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ATTACHMENT FOR STAPLING MACHINES

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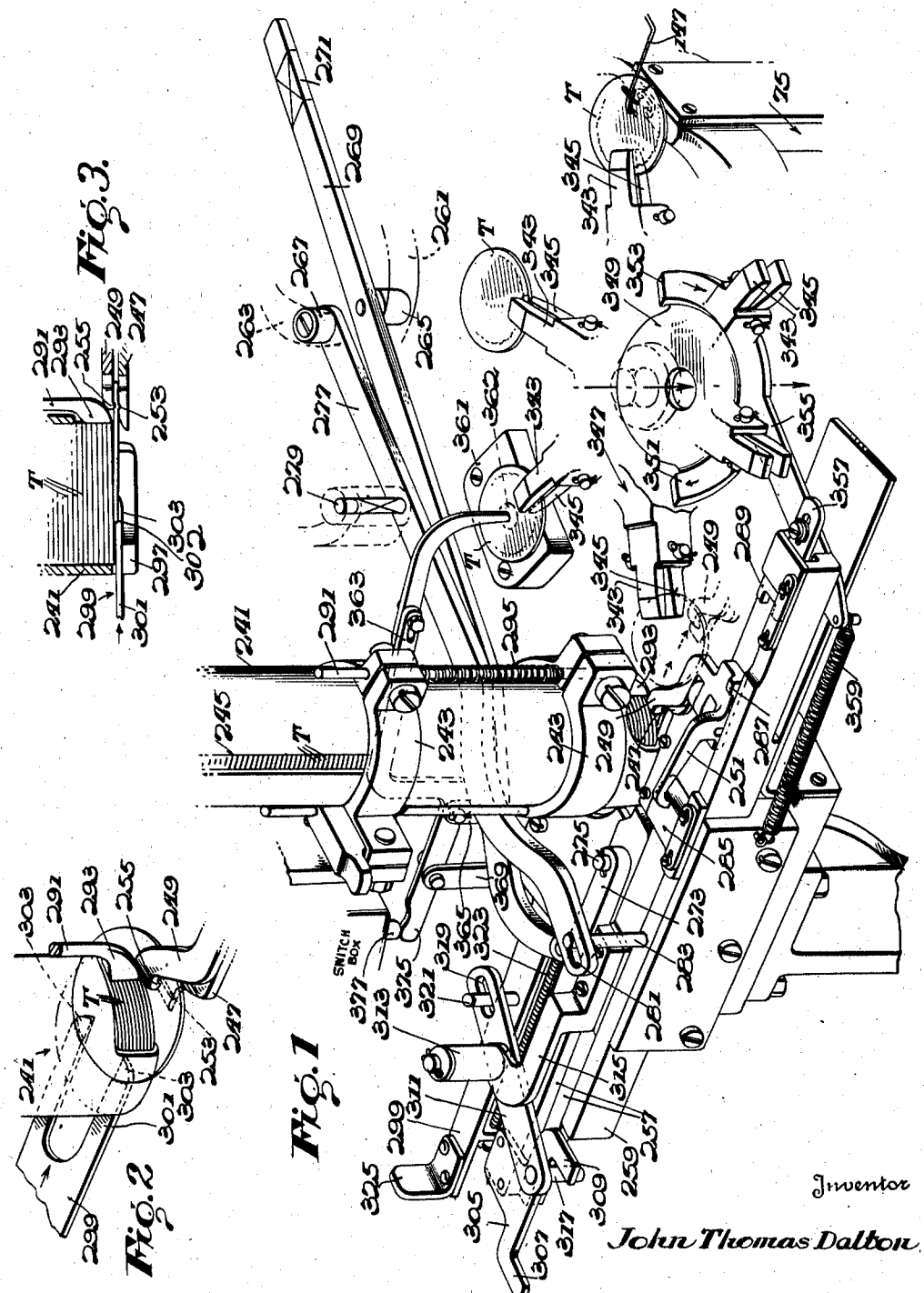


Fig. 1

Fig. 2

Fig. 3

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ATTACHMENT FOR STAPLING MACHINES

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9 Claims. (Cl. 271—10)

This invention relates to wire stitchers or stapling machines and more particularly to apparatus for stitching tags to the strings of bags of the string closure type, such as tobacco bags.

In my prior application Serial No. 234,916, filed October 14, 1938 (now Patent No. 2,207,912, granted July 16, 1940), I have disclosed and claimed an apparatus in which bags are delivered to a feeding mechanism, individual bags are fed past the anvil of a wire stitcher and one of the strings guided over the stitcher head at the same time that a tag is fed to the stitcher head, the feed of the bags and tags being coordinated with the movement of the stitcher head to stitch a tag to one of the strings of each bag. While the apparatus of the said application is a vast improvement over the application of the tags to the bag strings by hand, which was the previous practice, it necessitates collecting the bags after they are fed through the stitching machine and as an economical matter it requires operation of the stitcher head at a relatively high rate of speed.

In my copending application, Serial No. 374,326, filed January 14, 1941, I have provided mechanism for delivering bags past the anvil of a stitching machine and securing a tag to one of the strings of each bag which mechanism is adapted to be assembled with a tobacco bag filling machine and to attach the tag to the string after the bag has been filled. The apparatus disclosed in the present application comprises improved means for feeding single tags to the anvil of the stitching machine, coordinated with the feed of the bags, and capable of use with the apparatus of my prior patent or the apparatus of my copending application. The apparatus comprises a tube adapted to receive the tags in stacked formation together with means for delivering a single tag therefrom. One of the improvements forming a part of the present invention comprises means for partially projecting the lowermost tag from the tube prior to its engagement by the tag engaging fingers which carry it to a spider having a step by step motion for delivery to the anvil. A further improvement comprises a guide member arranged in front of the tube and contacting with the edges of the tags with the exception of the lowermost tag to permit free removal of the lowermost tag from the tube.

In the accompanying drawing I have shown one form of the invention. In this showing:

Fig. 1 is a perspective view of the lower end of the tube from which the tags are delivered showing the mechanism for delivering single tags from the tube to the anvil;

Fig. 2 is a detailed, perspective view of the lower portion of the tag tube; and

Fig. 3 is a vertical, sectional view of the lower end of the tube.

The means employed in the present machine for delivering tags to the anvil coordinated with the operation of the stitcher head is of the same general type as that disclosed in my prior patent. The tags T are arranged in stacked formation in a tube 241 (see Figs. 1 to 3) of substantially the same internal diameter as the diameter of the tags. The tube is supported by means of collars 243 secured to suitable portions of the frame of the machine. It is provided with a slot 245 to permit inspection of the tags within the tube. The tags are removed from the bottom of the tube by a tag engaging member consisting of a pair of fingers 247 and 249. The lower finger 247 is fixed and the upper finger 249 is pivotally mounted and carries an operating arm 251. As shown in Fig. 3 the gripping portion of the finger 247 is provided with a depression 253 and the adjacent portion of the upper finger is provided with a lug 255 in alignment therewith. The tag engaging fingers are carried by a reciprocating member 257 with which cooperates a second reciprocating member 259 to move the pivoted finger 249 at each end of the stroke of the reciprocating member 257 for the reception of a tag from the bottom of the tube as illustrated in Fig. 3 and delivery of the tag from the tag engaging means to a spider which conveys it to the anvil. The reciprocating members 257 and 259 are actuated from a pair of cams 261 and 263. These cams are provided with grooves to receive cam rollers 265 and 267, respectively. Cam roller 265 is carried by an arm 269 that is mounted in a sliding bearing 271 on the frame of the machine. This arm is connected to a link 273, the other end of which is connected to a pin 275 mounted on the reciprocating member 257. The roller 267 is carried by an arm 277 pivoted to the frame of the machine at 279 between the cam and its end. Arm 277 is provided with a slot 281 adjacent its end which is adapted to receive a pin 283 carried by the reciprocating member 259. The reciprocating member 259 carries a cam plate 285 which is engaged by the arm 251 when the tag engaging members 247 and 249 are in the position adjacent the bottom of the tube shown in Fig. 3 to cause them to open to receive one of the tags. When the plate 257 is reciprocated in the opposite direction a lug 287 on the

opposite end of the arm 251 engages a cooperating member 289 carried by the reciprocating member 259 to again open the fingers 247 and 249 when the tag is to be delivered to the spider.

Means are also provided for partially ejecting the lower tag (as illustrated in Figs. 2 and 3) into a position to facilitate its engagement by the fingers 247 and 249. As shown a rod 291 is arranged on the side of the tube being supported in collars 243. The lower end of the rod is enlarged and extended as at 293 into a slot formed in the wall of the tube and forms a continuation of the wall. The rod is provided with a spring 295 to resiliently hold it in position and permit it to yield. The position of the lower end of the rod is such that it engages the periphery of the tags with the exception of the lower tag. The downward movement of the tags is limited by a lug 297 formed on the wall of the tube opposite the slot. A reciprocating member 299 having a forked end 301 is adapted to enter the tube opposite the gripping fingers through a horizontally disposed slot and the forked ends 301 are reduced in thickness as at 303 adjacent their extremities forming shoulders 302. The member 299 is reciprocated by the reciprocating member 257 so as to be fed into the bottom of the tube just before the gripping fingers 249 are in position to engage a tag to partially project the bottom tag as shown in Figs. 2 and 3. As shown, the member 257 carries a plate 305 at its rear end having a pair of spaced arms 307 and 309. A link 311 is mounted on a pivot 313 carried by a bracket 315, and one end of the link 311 carries a pin 317 which is arranged between the fingers 307 and 309. The other end of link 311 is provided with a slot 319 for the reception of a pin 321 carried by the reciprocating member 299. A coil spring 323 is also secured to the member 299 and is adapted to retain it in withdrawn position. The outer end of the member 299 is provided with a hand grip 325 to permit manual operation.

The operation of the member 299 will be apparent from the foregoing description. As the reciprocating member 257 travels in a direction to bring the fingers 247 and 249 toward the tube, arm 309 engages pin 317 to swing the link 311 in a clockwise direction in Fig. 1 of the drawing and the forked end 301 is projected into the tube as illustrated in Figs. 2 and 3 permitting the reduced end portions 303 to engage the bottom tag and partially project it. When the reciprocating member 257 travels in the opposite direction, the arm 307 engages the pin 317 to withdraw the reciprocating member 299 and permit the next tag to lower into a position to be engaged by the forked end 301 upon its next reciprocation. Cams 261 and 263 are mounted upon a vertical shaft (not shown) and driven in any suitable manner from a moving part of the machine on which the tag feeding attachment is used.

At the forward end of the stroke of the reciprocating member 257 when the fingers 247 and 249 are opened by the engagement of the lug 287 and the cooperating member 289 the tag is delivered to a pair of tag engaging fingers 343 and 345 carried by a spider 347. The spider is rotated with a step-by-step movement by means (not shown) for the purpose of delivering one tag to the anvil 75 each time the stitcher head is raised. The upper finger 343 of the tag engaging means is fixedly mounted on the spider and the lower finger 345 is pivotally mounted to permit opening of the fingers for engagement of a tag and for release of a tag when the tag is delivered to the anvil. For this purpose I provide an operating member 349 beneath the spider having cams 351 and 353 formed at its opposite ends, the cam 351 being adapted to swing the finger 345 on its pivot and thus open the pair of fingers when the tag is to be received from the reciprocating fingers 247 and 249 and the cam 353 opening the fingers when the tag is stitched to the bag string to release it from the spider. The cam 349 is provided with an arm 355 to oscillate it about the shaft of the spider 347. This arm carries a transversely mounted arm or projection 357 which extends below the member 289 and is positioned to be engaged by the end of arm or member 251 when the tag delivering member is in its outer position. A spring 359 is secured to the outer end of arm 355 and to the frame of the machine to normally retain the cam in one position.

I claim:

1. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, a pair of reciprocating members arranged adjacent the bottom of the tube, tag engaging members carried by one of said reciprocating members, and means actuated by one of the reciprocating members for partially projecting the bottom tag from the tube for engagement by the tag engaging members.

2. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, a pair of reciprocating members arranged adjacent the bottom of the tube, tag engaging members carried by one of said reciprocating members, and a member entering the tube on the side opposite the tag engaging members to partially project the bottom tag for engagement by the tag engaging members.

3. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, a pair of reciprocating members arranged adjacent the bottom of the tube, tag engaging members carried by one of said reciprocating members, another reciprocating member entering the tube on the side opposite the tag engaging members to partially project the bottom tag for engagement by the tag engaging members, and means actuated by one of the first reciprocating members for reciprocating said last mentioned reciprocating member to project a tag prior to movement of the tag engaging members into a position to engage the tag.

4. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, a pair of reciprocating members arranged adjacent the bottom of the tube, tag engaging members carried by one of the reciprocating members, a member entering the tube on the side opposite the tag engaging members to partially project the bottom tag for engagement by the tag engaging members, and means actuated by one of the reciprocating members to operate said member.

5. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, the tube being open at one side adjacent the bottom to permit delivery of tags, means for supporting a column of tags in the tube, a rod extending in front of the open portion of the tube and engaging the edge of the tags, the rod being positioned

above the lowermost tag to permit its withdrawal, and means for withdrawing the lowermost tag from the tube.

6. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, the tube being open at one side adjacent the bottom to permit delivery of tags, means for supporting a column of tags in the tube, a rod extending in front of the open portion of the tube and engaging the edge of the tags, the rod being positioned above the lowermost tag to permit its withdrawal, means for partially projecting the lowermost tag from the tube, and means for withdrawing the lowermost tag after it has been projected.

7. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, the tube being open at one side adjacent the bottom to permit delivery of tags, means for supporting a column of tags in the tube, a rod extending in front of the open portion of the tube and engaging the edge of the tags, the rod being positioned above the lowermost tag to permit its withdrawal, a reciprocating member entering the side of the tube opposite the rod to partially project the lowermost tag, and means for withdrawing the projected tag.

8. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, the tube being open at one side adjacent the bottom to permit delivery of tags, means for supporting a column of tags in the tube, a rod extending in front of the open portion of the tube and engaging the edge of the tags, the rod being positioned above the lowermost tag to permit its withdrawal, a reciprocating member entering the bottom of the tube on the side opposite the rod to partially project the lowermost tag, a pair of reciprocating members arranged adjacent the bottom of the tube on the opposite side and tag engaging members carried by one of the reciprocating members and adapted to receive the projected tag.

9. Apparatus of the character described, tag delivering mechanism comprising a tube to receive tags in stacked relation, a pair of reciprocating members arranged adjacent the bottom of the tube, tag engaging members carried by one of said reciprocating members, and a reciprocating member entering the tube from the opposite side, the last mentioned reciprocating member being provided with a reduced end forming a shoulder, the reduced end portion of said reciprocating member passing under the lowest tag in the tube whereby the shoulder engages the edge of the lowest tag to partially project it from the tube.

JOHN THOMAS DALTON.