Sept. 2, 1958 G. W. VON HOFE 2,849,933

METHOD AND APPARATUS FOR ATTACHING ARTICLE COMPOSED OF THERMOACTIVATABLE MATERIAL

Filed Feb. 10, 1955

FIG.1.

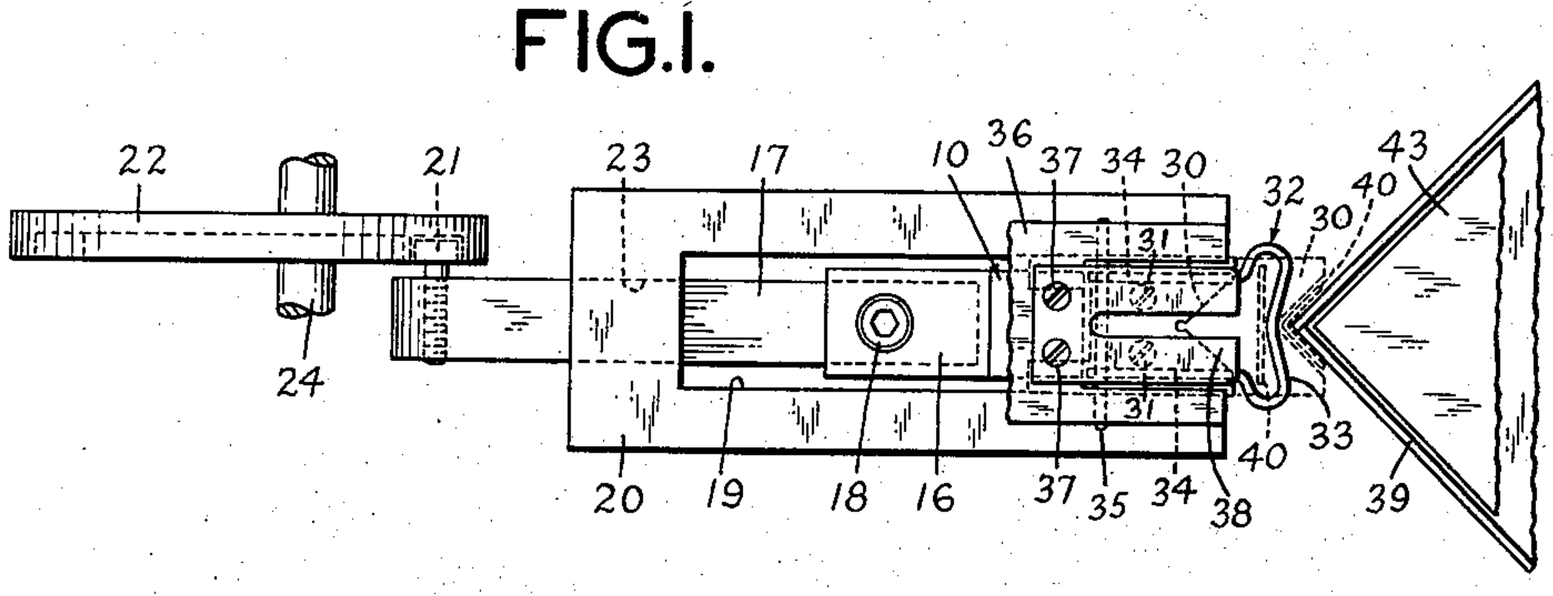


FIG.2.

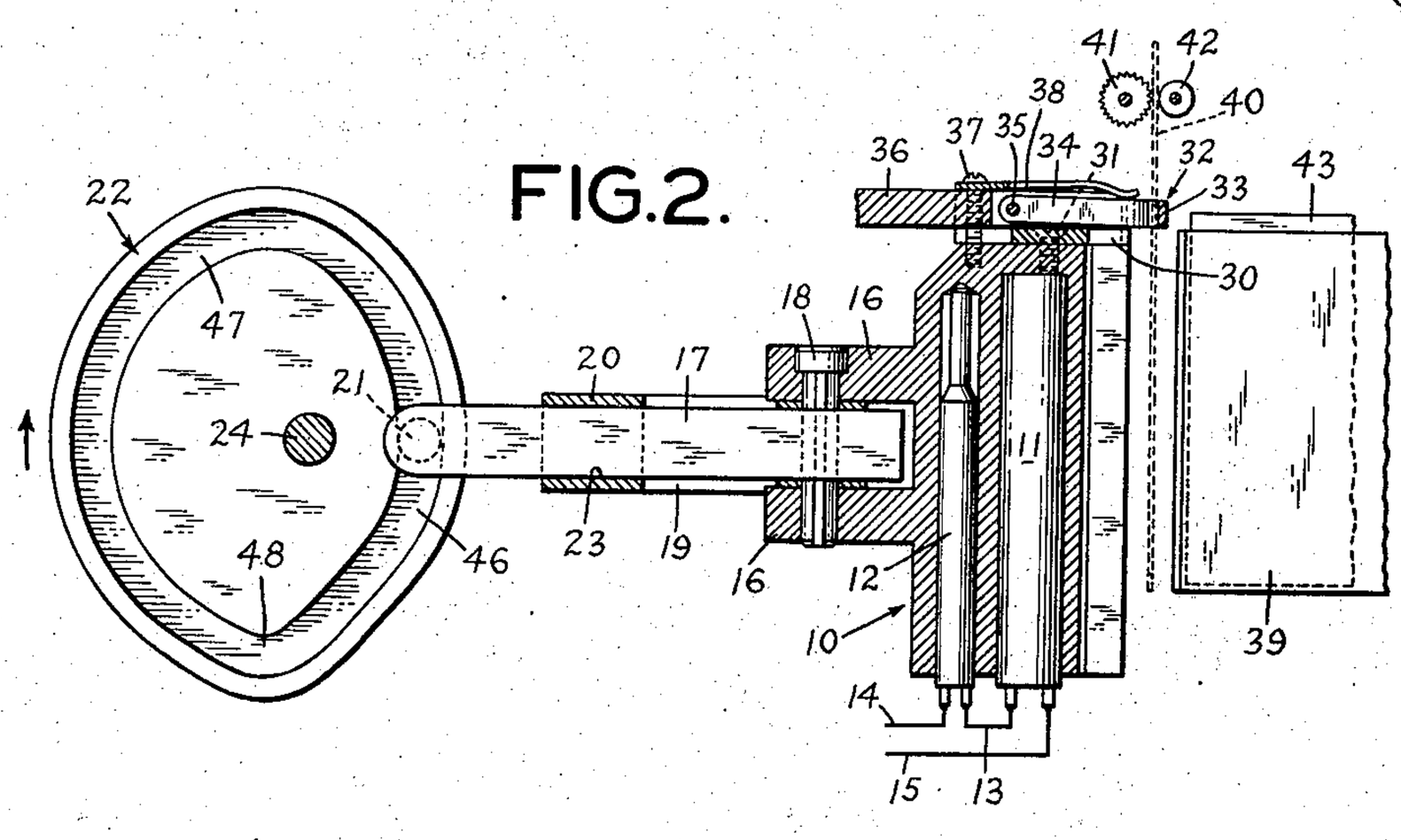


FIG.4.

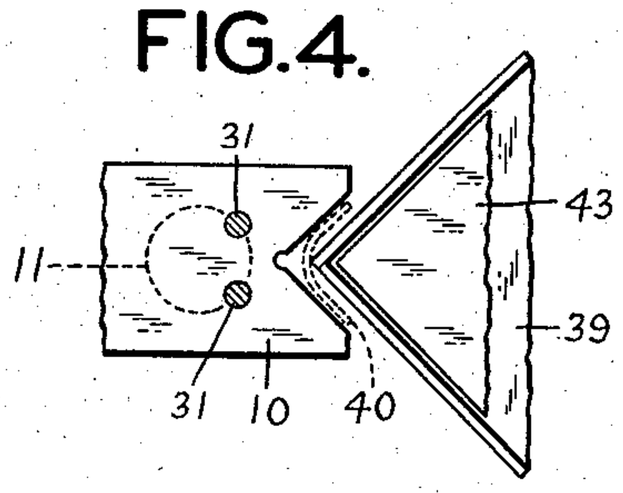


FIG.3.

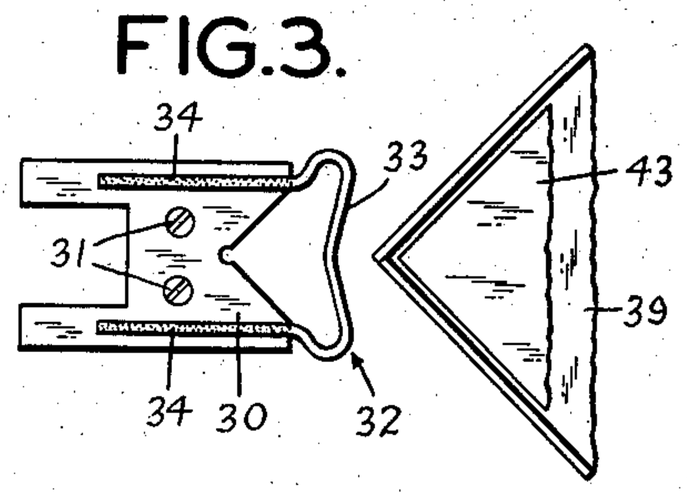
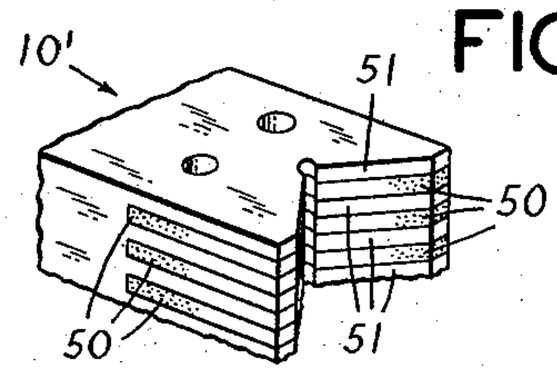


FIG.5.



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METHOD AND APPARATUS FOR ATTACHING ARTICLES COMPOSED OF THERMOACTIVATABLE MATERIAL

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Application February 10, 1955, Serial No. 487,358

21 Claims. (Cl. 93—56)

This invention relates to an improved method and apparatus for attaching articles composed of thermoactivatable material. The invention may be utilized to advantage in the affixing of labels and the like to the surfaces of articles, but is of particular advantage in the construction of the corners of paper boxes in the process of forming such boxes.

I am aware that it has been proposed to apply stay strips coated with a thermoactivatable adhesive material to paper boxes, but the application of such strips as heretofore practiced produced uncertain and not completely satisfactory results. This I found was due to the fact that in such prior methods, the stay strips usually are rendered adherent only when actually in place against the box surfaces to which they are to be affixed, care being taken by the use of specially constructed mechanisms, to prevent the heat of the dies or pressers from activating the heat responsive adhesive on the stay strips before the strips have been seated on the box surfaces. Such a procedure was deemed necessary because of the problems encountered when the strips were rendered adhesive prior to the application thereof to the box, but I have found that because of certain characteristics of the materials involved and the conditions of desirable commercial production, such a procedure gave rise to a number of disadvantages. The thermoplastic or thermoactivatable adhesives usually provided on labels, stay strips and the like, are dry or non-tacky at room temperatures and when heated pass through a stage of tackiness and then at a higher temperature become fluid with a minimum degree of tackiness. The temperatures at which such adhesives are activated to a tacky condition are relatively high, being of the order of 180° F., so that the time interval required for heating such an adhesive to its activating temperature through the material of a stay strip that is seated on a box will, due to the heat absorbing characteristics of the cardboard material of the box and the impossibility of preventing the heat from passing into such cardboard material, be longer than the staying operations of a box-staying machine designed for high speed operation. The result is that when a machine designed to stay-strip 80 to 100 boxes per minute is used to apply such thermoplastic coated stay strips, in accordance with present practice, many of the strips will be imperfectly adhered to the boxes because the strips have not been heated to the proper temperature for tackiness. It is necessary therefore to operate such a machine at a slower rate than its capabilities in order to make sure that the activating temperature for the adhesive is reached. Besides prolonging the interval ordinarily required to bring the adhesive up to the activating temperature, this absorption of heat by the box renders it difficult to get the temperature in the adhesive exactly right for proper tackiness. The temperature range in which this occurs is quite narrow for adhesives of this character and, unless extreme care is taken, the likelihood is that under

ordinary commercial conditions the adhesive will pass into a condition of fluidity. In this condition, part of the adhesive will be absorbed by the cardboard material of the box, thereby weakening the bond of the stay strips on the box. This loss of adhesive that would be useful in bonding the stay strips to the folded flaps of the cardboard box, is accentuated because of the pressure that is necessarily applied for a substantial period during the application of the stay strips in accordance with present practice. Even should the temperature control be such that the adhesive does not become fluid, the heat absorbed by the cardboard of the box will prevent the temperature of the adhesive from falling below the critical point as soon as the pressers are withdrawn so that, under the inherent springiness of the folded flaps of the cardboard box, the non-set adhesive material will flow and permit such flaps to spring open when the pressers are withdrawn and the box released.

The principal object of the present invention is to provide an improved method of and apparatus for applying labels, stay strips and the like to articles without the disadvantages of the methods and mechanisms heretofore employed for such purposes.

A particular object of the invention is to provide an improved method of and apparatus for applying stay strips whereby the adhesive material of the stay strips is instantly set and bonded to the cardboard material of the box without such substantial penetration into such cardboard material as to substantially weaken such bond and without substantial transfer of heat to such cardboard material.

Another object of the invention is to provide an improved method of and apparatus for applying stay strips to boxes practically instantaneously and with a minimum amount of pressure.

A further object of the invention is to provide an improved method of and apparatus for uniformly and strongly bonding stay strips to boxes at high speeds and which do not require that the adhesive material be maintained within critical temperatures for the successful accomplishment of such bonding.

A still further object of the invention is to provide an improved method of and apparatus for applying stay strips wherein the material of the box is utilized to cool the adhesive material of such strips to bonding tackiness.

A still further object of the invention is to provide an improved method of and apparatus for applying stay strips whereby the adhesive material is activated while the strips are supported under tension prior to the application thereof to the box.

Other objects, as well as the advantages and the novel features of the invention, will become apparent from a perusal of the following description when read in connection with the accompanying drawings which illustrate the invention as it may be utilized in existing box staying machines of the quadruple stayer type and in which:

Fig. 1 is a top view of stay presser mechanism which may be embodied in such stay machines in practicing the invention;

Fig. 2 is an elevational view, partly in section, of the mechanism shown in Fig. 1;

Fig. 3 is a top plan view of the stay cutting mechanism in the mechanism of Figs. 1 and 2;

Fig. 4 is a view showing the relation of the presser, stay and box in the second stage of the method herein disclosed wherein the cut stay is being heated prior to its application to the box; and

Fig. 5 is a partial perspective view showing a modified form of presser member.

The invention may be employed in existing box-staying machines such as the well known single stayer machines provided with a reciprocating plunger equipped with a presser head and with a fixed anvil for supporting the edge portions of the turned in side flaps of a box blank, and the well known quadruple strayers of which the stayers shown in Patents Nos. 728,086; 2,186,772 and 2,641,973 are illustrative. In the quadruple stayers the box blanks are usually placed successively on folding members beneath a form. As the form descends on a box blank resting on the folding members, the side flaps of the blank are folded upward and such flaps are held in folded condition as the form completes its downward movement. In the continuing downward movement of the form, the end flaps of the blank are bent upwardly by other flap folding members against the ends of the form to complete the folding of the flaps on the blank. Stay pressers working diagonally to the form and the folded box thereon, then move in toward the four corners of the folded box and in their advancing movement cut off appropriate lengths of stay material coated on one side with adhesive material and press them into position across the corners of the folded box. To employ the invention in a quadruple stay machine of the above indicated familiar type, the stay pressers may be constructed as shown in Figs. 1 and 2 of the drawings. In these drawings, the numeral **10** designates generally the presser head which is formed with the usual dihedral angle to receive a corner of the box. The head **10** is provided with an elongated cavity within which is positioned an electrical resistance type heating element **11** extending from near the top to the bottom of the head. The element **11** is centrally disposed in the head parallel to and quite near the inner corner of the reentrant angle (note Figs. 2 and 4). Adjacent to the element **11** in a separate elongated cavity provided in the head, is a thermostat **12** which is connected to element **11** by wire **13**. The element **11** and thermostat **12** are connected to a suitable source of electrical current by wires **14** and **15**. The heat produced by the element **11** under the control of thermostat **12** keeps the head **10** at the operating temperature range for activating the thermoplastic adhesive coatings on the stay strips.

The head **10** is also provided with a pair of integral, spaced coupling flanges **16, 16** between which is positioned one end of a rod **17** that is coupled to the flanges **16, 16** by any suitable means capable of maintaining the head in fixed position on the rod such as the keyed bolt **18** which engages key seats provided in the openings of the brackets **16, 16** and the rod **17**. The rod **17** extends into the closed end of an open slot **19** provided in a plate **20** which is secured to the frame of the machine and at its other end is provided with a cam roller **21** which engages the track of a cam **22** mounted on a continuously rotating shaft **24** in the machine. The rod **17** and the opening **23** through which it extends in the end of plate **20** are rectangularly-shaped, the opening **23** being in the nature of a square bearing to support the rod **17** and the head **10**, and to confine their movements to a linear direction when reciprocated by the cam **22**. The head **10** which is located at the open end of the slot **19** and extends vertically through such slot has a width less than the width of the slot to provide air gaps between such head and the sides of the slot so that there is no direct heat transfer between the head and the plate **20**.

Mounted on the heated head **10** is a stay cutter **30** which is affixed to the top surface of the head by a pair of screws **31**. The cutter **30** is provided at its forward end with a V-shaped cutting edge conforming exactly with the right dihedral angle working surfaces or face of the presser and being flush therewith. Overlying the moving cutter blade or knife **30** is a stationary cutting blade or knife **32** constituted of a strip of tool steel bent to form a forward V-shaped cutting edge **33** having an angle greater than the angle of the cutting edge in knife

30 so that the two knives cut the stay strip with a shearing action. The material of knife **32** is bent to provide two parallel legs **34** which are pivotally connected to a rod **35** supported at its ends by the fork-shaped end of supporting plate **36** secured to the frame of the machine. Secured to the plate **36** by screws **37** is a slotted leaf spring **38** the fingers of which extend forwardly over the legs of stationary knife **32** and at the free ends thereof engage the forward ends of such legs to yieldably maintain the legs of knife **32** in engagement with the top surface of knife **30** during the reciprocating movements of the latter. The cutting end **33** of knife **32** is so located that it is spaced a small distance from the corner of a folded box **39** in position on the usual form **43** to be stay stripped and with the apex of such cutting end aligned with such box corner. The stay strip **40** is fed through knife **32** in back of the cutting end thereof and through an opening defined by the latter, the forward ends of the legs **34** of such knife and the forward ends of the leaf spring **38**, when the moving knife **30** and head **10** are in a retracted position as shown in the drawings. The stay strips may be fed intermittently by any suitable type of stay-feeding devices, such a device being indicated generally in Fig. 2 of the drawings by the driven knurled stay-feed roller **41** and idler roll **42**.

It will be noted more clearly from Fig. 2 of the drawings that the cam **22** which controls the reciprocating movements of head **10** and knife **30**, is so designed that when the roller **21** is located in the portion of the cam track designated **46**, the rod **17** and consequently head **10** and knife **30** will have been withdrawn to a retracted position. The parts of the stay mechanism in this portion of the cycle of cam **22** will be in the relative positions shown in Figs. 1 to 3 of the drawings. During the period of time that roller **21** remains in track portion **46** in the rotational movement of cam **22**, the stay feeding device indicated by the rolls **41, 42** will advance the stay strips through the knife **32** until a length thereof appropriate to the depth of the corners thereof depends below such knife, as is indicated in Fig. 2 of the drawings. It will be noted from Figs. 2 and 3 of the drawings, that when the heated moving knife **30** is in this retracted position, a very large percentage of the area of the stationary knife **32** is still in engagement with hot knife **30**. The minimum contact area of the stationary knife **32** with the hot knife **30** is indicated in Fig. 3 by cross hatching. Because of this large area of contact between the two knives at all times, the hot movable knife **30** will always maintain the stationary knife **32** at a temperature approximating that imparted to it by the head **10**. The thermostat **12** is set so that the head **10** is always maintained above the optimum activating temperature of the particular adhesive provided on the stay strip and preferably so that the temperature of the head is high enough to render the thermoplastic adhesive material fluid, in which condition an adhesive of this type has a minimum degree of tackiness. This condition is especially desirable in high speed operation because it shortens the period in which the adhesive will be melted by heat passing through the paper of the stay, which is a poor conductor. As will later appear, the instant method does not require for its successful operation that the adhesive be maintained in the range of temperatures to produce optimum tackiness. With the stationary knife **32** maintained by the hot movable knife **30** at a temperature above the range of temperatures at which the optimum tackiness of the adhesive material is attained, the tape or strip will never adhere to the stationary knife **32** if contact is made by the strip against either the knife **32** or the built up adhesive on such knife.

When in the rotational movement of cam **22**, the roller **21** enters the track portion **47** of such cam, the feed of the stay strip **40** will have finished, and rod **17** will be advanced to advance the head **10** and movable knife **30**. In the advancing movement of knife **30** relative to sta-

tionary knife 32, the two knives will coact to shear the advanced depending portion of stay strip 40 from the body of such strip. Because of the form of the cutting edges of the two knives, the stay strip will be progressively sheared from the edges thereof toward the central portion thereof. It will be noted from Fig. 4 of the drawings, that the moment such depending strip portion is completely severed, the movable knife 30 and head 10 will have advanced to a position where the sides of their reentrant angles are positioned closely adjacent to the sides of the corner to be stayed, the apex of knife 30 has advanced slightly ahead of the apex of the cutting edge of knife 32 and the longitudinal central portion of the severed strip portion has sprung forward into engagement with the corner of the box, so that the severed strip portion is supported under tension in proper position relative to the box by the engaged corner thereof and the sides of the reentrant angles of head 10 and knife 30. The severed strip portion will be so supported under tension in this position during the travel of the roller 21 in track portion 47 and during this interval or period of dwell of the head 10 and knife 30, will be heated by the latter to activate the thermoplastic adhesive on such strip portion. As previously mentioned it is preferred for high speed operation and in order to maintain the temperatures of the knives 30 and 32 above the temperature of optimum tackiness of the adhesive material, to set the thermostat 12 at a temperature at which such adhesive will be rendered fluid. Thus if the particular adhesive on the stay strip is at its maximum tackiness within a range of temperatures from 180° to 200° F., it is preferred that the head 10 be maintained at a temperature within the range of from approximately 200° to 280° F. and higher, the maximum temperature being controlled by and not higher than the temperature at which the paper of the stay strip will burn or char. The adhesive on the severed strip therefore will be heated instantaneously to a condition of fluidity by both the head 10 and knife 30 through the paper material of the strip. Although the severed strip is not in contact with the head 10 along its longitudinal central portion, the adhesive material in such portion will be activated by the heat of the head.

As the roller 21 travels through the track portion 48 of the cam, the head 10 and knife 30 will be advanced and retracted with no dwell at the fully advanced position of such parts. In the final advancing movement of the head and knife 30, the severed strip will be bent on the corner of the box and the adhesive material of the seated strip will be instantly cooled by the box material which is at room temperature, down to a condition of bonding tackiness. Due to the fact that the heated pressing device is withdrawn the instant that the strip is pressed home on the box and the latter is used to instantly set the adhesive of the strip, the strip will be bonded to the box with a minimum amount of pressure. As the seating and setting of the adhesive is substantially an instantaneous action, substantially no heat from the head 10 is absorbed by the material of the box and consequently the edges of the flaps forming the corners will be secured truly and cannot spring back out of such position as was the case with prior methods. Further, as the adhesive is instantly set upon contact with the box, the stay strip adheres to the surfaces and fibers of the box without substantial penetration and with no loss of adhesive so that there is attained a strong bond which is substantially uniform at all corners of the box irrespective of the thickness and quality of the paper from which the box was formed. Thus equally good bonds can be made on boxes constituted of 35, 60, 90 and 120 pound paper. It will also be evident that as the period of dwell in which the adhesive is activated is relatively short, this change in condition of the adhesive being attained almost instantaneously, and that as there is no dwell during the application of the strip to the box, it has been found that the method is very practical and advantageous for high speed operation.

The head 10 may be formed of an integral piece of suitable metal material as is indicated in Figs. 2 and 4, to provide substantially uniform heat flow characteristics or it may be constructed to have areas of different heat flow characteristics. As shown in Fig. 5 of the drawings, the presser member or head 10' may be formed at its working end with a plurality of transverse slots within which are positioned layers 50 of suitable heat insulating material such as hard pressed asbestos board, to insure that there is no heat transfer in the regions of such layers from the head 10' to the articles. As a result of this construction, there will be a maximum flow of heat through the metallic working edges 51 of the head to the stay strips and no flow of heat through the edges of the layers 50 to the stay strips, the heat flow pattern at the working end of the head 10' being sinuous. The adhesive material on the strips therefore will have alternate transverse areas that are activated to a fluid condition and alternate transverse areas to which no heat is applied during the period of dwell of the head after it has advanced its first step in the manner previously explained. The heat to the activated transverse areas will spread to the alternate areas to which no heat has been applied so that each of the latter while not heated as a whole to a condition of fluidity will gradually be raised to the range of temperatures for optimum tackiness, as the heat in the activated areas becomes dissipated. This action however will not be fully completed until after the strip has been stayed to the box. As a consequence, during the staying operation the activated transverse areas which have not been directly activated will later become bonded to the box after the staying operation has been completed. Even if such areas which have not been directly activated do not eventually wholly adhere to the box, the adhered areas of the strip will assure a good bond at the corner of the box. The advantage of this construction is that the period of time for pressing the stays in position on the box may be prolonged without danger of the box absorbing sufficient heat to weaken the bond of such stay strips or to enable the stayed folded flaps of the box to spring out after the box has been released. It will be understood that other materials than asbestos board may be utilized in the layers 50 so that any desired control of heat flow from the head may be obtained.

While I have herein described and illustrated preferred embodiments of my invention, it will be apparent to those skilled in the art that changes and modifications may be made therein without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. Apparatus for applying thermoactivatable adhesive coated sheets to articles comprising means to support an article, a presser, means for heating the working face of said presser, means for feeding a sheet coated with thermoactivatable adhesive material between the article on said support and said heated presser, and means for intermittently advancing said presser in a plurality of steps from a retracted position to the article on said support, said last mentioned means being constructed and arranged to advance said presser in one of said steps to a position where it coacts with a corner of the article on said support to flex the sheet to a curved condition in which it is positively gripped therebetween, and after the adhesive material on the sheet has been heated while so gripped, to advance said presser through a succeeding step to press the activated sheet against the article.

2. Apparatus for applying thermoactivatable adhesive coated sheets to articles comprising means to support an article, a presser, means for heating the working face of said presser, means supporting said presser for movement toward and away from an article on said support, means for feeding a sheet coated with thermoactivatable adhesive material into the space between the article on said

support and said heated presser when the latter is in a retracted position, and means for intermittently advancing said presser in a plurality of steps from a retracted position to the article on said support, said last mentioned means being constructed and arranged to advance said presser in one of said steps to a position where the pressing surfaces thereof are spaced from the article a distance greater than the thickness of the sheet and so that the sheet is engaged partially by said surfaces and a corner of the article on said support and is positively gripped by such engagement, and after the adhesive material on the sheet has been heated while so gripped, to advance said presser through a succeeding step to press the activated sheet against the article.

3. Apparatus for applying thermoactivatable adhesive coated sheets to articles comprising unheated means to support an article, a presser, means for heating the working face of said presser, means for feeding a sheet coated with thermoactivatable adhesive material into the space between an unheated article on said support and said heated presser when the latter is in a retracted position so that such sheet is spaced from both the presser and the article, and means for intermittently advancing said presser in a plurality of steps from a retracted position to the article on said support, said last mentioned means being constructed and arranged to advance said presser in one of said steps to a position where the sheet will be in contact with both the working face of said presser and the article on said support and where the contact of such sheet with said heated presser is of greater area than the contact thereof with the unheated article and sufficient to positively grip said sheet in heat exchange relation with said heated presser during the period of dwell following such step, and said last mentioned means being constructed and arranged to advance said presser through a succeeding step following such period of dwell to press the activated sheet against the article.

4. Apparatus for applying thermoactivatable adhesive coated sheets to articles, comprising means to support an article, a presser member movable toward an article on said support, means for heating the working face of said presser, means to interpose a sheet coated with thermoactivatable adhesive material between the article on said support and said heated presser, and means for moving said presser in a plurality of steps towards the article on said support, said last mentioned means being constructed and arranged to advance said presser in one of said steps to a position where the working face thereof is spaced from the article a distance greater than the thickness of the sheet and so that it coacts with a corner of the article on said support to distort said sheet and to positively grip it under tension, and after the adhesive material on the sheet has been heated by said pressure while so distorted and gripped under tension, to advance said presser through a succeeding step to press the activated sheet against the article, and said last mentioned means being so constructed and arranged that the dwell period after said first mentioned step is of greater duration than the dwell period after said second mentioned step.

5. Apparatus for applying thermoactivatable adhesive coated sheets to articles, comprising means to support an article, a presser member movable toward an article on said support, means for heating the working face of said presser, means to interpose a sheet coated with thermoactivatable adhesive material between the article on said support and said heated presser, and means for moving said presser in a plurality of steps toward the article on said support, said last mentioned means being constructed and arranged to advance said presser in one of said steps to a position where the working face thereof is spaced from the article a distance greater than the thickness of the sheet and so that it coacts with a corner of the article on said support to distort said sheet and to positively grip it under tension, and after the adhesive material on the sheet has been heated by said presser

while so distorted and gripped under tension, to advance said presser through a succeeding step to press the activated sheet against the article, and said last mentioned means being constructed and arranged to advance said presser through said second mentioned step and to immediately withdraw said presser so that there is no substantial dwell period of the presser after said second mentioned step.

6 Apparatus for applying thermactivatable adhesive coated sheets to articles comprising means to support an article, a presser movable toward and away from an article on said support, a movable knife mounted on said presser, means for heating said presser and said knife to a temperature above the activating point of the adhesive material on said sheets, a stationary knife having a cutting edge arranged to be positioned between the article on said support and the cutting edge of said movable knife in the retracted position of said presser, means for maintaining said stationary knife in engagement with said movable knife during the advancing and retracting movements of said presser, said movable and stationary knives being constructed and arranged so that the area of contact therebetween during the movements of said presser is sufficient to enable said heated presser and movable knife to maintain the temperature of said stationary knife above the activating point of the adhesive material at all times, means for feeding a sheet coated with thermoactivatable adhesive material through the space between the cutting edges of said knives and into the space between the article on said support and said heated presser when the latter is in a retracted position, and means for intermittently advancing said presser and said movable knife in a plurality of steps from a retracted position to the article on said support, said last mentioned means being constructed and arranged to advance said presser and movable knife in one of said steps to sever the portion of the sheet interposed between the presser and the article and to a position where the working face of the pressure is spaced from the article a distance greater than the thickness of the sheet and so that it coacts with a corner of the article on said support to positively grip the severed sheet portion therebetween, and after the adhesive material on the severed sheet portion has been heated while so gripped, to advance said presser through a succeeding step to press the activated sheet against the article.

7. Apparatus for applying thermoactivatable adhesive coated sheets to articles comprising means to support an article, a presser movable toward and away from an article on said support and having a working face, a movable knife mounted on the top of said presser and having a cutting edge conforming in shape to the shape of the working face of the presser and being substantially flush with the latter, means for heating said presser and said knife to a temperature above the activating point of the adhesive material on said sheets, a stationary knife resting on said movable knife and having a forward end freely projecting beyond said movable knife in the retracted position of said presser and provided with a cutting edge arranged to be positioned between the article on said support and the cutting edge of said movable knife in such retracted position of the presser, means for maintaining said stationary knife in engagement with said movable knife during the advancing and retracting movements of said presser, said movable and stationary knives being constructed and arranged so that the area of contact therebetween during the movements of said presser is sufficient to enable said heated presser and movable knife to maintain the temperature of said stationary knife above the activating point of the adhesive material at all times, means for feeding a sheet coated with thermoactivatable adhesive material through the space between the cutting edges of said knives and into the space between the article on said support and said heated presser when the latter is in a retracted position, and means for intermittently advancing said presser and said

movable knife in a plurality of steps from a retracted position to the article on said support, said last mentioned means being constructed and arranged to advance said presser and movable knife in one of said steps to sever the portion of the sheet interposed between the presser and the article and to a position where the working face of the presser is spaced from the article a distance greater than the thickness of the sheet and so that it coacts with a corner of the article on said support positively grip the severed sheet portion therebetween, and after the adhesive material on the severed sheet portion has been heated while so gripped, to advance said presser through a succeeding step to press the activated sheet against the article.

8. Apparatus for applying thermoactivatable adhesive coated sheets to articles comprising means to support an article, a presser having a working face constituted of a plurality of materials of different heat conductivity and arranged to provide areas of different heat flow characteristics, means for heating the working face of said presser, means for feeding a sheet coated with thermoactivatable adhesive material between the article on said support and said heated presser, and means for intermittently advancing said presser in a plurality of steps from a retracted position to the article on said support, said last mentioned means being constructed and arranged to advance said presser in one of said steps to a position where the working face thereof is spaced from the article a distance greater than the thickness of the sheet and so that is coacts with a corner of the article on said support to positively grip the sheet therebetween, and after the adhesive material on the sheet has been heated while so gripped, to advance said presser through a succeeding step to press the activated sheet against the article.

9. Apparatus for applying thermoactivatable adhesive coated sheets to articles comprising means to support an article, a presser having a working end constituted of a plurality of layers of material, alternate layers of said working end being of material having a high heat conductivity and the remaining layers of said working end being of material having a heat conductivity less than that of said alternate layers so that the working face of said presser is provided with alternate areas of different heat flow characteristics, means for heating the working face of said presser, means for feeding a sheet coated with thermoactivatable adhesive material between the article on said support and said heated presser, and means for intermittently advancing said presser in a plurality of steps from a retracted position to the article on said support, said last mentioned means being constructed and arranged to advance said presser in one of said steps to a position where the working face thereof is spaced from the article a distance greater than the thickness of the sheet and so that it coacts with a corner of the article on said support to positively grip the sheet therebetween, and after the adhesive material on the sheet has been heated while so gripped, to advance said presser through a succeeding step to press the activated sheet against the article.

10. Apparatus for applying thermoactivatable adhesive coated sheets to articles comprising means to support an article, a presser having a working end constituted of a plurality of layers of material, alternate layers of said working end being of material having a high heat conductivity and capable of readily transferring heat to the working face of said presser, and the remaining layers of said working end being of a heat-insulating material capable of obstructing the transfer of heat to the working face of said presser, means for heating the working face of said presser, means for feeding a sheet coated with thermoactivatable adhesive material between the article on said support and said heated presser, and means for intermittently advancing said presser in a plurality of steps from a retracted position to the article on said support, said last mentioned means being constructed and arranged to advance said presser in one of said steps to a position where the working face thereof is spaced from the article a distance greater than the thickness of the sheet and so that it coacts with a corner of the article on said support to positively grip the sheet therebetween, and after the adhesive material on the sheet has been heated while so gripped, to advance said presser through a succeeding step to press the activated sheet against the article.

11. The method of applying thermoactivatable adhesive coated sheets to articles which comprises holding a sheet under tension against an article so that an extended inner portion only of the adhesive coating is in engagement with the article, and while so holding the sheet under tension, heating the thermoactivatable adhesive coating thereof to a temperature above the activating point of such adhesive, and then pressing the remainder of the adhesive coating on the sheet onto the article with such rapidity as to prevent a substantial transfer of heat to the article.

12. The method of applying thermoactivatable adhesive coated sheets to articles which comprises placing the central portion of the sheet against the article by pressing on the outer edges of such sheet to bend the latter toward the surfaces of the article, holding the sheet under tension with the outer edges thereof spaced from the article by the engagement of the central portion thereof with the article and the bending force exerted on the outer edges thereof, heating the thermoactivatable adhesive coating of the sheet to a temperature above the activating point of such adhesive while the sheet is being so held under tension, and then pressing the remainder of the adhesive coating on the sheet onto the article with substantially no dwell during the pressing operation so as to prevent a substantial transfer of heat to the article.

13. The method of applying thermoactivatable adhesive coated sheets to articles which comprises holding a sheet in a distorted condition against an article so that a minor portion only of the adhesive coating is in engagement with the article, heating the adhesive coating of the sheet to a temperature above the activating point of such adhesive while the sheet is so held, and then pressing the remaining portions of the adhesive coating on the sheet not in engagement with the article during such heating operation against the surfaces of the article.

14. The method of applying thermoplastic adhesive coated sheets to articles which comprises simultaneously cutting a portion of a sheet from the end of a strip thereof by a cutting action which progresses from the edges of the strip toward the central portion thereof and progressively moving the longitudinal edges thereof toward the article to points spaced from the surfaces of the article so that when the central portion of the sheet has been severed it will spring into engagement with the article, holding the sheet in a distorted tensioned condition against the article for a predetermined period, heating the adhesive coating of the sheet to a temperature above the activating point of such adhesive during such period, and then pressing the remaining portions of the sheet against the surfaces of the article.

15. The method of applying thermoactivatable adhesive coated sheets to articles which comprises holding a sheet in a distorted condition under tension against an article so that a minor portion only of the adhesive coating is in engagement with the article, heating the adhesive coating of the sheet while the sheet is so held by applying heat to predetermined areas of those portions of the sheet not in engagement with the article until predetermined areas of the adhesive coating of the sheet are brought to a temperature above the range of temperatures for optimum tackiness of such adhesive, and then pressing the remaining portions of the sheet

not in engagement with the article during such heating operations against the surfaces of the article.

16. In a box making machine, means for supporting the sides of a set-up box adjacent a corner thereof, a presser including a head movable toward and away from said supporting means and having a working face constituted of a plurality of materials of different heat conductivity and arranged to provide areas in such working face of different heat flow characteristics, heating means embedded in said presser head and supplying heat to the working face thereof, means conductively connecting each of the different materials in said working face areas to said heating means, certain of said conductive means facilitating the transfer of heat from said heating means to certain of such areas and certain of said conductive means obstructing the transfer of heat from said heating means to others of such areas.

17. In a box making machine, means for supporting the sides of a set-up box adjacent a corner thereof, a presser including a head movable toward and away from said supporting means and having a working face engageable with the supported box corner, heating means embedded in said presser head, means for conducting heat at a high rate from said heating means to spaced areas of the working face of said presser head, and means obstructing heat transfer from said heating means to other spaced areas of the working face of said presser head, said spaced areas of the working face to which the heat is conducted at a high rate being alternately arranged with said other spaced areas of said working face.

18. In a box making machine, means for supporting the sides of a set-up box adjacent a corner thereof, a presser including a head movable toward and away from said supporting means and having a working face engageable with the supported box corner, the working face of said presser head being constituted of a plurality of layers of material, alternate layers of said working face being of material having a high heat conductivity and the remaining layers of said working face being of material having a heat conductivity less than that of said alternate layers, heating means embedded in said presser head, means for conducting heat at a high rate from said heating means to said alternate layers, and means obstructing heat transfer from said heating means to said remaining layers.

19. In a box making machine, means for supporting the sides of a set-up box adjacent a corner thereof, a presser including a head movable lengthwise of the longitudinal axis thereof toward and away from said supporting means and having a working end engageable with the supported box corner, heating means embedded in said presser head, the working end of said head being constituted of a plurality of layers of material extending in substantial parallelism with said longitudinal axis, alternate layers of said working end being of material having a high heat conductivity and the remaining layers of said working end being of material having a heat conductivity less than that of said alternate layers so that the working face of the presser head is provided with alternate areas of different heat flow characteristics.

20. In a box making machine, means for supporting the sides of a set-up box adjacent a corner thereof, a presser including a head movable lengthwise of the longitudinal axis thereof toward and away from said supporting means and having a working end engageable with the supported box corner, heating means embedded in said presser head, the working end of said head being constituted of a plurality of layers of material extending in substantial parallelism with said longitudinal axis, alternate layers of said working end being of material having a high heat conductivity and capable of readily transferring heat to the working face of said presser, and the remaining layers of said working end being of a heat-insulating material capable of preventing the transfer of heat to the working face of said presser.

21. In a box making machine, means for supporting the sides of a set-up box adjacent a corner thereof, a presser including a head movable lengthwise of the longitudinal axis thereof toward and away from said supporting means and having a working end engageable with the supported box corner, the working end of said head being composed of a plurality of spaced layers extending in substantial parallelism with said longitudinal axis, one end of said layers being integral with the body of said head and the other ends of said layers forming part of the working face of said presser head, a plurality of layers of material located between said integral layers and having outer end edges forming the remaining part of the working face of said presser head, said last mentioned layers of material having a heat conductivity different from that of said integral layers, and heating means embedded in said presser head.

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