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Dohnalik

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[54] **ENVELOPE BLANK SCORING AND FEEDING APPARATUS**

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[73] Assignee: **Garden City Envelope Company**, Chicago, Ill.

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[52] **U.S. Cl.** ..... **93/58.1**; 93/58 P; 93/58.2 R; 83/699; 93/61 R

[51] **Int. Cl.** **B31b 1/14**

[58] **Field of Search** ..... 93/58.1, 58 R, 58.2 R, 93/58.2 F, 61 R, 58 P; 83/698, 699

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Assistant Examiner—James F. Coan
Attorney, Agent, or Firm—Neuman, Williams, Anderson & Olson

[57] **ABSTRACT**

A support apparatus is provided having a cylindrical body to which elements for scoring and feeding envelope stock are attached. In operation the cylindrical body rotates above a guide bed over which the envelope stock can move and the stock is advanced between the scoring or feeding elements and the guide bed. The scoring and feeding elements are adjustable about the periphery of the cylindrical body such that the points at which envelope stock is scored can be easily set and positive feeding engagement can be maintained.

11 Claims, 9 Drawing Figures

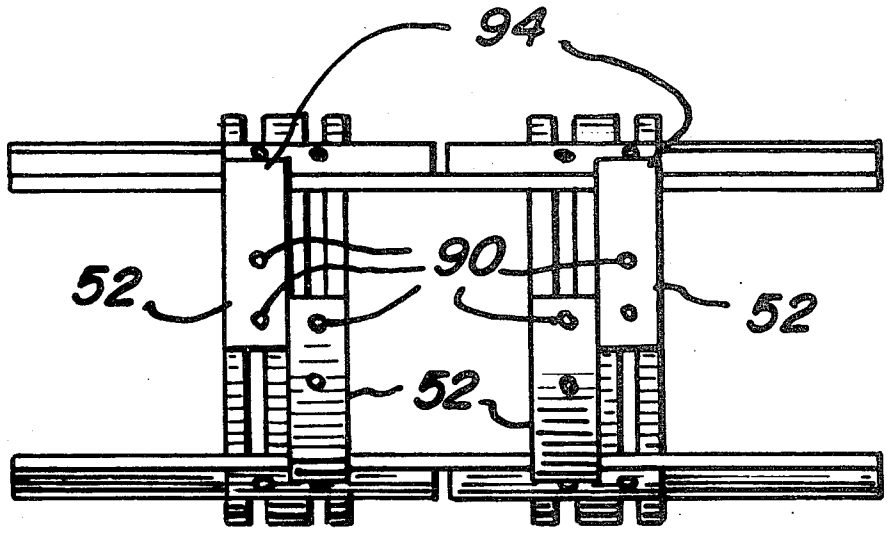


FIG. 1

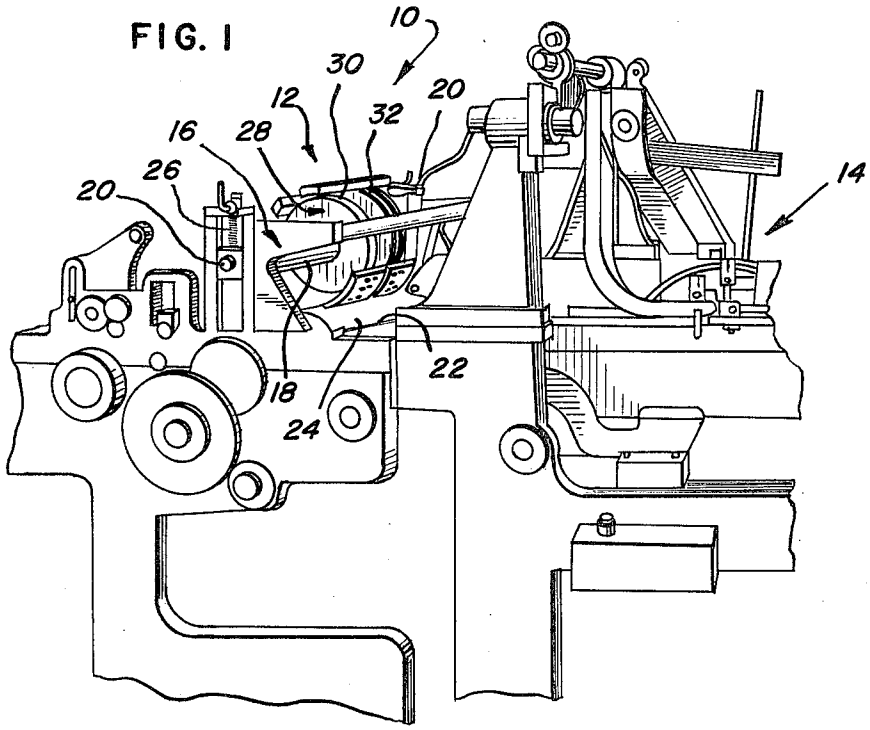

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FIG. 2

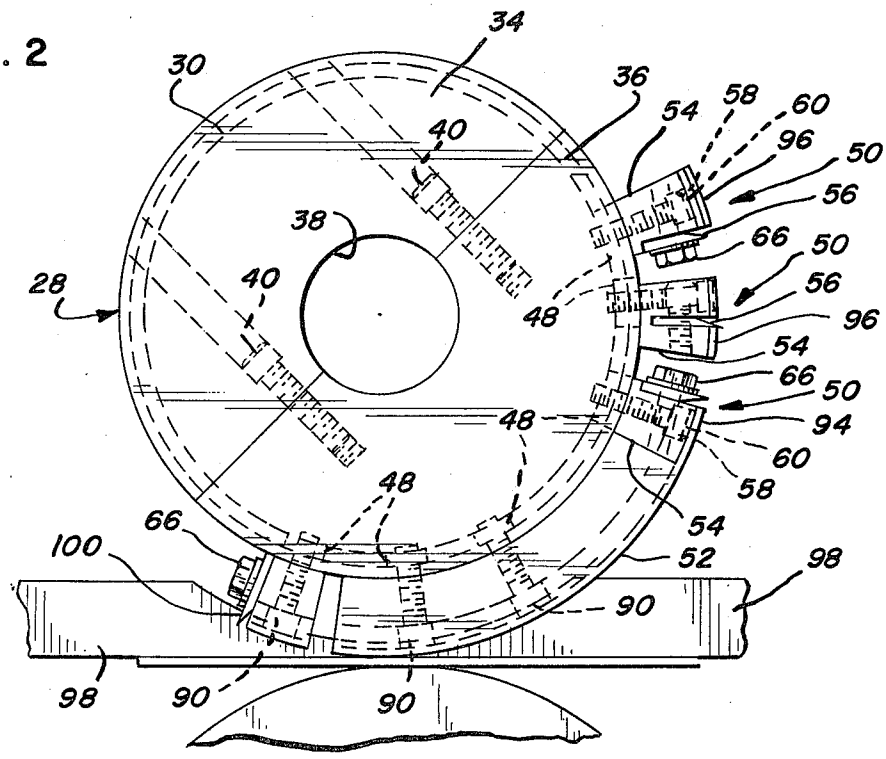

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FIG. 3

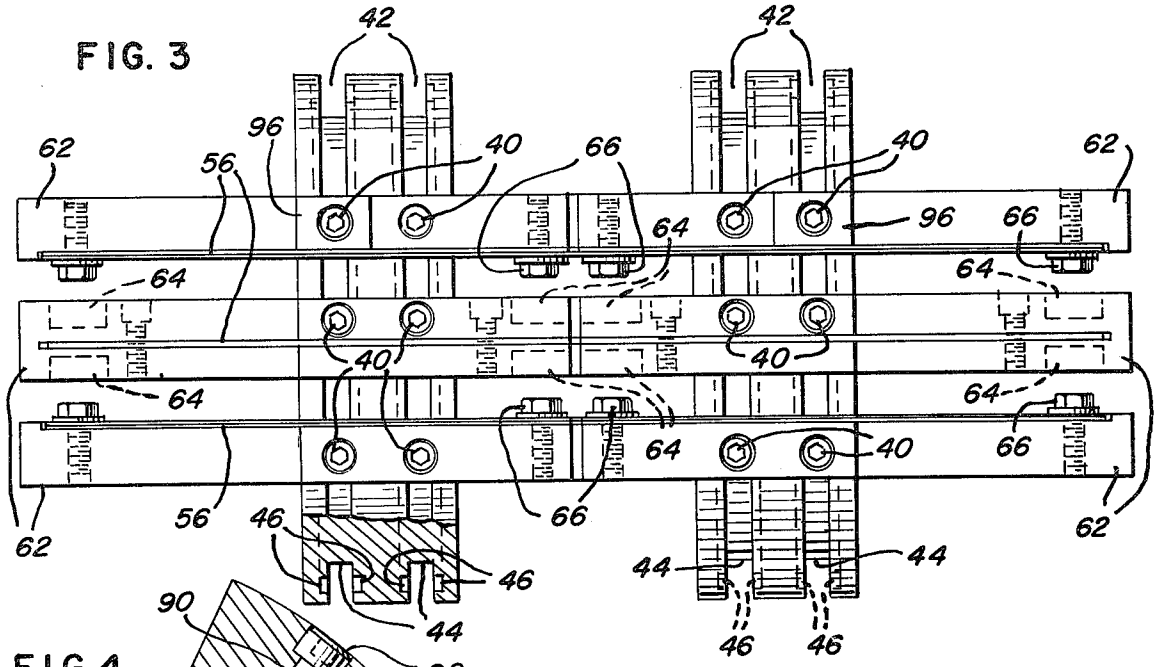


FIG. 4

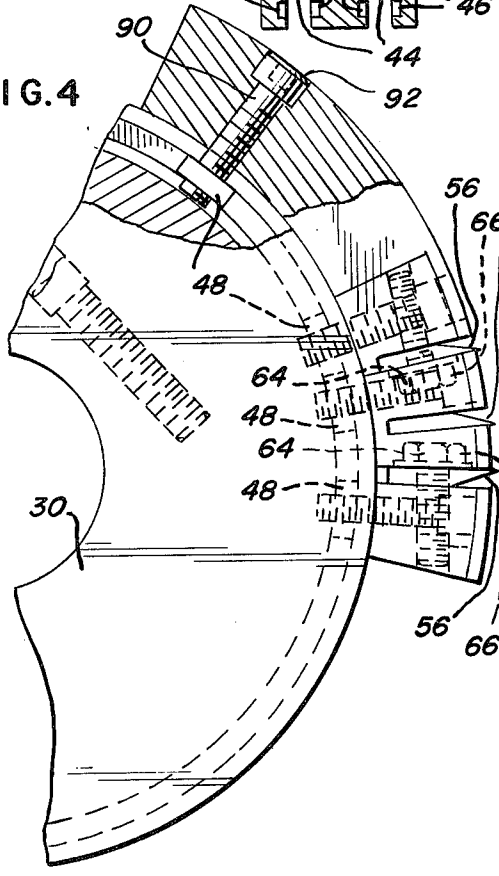


FIG. 5

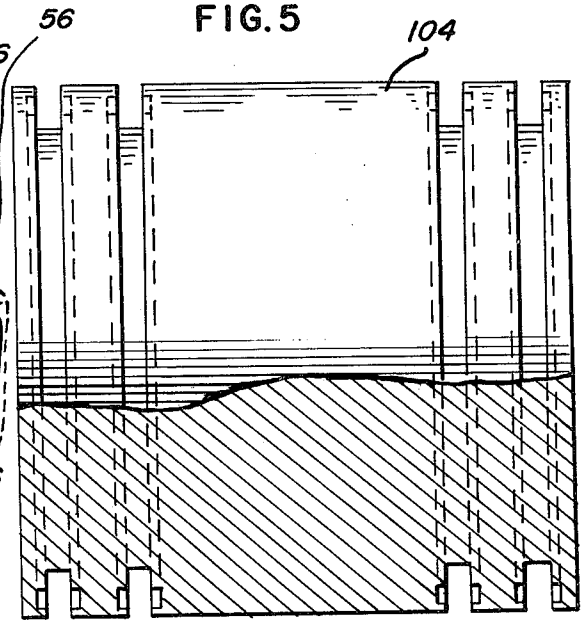


FIG. 9

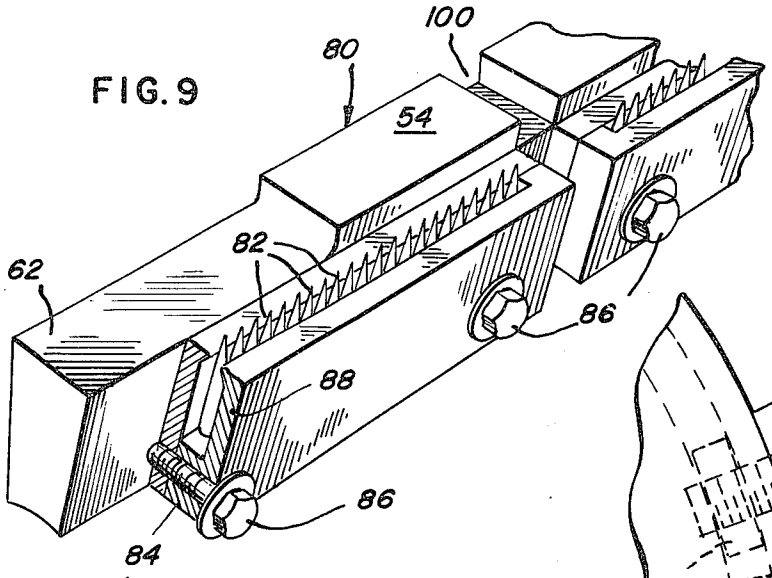


FIG. 6

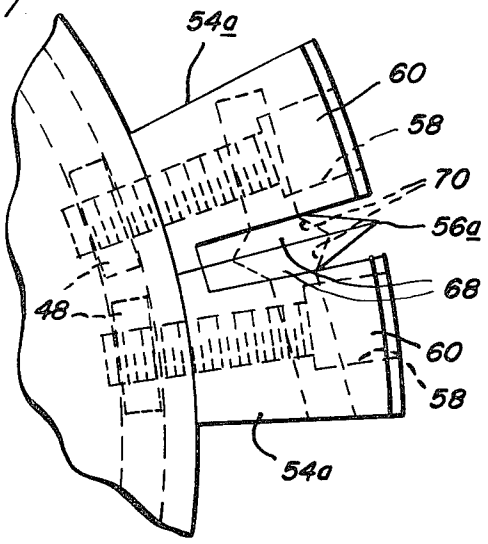
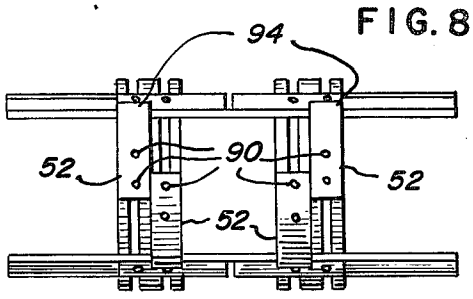


FIG. 8



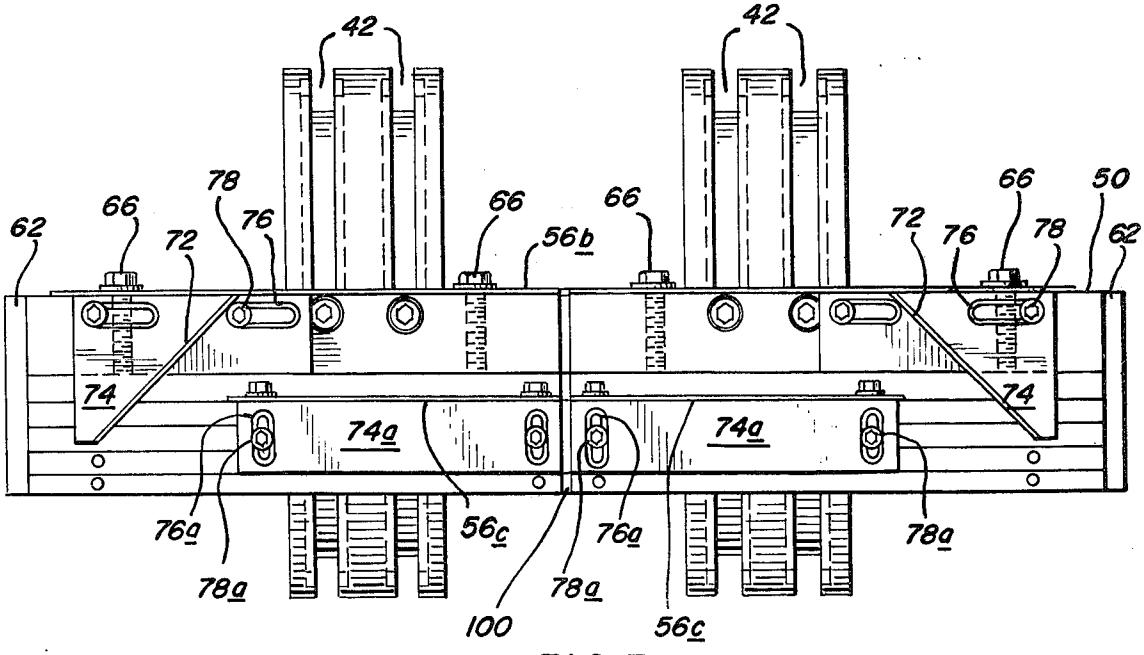


FIG. 7

ENVELOPE BLANK SCORING AND FEEDING APPARATUS

This invention relates to scoring and feeding apparatus in machines for handling sheet material and more particularly to providing rotatable scoring and feeding mechanisms for envelope forming machines which have an adjustment capability that allows the score or feed elements to be easily and accurately set to various relative positions.

It is known that the scoring elements of an envelope machine may be adjustable about their drive shaft and with respect to one another, e.g., as shown in the U.S. Pat. Nos. 1,839,492 and 2,098,970 to Novick, 2,403,377 to Kelly, 3,586,312 to Sammons and 3,664,240 to Helm. Others have suggested the use of an annular keyway for adjusting tools for working sheet material, e.g., as shown in U.S. Pat. Nos. 3,060,816 to Martin and 3,353,460 to Henc.

Correct positioning of the scores on the blanks is essential in the manufacture of envelopes by machine. An inaccurately placed score or fold line will preclude the proper folding of the envelope. The spacing of the scores with respect to one another and the positioning of the scores on a blank as a whole must be accurate so that proper registry is maintained as the blank moves through the machine and so that the envelope will fold up as designed. While the spacing of scores formed by a single rotating scorer is merely a function of the location of each scoring element about the rotatable support, the location of the scores on a blank as a whole, or registry, is regulated, in part, by the feeding elements. It is essential that the envelope stock or blanks be moved uniformly and continuously throughout the scoring process since any hesitation or slippage will be detrimental to the registry.

It is desirable that positive feed control of the blanks be maintained at the scoring position so that registry can be maintained conveniently, even with relatively small blanks. Moreover, it is highly desirable that the scoring mechanism be readily adjustable for the forming of scores at a wide variety of spacings and in various patterns to facilitate adjustment of the machine for forming different styles and different sizes of envelopes.

The instant invention provides improvements which meet the aforementioned requirements. This invention allows the scoring elements to be easily positioned anywhere about the periphery of a rotatable scorer, and also allows the placement and adjustment of feed elements to control the movement and processing of the envelope stock throughout the scoring process.

It is an object of the present invention to provide an improved scoring and feeding apparatus for envelope forming machines.

It is an object of the subject invention to overcome disadvantages and difficulties of the prior art.

It is a more specific object of this invention to provide an improved feeding and scoring apparatus in which the feeding and scoring elements are readily adjustable.

It is a further object of this invention to provide a scoring and feeding apparatus which is easily and accurately set up or changed for any specific production run.

It is yet another object of the present invention to provide an improved feeding and scoring apparatus

which allows the scoring elements to be positioned in a variety of positions relative to one another and with respect to the feeding elements.

It is a still further object of the present invention to provide a feeding and scoring apparatus wherein the feeding elements do not interfere with the positioning of the scoring elements and can be adjusted to provide continuous positive control of the feeding of envelope blanks.

Additional objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize this invention are pointed out with particularity in the claims annexed to and forming a part of this specification.

In carrying out the invention in one embodiment, a cylindrical support is mounted on a coaxial drive shaft in an envelope forming machine. Annular key slots or mounting ways are provided about the perimeter of the cylindrical support to retain or capture nuts for the screws attaching parallel scoring blade mounting bars (e.g., those sold by F. L. Smithe Machine Co., Inc.) and feeding elements. The mounting bars and blades are adjusted to any position along the periphery of the support by merely loosening the screws. Each blade is formed of an elongated strip of flat metal stock with a beveled edge. Adjacent scoring blades can be adjusted to abut one another when flat head screws are used to attach the blades to the mounting bars. Arcuately shaped feeder segments or ribs are positioned between the scoring blades about the perimeter of the support and bear against the blank sheet stock to drive the stock when it is not under the scoring blades. The arcuately shaped feeder segments overlap one another and are arranged to adjust telescopically about the support such that they may span the spaces between adjacent scoring blades. The feeder segments thus provide continuous positive feed engagement with the envelope stock between adjacent blades. The feeder segments also are attached to the cylindrical body by screws passing through the segments and into nuts retained and captured in the annular key slots or ways. To provide continuous feeding engagement with the blanks, a cantilever overhanging edge on each adjacent feeder segment fits across the respective mounting bar and extends to the scoring blade, or alternatively the mounting bars include raised portions to form continuous feeding ribs thereacross.

In operation the drive shaft rotates the cylindrical support which is positioned transversely above a guide bed over which the stock is conveyed in the machine. In the floor of the guide bed directly beneath and juxtaposed to the support body is a resilient pressure roller to support the stock during scoring and feeding. Once the stock is caught in the bite of the scoring and feeder elements, the process of scoring and feeding is carried forward to completion by the counter-rotation of the cylindrical body support with its scoring and feeder elements and the resilient pressure roller.

For a more complete understanding of this invention, reference should now be made to the embodiment illustrated in greater detail in the accompanying drawing and described below by way of an example of the invention. In the drawings:

FIG. 1 is a perspective view of a portion of an envelope forming machine and showing feeding and scoring

apparatus employing teachings of this invention in an operational environment;

FIG. 2 is a partial end view of the scoring and feeding apparatus of FIG. 1, showing details of the mounting of the scoring blades and the feeder segments;

FIG. 3 is a top plan view of the support and scoring apparatus illustrated as it would appear before assembly onto the drive shaft of the envelope making machine;

FIG. 4 is an enlarged showing of a portion of the apparatus shown in FIG. 3, wherein the various scoring blade mounting bars are moved adjacent to one another such that blade mounting bolts are shown fitting into recesses in neighboring mounting bars;

FIG. 5 is a partial sectional view of a cylindrical support body composed of a unitary drum for another embodiment employing teachings of the invention;

FIG. 6 is an enlarged partial end view of a portion of the support and two scoring blades with the mounting bars adjusted so that the blades abut one another;

FIG. 7 is a top plan view of the support and scoring apparatus of another embodiment employing teachings of this invention and illustrated as this apparatus would appear before assembly onto a drive shaft in an envelope forming machine.

FIG. 8 is a plan view of a support with a pair of scoring blades and the adjustable overlapping feeder segments therebetween; and

FIG. 9 is a partial perspective view of a perforating type scoring device which may be used in scoring and feeding apparatus of this invention.

Referring to the drawings, FIG. 1 illustrates a portion of an envelope forming machine such as the so-called Large Open End Envelope Machine of F. L. Smithe Machine Co., Inc. The illustrated machine **10** includes a scoring and feeding section **12** in accordance with this invention located just ahead of a blank folding and forming section indicated in part at **14.** The envelope blanks (not shown) move through the scoring and folding sections from left to right as viewed in FIG. **1.**

Considering the arrangement of operative components of the machine **10** wherein the invention of this application is embodied, a scoring and feeding drum apparatus **16** comprises a drive shaft **18** which is mounted on a pair of adjustable pillow bearings **20** such that the drive shaft is horizontally positioned above a guide bed **22** over which the envelope blanks pass during processing through the scoring and folding sections **12** and **14.** A resilient pressure roller **24** is juxtaposed with and directly beneath the drive shaft **18** such that the envelope blanks are gripped and scored in the nip between the apparatus **16** and the roller **24.** To adjust for variations in stock thickness pillow bearings **20** are adjustably mounted in a well known manner by means of a threaded supports **26.** Also, the drive shaft is rotatably driven in a well known manner in timed relation with the other components of machine **10** by a timing gear drive, not shown, which engages the end of shaft **18** opposite the end seen in FIG. **1.**

Attached to and supported upon the drive shaft **18** is a cylindrical support structure **28** which includes a pair of spaced, axially aligned, short cylindrical support bodies **30** and **32** that are wheel-like or disc shaped, see FIGS. **14** and **7.** Each of these discs is formed of two semicircular sections **34** and **36** to easily and securely couple the support **28** to the drive shaft **18,** see FIG. **2** wherein a part of a mounting hole **38** provided in each section **34** and **36** is shown. Each part **34** and **36** defines one half of mounting hole **38** such that sections **34** and **36** straddle and surround the drive shaft **18.** In a manner well known to any skilled mechanic the sections **34** and **36** and the halves of hole **38** in each are sized and arranged to clamp upon the drive shaft **18** when the clamping screws **40** are tightened, drawing section **34** toward section **36** and into engagement with the drive shaft **18.**

A pair of spaced parallel annular keyways or T-shaped slots **42** are provided about the perimeter of and circumscribing each disc **30** and **32.** The slots **42** are shown in each figure but can be best described with reference to FIGS. **2** and **3.** Each keyway slot or tee slot **42** is composed of a deep annular channel **44** with a pair of opposing side grooves **46** located in the side walls of channel **44.** Nuts **48** are captured in grooves **46** and are used to secure scoring subassemblies **50** and feeder segments **52** to the supports, as described further below. As many threaded nuts **48** as are required for mounting purposes can be inserted in the grooves **46** before the sections **34** and **36** of support **20** are assembled to drive shaft **18,** see FIGS. **2, 4** and **6.**

Each scoring subassembly **50** is composed of a mounting bar **54** and a scoring element **56.** The mounting bar **54** is an elongated bar which mounts parallel to the axis of the discs **30** and **32,** i.e., generally parallel to the shaft **18.** A series of counterbored mounting holes **58** are located in each bar **54** and are aligned with the keyway slots **42** such that filister head Allen screws **60** can be used to attach the mounting bars to the support **28** by threaded engagement with the nuts **48** captured in the grooves **46.** Each mounting bar **54** is easily positioned and adjusted by loosening the mounting screws **60** then sliding the bar **54** to the correct position before retightening screws **60.** This simplified adjustment and the circumferential extent of the slots allows great flexibility in positioning the scoring elements **56.**

Depressed areas **62** at the distal portions of bars **54** may be included to provide clearance for roller **24.** The depressed areas **62** are relieved about 0.050 inches below the pitch diameter for clearance for resilient roll **24** which tends to expand because of compression resulting from the scoring elements **56** and the feeding segments **52.** The outer perimeter of feeder segments **52** establishes the pitch diameter of the rotary feeder **16,** whereby the feeder segments extend to the paper line or locus along which the blanks move to and through the nip between feeder **16** and roller **24.**

Recesses **64** are provided in each bar **54** to receive the heads of scoring element mounting bolts **66** of an adjacent bar **54** and thereby allow maximum adjustment movement of the mounting bars **54** toward one another on the supports, see FIG. **4,** wherein three adjacent bars **54** are shown positioned closely adjacent or contiguous to one another. FIG. **6** shows an alternative arrangement wherein adjacent bars **54*a*** may be positioned so that the scoring elements **56*a*** abut one another. In this particular arrangement the elements **56*a*** are mounted by means of flat head screws **68** which fit flush in suitable countersunk openings **70.**

By means of different combinations of mounting bars **54** or **54*a*** and scoring elements **56** or **56*a***, a wide variety of placements or spacings for adjacent scores is attainable. The bars **54** or **54*a***, see FIGS. **2, 3** and **6,** can be rotated 180° such that the scoring elements **56** or **56*a*** would be positioned on the other side of said bars.

Another arrangement is shown in FIG. 7 wherein an extra set of angled supplementary scoring elements 72 are shown. In FIG. 7 scoring elements 72 are positioned at a 45° angle to the transverse scoring element 56*b*. Each supplemental scoring element 72 includes a mounting flange 74 with counter sunk mounting slots 76. Screws 78 which are similar to screws 60, but smaller, extend through slots 76 and mount to retain the supplemental scoring elements 72 to mounting bar 54*b*. Mounting bar 54*b* is of greater width than bars 54*a* and arcuate in cross-sectional shape so as to support the scoring elements 56*b* and 72 and an additional and somewhat shorter pair of scoring blades 56*c* mounted between the scoring blades 72. Each scoring blade 56*c* includes a mounting flange 74*a* with counter sunk mounting slots 76*a*. Screws 78*a* which are similar to screws 78 extend through slots 76*a* and retain scoring elements 56*c* to mounting bar 54*b*.

Generally, each scoring element 56, 56*a*, 56*b* or 56*c*, and supplemental scoring element 72 is made of a flat strip of hard metal to which a beveled edge is applied. As best shown in FIGS. 4 and 6, they are beveled on one side only and as already explained and as the figures illustrate, the bevel may be oriented either toward or away from the mounting bar 54, 54*a* or 54*b*, the particular choice depending upon the spacing requirements.

FIG. 9 shows a portion of a special purpose scoring element 80 for perforating sheet material. A series of needles 82 are loosely held in split frame 84 by the clamping action of bolts 86. As is apparent from the drawing, the frame 84 captures the needles 82 in an in-line relationship as shown. The inner cavity for the needles 82 is such that they are captively retained by inwardly extending flanges 88 surrounding the opening through which the tips of the needles 82 pass. It has been found that phonograph needles with a conical body work well and are readily available.

In the operation of the scoring apparatus, the individual blanks of envelope stock are fed successively into the nip of the scoring apparatus 16 and the roller 24 at precisely the right point in time in a manner well known in the art, i.e. in the proper registry with the operation of the mechanism. The spacing between adjacent transverse scores on the blanks is a function of the spacing of scoring elements 56, 56*a*, 56*b*, 56*c*, 72 or 80 about the perimeter of support 28, providing that the movement of the blanks or envelope stock is uniform and continuous. Accordingly, the spacing between the scores is a function of the circumference of the pitch diameter (the imaginary circle having a radius extending to the locus of the blanks or paper line, i.e., the point of contact between the feeder segments and the pressure roller 24) and the relative angular positions of the scoring elements about that circumference.

Positive feeding of blanks is required at all times to maintain registration. In some machines, and particularly when scoring large blanks, positive feed control of the blanks may be maintained by rolls or other elements ahead of or following the scoring apparatus. However, to insure positive registration control through the scoring section at all times, and especially for short blanks, the feeding segments 52 should be positioned such that at every point about the support where the stock is not engaged by the scoring elements 56, 56*a*, 56*b*, 56*c*, 72 or 80 the feeding segments 52 press the blank against the roller 24 and thereby maintain the movement of the blanks in registry. Since feeding segments 52 extend radially from the support 28 to the pitch diameter or paper line and the roller 24 is resilient, the stock is engaged but not marked or scored by the feeder segments 52.

Where the spacing between adjacent scoring elements 56, 56*a*, 56*b*, 56*c*, 72 or 80 is large, a pair of adjustable feeder segments 52 are provided between the scoring elements at each end of the support 28, see FIG. 8. Each of the segments 52 of each such pair overlaps with respect to the other circumferentially of the support 28, and the two elements are independently attached to the support by engagement of fasteners in the respective subjacent parallel slots 42 in a manner similar to the manner in which the mounting bars 54, 54*a* or 54*b* are attached. That is to say filister headed mounting screws 90 fit counterbored mounting holes 92 to engage with captured retaining nuts 48, as in FIGS. 2, 4 and 8. Thus, the elements 52 of each pair are independently adjustable, in overlapping telescopic relation to one another, to vary the effective gripper length of the pair between a minimum arc length equal to the length of one of the segments 52 to a maximum length equal to the combined length of the two elements. Each segment 52 is arcuately shaped so as to fit against the curve of cylindrical support 28 and also to conform to the pitch diameter.

To readjust the scoring apparatus such that the spacing between scoring elements 56, 56*a*, 56*b*, 56*c*, 72 or 80 is changed, the appropriate feeder segments 52 are first loosened by loosening screws 90 therein, then the mounting bar screws 40 are loosened, and then all are moved, repositioned and reset by sliding the parts and their respective screws and nuts along the keyways 42. After the readjustment the screws 90 and 40 are tightened. The feed segments 52 span the distance between the scorers to give continuous positive feeding engagement with the blanks.

As shown in FIGS. 2, 3 and 4, raised portions 96 on the mounting bars 54*a* or 54*b* shown in series or tandem with the adjacent feeder segments 52, provide continuity of feeding movement by extending from the feeder segments 52 up to the scoring elements 56, 56*a*, 56*b*, 56*c*, 72 or 80. Where it would be impossible to interpose feeder segments 52, the raised portions 96 will act to provide the requisite continuous uniform envelope blank movement. As an alternative, extended end portions 94 may be provided on feeder segments 52 to overlie the adjacent bars 54, 54*a* or 54*b* and thereby to continue the feeding engagment right up to the scoring elements 56, 56*a*, 56*b*, 56*c*, 72 or 80, see FIGS. 2 and 8.

The nature of the scoring and feeding is such that the stock movement is under complete control during the rotation of the support 28. There is a tendency of the blanks to be lifted off of the guide bed 22 as they emerge from the nip of the scoring and feeding section 12. To counteract this wrapping or following tendency, a stripper 98 is provided as shown in FIG. 7. The stripper 98 is a metal strip mounted in line with the direction in which the blanks move and along the center of the guide bed 22 just above the paper line. A stripper clearance slot 100 is provided in each scoring element 56, 56*a*, 56*b*, 56*c*, 72 or 80 and their respective mounting bars 54, 54*a* or 54*b*. In perforator element 80 the split frame 84 defines two needle cavities spaced slightly from one another to provide the stripper slot

100 therebetween. The small space which is unscored where the stripper 98 is located is no problem as it represents an insignificant portion of each scoring line.

FIG. 5 shows a unitary cylindrical body or bodies 104 which are designed to function in place of the two discs 30 and 32. The drum 104 is formed with parallel slots 42 at each end and is designed to be mounted on shaft 18 and to support mounting bars 54 and feeder segments 52 in the same fashion as discs 30 and 32.

It will be appreciated, particularly by those skilled in the art, that many modifications and variations may be made in the embodiments shown and described without departing from the spirit and scope of the invention. By way of examples, certain alternatives have been noted within the foregoing description. As to other examples, the scoring implements may be varied or rearranged to produce any desired result, and various sizes and combinations of feeder segments may be used to bridge the gap between the scoring elements. Moreover, while the described embodiment is preferred for the reasons noted, other techniques and arrangements may be used for combining the support, the scoring apparatus, and the feeder mechanism.

It will be appreciated that improvements have been provided which meet the aforestated objects.

While there has been shown and described a preferred embodiment of the present invention, it will be apparent to those skilled in the art that further changes and modifications may be made without departing from the invention in its broader aspects. It is, therefore, contemplated in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the present invention.

What is claimed is:

1. Apparatus for scoring and feeding paper sheet material including a guide bed over which paper stock is moved during processing, and a feeding and scoring system having juxtaposed elements on opposite sides of said bed and transverse thereto wherein one of said elements is the feeding and scoring apparatus and the other of said elements presents a pressure surface defining therebetween a locus or paper line at the pitch diameter of the feeding system through which the paper stock passes, the improvement comprising: said feeding and scoring apparatus including a cylindrical support drivingly mounted for rotation about an axis transverse to said guide bed, paper stock feeding members attached to said support and having arcuately shaped bodies conforming to said support and further having protruding surfaces radially extending to said pitch diameter for capturing paper stock against said pressure surface, a plurality of paper stock scoring elements attached to said support and each including a mounting portion and a scoring portion, said mounting portion being an elongated bar extending generally parallel to said axis and attached to said support, said scoring portion being an elongated narrow member mounted on said mounting portion and including an outwardly disposed edge for scoring such stock, said edge protruding radially beyond said pitch diameter defined by said feeding members, said support formed with axially spaced mounting ways extending annularly about the circumference thereof, threaded fasteners including first components captured within said ways, and cooperating threaded components adjustably attaching said mounting portions and said feeding members to said first components whereby said scoring elements and feeding members may be readily adjusted about the circumferential periphery of said support by loosening said fasteners and sliding said fasteners along said ways such that a pair of said scoring portions may be positioned at a variety of circumferentially spaced adjacent positions by adjusting said scoring elements on said support, and said feeding members forming a continuous paper stock feeding engagement with said pressure surface from one scoring element to the next scoring element such that paper stock is continuously engaged at said pitch diameter between said juxtaposed elements during a scoring operation.

2. Apparatus as in claim 1 wherein each of said bars is of substantial width circumferentially of said support, and including feeding means extending across the width of each of said bars and extending radially to said pitch diameter for capturing stock against said pressure surface, said feeding means and members forming a continuous paper stock feeding engagement with said pressure surface from one scoring element to the next scoring element.

3. Apparatus as in claim 2 wherein said other of said juxtaposed elements is a resilient pressure member.

4. Apparatus as in claim 1 wherein said cylindrical support is formed with two pairs of parallel annular mounting ways for receiving and retaining said first components, and wherein said feeding members include pairs of feeder elements, said feeder elements of each of said pairs thereof being positioned over one of said pairs of parallel slots and extending in mutually overlapping relationship circumferentially of said support means, one of said feeder elements of each pair thereof being secured to one of a pair of said ways by said threaded means and the other of said feeder elements of each pair being similarly secured to the other of such pair of ways, for independent telescopic adjustment of said feeder elements of each pair.

5. Apparatus as in claim 4 wherein each of said pairs of feeder elements comprises a pair of arcuately shaped elements which conform to said cylindrical support on their inward surfaces and are adapted to bear against such sheet material on their outward surfaces and which attach to each said pair of adjacent slots in overlapping telescopic relation for spanning a variety of spacings from the length of one of said elements to the combined lengths of said pair of elements.

6. Apparatus as in claim 4 wherein said pair of slots extend circumferentially about the perimeter of said support at each end.

7. Apparatus as in claim 1 wherein said scoring portions comprises an elongated frame means captively retaining a plurality of acerose perforators in substantially in-line relationship to one another, said frame means supporting said perforators, such that the points thereof extend beyond said frame means for engaging and scoring such sheet material.

8. Apparatus as in claim 1 wherein said scoring portions secured to one of said bars includes a blade element and inwardly angled supplemental blades for forming a truncated V-shape score in such sheet material.

9. Apparatus as in claim 1 wherein said cylindrical support means includes a plurality of disc members each comprising a pair of semicircular parts adapted to be fastened to one another.

10. Apparatus as in claim 1 wherein said scoring portions on an adjacent pair of said elongated mounting

bars are fastened to adjacent sides of the respective mounting bars such that a pair of said scoring means may be positioned at a variety of closely spaced adjacent positions by adjusting said mounting bars on said support means.

11. In an envelope making machine including a horizontal guide bed over which paper envelope stock is moved during processing and an envelope feeding and scoring system having juxtaposed elements above and below said bed and transverse thereto wherein one of said elements is the feeding and scoring apparatus and the other of said elements presents a resilient pressure surface defining therebetween a locus or paper line at the pitch diameter of the feeding system through which the paper stock passes, the improvement comprising: said feeding and storing apparatus including a cylindrical support drivingly mounted for rotation about an axis transverse to said guide bed, paper stock feeding members attached to said support and having arcuately shaped bodies conforming to said support and further having protruding surfaces radially extending to said pitch diameter for capturing paper stock against said resilient pressure surface, a plurality of paper stock scoring elements attached to said support and each including a mounting portion and a scoring portion, said mounting portion being an elongated bar extending generally parallel to said axis and attached to said support, said bar being of substantial width circumferentially of said support, feeding means extending across the width of said bar and extending radially to said pitch diameter for capturing paper stock against said resilient pressure surface, said scoring portion being an elongated narrow member mounted on said mounting portion and including an outwardly disposed edge for scoring such stock, said edge protruding radially beyond said pitch diameter defined by said feeding members, said support formed with axially spaced mounting ways extending annularly about the circumference thereof, threaded fasteners including first components captured within said ways, and cooperating threaded components adjustably attaching said mounting portions and said feeding members to said first components whereby said scoring elements and feeding members may be readily adjusted about the circumferential periphery of said support by loosening said fasteners and sliding said fasteners along said ways such that a pair of said scoring portions may be positioned at a variety of circumferentially spaced adjacent positions by adjusting said scoring elements on said support, and said feeding means and members forming a continuous paper stock feeding engagement with said resilient means from one scoring edge to the next scoring edge such that paper stock is continuously engaged at said pitch diameter during scoring between said juxtaposed elements.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,880,056

DATED : April 29, 1975

INVENTOR(S) : Joseph J. Dohnalik

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 15 "Kelly" should read -- Kelley -- .
Column 8, line 17 (claim 2), before "stock" insert -- paper -- .

Signed and sealed this 15th day of July 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks