

Dec. 12, 1967

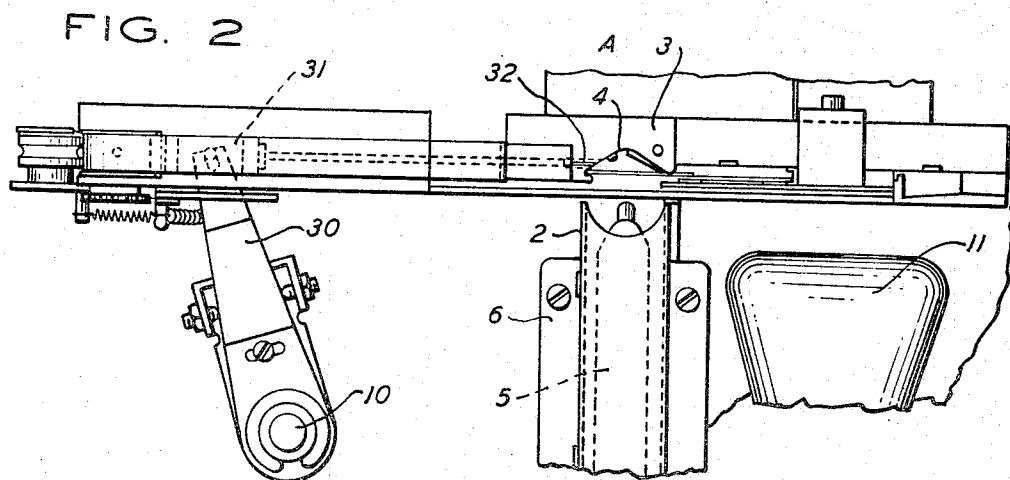
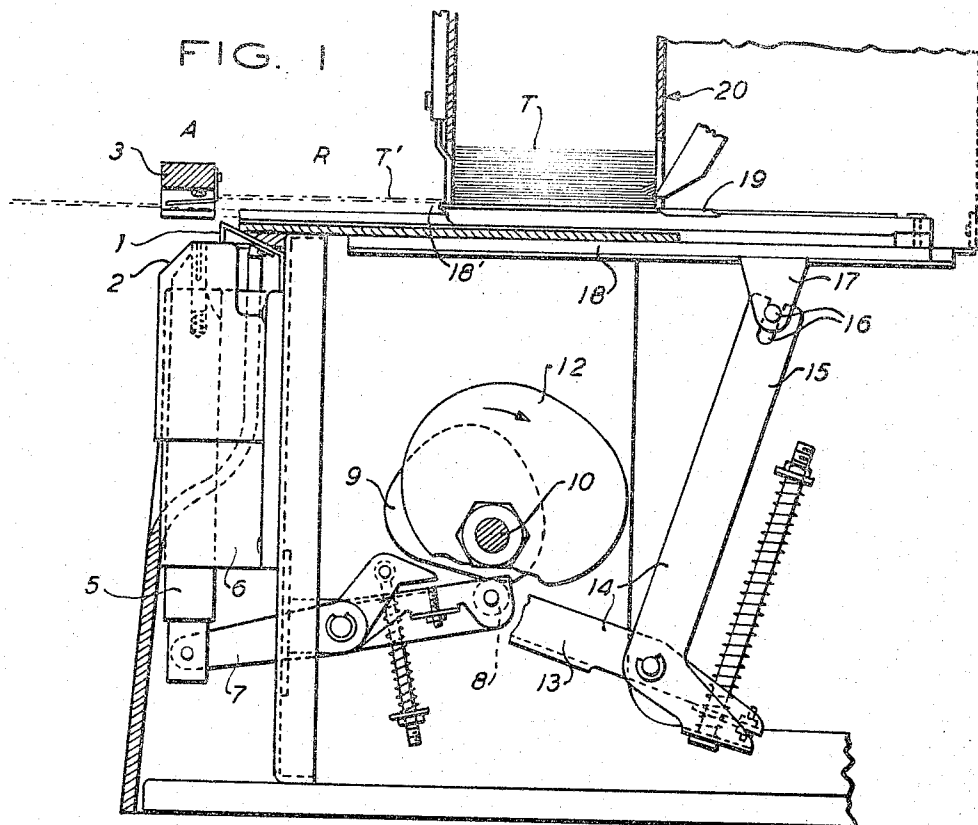
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3,357,618

TAG ATTACHING MACHINE

Filed Jan. 4, 1966

2 Sheets-Sheet 1



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FIG. 3

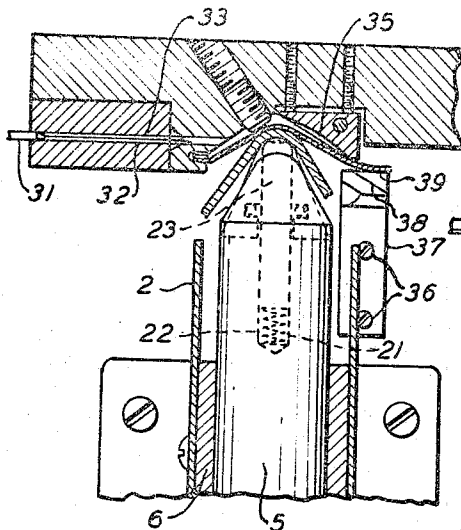


FIG. 4

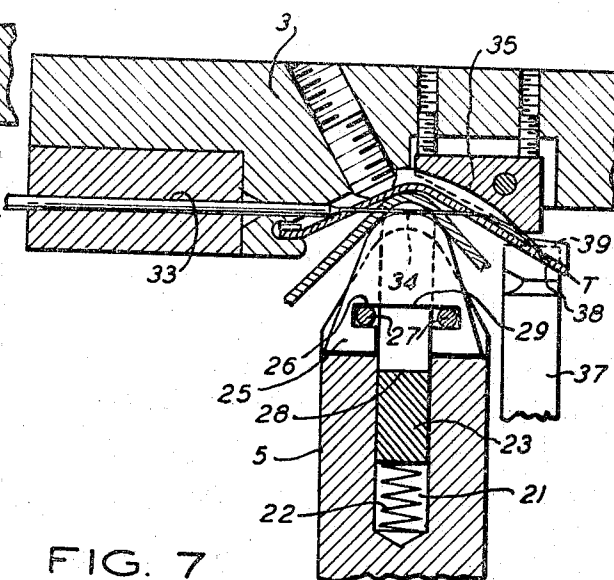


FIG. 7

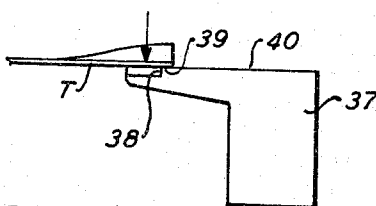


FIG. 5

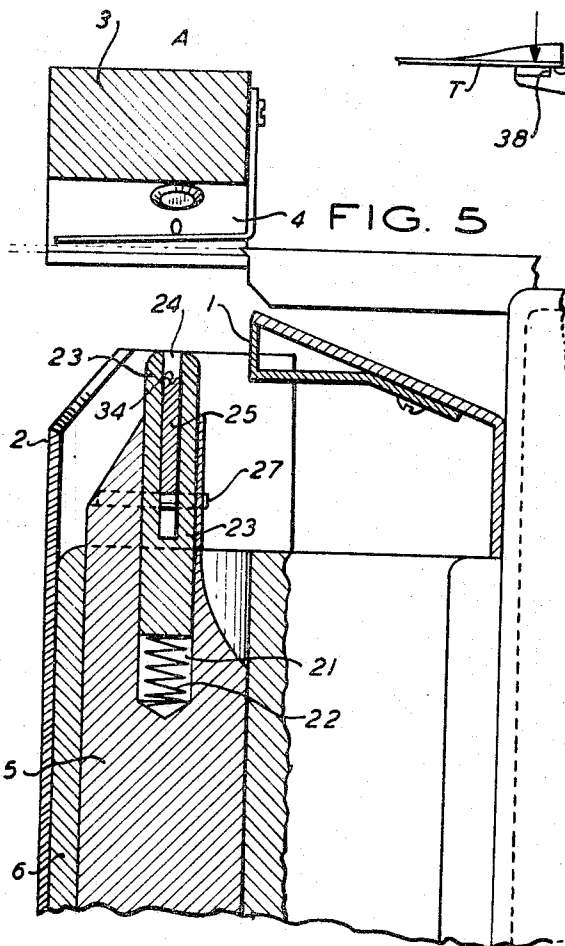


FIG. 6

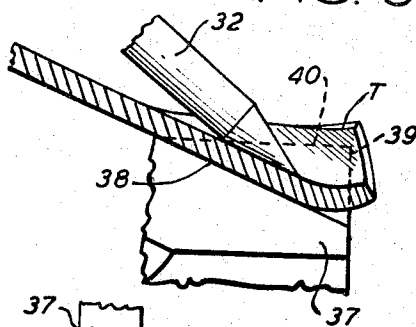
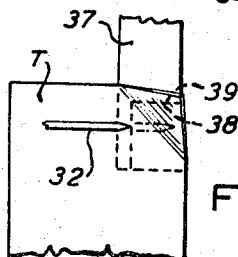


FIG. 8



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TAG ATTACHING MACHINE

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4 Claims. (Cl. 227-25)

ABSTRACT OF THE DISCLOSURE

An apparatus for accurately controlling pins in attaching tags to articles of different thickness and with variations in compression resistance, by bending and guiding an advancing pin over a plunger having a replaceable guide which provides a consistently uniform fulcrum as moved to a given position. Said plunger is equipped with an easily replaceable yieldable tip for compressing and holding material within a V-shaped anvil. A plate has a cam surface for causing the advancing pin, after pinning the tag to an article, to crease one corner of the tag so that the pin point is finally hidden by entering the tag to only a partial depth along the crease.

This invention relates to improvements in machines for attaching tags to articles. More particularly, the invention relates to improvements for tag pinning means of the character disclosed in the U.S. Patent No. 3,025,054 issued Mar. 13, 1962 to John E. Clemens, et al.

For the machine of said patent, an article is manually placed at an attaching station wherein a unitary type structure plunger is caused to be yieldably moved upwardly and then downwardly during each cyclic operation of the machine. Said plunger in the upward stroke thereof serves to compress the article and also a tag, superimposed thereon during a machine cyclic operation, into an inverted V-shaped cavity of a fixed frame member of the machine. The article and tag are both caused to be bow shaped thereby in manner so that a pin driven transversely of the plunger will easily pierce through both sides of the bowed portion of the article and tag for pinning them together, as in manner fully set forth in said patent.

For safety reasons, after passing through both sides of the bowed tag, it is desirable to have the point of the pin reenter the tag to a partial depth of tag thickness. This requires that considerable accuracy must be maintained in controlling both the direction and extent of a final movement of the pin point. As disclosed in the patent, it has been customary heretofore to guide the advancing pin point by suitable fixed deflecting cam anvils in manner so that the pin will be intermediately fulcrumed upon the raised solid piece plunger member and be bent thereover downwardly toward the tag. However, such solid piece plunger members are yieldably operated in order that articles and tags of different thickness and compression resistance may be used. It is obvious therefore that said plunger is raised to indeterminate positions and so will not provide a consistently uniform fulcrum point support for bending and guiding a pin, such as required for the final partial tag reentry of the pin point of the present invention.

An object of the invention therefore is to provide tag and article compressing means adapted to provide for uniformly accurate pinning operations regardless of variations occurring in compression resistance or of the thickness of the articles and tags which are to be pinned together.

Another object of the invention is to provide means for automatically forming a crease across one corner of a tag in manner to bias the pin point during a final movement of the pin.

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Another object of the invention is to effect said crease by means of the pin during the pinning operation.

The above and other features of the invention including various details of construction and novel combinations of parts will not be described with reference to the drawings and thereafter pointed out in the claims.

In the drawings:

FIG. 1 is a sectional elevation showing the tag feeding means and the operating means for the novel article compressing plunger;

FIG. 2 is a front elevation of a portion of the machine, showing the operating means for driving a pin;

FIGS. 3 and 4 are sections showing progressively the driving of a pin for fastening a tag to an article;

FIG. 5 is a right side sectional elevation of the novel compressing plunger;

FIGS. 6 and 7 are enlarged detail elevations showing the manner in which a pin will act to crease one corner of a tag; and

FIG. 8 is an enlarged detail plan view illustrating the manner in which a pin will pierce the tag along said crease to a partial thickness thereof.

The invention is applied to a machine of the character described in the above U.S. Patent 3,025,054 to which reference is made for details of structure and operation not deemed necessary to be described herein.

In general, any suitable article to which a tag is to be pinned is manually inserted within an attaching station indicated at A, the article being placed against a fixed back stop 1 and over a U-shaped guide piece 2 forming the lower portion of the article entry throat of the attaching station. The upper throat portion includes a horizontal bar 3 having on the underside thereof an inverted V-shaped anvil portion 4.

Within guide 2 and being aligned directly beneath anvil 4 is a plunger 5 mounted for heightwise sliding movement in a guide block 6 carried by a portion of the machine frame. At its lower end the plunger 5 is connected to a two piece yieldable lever 7 which at its rearward end carries a cam roll 8 riding on the periphery of a cam 9 fixed to an operating shaft 10; shaft 10 being power operated through means of a suitable single cycle clutch means released upon inward depression of a starting key 11, as in manner fully described for the above patent of reference.

Also fast for rotation with shaft 10 is a cam 12 cooperable with a roller (not shown) on the lower member 13 of a yieldable two piece lever forming a bell crank 14. The upwardly extending arm 15 of said bell crank has pin and slot engagement 16 with suitable ears 17 depending downwardly from a slide member 18. As more fully set forth in the reference patent, slide 18 is mounted in suitable guides for horizontal reciprocatory movement in an operation of cam 12. Thus, a picker knife 19 on said slide will act to displace the bottom tag from a stack of tags T, stored in suitable hopper means 20, to an intermediate or reading position R. Meanwhile the forward edge 18' of slide 18 advances a tag T from said position R to the attaching station A.

When the tag is moved to the attaching station A, as indicated in broken lines, the rearward end of the tag is positioned over the plunger 5. As most clearly shown in FIGS. 4 and 5, the plunger 5 of the instant case includes in the upper end thereof a recess 21 within which is inserted first a compression spring 22 and thereafter a secondary plunger member 23 urged upwardly by said spring.

Plungers 5 and 23 at their upper end are both slotted to form a common slot 24 within which is mounted a plate 25. Said plate includes a T-shaped opening 26 therein, within which extends holding pins 27 for fixedly securing plate 25 to the plunger 5. The shoulder 28 of plunger 23

and which forms the base of slot 24 in said plunger, in the normal lowered position of plunger 5 engages the surface 29 of plate 25 whereby to hold plunger 23 within the plunger 5.

An article having been placed in the machine over the combined plungers 5, 23 and a tag subsequently displaced to the attaching station A, cam 9 thereafter will act to raise plunger 5 upwardly a given extent of movement and carries plunger 23 upwardly therewith. Plunger 23 thereupon acts to compress the article and tag into the inverted V-shaped anvil 4, so that the tag and article are bent into the bowed positions generally indicated in FIG. 3. Upon said bending of the article and tag plunger 23 now yields to the resistance thereof while plunger 5 with the plate 25 therein continues in upward movement to a given position, as determined in accordance with the configuration of cam member 9.

At this time in the cycle an arm 30 rocked by shaft 10 causes a driver 31 to advance a pin 32 through suitable guide passage 33 in the horizontal bar 3 and so through the bent article and tag to the position shown in FIG. 4. During said movement the pin also passes through the slot 24 of plunger 23 and a groove 34 formed in the upper end of the plate member 25. The pin 32 having pierced the article and tag to each side of plunger 23, the point of the pin now engages the hardened cam surface 35 of anvil 4 at a given point and is deflected thereby downwardly toward the tag.

Special means now to be described are provided herein for facilitating a partial depth re-entry of the pin point into a tag. Adjacent the plunger 5 and being mounted to the framing of the machine by means of screws 36 (FIG. 3) is a guided block 37 having a horizontal surface 40 which serves as the right side support for one longitudinal edge of a tag. The forward end, to the left as viewed in FIG. 7, of said guide block is provided with a declining surface 38 which is intended to be substantially parallel to any tag that is held in the bowed condition, such as shown in FIGS. 3, 4. Formed also upon guide block 37 by means of said declining surface 38 is a shoulder 39. When a tag T has completed its movement to the attaching station, the trailing end of the tag will rest upon the horizontal surface 40 of guide block 37, as shown in FIGS. 3 and 7.

It is recalled that plunger plate 25 is raised with plunger 5 always to a constant height, therefore the groove 34 in said plate acts to guide any pin to substantially a given point on the cam surface 35 of the anvil 4. Thus, the bending operations and general direction of movement for any pin during pinning operations will be substantially uniform. It will be observed therefore, with particular reference to FIG. 6, that a pin so guided during its advancement is now caused to be bent downwardly in a manner so that the tapered side of the pointed portion of the pin will engage the upper surface of a tag near one corner and force downwardly thereon, as illustrated by the arrow of FIG. 7. Since the corner of the tag is supported upon the horizontal surface 40 of guide block 37, it will be obvious that a pin in forcing the tag downwardly will cause the tag corner to be lifted upwardly about shoulder 39 and effect a diagonal crease thereto, said crease biasing a movement of the pin point in the manner as illustrated in FIG. 8. The pin thereupon, in a continuing movement thereof to the position shown by the dotted lines, will pierce the tag along said crease and sufficient only to enter the tag for an approximate one-half its thickness.

It will be appreciated from observation of FIG. 6 that in the instant case the tapered end of a pin as bent parallel to the declining surface 38 of guide block 37 thereafter moves parallel to the top surface of the tag proper. The pin point will thus enter the tag crease without the danger of being curled at the tip, as would frequently occur where the pin point moves in an angular manner toward the supporting anvil of the tag as for the earlier known devices. Again, applicant's devices provide for more latitude to variations in length, which might occur in the manufacture

of different pins, and also to an extent of movement permissible to the pin point after entering the creased tag.

From the foregoing, it will be apparent to those skilled in this art that I have provided a relatively simple and very effective mechanism for accomplishing the objects of this invention.

It is to be understood that I am not limited to the specific construction shown and described herein, as various modifications can be made therein within the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. An apparatus having an attaching station for pinning articles to other articles; the combination of:
 - a fixed anvil having an indented area at said attaching station;
 - a movable plunger at said attaching station, said plunger including a recess within the leading edge thereof;
 - a compression spring mounted within said recess; means for advancing said plunger uniformly to a given position relative to said anvil;
 - a secondary plunger extending forward of the first said plunger and slideable within said recess for yieldable cooperation with said anvil in the operation of said first plunger for thereby bowing and holding articles within said indented area of said anvil;
 - both said plungers having an open end forming a slot in common; and
 - a plate mounted within said in common open end slots, removably secured to said first plunger and adapted for limiting the outward movement of said secondary plunger along said recess as urged by said spring.
2. The invention according to claim 1: with driving means to advance a pin for piercing articles placed at said attaching station;
 - said fixed anvil having a passage therein for guiding a pin during the first portion of its movement;
 - said open end slot in said secondary plunger serving as a guide passage in a further movement of the pin;
 - said plate including a guide surface adapted in raised position of the first said plunger for supporting a pin in said guide passage substantially in parallel with the passage in said fixed anvil, whereby to serve as bending support means intermediate the length of a pin.
3. The invention according to claim 1: wherein said fixed anvil includes a deflecting surface uniformly engageable at substantially a given point by any advancing pin as guided by said raised guide surface, so that such pin is uniformly caused to be bent thereby about said raised guide surface to substantially a given condition;
 - a tag support having a surface parallel to the bottom surface of a tag as fed to the attaching station;
 - said support including at the attaching station a surface declining transversely of the tag feeding movement at an angle which approximates the angle assumed by the tapered end of the pin as bent at said attaching station; and
 - a shoulder formed on said parallel surface adjacent to said angled surface;
 - and wherein during said bending operation the tapered portion of the pin will engage the surface of the pinned tag for depressing a corner thereof about said shoulder, thereby effecting in the tag a crease which biases the movement of the pin point whereby the tapered portion of the pin controls final movement of the pin in parallel to said depressed tag surface for entering the tag at said crease to a partial depth.
4. In an apparatus having an attaching station for pinning tags to articles;
 - means for bowing a portion of the tag at said attaching station;
 - means for advancing a pin to pierce the tag at said bowed portion; and

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guide means cooperable during said advance to deflect the pin along a given path: the combination therewith of a tag support having a surface parallel to the bottom surface of a tag at the attaching station; said support including at the attaching station a surface declining at an angle approximating the angle assumed by the tapered end of a pin as so deflected at said attaching station; and
 a shoulder formed on said parallel surface adjacent to said angled surface;
 and wherein during said advance the tapered portion of the pin will engage the face of the pinned tag for depressing a corner thereof about said shoulder to

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impart a crease thereto which biases the movement of the pin point, whereby the tapered portion of the pin thereafter controls a final movement of the pin in parallel to said depressed tag surface for entering the tag at said crease to a partial depth.

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GRANVILLE Y. CUSTER, JR., *Primary Examiner.*