Aug. 24, 1926. 1,596,955

J. V. WASHBURNE

PAPER FASTENER

Filed Jan. 12, 1926

Fig. 1.

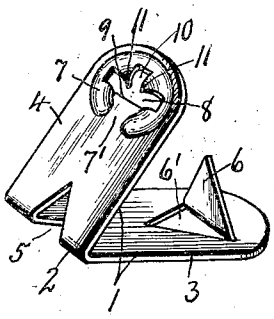


Fig. 2.

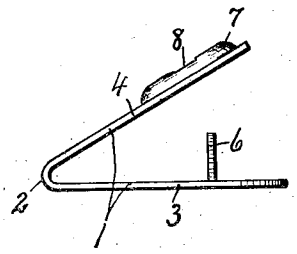


Fig. 3.

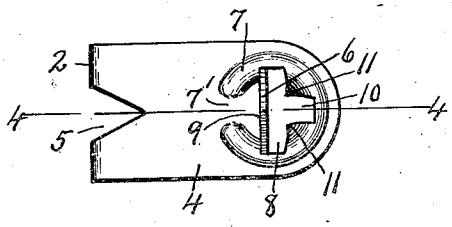


Fig. 4.

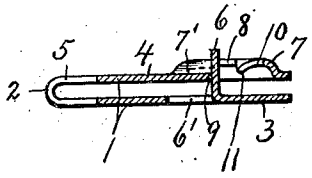


Fig. 5.

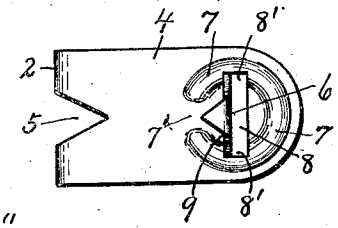


Fig. 6.

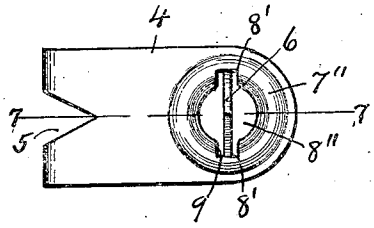
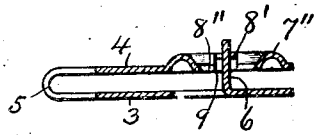


Fig. 7.



INVENTOR

J. V. Washburne

BY Dennison & Thompson

ATTORNEYS

WITNESS

H. Stuart

Patented Aug. 24, 1926. 1,596,955

UNITED STATES PATENT OFFICE.

JAMES V. WASHBURNE, OF FULTON, NEW YORK.

PAPER FASTENER.

Application filed January 12, 1926. Serial No. 80,732.

This invention relates to a paper fastener for binding together loose sheets of paper or other material and involves the use of a strip of bendable sheet metal folded along a medial transverse line to form opposite compressible members which are provided respectively with a punch and a die for perforating the sheets and fastening them together in a manner somewhat similar to that shown in my Patents No. 731,827, June 23, 1923, No. 1,238,366, August 28, 1917, and No. 1,466,347, August 28, 1923.

These fasteners are made in several sizes and are necessarily small and thin and in many instances the punches are required to pass easily through several thicknesses of paper when the opposed members are forced together under pressure.

One of the objects of the present invention is to provide the punch with a broader or wider base than has heretofore been practicable owing to the limitations of the opening in the opposed die, and also to extend the opening laterally into the reinforcing rib partially or wholly surrounding the same to accommodate the broadened base of the punch and thereby to increase the strength of the punch and at the same time to establish a stronger interlock between the punch and die whether the fastener is used as a temporary or permanent binder for the sheets.

Another object is to provide the die with a central lengthwise branch slot extending into the adjacent portion of the reinforcing boss so as to form clinching points tending to engage the paper sheets for additionally holding said sheets in alinement against relative lateral swinging movement and also to assist in holding the fastener against accidental displacement.

Other objects and uses relating to specific parts of the fastener will be brought out in the following description:—

In the drawings:—

Figure 1 is an enlarged perspective view of an open paper fastener embodying the features of my invention.

Figure 2 is a side elevation of the same.

Figure 3 is a top plan of the fastener showing the members in their paper fastening positions as used for a temporary binder.

Figure 4 is a longitudinal sectional view of the closed fastener taken on line 4—4, Figure 3.

Figure 5 is a top plan of a slightly modified form of my invention omitting the branch lengthwise slot of one side of the transverse opening, the point of the spur being shown as bent over against the outer face of the opposed member to form a permanent binder.

Figure 6 is a plan of the fastener showing a slightly modified form of die.

Figure 7 is a longtudinal sectional view of the same fastener taken on line 7—7, Figure 6.

As illustrated, this paper fastening device consists of a strip —1— of bendable sheet metal elongated in one direction, and bent at —2— to form opposed members —3— and —4— which face each other leaving an open space between them for the reception of the sheets of paper or other material which are to be fastened together.

The folded ends of the members —3— and —4— are provided with the usual V-shaped recess —5— extending inwardly therefrom midway between the longitudinal edges of the strip to enable said member to be more easily bent at the fold and the edges of the sheet to be more accurately alined in and against the fold of the fastener.

The member —3— is provided intermediate its ends with a V-shaped punch —6— struck up therefrom toward the member —4— midway between its longitudinal edges and in a transverse plane at substantially right angles thereto thereby forming a corresponding opening —6′— with the point of the punch in the plane of the longitudinal center of the fastener.

The length of the punch —6— is sufficient to assure its passage through the interposed sheets and member —4— when the members —3— and —4— are pressed toward each other upon said sheets and its opposite side edges are preferably tapered from the base to the point, said base being considerably wider than one-half the width of the fastening members to produce a maximum strength and enable it to penetrate a larger number of sheets than has heretofore been practicable.

The die plate —4— is provided near its free end with a raised circular rib —7— embossed therein for reinforcing purposes, and thereby partially concealing the point of the punch —6—, reducing the liability of puncturing the fingers, and permitting the stacking of several sets of bound sheets flatwise one upon the other in compact relation.

The bead —7— is preferably formed concentric with or about the center of the curved end of the die member and terminates equal distances from and at opposite sides of longitudinal center of said member as shown more clearly in Figures 1 and 3 thereby forming an intervening flat web —7'— between its ends upon which the point of the punch may be bent to form a permanent binder.

The portion of the member —4— within the margin of the rib —7— is provided with an opening —8— about the same distance from the fold —2— as the punch —6— so as to register with said punch when the members —3— and —4— are folded toward each other for fastening the interposed portions of the sheets together, said opening —8— being of greater width than the distance between opposite side of the rib —7— to extend into the corresponding sides of said bead so that the transverse width of the opening is approximately equal to or slightly greater than the transverse width of the base of the punch —6—, thus permitting the use of a wider and stronger punch than has heretofore been practised.

The side wall of the opening —8— nearest the fold —2— is preferably straight or disposed in a flat plane to form a straight flat bearing —9— for the adjacent side of the spur —6— when the members are folded together upon the interposed sheets, not shown.

When the fastener is adjusted for use as a binder, the punch —6— is pressed flatwise against the bearing —9— which enables the point of the punch to be bent flatwise over and upon the outer face of the die member between the ends of the rib —7— as shown by dotted lines in Figure 4 thus producing a permanent binder for the sheets and also assisting in preventing the turning of the sheets relatively to each other and to the fastener.

The free end of the die member is also provided with a branch opening or slot —10— extending outwardly from the main opening —8— midway between the sides of said plate and extending part way into the adjacent portion of the bead —7— to form additional gripping points —11— at the inner inturned edge of the rib —7—.

When the members —3— and —4— are pressed toward each other in the act of fastening the interposed sheets, the punch —6— will readily pass through the sheets into the opening —8— while the points —11— may be simultaneously pressed into or against the adjacent sheets for additionally holding said sheets and fastener against relative lateral movement and if it is desired to make the fastener a permanent binder the point of the punch —6— may be bent over upon the outer face of the member —4— between the ends of the segmental rib —7— as previously described.

When the fastener is clamped upon the work either as a temporary or as a permanent binder the flat faces of the punch engaging the corresponding openings in the sheet formed thereby serves to hold said sheets in alinement against relative lateral displacement while the engagement of the punch —6— with the flat end wall —9— of the opening —8— serves to hold the fastener against accidental withdrawal from the sheets and thereby reduces the strain upon the punch —6—.

The construction shown in Figure 5 is similar to that shown in Figures 1 to 4 inclusive except that the branch slot or opening —10— is omitted.

The construction shown in Figures 6 and 7 is also similar to that shown in Figures 1 to 5 inclusive except that the central portion of the opening as —8''— is concentric with the rib as —7''— which is made in the form of a complete circle instead of being segmental as in the previous figures.

It will be noted, however, that in each form the opening in the die for receiving the punch extends into opposite sides of the rib and that the base of the spur is wider than the inner diameter of said rib thus permitting the use of a wider and stronger spur than has heretofore been practised and therefore extending the range of use of fasteners of this character.

What I claim is:—

1. A fastening device struck up from flattened or sheet metal comprising two members facing each other, an integral bent connection between said members, an inwardly extending integral punch from one member, a die form on the other member, a circular rib extending around the die and having a slot at right angles to the die member, said slot extending into the rib a suitable distance to allow the broad base of the punch to pass entirely through the sheets when the two members are forced together under pressure.

2. A fastener as in claim 1 in which the width of the base of the punch is greater than the inner diameter of the circular rib.

3. A fastener as in claim 1 in which the die member is provided with inturned gripping points facing the punch member.

In witness whereof I have hereunto set my hand this 8th day of January 1926.

JAMES V. WASHBURNE.