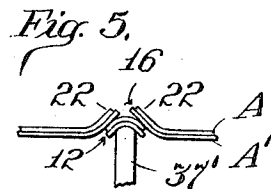
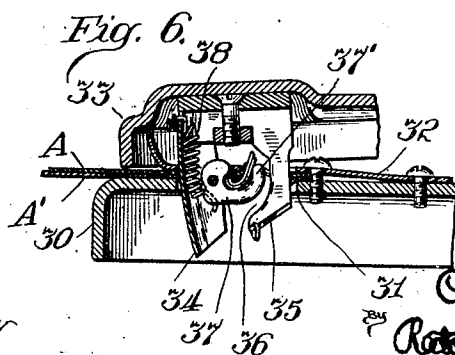
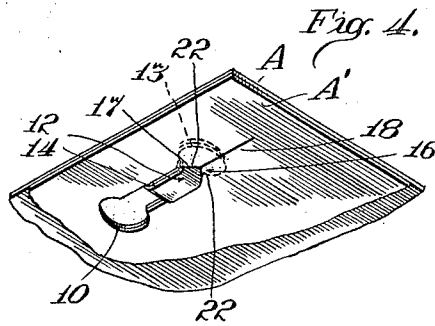
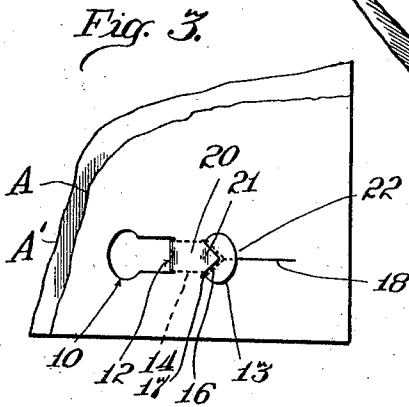
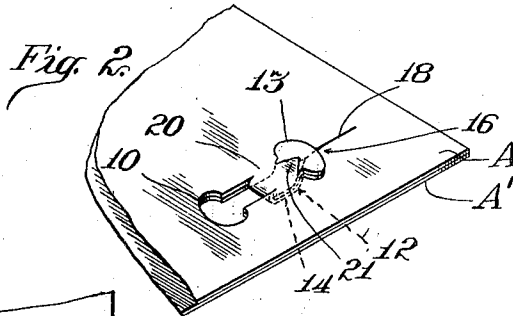
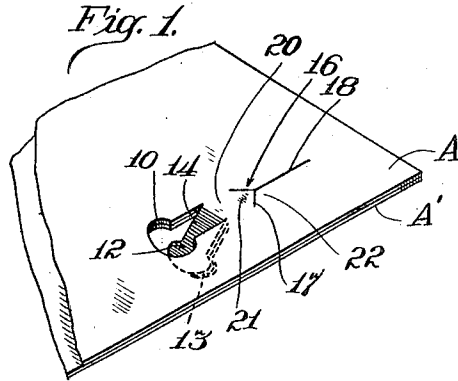


C. S. CONE.
 PAPER FASTENING.
 APPLICATION FILED DEC. 11, 1917.

1,324,144.

Patented Dec. 9, 1919.



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UNITED STATES PATENT OFFICE.

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PAPER-FASTENING.

1,324,144.

Specification of Letters Patent.

Patented Dec. 9, 1919.

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To all whom it may concern:

Be it known that I, CHARLES S. CONE, a citizen of the United States, residing at La Crosse, in the county of La Crosse and State of Wisconsin, have invented certain new and useful Improvements in Paper-Fastenings, of which the following is a specification.

My invention relates to paper fastening and has for its object to provide a novel and efficient paper-lock and method of forming the same, for the securing of sheets of paper together by the interlocking of parts of the paper plies.

In the drawings wherein I have illustrated an embodiment of my invention, Figure 1 illustrates superimposed paper sheets cut to provide the members for interlocking the sheets; Fig. 2 is a similar view showing the lock completed; Fig. 3 is a plan view showing the interlocking process of formation; Fig. 4 is a perspective from the underside of the structure shown in the figure, illustrating the completed lock; Fig. 5 is a detail showing a step of lock-formation; and Fig. 6 is a sectional view showing a further step in the process of lock-formation as effected by a suitable machine.

In the drawing A and A' represent two paper sheets, typical of a suitable plurality to be joined. Through both of such sheets the cuts requisite for the provision of the tongue and slit formation of the lock features are made in precise registry, preferably by superimposing the paper sheets and effecting the cutting operations and manipulation of the tongue by machine, so insuring perfect uniformity of the operations on all sheets affected.

The sheets are cut along a line of suitable configuration to sever the sides and end of a tongue 12 that has a broadened tip or head 13 and a narrower body or stem 14, the root or base of which is unsevered and integral with the paper. In rear of the tongue root, in longitudinal alinement with the tongue, and at a distance back of the tongue root not greater than the length of the tongue-stem portion 14 I provide a Y-shaped slit 16, the arms 17 of the Y diverging toward the tongue root at a wide angle, said arms being relatively short and only of sufficient length to embrace within their tips a width equal to or slightly greater than the width of the stem 14 of the tongue. The

slit-arms 17 meet, at their juncture, a central longitudinal slit 18 of materially greater length than the axial dimension of the head 13 of the tongue. Thus when the tongue is folded back upon its root its stem will underlie the uncut bridge 20 of paper and its V-shaped tab 21, intervening between the tongue root and the ends of the slit arms 17, the slit arms will span across the tongue-stem relatively close to the head of the tongue, and the head of the tongue will underlie a short portion only of the slit 18, and the contiguous angular slit-borders 22.

In the formation of the paper lock the tongue cut from the several paper sheets is bent rearwardly as described under the paper bridge 20, and then the portion of said tongue extending beyond said bridge is tucked through the Y-shaped slit 16, the head of the tongue being folded somewhat along an axial line for passage through the slit 16 without tearing the paper, either of the tongue or of the slit borders 22. When the headed end of the tongue has been thus forced through the slit, a portion of its stem lies within the embrace of the slit arms 17 with the V-shaped tab 21 from the paper bridge 20 overlying the tongue. The head of the tongue is then flattened out to spread over a surface of the paper wider than the spread of the slit arms 17 and to overlie a short portion of the slit-stem 18.

Such a paper lock is highly efficacious for securing the paper sheets against separation. In practice it is so secure against pulling of the sheets apart that the interlocked parts never accidentally separate, but will tear rather than become unlocked. It will be observed that not only is the broad head of the tongue passed through an opening narrower than the head, for positive locking effect, but the paper of the tongue is gripped in the narrow confines of the Y-arms of the slit, and the shape of the slit is such that contact with the tongue with the edges of the slit-arms 17, is on an angular line for especially efficacious frictional gripping effect.

The construction of the paper slit 16 with its stem 18 materially exceeding the axial dimension of the tongue portion which is to be passed through it, gives to the portions 22 of the paper bordering laterally on the slit 16 a flexibility that enables them readily to bend out of the way without tear-

ing the paper when the tongue head is being inserted through the slit by means of a narrow tucking instrument on which the tongue head may fold as shown in Fig. 5, and yet does not weaken the lock.

In practice I employ in making such locks a machine as described in my co-pending application filed December 11, 1917, Serial No. 206,592, the construction of which is sufficiently suggested in Fig. 6 hereof for purposes of present disclosure. In said figure, 30 represents a paper receiving base, suitably apertured at 31 and overlaid by an apertured stripper plate 32 between which and the base the paper sheets A are passed to be cut. Toward this base there works a cutter jaw 33 carrying a cutter 34 suitably shaped to form the tongue 13, a narrow knife blade or slitter 35 suitably shaped to form the Y-slit 16, and, when depressed, to leave a free space 36 above its cutting blade. 37 represents a tucker element, pivoted in the tongue cutter 34 arranged for oscillation by contact of a cam portion thereof with a portion of the stripper plate 32. In the descent of the cutter jaw, a narrow curved finger part 37' of said tucker rises, while the cutters are in engagement with the paper passing over blade 35 to tuck the cut tongue through the slit 16 in the fashion heretofore described. On retraction of the upper jaw the tucker is retracted by spring 38 and the cutters emerge above the paper, whereupon withdrawal of the paper from under the stripper spring 32 flattens down the tongue head 13 and the tab 21.

It will be understood that I do not intend to limit my present invention to constructions effectuated by machinery of the construction illustratively shown, as such locks may be formed by independently operated hand tools or non-coördinated devices, as well as by coördinated mechanisms specifically different from that shown in Fig. 5; and it will further be understood that changes in design and proportions of the locked parts might be made without a departure from the spirit of my invention within the scope of the appended claims.

What I claim is:

1. The method of forming a paper-lock between a plurality of paper-sheets which consists in cutting in the paper-sheets, jointly, a tongue having a narrower stem and a broader head; cutting through the paper-sheets jointly, beyond the tongue-root and without removal of material, a slit having connected transverse arms jointly extending laterally to substantially the same width as the width of the tongue-stem adjacent to the head and having also a longitudinal limb intercepting the arms, said limb being of materially greater length than the axial length of the tongue-head; and tucking the tongue-head through said slit to engage the portion of the tongue-stem close to the head in the transverse arms of the slit, for frictional and positive locking of the tongue.

2. The method of forming a paper lock which consists in cutting from the paper a headed tongue, slitting in rear of the tongue root a Y-shaped slit having its stem materially longer than its Y-arms and its arms of extent to embrace between them a width substantially that of the tongue stem, and passing said tongue head in partly folded condition through said Y-slit to engage a portion of the tongue stem, close to the tongue head, in the V-shaped slit portion provided by said arms.

3. A paper lock formed in paper sheets for holding them in engagement comprising a headed tongue cut from the sheets jointly, and a Y-shaped slit in rear of the tongue-root, the spread of the arms of said slit, from tip to tip, substantially equaling the width of the tongue-root, and the length of the stem of said slit materially exceeding the axial depth of the head of the tongue, the headed end of said tongue being passed through the slit with the tongue stem embraced by the Y-arms of the slit, and a portion of the tongue head overlaid by the V-shaped tab of paper between said arms.

CHARLES S. CONE.