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Shenoha

[11] **3,881,410**

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[54] **INFLATED BAG PRINTER HAVING THE ANVIL MOUNTED ON A BELL CRANK**

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[73] Assignee: **Norwood Marking & Equipment Company,** Downers Grove, Ill.

[*] Notice: The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.

[22] Filed: **Oct. 26, 1973**

[21] Appl. No.: **410,096**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 358,962, May 10, 1973, Pat. No. 3,823,664.

[52] **U.S. Cl.** **101/41;** 53/131; 53/385; 101/297

[51] **Int. Cl.** **B41f 17/00**

[58] **Field of Search** ..... 101/41–44, 101/333, 334, 3 R, 4, 9–11, 21, 27, 297; 93/34, 73; 53/131, 385

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[57] **ABSTRACT**

An imprinting device for marking the outside surface of bags which have been inflated which includes a marker device positioned adjacent a surface of the inflated bag and a moving anvil arm effective to deflate a portion of the bag to press an adjacent bag surface against the marking device. The anvil arm is positioned at the end of a bellcrank attached to a prime mover.

4 Claims, 4 Drawing Figures

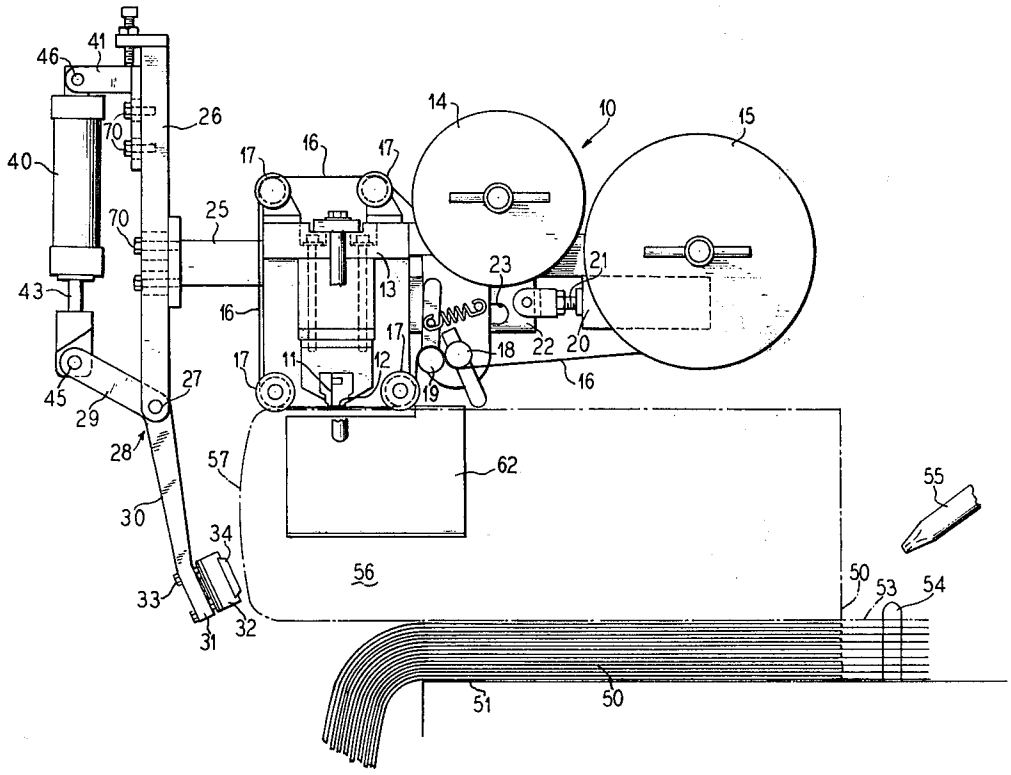


Fig. 1

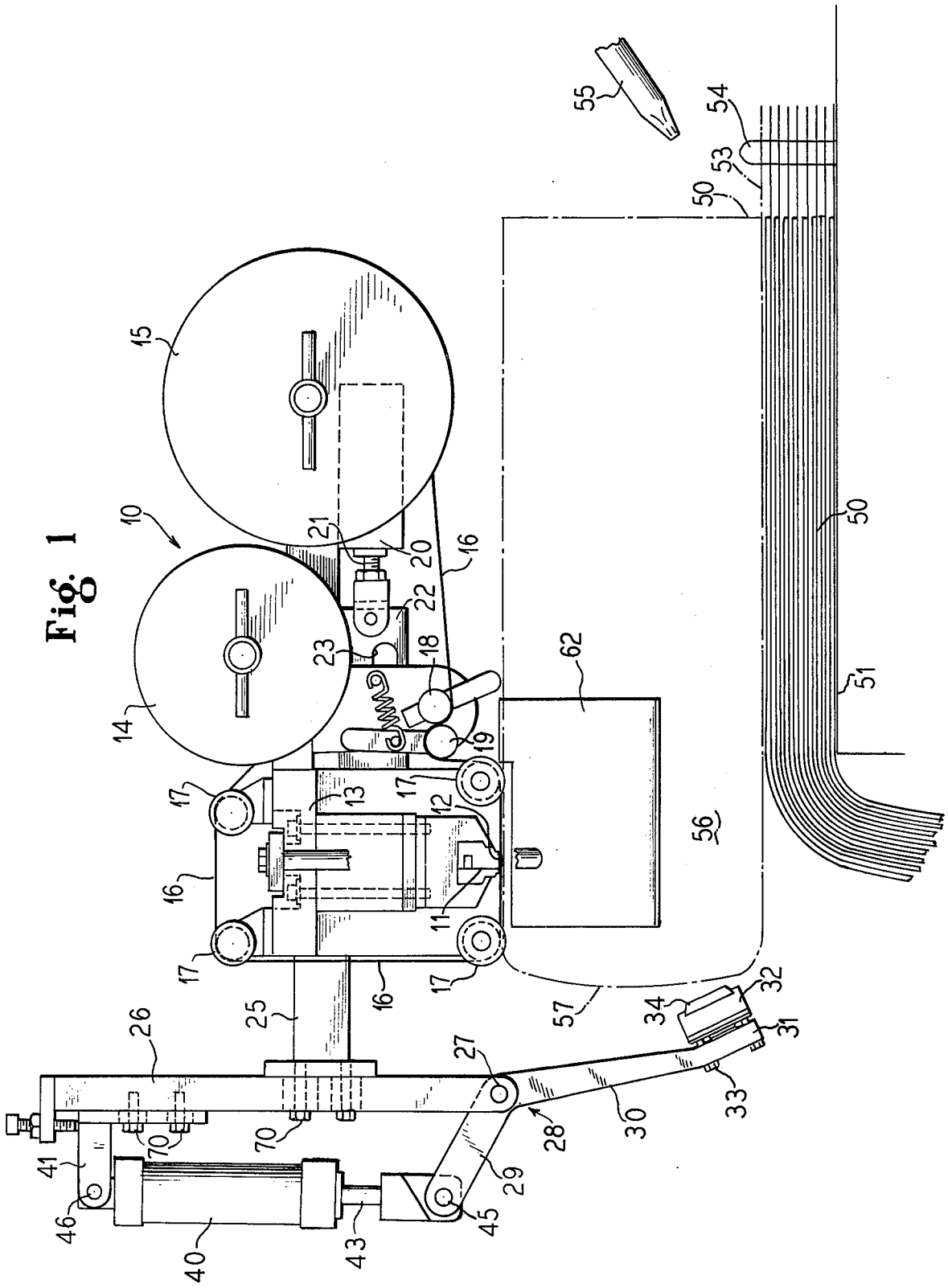

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Fig. 4

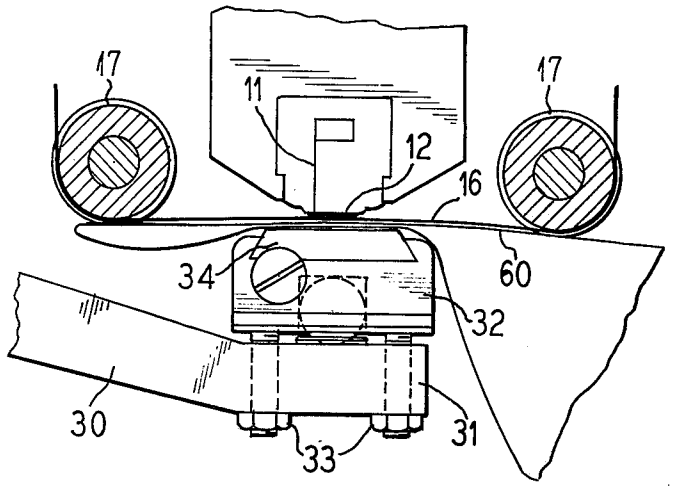


Fig. 3

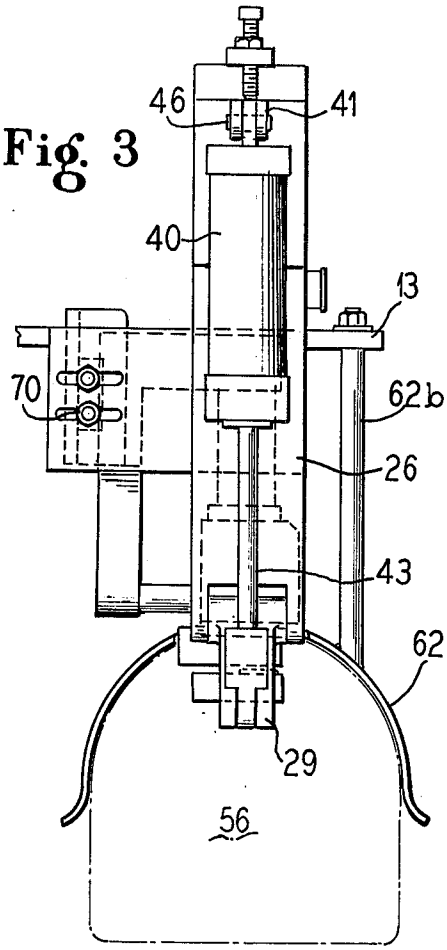
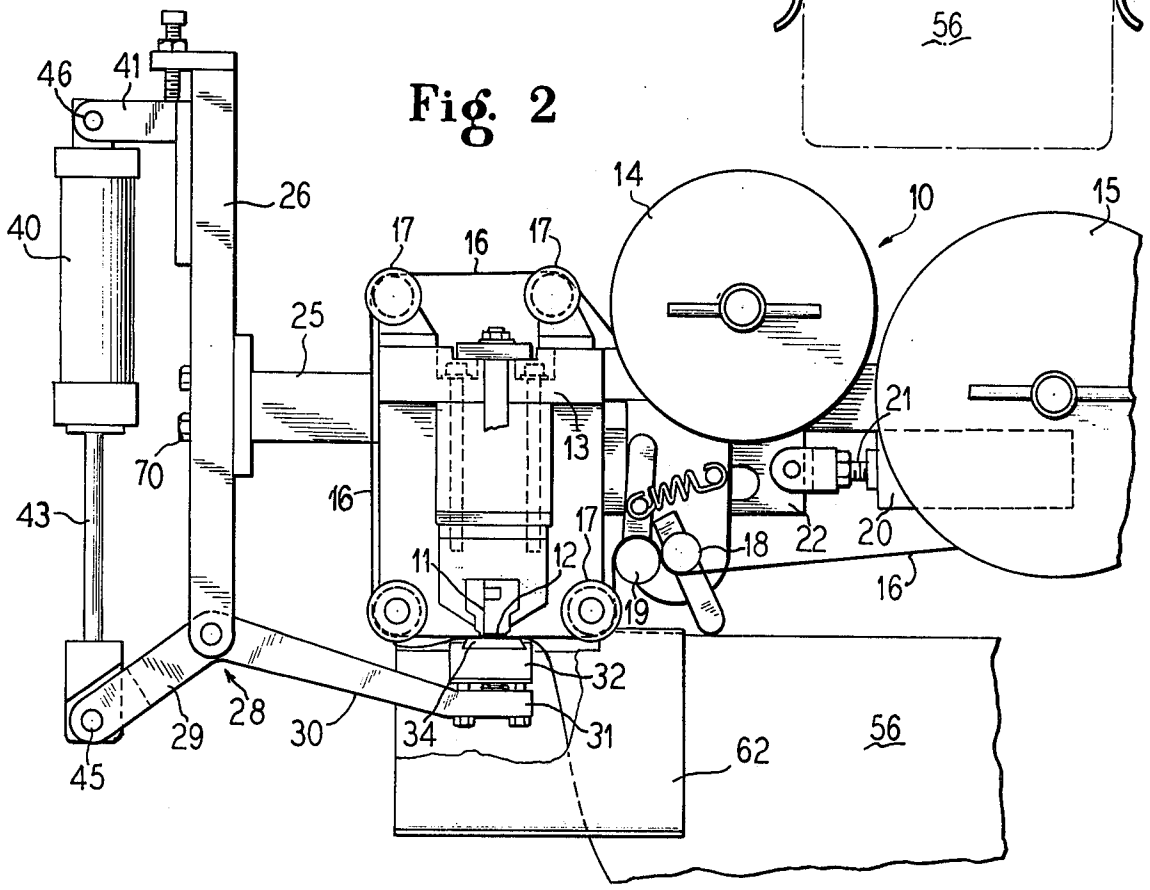


Fig. 2



INFLATED BAG PRINTER HAVING THE ANVIL MOUNTED ON A BELL CRANK

This application is a continuation-in-part of application Ser. No. 358,962, inventor James L. Shenoha, entitled "Inflated Bag Printer And Method," filed May 10, 1973, now U.S. Pat. No. 3,823,664.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to marking devices and more particularly to a device for applying indicia to bags.

2. The Prior Art

In the filling of bags with product on the production line, it is quite often desirable to mark the bag at the time of filling. To the extent that the bag is identified from a stack of bags and then filled with product, it is difficult to mark the bag. When the bag is a part of a stack of bags, most often the top bag in a stack, the resiliency of the underlying stack of bags will prevent clear marking by a stamping operation. Once the bag is separated from the stack, as by inflation of the top bag, there is not normally an underlying rigid surface against which the bag can be pressed by a marking device. Further once the bag has been filled with product, any attempted marking of the bag surface by stamping process will damage the product.

Therefore prior art marking devices have either relied upon separation of the bag in a collapsed condition from the stack of bags and movement to a separate point where a backup member is available for imprinting or they have relied upon non-stamping methods of applying indicia. However, modern production machinery oftentimes merely inflates the bag from the top of the stack of bags and immediately thereafter fills the bag with product.

It would therefore be an advance in the art to provide a device capable of imprinting a surface portion of the bag without requiring movement of the bag to a separate station and without interferring with the production machinery filling of the bag.

SUMMARY OF THE INVENTION

In the above described sequence of inflation of the bag and filling with product, there is a short period of time between separation of the top bag from the stack of bags by inflation and the filling of the bag with product. My invention places a marking device adjacent the stack of bags in a position where inflation of the top bag will move a surface of the top bag into an area which includes an imprint station where a marker is positioned. I then provide a moving anvil arm which is effective to deflate and collapse a portion of the bag to press a surface portion thereof against the marker. Such a device is shown and described in my U.S. Pat. No. 3,823,664, entitled, "Inflated Bag Printer and Method", the teachings of which are herein incorporated by reference.

The present invention improves upon other devices by providing that the marker device be suspended adjacent to the rear portion of the inflated bag and that the marker device have attached thereto a vertically disposed power element having a movable arm connected to one end of a bellcrank. The central portion of the bellcrank is attached pivotably to a fixed position mount and the other end of the bellcrank contains an anvil member. Movement of the power element will rotate the bellcrank to move the anvil member into contact with the closed end of the bag and upwardly in an arc towards the marker. The supply of air to the open front end of the bag will maintain the surface of the bag adjacent the surface of the market in a taut condition and the anvil will press it against the marker or against a heat transferrable tape interposed between the bag surface and the marker.

It is therfore an object of this invention to provide an inflated bag marker.

It is another object of this invention to provide an inflated bag marker which has a moving anvil member which will collapse a portion of the inflated bag and press a surface portion thereof against a marker device.

It is another and more important object of this invention to provide an inflated bag printer having a movable anvil attached through a bellcrank to a power member whereby movement of the power member will impart an arcuate movement to the anvil to press a surface portion of a bag against a marking member.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features and advantages of the invention will be readily apparent from the following description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure, and in which:

FIG. **1** is a side plan view with portions broken away to show underlying portions of the imprint marker of my invention positioned adjacent a stack of inflatable bags.

FIG. **2** is a view similar to FIG. **1** on a reduced scale showing the imprint marker in imprinting position.

FIG. **3** is an end plan view of the marker of FIGS. **1** and **2.**

FIG. **4** is an enlarged fragmentary view of the imprint station of the marker in its imprint position as shown in FIG. **2.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** illustrates as inflated bag printing device **10** which consists of a heated marking device **11** having a type carrying face **12** thereon mounted to a frame **13** which also carries tape supply **14** and takeup reels **15.** The tape **16** extends from the supply reel to the takeup reel around guide rolls **17** which pass the tape across the face **12** of the marking head **11.** A drive roller **18** and a spring loaded pressure roller **19** are urged towards one another with the tape **16** passing therebetween whereby rotation of the drive roller **18** will cause a given movement of the tape. Tape movement is controlled by a power member **20** which may be a pneumatic cylinder having a power arm **21** connected to a shuttle **22** having a cam opening **23** therein. The cam opening is connected through a cam follower arrangement to the drive wheel **18** to rotate the wheel in response to movement of the power arm **21.**

Also attached to the frame **13** is an extension member **25** which has a vertically disposed frame member **26** fixedly attached thereto. The vertical member terminates at one end in a pivot **27** to which a bellcrank **28** is affixed. The bellcrank may be a single piece or may consist of two attached together arm members **29** and **30.** The arm member **30** terminates in an anvil sup-

port 31 which has an anvil 32 attached thereto by adjustable attachment means 33 which are capable of leveling the anvil. The anvil terminates in a striking pad 34. The length of the arm 30 and the position of the pivot point 27 are such that movement of the bellcrank will cause the pad 34 to strike the face 12 of the imprinting head 11. A prime mover such as a pneumatic cylinder 40 is positioned between a fixed attachment 41 extending from the vertically disposed frame 26 and the arm 29 of the bellcrank 28 so that movement of the power arm 43 will actuate the bellcrank to move the anvil towards or away from the face 12. The attachment between the power arm 43 and the bellcrank arm 29 is through a pivotable connection 45 as is the attachment between the hydraulic cylinder 40 and the fixed attachment 41 at 46.

The inflated bag printer 10 is positioned adjacent a stack 50 of inflatable bags 51 such as for example plastic bread wrapping bags. The bags have open ends 52 which may have flaps 53 associated therewith having openings therethrough received around a pin 54 for positioning the bags with respect to packaging machinery (not shown). The topmost bag is inflated by a jet of air from an air source 55 and, when inflated, a rear portion 56 of the bag will underlie the printing head 11, with the back end 57 of the bag spaced from the anvil 32 when the power arm 43 is in its raised position as illustrated in FIG. 1.

Actuation of the pneumatic cylinder 40 will move the anvil arm into contact with the rear 57 of the bag and thence upwardly towards the imprint head 11 to push the top surface 60 of the bag against the tape 16 and the tape against the imprint head 11 as illustrated in FIGS. 2 and 4. The tape is preferably of the type which, when contacted by the heated type face 12, will transfer a portion of the tape or a coating on the tape to the surface 60 of the bag. A shield member 62 may be affixed to the frame 13 by a frame supported member 62b to guide the rear portion 56 of the inflated bag into position adjacent the imprint head 11.

The actuation of the hydraulic cylinder 40 may be timed with respect to the production machinery so that the anvil will strike the bag and force the bag surface 60 against the tape immediately upon the inflation of the bag and before the bag is filled with product. Because the action of the anvil in both moving towards and away from the imprint head can occur in a very short period of time, this imprinter can work in connection with high speed bag filling machinery without adversely effecting the filling of the bags. Further, because the air is continuing to blast into the opening of the bag during the imprint stage, the bag will be in a taut condition so that there will be no wrinkles on the surface 60 as it is imprinted. In addition, because the device can be positioned as illustrated in FIG. 1, the rear portion of the bag is the portion that will be collapsed by the anvil so as to again not interfere with the entry of a product or a product filling piece of machinery into the front portion of the bag through the opened end 50.

Adjustable connections for the vertical frame member 26 and the frame member 41 are illustrated at 70 so as to allow the anvil to be positioned properly with respect to the imprint head so that as the bellcrank is operated the anvil will contact the head while at the same time being out of contact with the bag when in its fully retracted position as illustrated in FIG. 1.

It should be appreciated that the takeup 14 and supply 15 reels may be driven, if desired, by connections to the same cam follower which drives the drive roller 18. In addition, it should be appreciated, that if desired, the inflated bag printer of this invention could be positioned at right angles to that illustrated so as to contact the bag from the side.

It will therefore be appreciated from the above that my invention provides an inflated bag printer utilizing an imprint head having a printing station located immediately adjacent the imprint head a moving anvil supported at the end of a bellcrank which is acted upon by a prime mover. Actuation of the prime mover causes the anvil to move towards and away from the printing station and a portion of an inflated bag positioned between the anvil and the imprint head will be deflated by movement of the anvil towards and away from the printing station to force a surface portion of the bag towards the imprint head.

Although the teachings of my invention have herein been discussed with reference to specific theories and embodiments, it is to be understood that these are by way of illustration only and that others may wish to utilize my invention in different designs or applications.

I claim as my invention:

1. In an apparatus for imprinting bags comprising an imprint marker device having a marking head, an anvil, said anvil attached to the end of a moving member, means for moving the member to move the anvil towards and away from the marking head, means for positioning a bottom wall of a bag inflated by an air jet from a stack of deflated bags between the anvil and the marking head, the means for moving, moving the anvil against the bottom wall to collapse a portion of the inflated bag to press a first surface portion thereof against the marking head, the first surface being adjacent, nonopposed to the bottom wall, and means for withdrawing the anvil from contact with the bag, the improvement of the anvil being attached to one end of a bell crank, the means for moving being a prime mover being attached to an opposite end of the bell crank, the bell crank pivotally attached to a frame member, movement of the prime mover causing the anvil to move toward and away from the marking head.

2. The improvement of claim 1, wherein the prime mover is a pneumatic cylinder having a power arm pivotally attached to said opposite end of the bell crank, the pneumatic cylinder pivotally attached to the frame member.

3. The improvement of claim 2, wherein the bell crank consists of a lever arm device having a first leg, with a second leg attached to one end of the first leg at an angle thereto, the legs being attached to one another at a juncture, the legs being pivotally attached to the frame member at the juncture, and the juncture of the first leg to the second leg being fixed.

4. A device for imprinting bags which comprises: a marking device with a marking type, the marking device positioned adjacent a stack of deflated bags, means for inflating the bags one at a time, means for maintaining a first surface of the inflated bag adjacent the marking device, a movable arm, an anvil member at the end of the movable arm, means for moving the arm and the anvil for moving the anvil against a second surface of the inflated bag to collapse a portion of the inflated bag to urge a portion of the first surface thereof against the marking type, means for withdrawing the

movable arm and anvil, and means for positively reinflating the collapsed portion of the bag, the arm comprising a bell crank, the anvil attached at one end of the bell crank, the means for moving the arm and anvil and the means for withdrawing the movable arm and anvil comprising a prime mover having a movable portion thereof attached to the other end of the bell crank, the bell crank being pivotally attached to a stationary frame member intermediate ends of the bell crank.

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