July 31, 1956 G. W. POPPE 2,756,923

LATCH FORMED BY SUPERIMPOSED SHEETS

Filed Feb. 1, 1954

Fig. 1.

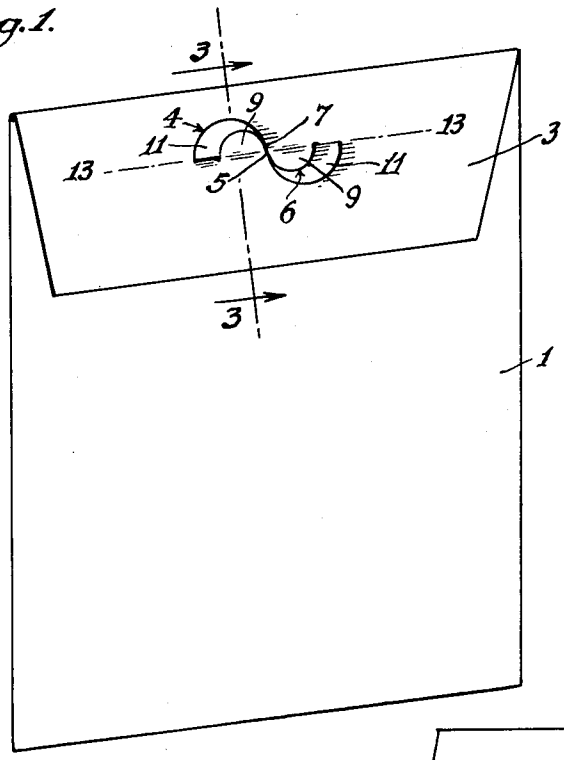


Fig. 3.

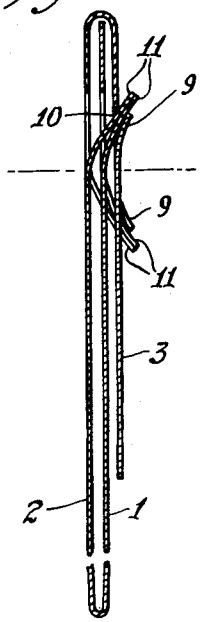


Fig. 2.

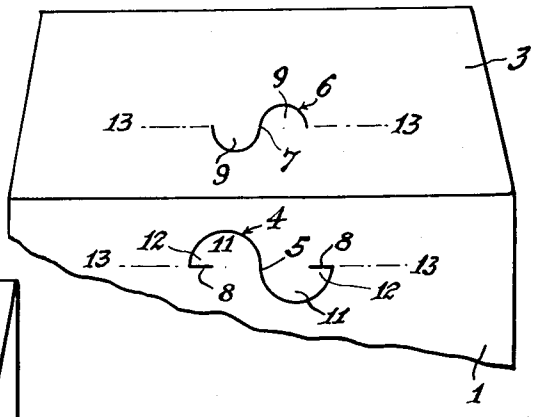


Fig. 4.

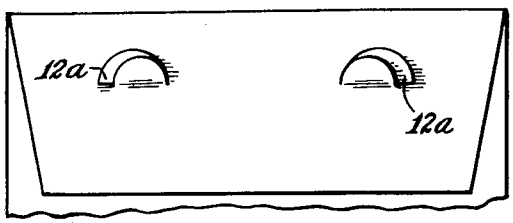
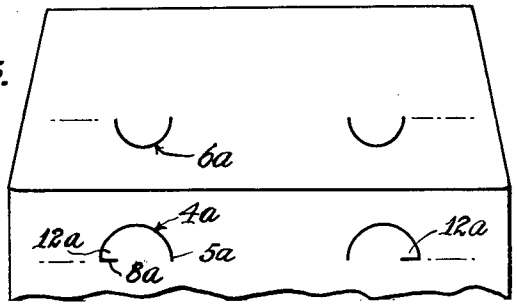


Fig. 5.



INVENTOR.
GEORGE W. POPPE

BY Kenyon & Kenyon

ATTORNEYS.

United States Patent Office 2,756,923 Patented July 31, 1956

2,756,923

LATCH FORMED BY SUPERIMPOSED SHEETS

George W. Poppe, Stroudsburg, Pa., assignor to Equitable Paper Bag Co. Inc., Long Island City, N. Y., a corporation of New York

Application February 1, 1954, Serial No. 407,231

4 Claims. (Cl. 229—77)

This invention relates to a latch formed by superimposed sheets of flexible material. The invention is particularly adapted for incorporation in a paper bag, envelope or the like, in which case the superimposed sheets are provided by the parts of the article which are fastened together by the latch. For example, one wall of a bag or envelope may be extended to form a flap which folds down over the other wall, in which case the flap would provide one of the superimposed sheets while the other would be provided by the two walls of the bag which would function cooperatively.

One of the objects is to provide a latch construction which is suitable for application to paper bags, envelopes and the like, which may be created only by forming appropriately contoured lines of severance through the parts to be fastened together, and which provides an easily manipulated latch. Another object is to provide such a latch in a form that will have an attractive appearance. Other objects may be inferred from the following disclosure of specific examples of the invention.

These examples are illustrated by the accompanying drawings in which:

Fig. 1 is a perspective view showing a preferred form of the invention as incorporated in a paper bag or envelope having a flap fastened closed by the new latch;

Fig. 2 shows the top portion of Fig. 1 as the construction appears prior to latching and with the flap fully opened;

Fig. 3 is a cross section taken on the line 3—3 in Fig. 1;

Fig. 4 shows the upper portion of a bag or envelope having a flap closed by a modification of the invention; and

Fig. 5 shows the construction of Fig. 4 as it appears when the flap is opened and prior to engagement of the new latch construction.

In the form shown by Fig. 1 the bag or envelope has a front wall **1** and a back wall **2**, the back wall being extended to form a flap **3** which may be folded down over the front wall **1**. All of the parts of this article are formed from sheet material such as paper or the like. This material has a certain amount of elasticity and stiffness when it is not bent excessively. The constructional details of the bag or envelope, such as the manner in which it is folded from sheet material, seamed, bottomed, and similar details, is unimportant insofar as the present invention is concerned.

The two walls **1** and **2** may be considered as a single sheet, the flap **3** constituting a second sheet, these sheets being superimposed when the flap is folded downwardly.

According to the invention, the walls **1** and **2** have an S-curved line of severance **4** formed therethrough and having a central portion **5**. This line of severance extends transversely with respect to the bag. The flap **3** has an S-curved line of severance **6** formed therethrough and this curve also has a central portion **7** and it also extends transversely with respect to the bag flap. The curves **4** are identically formed through the walls **1** and **2**, and

the curve **6** is formed so that when the flap **3** is closed, or folded downwardly, the curves **4** and **6** curve in the same direction. Also, the central portions **5** and **7** of the respective curves mutually register when the flap is closed. However, the curves **4** and **6** have different degrees of curvature respectively and, therefore, the curved lines of severance respectively diverge from each other in both directions from their central portions to their opposite end portions. This results in the mutually adjacent ends of the two curves being offset from each other transversely with respect to the bag or envelope.

The line of lesser curvature, which is the line of severance **4** in the drawings, has a return portion **8** which extends back to the line of greater curvature, which is the line **6** in the drawings, at each of the end portions of the line of severance **4**. The line of severance of greater curvature **6** defines oppositely pointing tabs **9** which may be elastically displaced to form openings **10**, and the line of lesser curvature **4** defines oppositely pointing tabs **11** having shoulders **12**, defined by the return portions **8**, and which may be pushed through the openings **10** by elastic displacement of the shoulders **12**. This action is carried out when the sheets are superimposed and ready to be fastened together, and the action may be effected simply by pushing the tabs **11** towards the tabs **9**. It is to be noted that the tabs have mutually registered hinging base lines, indicated by the broken line **13—13** in the drawings, these hinging base lines extending straight between the end and central portions of the lines of severance **4** and **6**, in each instance.

The line of greater curvature **6** continuously curves reversely between its end portions. It may take the form of two semi-circles joined to form an S-curve. The line of lesser curvature **4** has its previously mentioned return portions **8** extending back to the line of greater curvature **6**, when the sheets are superimposed, at both ends thereof substantially straight and in alignment with the base lines indicated by the broken line **13—13**. Excepting for these return portions, the line **4** also continuously curves reversely between its end portions, the desired S-curve in this instance being also formed by two appropriately joined semi-circular lines of severance.

In the modification shown by Figs. 4 and 5 a half S-curve latch construction is provided. Thus the line **4*a*** is only a semi-circle, one end of this line representing the central portion **5*a*** of the S-curve. The curve **6*a*** carries along this idea, and it is to be noted that the curve **4*a*** has the return portion **8*a*** of the full S-curve. The main difference is that the latching action only occurs when the flap is pulled straight away from the walls of the receptacle, or at an angle directed towards the latter's center. A pull on the flap directed away from the central portion of the bag or envelope might unlatch this modified latch construction. Therefore, when this modified construction is used it is preferable to incorporate both halves of the previously described S-curve construction.

As is shown by Figs. 4 and 5 the two halves of the S-curve construction may be changed so that the tabs provided both point upwardly. This is not necessary but it does provide a better appearance. However, it is quite preferable to arrange the two half S-curve constructions so that the shoulders **12*a*** point in opposite directions transversely to the bag or envelope. By doing this a secure latching effect is obtained because the two latch constructions best resist unlatching in opposite directions and, therefore, mutually cooperate to fasten the flap closed in a secure manner regardless of the direction of force supplied to open the flap.

In the modified form the parts which correspond to those of the full S-curve form are given similar numerals in conjunction with the letter *a*. The mode of operation

is similar in both cases but the full S-curve construction provides the maximum security in all instances.

This new latch construction has the great practical advantage that one of the tabs, providing the latch shoulder, may be made considerably wider than the hole through which it is pushed by displacement of the corresponding tab of the other sheet. The curved shapes permit the shoulder to elastically deform and to then snap behind the other sheet after the shouldered tab is pushed through the opening. In the case of the full S-curve construction the shouldered tabs may be made considerably wider than the openings through which they are pushed. This advantageous feature cannot be provided so effectively by prior art constructions because in the latter it is very easy to tear the paper or other material when causing locking action of the locking tabs. Another advantage of the present invention is the obviously attractive appearance that results from its use. The construction is inexpensive because it may be produced merely by die cutting the sheets to provide the appropriate curves disclosed hereinabove.

I claim:

1. A latch for a bag having a front and back walls and a flap connecting with one of said walls and folded down over the other of said walls, said walls and flap being made of elastically flexible material and said walls together forming one sheet and said flap being superimposed thereon and forming another sheet, said sheets having lines of severance formed therethrough respectively, all of said lines being curved in the same direction and having different degrees of curvature respectively, all of said lines extending between interspaced locations and all of said lines being mutually registered substantially at one of said locations and respectively diverging from each other while extending to the other of said locations and at the latter location the line of lesser curvature having a return portion extending back to the line of greater curvature, the latter line defining a tab which may be displaced to form an opening and said line of lesser curvature defining a tab having a shoulder, defined by said return portion of this line, and which may be pushed through said opening by elastic displacement of said shoulder, the latter latching with the one of said sheets in which said opening is formed when pushed through said opening.

2. A latch for a bag having front and back walls and a flap connecting with one of said walls and folded down over the other of said walls, said walls and flap being made of elastically flexible material and said walls together forming one sheet and said flap being superimposed thereon and forming another sheet, said sheets having lines of severance formed therethrough respectively, all of said lines being curved in the same direction and having different degrees of curvature respectively, all of said lines extending between interspaced locations and all of said lines being mutually registered substantially at one of said locations and respectively diverging from each other while extending to the other of said locations and at the latter location the line of lesser curvature having a return portion extending back to the line of greater curvature, the latter line defining a tab which may be displaced to form an opening and said line of lesser curvature defining a tab having a shoulder, defined by said return portion of this line, and which may be pushed through said opening by elastic displacement of said shoulder, the latter latching with the one of said sheets in which said opening is formed when pushed through said opening, said tabs having mutually registered hinging base lines extending straight from one of said locations to the other in each instance, said line of greater curvature continuously curving from one of said locations to the other and said line of lesser curvature having its said return portion extending back to said line of greater curvature substantially straight and in alignment with said base lines, to define said shoulder, and otherwise being continuously curved from one of said locations to the other.

3. A latch for a bag having front and back walls and a flap connecting with one of said walls and folded down over the other of said walls, said walls and flap being made of elastically flexible material and said walls together forming one sheet and said flap being superimposed thereon and forming another sheet, said sheets having lines of severance formed therethrough respectively, all of said lines being S-curved in the same direction but having different degrees of curvature respectively, all of said lines having central portions which are mutually registered substantially and said lines respectively diverging from each other in both directions from said central portions to their opposite end portions, the line of lesser curvature having a return portion extending back to said line of greater curvature at each of its said end portions, said line of greater curvature defining oppositely pointing tabs which may be displaced to form openings and said line of lesser curvature defining oppositely pointing tabs having shoulders, defined by said return portions of this line, and which may be pushed through said openings by elastic displacement of said shoulders, the latter latching with the one of said sheets in which said openings are formed when pushed through said openings.

4. A latch for a bag having front and back walls and a flap connecting with one of said walls and folded down over the other of said walls, said walls and flap being made of elastically flexible material and said walls together forming one sheet and said flap being superimposed thereon and forming another sheet, said sheets having lines of severance formed therethrough respectively, all of said lines being S-curved in the same direction but having different degrees of curvature respectively, all of said lines having central portions which are mutually registered substantially and said lines respectively diverging from each other in both directions from said central portions to their opposite end portions, the line of lesser curvature having a return portion extending back to said line of greater curvature at each of its said end portions, said line of greater curvature defining oppositely pointing tabs which may be displaced to form openings and said line of lesser curvature defining oppositely pointing tabs having shoulders, defined by said return portions of this line, and which may be pushed through said openings by elastic displacement of said shoulders, the latter latching with the one of said sheets in which said openings are formed when pushed through said openings, said tabs having mutually registered hinging base lines extending straight between all of their said portions in each instance, said line of greater curvature continuously curving reversely between its said end portions and said line of lesser curvature having its said return portions extending back to said line of greater curvature at both ends thereof substantially straight and in alignment with said base lines, to define said tabs, and otherwise continuously curving reversely between said end portions.

References Cited in the file of this patent

UNITED STATES PATENTS

229,893	Kehr	July 13, 1880
1,310,288	Nico	July 15, 1919
1,665,035	Kleebauer et al.	Apr. 3, 1928
2,009,411	Poppe	July 30, 1935
2,132,669	Wolf	Oct. 11, 1938
2,536,384	Meller	Jan. 2, 1951