring 336 is interposed between the rocker and a washer 338 engaging the head of the pivot screw 334 and thereby urges a face of the rocker extending in a plane normal to its pivotal axis into frictional engagement with a parallel face of the slide 318 with a force that is adjustable by adjustment of the screw 334. A pair of generally upstanding and slightly forwardly inclined pointed tape drive pins 340 are mounted on the rocker forwardly of and above its pivotal axis and are dimensioned to penetrate the tape 302 when they are pivoted upwardly to their drive position, in the counterclockwise direction as seen in FIG. 3, for which purpose the cover plate 314 is provided with a suitable slot for receiving the pins and the work supporting plate 150 is provided with a pair of elongated V-slots 342 on the underside thereof for receiving the pointed ends of the pins to ensure that the pins completely penetrate the tape.

A forward stop or pin 346 is fixed to the base plate 308 for engagement with the forward lug 332 and thereby pivotally retract the drive pins 340, in the clockwise direction as seen in FIG. 4, out of engagement with the reinforcing tape when the slide reaches its forward limit. Upon withdrawal of the slide 318, an adjustable stop 348 mounted on the rear support 312 engages the rearward lug 331 and thereby pivots the rocker 330, in the counterclockwise direction as seen in FIG. 4, to reinsert the drive pins into the tape and thereby bring about re-engagement of the pins with the tape as the slide reaches its rear limit. The adjustable stop 348 also provides for controlling the stroke of the slide and therefore the length of the tape fed with each cycle of the slide.

An intermediate guideway 350 provides for guiding the tape from the groove 316 to the access opening of the work supporting plate. Also, the side block 152 of the anvil assembly is provided with a vertical guideway 356 and an upstanding shear blade 358 retained in abutment with the plate 20 by a pin 360 fixed to the anvil support frame 164 is received within the guideway 356. A shear plate 362 is secured to the side block 152 to retain the shear blade within the guideway and to cooperate with the shear blade to shear the reinforcing tape when the work supporting plate is depressed during the application of a fastener part with a backing plate to a fabric, it being understood that the shear plate 362 is provided with a suitable slot 364 aligned with the tape guideway 316 and 350 for receiving the tape.

A single air cylinder 400 is provided for actuating the tape feed mechanism against the force of a return spring 402 connected between the bell crank and the base plate and for withdrawing the slides 104, 176 against the force of their operating springs 130, 212, respectively. The air cylinder is mounted on the plate 24 of the machine frame and has an operating rod 404 with an arm 406 fixed to the outer end of the rod. A depending pin 408 fixed to the arm 406 is adapted to engage the bell crank 322 to positively feed the tape forwardly when the air cylinder is operated to extend its operating rod. A second arm 412 transversely reciprocable within an opening 414 in the plate 22 is secured to the arm 406 by an elongated bar 416 mounted for reciprocable movement within a guide 418 fixed to the plate 22, and is adapted to engage the lower end of the post 134 on slide 104 and to engage the upper end of a similar post 417 upstanding from the slide 176 to retract the slides 104, 176 when the air cylinder is operated to withdraw its operating rod. It can be seen therefore that when the air cylinder is operated to extend the rod 404 a length of tape is fed across the die plate 230 and the slides 104, 176 are released for actuation by their operating springs to feed a hook fastener 10 onto the holder 34 and to feed a stay plate 12 into the pocket of the die plate 230, thereby conditioning the stapling machine for operation of the ram 30. In order to prevent extension of the ram-operating cylinder 26 until the hook fastener is properly positioned in the holder 34 and the stay plate is properly positioned in the pocket of the die plate 230, each slide 104, 176 is provided with a mirco switch 430 which must be actuated to condition the control circuit for the air cylinder 26 for energization as by the usual foot-operated switch 432 (FIG. 7). The micro switches 430 are actuated by adjustable screws 432 mounted on the cross bars 135, 217 and accordingly, if either of the feed mechanisms is hung up the ram cannot be operated and the appropriate handle 140, 220 may be used to manually clear the hung feed mechanism before the ram is operated.

Referring to FIG. 7, the stapling machine is adapted to be operated as by a foot pedal (not shown) which is connected for pivoting an operating lever or yoke 452 as by a cable 450 secured to the lever 452 by a pin 453. The yoke 452 and a pair of mounts or levers 455 of a safety guard 456 are pivotally mounted on the plate 22 by a pin 454 and with one of the mounts 455 retained within the yoke 452 between the pin 453 and an adjustable stop screw 457 threaded to the yoke. A compression spring 459 is interposed between the yoke and the mount 455 to bias the mount into abutment with the pin 453.

The safety guard comprises a U-shaped frame with transversely extending rods adjustable in the mounts 455. The frame is thereby adapted to be pivoted by the yoke to lower the safety guard to its pivotal position shown in FIG. 7 prior to actuation of the switch and to thereby assure that the stapling area is clear before the ram is operated. The safety guard 456 is shown provided with a locating plate 458 adjustable along the horizontal center bar 460 of the frame for assisting in positioning the garment on the table and to thereby assist in positioning the applied fastener on the garment. The illustrated locating plate 458 is adapted to locate the applied staple with respect to a zipper portion 462 as of a pair of trousers.

A tension spring 463 provides for returning the yoke and the safety guard to their withdrawn positions and the yoke or operating lever is provided with an extension adapted to engage a plunger 464 of the switch 432 and thereby energize the control circuit for operating the ram. The yoke is related to the switch plunger so that the switch is actuated only after the safety guard has been fully lowered into engagement with the fabric and the yoke has moved through an angle of overtravel against the bias of the compression spring 459.

This overtravel feature thereby allows for ensuring that the safety guard is properly positioned and the stapling area is clear before the ram is operated, and if the safety guard engages an obstruction, actuation of the switch 432 is prevented. The sensitivity of the extended position of the safety guard is adjustable with the threaded stop 457 and can be controlled to ensure that the safety guard is within a given distance of the work supporting plate 150 before the switch can be actuated. Also, inasmuch as the safety guard is biased into engagement with the fabric and the operating lever is actuated through an angle of overtravel to actuate the switch 432, the safety guard is adapted to continue to hold the fabric against the work supporting table 150 during the downward displacement of the table.

Thus it can be seen that the stapling machine of the present invention is adapted for automatically feeding

a backing plate to the die of the anvil assembly, for automatically feeding a fastener to the ram holder, and for automatically feeding a strip of reinforcing tape into overlying relationship with the backing plate on the die and for thereby conditioning the stapling machine for the application of a fastener or staple to the fabric of a garment. Additionally, the stapling machine of the present invention incorporates a number of advantageous innovations for ensuring that the stapling machine provides reliable and maintenance free operation over a long service including a novel and reliable tape feed mechanism for applying a strip of reinforcing material with the fastener to the garment.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

We claim:

1. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having a lower anvil assembly with a die for receiving and locating a backing plate in cooperative association therewith, a ram operable for applying a fastener part with the backing plate in the die to the fabric, and means for feeding a reinforcing tape into overlying relationship with the die for reinforcing the fabric in the area of the applied fastener, the improvement wherein the tape feed means comprises means providing a tape guideway in alignment with the die adapted for receiving a reinforcing tape and for guiding the tape forwardly into overlying relationship with the die, a slide reciprocable between retracted and forward positions along a path adjacent the tape guideway, a rocker pivotally mounted on the slide having upstanding feed pins adapted for positive engagement with the tape by pivoting the rocker in one pivotal direction and withdrawable from the tape by pivoting the rocker in an opposite pivotal direction, and means for actuating the slide forwardly from its retracted position with the rocker positioned with the pins in positive engagement with the tape for feeding the tape forwardly across the die and for retracting the slide from its forward position with the rocker positioned with the pins withdrawn from the tape.

2. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having a lower anvil assembly with a die for receiving and locating a backing plate in cooperative association therewith, a ram operable between a first position withdrawn from the die and an extended position for applying a fastener part with the backing plate in the die to the fabric by insertion of the projecting prongs of the fastener part through the fabric and into cooperative association with the backing plate and by thereafter bending the projecting prongs about the backing plate, and means for feeding a reinforcing tape into overlying relationship with the die for reinforcing the fabric in the area of the applied fastener, the improvement wherein the tape feed means comprises means providing a tape guideway in alignment with the die adapted for receiving a reinforcing tape and for guiding the tape forwardly into overlying relationship with the die, a slide reciprocable between retracted and forward positions along a path adjacent the guideway, a rocker pivotally mounted on the slide, upstanding feed pin means on the rocker forwardly of its pivotal axis adapted for positive engagement with the tape by pivoting the rocker in one pivotal direction and withdrawable to disengage the feed pin means from the tape by pivoting the rocker in an opposite pivotal direction, and means for actuating the slide forwardly with the rocker positioned with the feed pin means in positive engagement with the tape for feeding the tape forwardly across the die and for withdrawing the slide with the rocker positioned with the feed pin means disengaged from the tape, and shearing means operable to shear a strip of the reinforcing tape overlying the die from the remaining tape in the tape guideway.

3. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having an anvil assembly with a vertically displaceable die for receiving and locating a backing plate in cooperative association therewith, a ram adapted for reciprocable movement between an upper position withdrawn from the die and a lower extended position for applying a fastener part with the backing plate in the die to the fabric and with the die being displaced downwardly to bend the projecting prongs of the fastener part about the backing plate, and means for feeding a reinforcing tape into overlying relationship with the die for reinforcing the fabric in the area of the applied fastener, the improvement wherein the tape feed means is mounted for displacement downwardly with the die, wherein the tape feed means comprises means providing a tape guideway in alignment with the die adapted for receiving a reinforcing tape and for guiding the tape forwardly into overlying relationship with the die, a slide reciprocable between withdrawn and forward positions along a path adjacent the guideway, a rocker pivotally mounted on the slide having tape driving means engageable with the tape by pivoting the rocker in one pivotal direction and withdrawable from the tape by pivoting the rocker in an opposite pivotal direction, and means for actuating the slide forwardly with the rocker positioned with the tape driving means engaging the tape for feeding the tape forwardly across the die and for withdrawing the slide with the rocker positioned with the tape driving means withdrawn from the tape, and wherein the stapling machine comprises tape shearing means having first knife means fixed to the tape feed means for displacement downwardly with the die and second stationary knife means operable for shearing the tape overlying the die from the remaining tape in the tape guideway as the die and tape feed means are displaced downwardly during the application of the fastener part with the backing plate to the fabric.

4. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having a lower anvil assembly with a die for receiving and locating a backing plate in cooperative association therewith, a ram operable between an upper position withdrawn from the die and a lower extended position for applying a fastener part with the backing plate in the die to the fabric, and means for feeding a reinforcing tape into overlying relationship with the die for reinforcing the fabric in the area of the applied fastener, the improvement wherein the tape feed means comprises means providing a tape guideway in alignment with the die adapted for receiving a reinforcing tape and for guiding the tape forwardly into overlying relationship with the die, a slide reciprocable between retracted and forward positions along a path adjacent the guideway, a rocker pivotally mounted on the slide having upstanding feed pin means engageable with the tape by pivoting the rocker in one pivotal direction and disengageable from the tape by pivoting the rocker in an opposite pivotal direction, said slide and rocker having opposed faces in planes extending substantially normal to the pivotal axis of the rocker in frictional engagement to restrain the rocker against pivotal movement on the slide, spring means urging the opposed faces into frictional engagement, means limiting the pivotal freedom of movement of the rocker on the slide, and stop means engageable with the rocker as the slide reciprocates between its forward and retracted positions for pivoting the rocker to engage the tape with the pin means when the slide is in a relatively retracted position and for pivoting the rocker to disengage the pin means from the tape when the slide is in a relatively forward position.

5. The improvement of claim 4 wherein the stop means is adjustable to vary the length of tape fed across the die.

6. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having an anvil assembly with a vertically displaceable die for receiving and locating a backing plate in cooperative association therewith, a work supporting plate for the fabric fixed to the anvil assembly for vertical displacement with the die, a ram adapted for reciprocable movement between an upper position withdrawn from the die and a lower extended position for applying a fastener part with the backing plate in the die to the fabric and with the die and work supporting plate being displaced downwardly to bend the projecting prongs of the fastener part about the backing plate, and means for feeding a length of reinforcing tape into overlying relationship with the die for reinforcing the fabric in the area of the applied fastener, the improvement wherein the tape feed means comprises means providing a tape guideway on the underside of the work supporting plate and in alignment with the die adapted for receiving a reinforcing tape and for guiding the tape forwardly into overlying relationship with the die, a slide reciprocable between retracted and forward positions along a path adjacent the guideway and beneath the work supporting plate, tape drive means on the slide operatively engageable with the tape in the guideway for feeding the tape forwardly across the die upon forward movement of the slide and operatively disengageable from the tape upon retraction of the slide, means for reciprocating the slide, and means for operatively engaging the tape drive means with the tape and for operatively disengaging it from the tape in cooperation with the reciprocable movement of the slide.

7. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having an anvil assembly with a vertically displaceable die for receiving and locating a backing plate in cooperative association therewith, a ram adapted for reciprocable movement between an upper position withdrawn from the die and a lower extended position for applying a fastener part with the backing plate in the die to a fabric and with the die being displaced downwardly to bend the projecting prongs of the fastener part about the backing plate, and feed means for feeding the backing plates to the die, the improvement wherein the feed means comprises a magazine for stacking the backing plates in alignment, a generally horizontally extending track for the backing plates for guiding the backing plates in succession from the magazine to the die, said track being formed by a first stationary track portion underlying the magazine and a second track portion fixed for displacement with the die, means for stripping the backing plates individually from the magazine and for forwardly feeding them in sequence along the track to the die, and wiper means fixed for displacement with the second track portion for displacing the forwardmost backing plate in the first track portion rearwardly therein when the die is displaced downwardly to prevent inadvertent obstruction by said forwardmost backing plate.

8. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having a work supporting plate for receiving the fabric, an anvil assembly below the work supporting plate, a die for positioning a backing plate below the upper face of the work supporting plate in cooperative association with the anvil assembly and for receiving the projecting prongs of a fastener part to be bent about the backing plate, the improvement wherein the anvil assembly comprises a support block having a planar face for supporting the backing plate and lying parallel to and below the upper face of the work supporting plate and a slot extending downwardly from said planar face to receive the projecting prongs of the fastener part, and wherein the die comprises a die plate overlying the planar face and below the upper face of the work supporting plate having an opening providing a pocket above said slot for receiving and positioning a backing plate in cooperative association therewith.

9. In a stapling machine of the type adapted for applying a fastener part with projecting prongs with a backing plate to a fabric, a work supporting plate and anvil assembly comprising, a support block having a pair of spaced upstanding posts and an intermediate recessed planar surface adapted for supporting a backing plate, a work supporting plate fixed to the upstanding posts having an opening above the recessed planar surface to permit access to the backing plate supported thereon, said support block having a slot in the recessed planar surface to receive the projecting prongs of a fastener part positioned in cooperative association with the backing plate supported on the recessed planar surface, means for bending the projecting prongs received within the slot about the backing plate for securely attaching the fastener part with the backing plate to the fabric, and a die plate within the recess between the work supporting plate and said planar surface having an opening providing a pocket on the flat surface for accurately locating the backing plate on the support block and for locating the backing plate for receiving the projecting prongs of the fastener part.

10. In a stapling machine of the type adapted for applying a fastener part with projecting prongs with a backing plate to a fabric, a work supporting plate for receiving a garment, an anvil assembly below the work supporting plate for bending the projecting prongs of a fastener part about a backing plate having a die for positioning a backing plate in cooperative association therewith, the improvement wherein the anvil assembly comprises a support block having a pair of spaced upstanding posts and an intermediate recessed planar surface adapted for supporting a backing plate thereon, wherein the work supporting plate is fixed to the upstanding posts, said support block having a slot extending vertically from the recessed planar surface to receive the projecting prongs of a fastener part positioned in cooperative association with the backing plate supported on the planar surface, and wherein the die comprises a die plate interposed within the recess between the work supporting plate and the recessed planar surface having an opening providing a pocket on the planar surface for accurately locating the backing plate in cooperative association with the slot and for receiving the projecting prongs of the fastener part, said opening in the die plate extending to an edge thereof to provide a track portion for feeding the backing plates individually and sequentially to the pocket, and additional track means on the underside of the work supporting plate in communication with said opening in the die plate for conveying the backing plates in sequence thereto.

11. In a stapling machine of the type adapted for applying a fastener part with projecting prongs with a backing plate to a fabric, a table and anvil assembly comprising a sheet metal table having an opening therein, an anvil assembly beneath the opening in the table including a support block having a pair of upstanding posts supporting the table and an intermediate planar surface beneath the table opening with a vertical slot extending therefrom adapted for receiving the projecting prongs of a fastener part, a detachable die plate overlying said planar surface having an opening defining a pocket for positioning a backing plate in cooperative association with the slot and for receiving the projecting prongs of a fastener part, a pair of links pivotally mounted within the vertical slot, a fixed thrust plate slideably mounted within the vertical slot below the links adapted for engagement with the links upon downward displacement of the table relative to the thrust plate, and a reinforcing tape feed mechanism comprising a frame mounted to the underside of the table, a guideway for the reinforcing tape in alignment with the die pocket, a slide reciprocable on the frame along the guideway, a rocker pivotal on the slide having generally upstanding pin means, said guideway having a longitudinally extending slot for receiving the pin means

and for allowing penetration of the tape with the pin means when the rocker is pivoted to an active pivotal position, stop means for limiting the pivotal movement of the rocker between said active pivotal position and an inactive pivotal position within the pin means withdrawn from the tape, means for reciprocating the slide and for pivoting the rocker between its active and inactive positions in cooperation therewith for intermittently feeding the tape, and a fixed shear blade adapted for shearing the tape upon said downward displacement of the table.

12. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having an anvil assembly with a vertically displaceable die for receiving and locating a backing plate in cooperative association therewith, a ram adapted for movement between an upper position withdrawn from the die and a lower extended position for applying a fastener part with the backing plate in the die to a fabric and with the die displaced downwardly to bend the projecting prongs of the fastener part about the backing plate, first feeding means for feeding a backing plate to the die and second feeding means for feeding a fastener part to the ram, and means for feeding a reinforcing tape into overlying relationship with the die for reinforcing the fabric in the area of the applied fastener, the improvement wherein said first and second feeding means comprise first and second feed slides reciprocably mounted between retracted positions and extended positions for feeding the backing plates to the die and for feeding the fastener parts to the ram respectively, and spring means for biasing the slides to their extended positions, wherein the tape feed means comprises a tape feed slide reciprocable for intermittently feeding the tape across the die, and wherein the stapling machine further comprises means for retracting the first and second slides against the bias of the spring means and for reciprocating the tape feed slide.

13. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having an anvil assembly with a vertically displaceable die for receiving and locating a backing plate in cooperative association therewith, a ram adapted for movement between an upper position withdrawn from the die and a lower extended position for applying a fastener part with the backing plate in the die to a fabric and with the die displaced downwardly to bend the projecting prongs of the fastener part about the backing plate, first feeding means for feeding the backing plates to the die, and second feeding means for feeding the fastener parts to the ram, the improvement wherein the first and second feed means comprise first and second feed slides reciprocably mounted between retracted positions and extended positions for feeding the backing plates to the die and for feeding the fastener parts to the ram respectively, and spring means for biasing the slides to their extended positions, first motor means for retracting the slides against the bias of the spring means, second motor means for operating the ram and first and second switch means operable by the first and second feed slides respectively in their extended positions for conditioning the second motor means for operation.

14. The improvement of claim **13** further comprising handle means on each of the feed slides for manually retracting the slides against the bias of the spring means for manually cycling the respective feeding means.

15. In a stapling machine adapted for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having an anvil assembly with a vertically displaceable die for receiving and locating a backing plate in cooperative association therewith, a ram adapted for movement between an upper position withdrawn from the die and a lower extended position for applying a fastener part with the backing plate in the die to a fabric and with the die displaced downwardly to bend the projecting prongs of the fastener part about the backing plate, first feeding means for feeding the backing plates to the die, second feeding means for feeding the fastener parts to the ram, and means for feeding a reinforcing tape into overlying relationship with the die for reinforcing the fabric in the area of the applied fastener, the improvement wherein the first and second feeding means comprise first and second feed slides reciprocably mounted between retracted positions and extended positions for feeding the backing plates individually and sequentially to the die and for feeding the fastener parts individually and sequentially to the ram respectively, and first spring means for biasing the slides to their extended positions, wherein the tape feed means comprises a tape feed slide reciprocable between withdrawn and forward positions for intermittently feeding the tape forwardly across the die, second spring means for withdrawing the tape feed slide, and stop means for limiting the withdrawal movement of the tape feed slide adjustable to effect adjustment of the length of tape fed across the die, and wherein the stapling machine includes motor means for retracting the first and second slides against the bias of the first spring means and for actuating the feed slide forwardly against the bias of the second spring means.

16. In a stapling machine adapted for applying a staple with projecting prongs to a fabric, having a table for supporting the fabric, a ram adapted for movement between an upper position withdrawn from the table and a lower extended position for applying a staple to a fabric supported on the table, a safety guard for guarding the zone of the application of the staple, and switching means for operating the stapling machine, the improvement wherein the safety guard is pivotally mounted for movement in a first pivotal direction between a retracted position withdrawn from the work supporting table and an extended position in juxtaposition with the work supporting table, and wherein the switching means comprises a machine operating switch, an operating lever pivotally mounted coaxially with the safety guard for movement in said first pivotal direction between an "off" position and an "on" position for actuating the operating switch, means for urging the operating lever in a second pivotal direction opposite to said first pivotal direction, said operating lever having abutment means engageable with the safety guard to pivot the safety guard in said second pivotal direction to its retracted position upon pivotal movement of the operating lever to its "off" position, spring means between the operating lever and safety guard biasing the safety guard into engagement with the abutment means, and stop means limiting the angular overtravel of the operating lever relative to the safety guard in said first pivotal direction.

17. In a stapling machine adapted for applying a staple with projecting prongs with a staple backing plate to a fabric, having a table and anvil assembly with a vertically displaceable die for receiving and locating a backing plate in cooperative association therewith, a work table vertically displaceable with the die, a ram adapted for movement between an upper position withdrawn from the die and a lower extended position for applying a staple with the backing plate in the die to a fabric and with the table and die displaced downwardly to bend the projecting prongs of the staple about the backing plate, a safety guard for guarding the zone of the application of the staple, and switching means for operating the stapling machine, the improvement wherein the safety guard is pivotally mounted for movement in a first pivotal direction between a retracted position withdrawn from the work supporting table and an extended position in juxtaposition with the work supporting table for engagement with a fabric supported thereon and wherein the switching means comprises a machine operating switch, an operating lever pivotally mounted coaxially with the safety guard for movement in said first pivotal direction between an "off" position and an "on" position for actuating the operating switch, first spring means biasing

the operating lever in a second pivotal direction opposite to said first pivotal direction, said operating lever having abutment means engageable with the safety guard to pivot the safety guard in said second pivotal direction to its retracted position upon pivotal movement of the operating lever to its "off" position, second spring means between the operating lever and the safety guard biasing the safety guard into engagement with the abutment means, and stop means limiting the angular overtravel of the operating lever relative to the safety guard in said first pivotal direction.

18. The improvement of claim **17** wherein the stop means is adjustable to effect adjustment of the overtravel of the operating lever relative to the safety guard.

19. In a stapling machine of the type described adapted for applying a fastener part with projecting prongs to a fabric, having a ram operable between a withdrawn position and an extended position for applying a fastener part to the fabric, and feeding means for feeding a fastener part to the ram for each cycle of the ram between its withdrawn and extended positions, the improvement wherein the feeding means comprises an elongated downwardly extending chute for the fastener parts having a lower arcuate portion with a generally laterally extending lower and adjacent the ram, escapement means in association with the chute intermediate the ends thereof for checking the downward travel of the fastener parts in the chute and for individually releasing the fastener parts in the chute for downward travel to the lower end thereof for each cycle of the ram, a slide adjacent the lower end of the chute reciprocable between withdrawn and forward positions, a pawl pivotally mounted on the slide for cooperative association with the arcuate portion of the chute for engagement with the fastener part adjacent the lower end thereof for transferring the fastener part to the ram upon reciprocable movement of the slide from its withdrawn to its forward position, spring means for pivotally biasing the pawl into said cooperative association with the lower arcuate portion of the chute, means for reciprocating the slide in timed relationship with the movement of the ram for transferring the fastener part adjacent the lower end of the chute to the ram when the ram is in its withdrawn position, and magnetic means adjacent the lower end of the chute for retaining the fastener part released by the escapement mechanism within the chute until it is transferred to the ram by the pawl.

20. In a stapling machine of the type described adapted for applying a staple to a fabric, a reinforcing tape feed mechanism comprising a tape guideway for receiving a reinforcing tape and for guiding the tape forwardly into association with the fabric for reinforcing the fabric in the area of the applied staple, a slide reciprocable between retracted and forward positions along a path adjacent the guideway, a rocker pivotally mounted on the slide having tape driving means engageable with the tape by pivoting the rocker in one pivotal direction and disengageable from the tape by pivoting the rocker in an opposite pivotal direction, means for actuating the slide forwardly with the rocker positioned with the tape driving means engaging the tape for feeding the tape forwardly across the die and for withdrawing the slide with the rocker positioned with the tape driving means disengaged from the tape, operator means for reciprocating the slide in timely sequence with the operation of the stapling machine including spring means for actuating the slide in one reciprocable direction and actuator means for actuating the slide in the opposite reciprocable direction, and stop means for limiting the reciprocable movement of the slide in said one reciprocable direction adjustable for controlling the length of tape fed by the feed mechanism.

21. In a stapling machine of the type described adapted for applying a fastener part with projecting prongs to a fabric, having a vertically reciprocable ram operable between a withdrawn position and an extended position for applying a fastener part to the fabric; and feeding means for feeding a fastener part to the ram for each cycle of the ram between its withdrawn and extended positions comprising a gravity chute for the fastener parts having a vertically extending portion, a lower end adjacent the ram, and an elongated opening along a side thereof for receiving the projecting prongs, and means for transferring a fastener part of the lower end of the chute onto the ram when the ram is in its withdrawn position, the improvement wherein the feeding means further comprises an escapement mechanism at the vertically extending portion of the chute for checking the downward travel of the fastener parts therein and for individually releasing a fastener part for downward travel to the lower end of the chute, said escapement mechanism comprising a pair of slides reciprocable transversely of the chute between first positions extending between the projecting prongs of adjacent fasteners in the chute and second positions clear of the path of travel of the projecting prongs, vertically reciprocable cam means engageable with the slides for sequentially reciprocating the slides to release a single fastener part, and cam operating means on the ram for selectively reciprocating the cam means as the ram is vertically reciprocated between its withdrawn and extended positions for releasing a fastener part in timed relationship with the movement of the ram.

22. The improvement of claim **21** wherein the pair of slides are independently reciprocable, wherein the cam means comprises a pair of independently reciprocable cams engageable with the slides respectfully for sequentially reciprocating the slides for releasing a single fastener part.

23. The improvement of claim **21** wherein the pair of slides are independently reciprocable, wherein the escapement mechanism further comprises spring means for biasing the slides to one of their said positions, and wherein the vertically reciprocable cam means is selectively reciprocated for actuating the slides to their other of said positions for releasing a single fastener part in timed relationship with the movement of the ram.

24. In a stapling machine of the type described adapted for applying a fastener part with projecting prongs to a fabric, having a ram operable between a withdrawn position and an extended position for applying a fastener part to the fabric, and feeding means for feeding a fastener part to the ram for each cycle of the ram between its withdrawn and extended positions, the improvement wherein the feeding means comprises an elongated downwardly extending chute for the fastener parts having a lower portion with a downwardly and laterally arcuate edge and a generally laterally extending lower end adjacent the ram, escapement means in association with the chute intermediate the ends thereof for checking the downward travel of the fastener parts in the chute and for individually releasing a fastener part in the chute for downward travel to the lower end thereof for each cycle of the ram, a slide adjacent the lower end of the chute reciprocable between withdrawn and forward positions, a pawl pivotally mounted on the slide for cooperative engagement with said arcuate edge of the chute for engagement with the fastener part adjacent the lower end thereof for transferring the fastener part to the ram upon reciprocable movement of the slide from its withdrawn to its forward position, spring means for pivotally biasing the pawl into engagement with the arcuate edge of the chute, means for restraining the pawl against the bias of the spring means as the slide is retracted to its withdrawn position, and means for reciprocating the slide with the ram in its withdrawn position for transferring the fastener part at the lower end of the chute onto the ram and for withdrawing the slide from its forward position before the ram is operated from its withdrawn to its extended position.

25. The improvement of claim **24** wherein the chute has an elongated opening along a side thereof for receiving the projecting prongs of the fastener, and wherein the pawl has an upstanding lug receivable within the elongat-

ed chute opening for engaging the fastener part at the lower end of the chute for transferring the fastener part to the ram upon reciprocable movement of the slide from its retracted to its forward position.

26. In a stapling machine of the type described adapted for applying a staple to a fabric, a reinforcing tape feed mechanism comprising a tape guideway for receiving a reinforcing tape and for guiding the tape forwardly into association with the fabric for reinforcing the fabric in the area of the applied staple, a slide reciprocable between retracted and forward positions along a path adjacent the guideway, a rocker pivotally mounted on the slide having tape driving means engageable with the tape with the rocker in one pivotal position and disengageable from the tape with the rocker in a second pivotal position, means for positioning the rocker in its said one pivotal position during the movement of the slide from its retracted to its forward position and for positioning the rocker in its said

second pivotal position during the movement of the slide from its forward to its retracted position, and operator means for reciprocating the slide in timely sequence with the operation of the stapling machine.

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