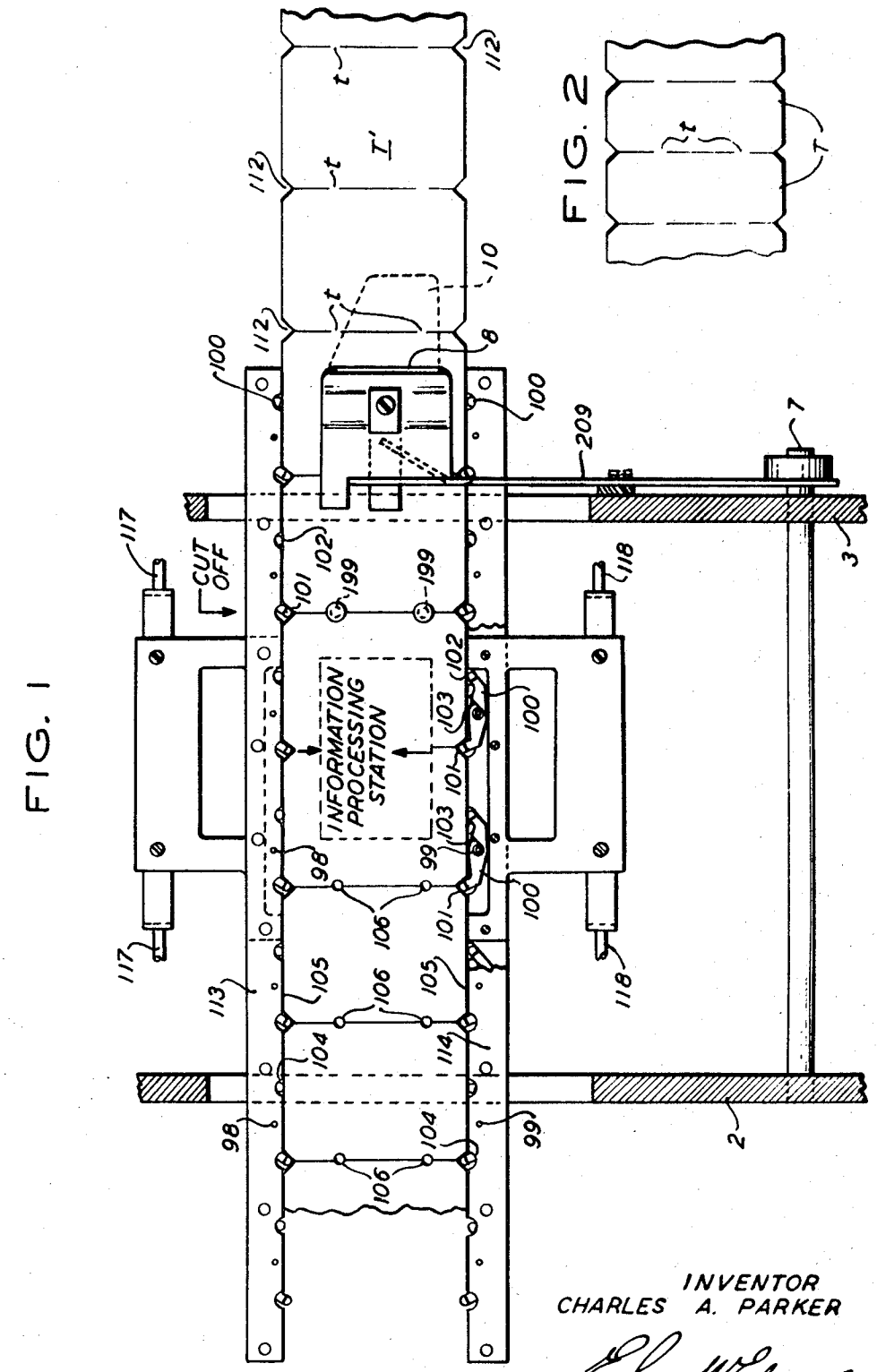
Sept. 30, 1969 C. A. PARKER 3,469,754

TAG FEED DEVICE

Filed June 7, 1966 4 Sheets-Sheet 1



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TAG FEED DEVICE

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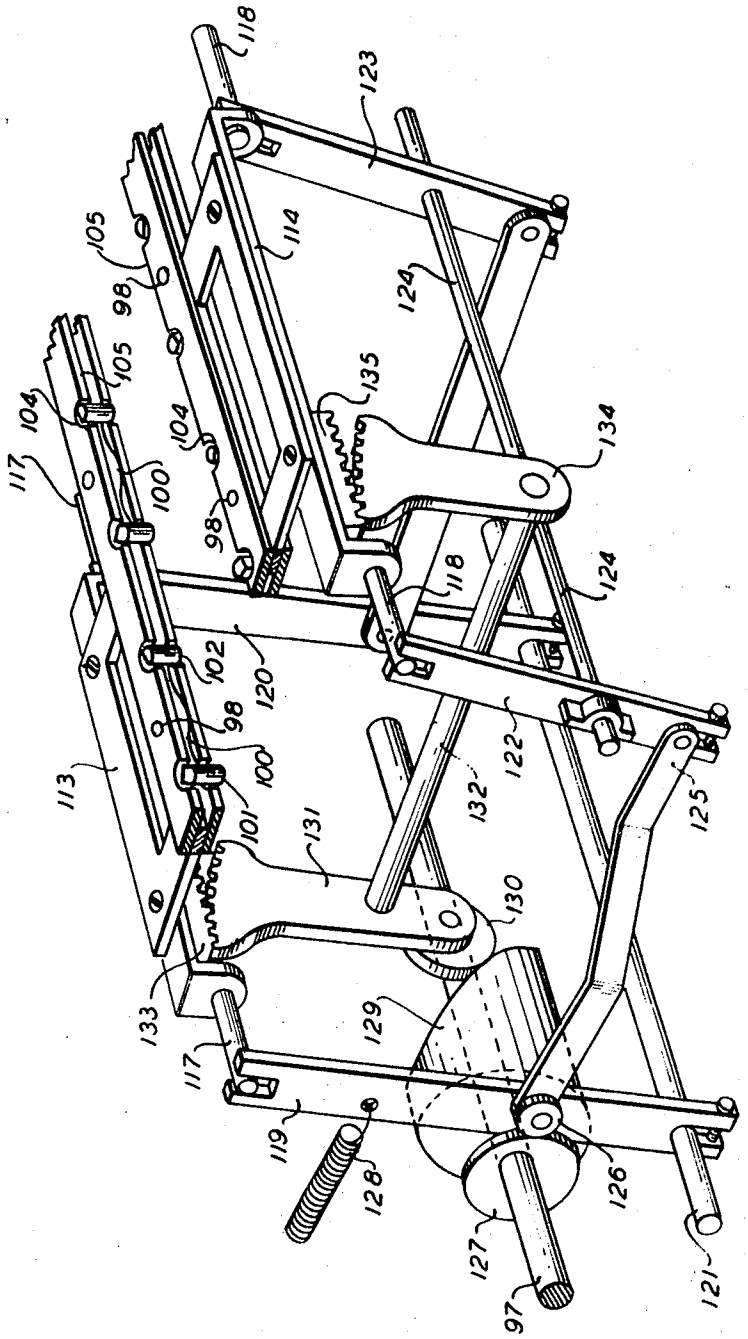
FIG. 3



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TAG FEED DEVICE

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FIG. 4

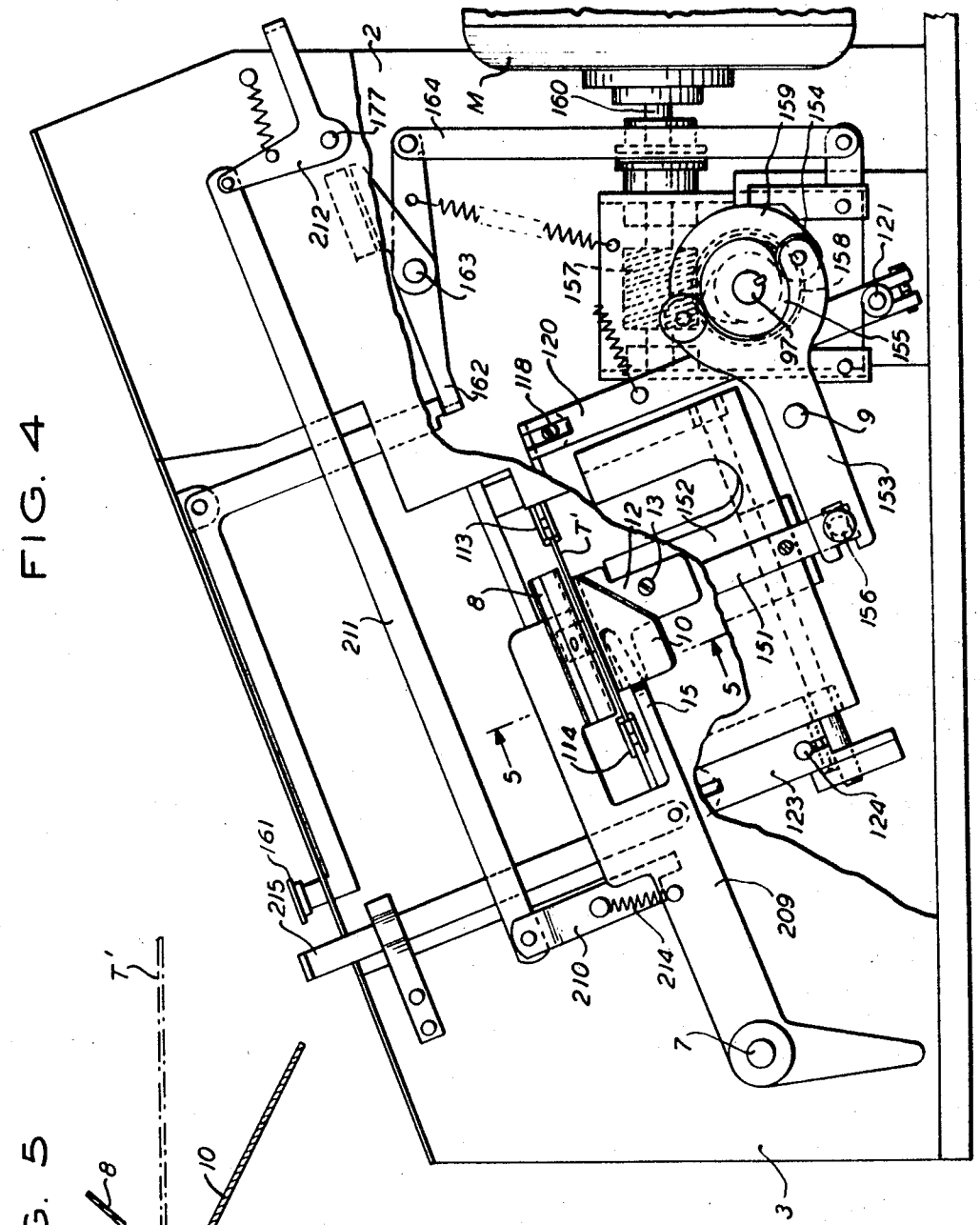
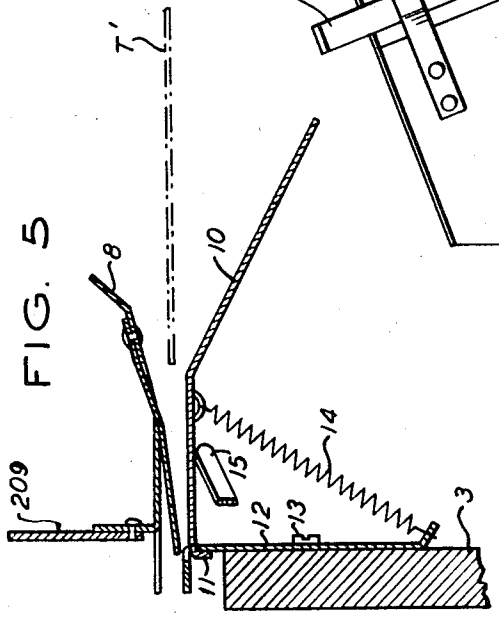


FIG. 5



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TAG FEED DEVICE

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FIG. 6

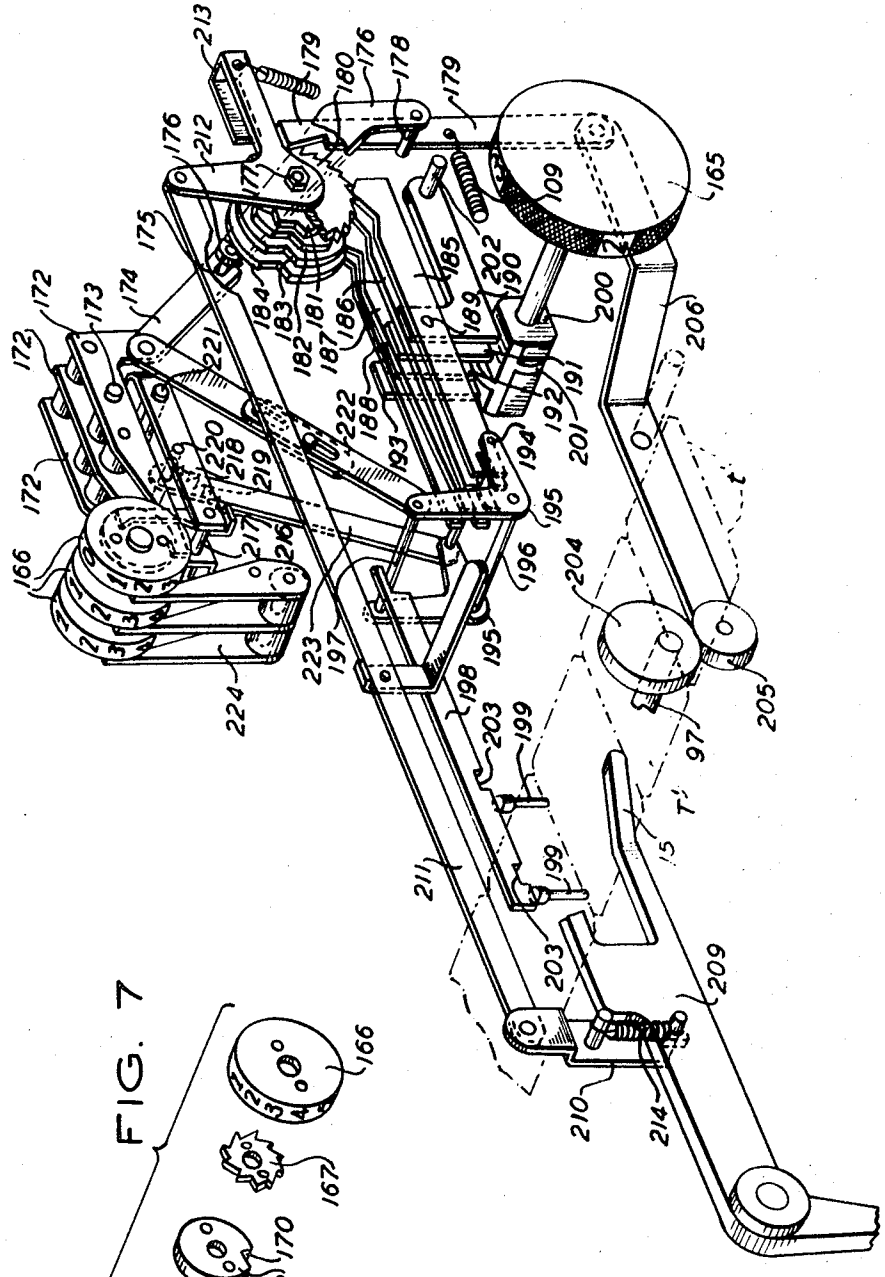

FIG. 7

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3,469,754

TAG FEED DEVICE

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Filed June 7, 1966, Ser. No. 555,887
Int. Cl. G03b 1/22; B26d 5/20
U.S. Cl. 226—68 7 Claims

ABSTRACT OF THE DISCLOSURE

A device for feeding edge notched tags in a predetermined direction including a pair of feed bars adapted for movement transversely to said predetermined direction, and in said predetermined direction; with each of said feed bars carrying one or more rock pawls each formed with a pair of spaced feed teeth. Movement of the feed bars towards the tag results in engagement of either a tooth on a rock pawl with the edges of a notch in the tag or with the edge of the tag itself. The teeth on the rack pawls are so spaced that if one tooth strikes an edge of the tag the pawl will be rocked so that the other tooth enters a notch. If the tooth initially enters a notch then the pawl does not rock. Subsequent movement of the bars in the predetermined direction results in tag feed.

The present invention relates generally to improvements in machines adapted to the printing and perforating of information upon small tags, for example, small price tags such as those used in the apparel industry for keeping inventory records, billing, recording, merchandising control, accounting and similar procedures. More particularly, the invention relates to improvements in tag feeding mechanisms therefor, of the character such as that disclosed in Reissue Patent No. 24,547, dated Oct. 7, 1958, from an original U.S. Patent 2,708,873, issued May 24, 1955 to Karl J. Braun, wherein tags of a single part width are fed either as individual tags or as a continuous web or strip of tags.

Customarily, the corners of each tag are cut off, thereby forming spaced notches to enable a continuous web or strip of tags to be intermittently and successively fed through the machine by the tag feeding mechanism. Where the tags are supplied in continuous strip or web form they are made up of individual tag parts severed from one another except for narrow connecting lands indicated at *t*, FIG. 1. Each tag may be supplied with an attaching string and preprinted with any desired data such as a company name, size, price and article identification, as well as other information which may be in the form of coded perforations.

In addition to the above information, it may be desired in certain instances to include also additional information, such as the conditions of manufacture, warranty and directions for handling and care of an article. This requires tags of a multiple width to the single part tag normally used, whereby to provide space for said conditional information. To attempt feeding said multiple width tag by the presently known single width tag feed devices would ordinarily require, in addition to the usual feed notches separated each tag, that intermediate feed notches of the character above described be cut within the feeding edges of the multiple part tags. However, this has been found to be objectionable both as to appearance and because such notches are frequently apt to be mistaken for a tear-off indication.

An object of the present invention therefore provides improved tag feed means whereby tags having multiple part widths to the usual single part width tags may now be advanced by the same feed stroke mechanism heretofore adapted to the advance of such single part width tags.

As another object, the invention provides tag feed means having a uniform feed stroke adapted for advancing single part tags of different widths.

As a further object, the invention provides tag advancing means adapted for advancing both single part width tags or tags which are a multiple width of said single part width tags.

Another object of the invention is the provision of tag feed means wherein the usual feed control indicia heretofore required at the line distinguishing single width tags from multiple width tags is not now required.

Other features and advantages of the present invention will become apparent to those skilled in the art from the following detailed description when read in conjunction with the accompanying drawings in which:

FIG. 1 is a plan view of the feed means for advancing tags of a given width and tags which may be a multiple of said width;

FIG. 2 is a face view showing a strip or web of single part tags;

FIG. 3 is a perspective view of the tag feeding means and driving means therefor;

FIG. 4 is a right side elevational view with the right-hand side framing of the machine broken away to show the drive mechanism;

FIG. 5 is a sectional view taken on line 5—5 of FIG. 4;

FIG. 6 is a perspective view of the counter mechanism and its relation with the tag cut-off mechanism.

FIG. 7 is an exploded perspective view of one counter dial assembly.

For feeding either single width tags T or multiple width tags T' through the machine a pair of feeding bars **113** and **114** (FIGS. 1 and 3) are moved toward and from each other fore and aft of the machine and reciprocated in unison transversely of the machine, in the manner of the devices of the above patent. The tag feeding bars **113** and **114** are provided with stub shafts **117** and **118** respectively. The stub shafts **117** slidably fit within slots in the upper end of a pair of levers **119** and **120** which levers are pivotally supported at their lower end by a cross shaft **121** mounted in the side frames **2** and **3** of the machines. Similarly, the stub shafts **118** slidably fit within slots in the upper end of a second pair of levers **122** and **123**, which are fast upon a suitably journaled transverse shaft **124**. A link **125** pivotally connected at one end to lever **119**, above the pivot shaft **121**, and pivotally connected at its other end to lever **122** below the pivot shaft **124**, serves to move the feeding bars **113**, **114** toward and from each other when levers **119**, **120**, **122** and **123** are rocked on their respective pivot shafts **121–124**. The means for rocking the levers **119**, **120** and **122**, **123** comprises a roller **126** rotatably mounted near the lower end of lever **119** and held by a spring **128** against the periphery of cam **127** fast on the main shaft **97** operated by suitable clutch means **159** (FIG. 4) and electric motor M.

In lieu of the claw like projections provided upon the feed bars of the reference patent, for the instant invention there is mounted upon each of the bars **113**, **114** (FIG. 1) a series of pivot studs **98**, **99** respectively, the studs **98** being spaced opposite and disposed in parallel series relative to studs **99**. Upon each stud **98**, **99** is pivotally mounted a corresponding rock pawl **100** provided at each end with an upwardly extending tooth **101**, **102**, as shown in FIG. 1. Each pawl **98**, **99** is provided with a hair spring **103** biasing the respective pawls so that the corresponding rearward or rightward tooth **102** is held in engagement with a related one of a series of recesses **104** formed on the inner edges **105** of each of the bars **113**, **114**. Thus the forward or leftward tooth **101** of each pawl **100** will be positioned beyond said inner edges **105** and during the above movement of bars **113**, **114** toward each other will act to engage the feeding edges of any tags T or T'

inserted therebetween whereby to be subsequently advanced by a tag feeding operation, as in the manner hereinafter to be described.

In addition to the feeding bars **113**, **114** being moved longitudinally of the machine for tag engagement as just described, they are also simultaneously moved transversely of the machine for feeding the tags, by the following mechanism. A cam **129** (FIG. 3) fast on main shaft **97**, adjacent cam **127**, drives a roller **130** which is rotatably carried by the lower end of gear segment **131**. This segment is fast on one end of a longitudinal shaft **132** and its gear teeth are in permanent sliding mesh with a rack **133** fixed to the feeding bar **113**. A second gear segment **134**, fast on the opposite end of shaft **132**, has teeth which are in permanent sliding mesh with a rack **135** fixed to the feeding bar **114**.

Besides the fore and aft and side to side motion of bars **113** and **114**, just described, they have a third movement in an up and down direction during tag feeding. This latter movement is for the purpose of raising the tags against suitable cut-off punches **199** (FIGS. 1 and 6) and severing the tags at the connecting lands *t*, either as single part tags, double part tags, triple part tags or quadruple part tags in accordance with the setting of a suitable manual control knob **165** (FIG. 6). Said up and down movement is effected, in the operation of well known punch devices, by a pair of left and right vertical slide levers **151** (FIG. 4) operated by related rock levers **153** pivotally mounted upon studs **9** projecting inwardly from the side plates **2** and **3** respectively. The slides **151** are positively raised and lowered during each revolution of main shaft **97** by means of related complemental cams **155** cooperating with rollers **154** on the bifurcated ends of rock levers **153**, all as in the manner more fully set forth in the above reissue Patent No. 24,547, to which reference is made for details of structure and operation not deemed necessary to be described herein. Whenever possible, numbers of corresponding parts of said patent to the present disclosure are used herein.

Main shaft **97** is rotatably journaled in suitable bearings carried by the main side plates **2** and **3** respectively, and is driven by electric motor M through a suitable worm **157**, worm gear **158** and the clutch **159** of any conventional design. The worm is keyed to motor shaft **160** and the worm gear is fixed with a part of the clutch **159** and free on main shaft **97**. The construction is such that when a starting button **161** is pushed, a bell crank **162** is caused to rock clockwise upon its pivot **163** to lower link **164** thus engaging the clutch **159** to operatively connect motor M with main shaft **97**.

Pivotally mounted at **7** to the side frame **3** is a rock lever **209** having mounted upon the free end thereof a plate **8** (see also FIG. 5). forming the upper guide surface of a tag entering throat means. The lower guide surface forming said throat includes a plate member **10** hinged at **11** to a slide **12**, secured for vertical adjustment on frame **3** by suitable screw means **13**. A tension spring **14** urges plate **10** clockwise (FIG. 5) against an offset finger **15** of the rock lever **209**. The entering end of a strip of tags T' is fed between plates **8** and **10** until stopped by engagement thereof with the forward teeth **101** (FIG. 1) of the first pair of feed pawls **100**, earlier described. Lever **209** is held in its lowered position by a pivoted latch **210**, and a link **211** has its forward end pivotally connected to the upper end of said latch **210**, and its rearward end pivotally connected with one arm of a bell crank **212** pivotally mounted upon a cam shaft **177** (FIG. 6).

As fully set forth in the reference patent a series of four cams **181**, **182**, **183** and **184** having twelve, six, four and three notches respectively on the periphery thereof are pivoted on shaft **177** to be indexed step by step by a counting finger **179** whereby to control the operations of well-known counter dials **166** for effecting merely single counts relative to every one cycle, two cycle, three cycle or four cycles of machine operations in accordance with the setting of said control dial knob **165**. Thus the counter mechanism is designed to control the number of tags to be printed and perforated with information whether these tags are single part tags, double part tags, triple part tags or quadruple part tags. When counting dials **166** are set in their zero position, the toothed end of corresponding levers **172** are engaged with the notches **170** in related discs **168** on each said dials and said levers are made rigid with one another to rock in unison upon a shaft **173** projecting inwardly from the right-hand side plate. The right hand or units order lever **172** has a downwardly and rearwardly projecting arm **174**, the free end of which is bifurcated to receive a stud **175**, carried by a two armed lever **176**, the latter being pivotally mounted upon cam shaft **177** also carried by the right-hand side plate. The lower arm of lever **176** has an inwardly projecting pin **178** which serves to engage and disengage the free end of counting lever **179**, with a feeding ratchet wheel **180** fast with the series of cams **181–184**. Lever **179** is held against pin **178** by a spring **109**. It may now be pointed out that when all the counting dials **166** are set at zero, the indexing end of lever **179** is held out of engagement with ratchet wheel **180** by pin **178**, and that when any one or all of the dials **166** are moved out of zero position, levers **172** will be rocked counterclockwise on their pivot shaft **173**, which in turn rocks the two-armed lever **176** clockwise on its pivot shaft **177** to engage the indexing end of lever **179** with ratchet wheel **180**.

In vertical alignment for cooperation at one end with the four cams **181–184** are four whiffletree levers **185–188** which are each pivoted at **189** to the vertical arms of corresponding bell crank levers **190** fulcrumed upon shaft **202**. The other end of said whiffletree levers are bifurcated for receiving a shaft **194** carried by a pair of spaced bell cranks **195**. The bell cranks **195** are pivotally mounted upon a shaft **196** extending inwardly from the right-hand side frame and carry a second shaft **197** which actuates a notched cut-off slide **198** for controlling tag cut-off punches **199** as will presently be explained and as more fully set forth in the said Reissue Patent 24,557.

Fast upon the shaft of dial **165** is a four-sided cam **200** having four staggered cam faces **201** spaced 90° apart which are beneath and in vertical alignment with the bell cranks **190–193** respectively. The construction is such that when single part tags are desired, dial **165** is set at the "number one" position, when two part tags are desired, dial **165** is set at the "number two" position, and so on. To illustrate, when dial **165** is set at the "number one" position the cam surface **201** in alignment with bell crank **190** rocks said bell crank clockwise (FIG. 6) on its pivot shaft **202** which in turn raises the toothed end of lever **185** into operative engagement with one of the twelve notches in cam **181**. It will now be clear that each time the toothed end of lever **185** passes from one notch in cam **181**, to the next notch, lever **185** will be rocked upon pivot **189** and in turn will rock bell cranks **195** counterclockwise to shift the notched cut-off slide **198**. Whenever the notches **203** in slide **198** are moved out of registration with the cut-off punches **199**, as shown in FIG. 6, a complete tag is severed from the web being fed into the right-hand side of the machine. The punches **199** operate to remove the lands *t* (FIG. 1), leaving notches **106** in the severed tag parts.

When two-part or double-width tags T', such as shown in FIG. 1, are fed into the machine the dial **165** is set at the "number two" position so that the related cam surface **201** is brought into alignment with the bell crank **191** for activating the lever **186** related to the cam **182** having six notches. Thus the notched cut-off slide **198** in this instance is operated only during every second or alternate machine cycles of operations.

On the other hand if it is desired that tags T' are to be folded, as pairs in book form, the dial **165** is set at the

"number four" position and bell crank **193** in this case activates the lever **188** which is related to the cam **184** having only four notches, whereby cut-off slide **198** now is operated only during every fourth cycle of machine operations.

The indexing lever **179**, previously referred to, is elevated and lowered for each revolution of main shaft **97** by cam **204** fast on the main shaft **97** and a roller **205** on one end of a pivoted lever **206**, as clearly illustrated in FIG. 6.

It is desirable to stop feeding the continuous web of tags when all of the counter dials **166** reach their zero or home position. This is accomplished by lifting the entering end of the continuous tag web out of the path of the teeth **101–102** of pawls **100** on the feed bars **113–114**, earlier described. It is recalled that the entering end of the tag web passes between the throat guide plates **8** and **10** (FIGS. 4 and 5), and that plate **8** with lever **209** is held in its lowered position by latch means **210** having link connection **211** with a bell crank lever **212**. Also, that plate **10** is spring held downwardly against the finger **15** of lever **209**. The bell crank **212** has an offset arm **213** (FIG. 6) in vertical alignment with the top end of counting finger **179**. It will be remembered that when any counter dial **166** is away from zero or home position, finger **179** is engaged with ratchet **180**, and when said lever is thus engaged with said ratchet, it will clear the arm **213** during its upward or indexing stroke. However, as soon as all of the dials **166** are normalized or reach their zero home position, pin **178** will act to disengage lever **179** from ratchet **180** and move said lever beneath arm **213**, so that upon its next upward or feeding stroke, it will strike arm **213** thereby rocking bell crank **212** counterclockwise on its pivot **177**. This movement of bell crank **212**, through link **211**, rocks latch **210** counterclockwise on its pivot, to release lever **209**, whereupon it is elevated by a spring **214**. This elevating or upward movement of lever **209**, causes the finger **15** thereof to rock the plate **10** (FIGS. 4 and 5) upwardly thereby lifting the entering end of the continuous web of tags T' (FIG. 1), free of the teeth **101–102** on the right hand pair of feed pawls **100** on bars **113** and **114**.

It has been previously explained that whenever any of the counter dials **166** (FIG. 6) are manually moved away from their home or zero position, lever **179** is engaged with ratchet wheel **180** to rotate the cams **181–184** respectively. The means for returning the dials to zero position, digit by digit, will now be described in connection with FIG. 6.

The construction of this mechanism is such that the counter dials are actuated only upon movement of the bell cranks **195** and cut-off slide **198**. Thus, if dial **165** is set for a single part tag, the counter and cut-off slide will be operated once for every machine cycle, but when dial **165** is set at the number two position for a two-part tag, the counter and cut-off slide will be operated only once for every two machine cycles and so forth. In this way the counter can be set for a definite predetermined number of tags regardless of whether they are to be one, two, three or four part tags according to the setting of dial **165**.

The counter shown in the present embodiment includes three counter dials **166**. These dials will be considered as the units, tens and hundreds positions. For each dial **166** there is a feed pawl **216** to feed its associated ratchet **167**. The pawls **216** are pivotally mounted upon a shaft **217** carried by a U-shaped lever **218**, and the feeding end of each pawl is held in engagement with its ratchet **167**, by a spring **219**, one end of which is anchored to the lower end of the pawl and the other end to a rod **220** carried by the lever **218**. The U-shaped lever **218** is pivotally supported by an elongated shaft **221** projecting inwardly from the right-hand side plate. An adjustable link **222** is pivotally connected at its upper end to arm **174** and at its lower end to shaft **197** carried by the bell cranks **195**. A second link **223** is connected between the shaft **194** and rod **220**. Each ratchet **167** has a spring pressed detent pawl **224** which serves to hold the counter dials **166** against any retrograde movement between feeding strokes of the pawls **216** and to the position to which they are manually set for counting purposes.

When any dial **166** is moved out of zero position, link **222** will act to rock bell cranks **195** counterclockwise on their pivot shaft **196** to position the notches **203** of cut-off slide **198** above the cut-off punches **199**. Thus said punches are disabled until the slide is again moved by action of one of the bell cranks **190–193** according to the setting of dial **165**.

It will now be clear that the counter dials are returned toward their zero or home position one digit each time the cut-off slide **198** is moved to its cut-off position by one of the levers **185–188** respectively through the bell cranks **195**.

From the above description it will be obvious that when it is desired to have tags punched and printed, at suitable stations spaced along the feed slides **113–114**, the operator sets the counter dials **166** to the desired number of tags required, which automatically engages the feed lever **179** with ratchet **180** as previously explained. Lever **209** is then lowered by depression of fingerpiece **215** so that plates **8** and **10** being lowered therewith will act to bring the inserted tag web T' in vertical alignment with the teeth **101**, **102** of the feed pawls **100** on the slides **113**, **114** respectively.

For single part tags T the dial **165** is set to "position one" and the starting button **161** is depressed to engage clutch **159**. During continued machine cycles of operation the successive feed notches **112** at the separating line between each of the tags will be engaged by the forward teeth **101** of pawls **100** in the inward movement of the slides **113**, **114** and are thereafter fed leftwardly (FIG. 1) during each transverse operation of said slides, until the counter dials reach their zero or home position, at which time the tag feeding operation is stopped as heretofore explained.

On the other hand when it is desired to use double width tags on the order of tags T' the dial **165** is set to the "position two," and it will now be clear that the counter and cut-off mechanisms operate only once for every second machine cycle while the feed slides **113**, **114** operate for every machine cycle. It will also be noted that following the outward and rearward movement, to the right in FIG. 1, of slides **113**, **114** the teeth **101** of pawls **100** are now adjacent the unbroken edge of the tag T' while the teeth **102** will be opposite the feed notches therein. Thus during the subsequent inward movement of the described slide operations the forward teeth **101** will engage the continuous edge of the tags and rock the teeth **102** into engagement with the related feed notches, and thereafter upon a leftward restoring operation of the slides **113**, **114** teeth **102** will advance the corresponding tag one-half a width thereof. In the next subsequent machine cycle of operation the operation is similar except that now the rearward teeth **102** are moved opposite the continuous edge of the tags and the forward teeth **102** will be opposite the feed notches in the tag for engagement therewith to complete the full width movement of the tags.

While I have described and illustrated one specific embodiment of my invention, it will be clear that variations of the details of construction which are specifically illustrated and described may be resorted to without departing from the true spirit and scope of the invention.

The invention claimed is:

1. In an apparatus of the class described for feeding single sheets or web sheets successively past an information processing station, the combination comprising:

sheet feeding means including a member having a feed stroke movement;

sheet engaging means spaced thereon according to said

feed stroke and disposed for independent movement substantially transversely thereof;

said sheet engaging means including at least one member carrying a pair of spaced feed elements adapted each for either cooperation with the feed opening as spaced in a sheet or engagement with a solid edge portion of the sheet, and when engaging the solid edge portion of the sheet for movement in a predetermined direction to bring the other feed element into a position to cooperate with a feed opening; and

said sheet engaging means engageable thereby with associated feed openings as spaced in a sheet in accordance with alternate feed strokes of said sheet feeding means for advancing a sheet during each operation of the sheet feeding means.

2. The invention according to claim **1**; and

in which said element comprises a rock member pivotally mounted upon the said sheet feeding member.

3. The invention according to claim **2**; and

means biasing said rock member so that a given one only of said spaced elements during feed operations will engage successive feed openings as spaced in a sheet in accordance with the feed stroke movement of said sheet feeding member, whereby to advance the sheet during each successive operation thereof.

4. The invention according to claim **3**; and

having duplicate feed means transversely spaced from

the first said sheet feeding means for similarly providing sheet feeding operation to the opposite edge thereof.

5. The invention according to claim **4**; and

wherein both said sheet feeding means have a reciprocatory feed movement in common and are movable away from and toward each other relative to each feed cycle of operation whereby to effect the said engagement of the spaced feed elements with a sheet.

6. The invention according to claim **2**; and having a plurality of said pivoted rock members spaced longitudinally along said sheet feeding members, whereby to further advance any severed sheets.

7. The invention according to claim **4**; and means operable to lift an incoming sheet from engagement with said pairs of spaced sheet engaging elements of said rock members whereby to disable sheet feeding operations.

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FRANK T. YOST, Primary Examiner

U.S. Cl. X.R.

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