

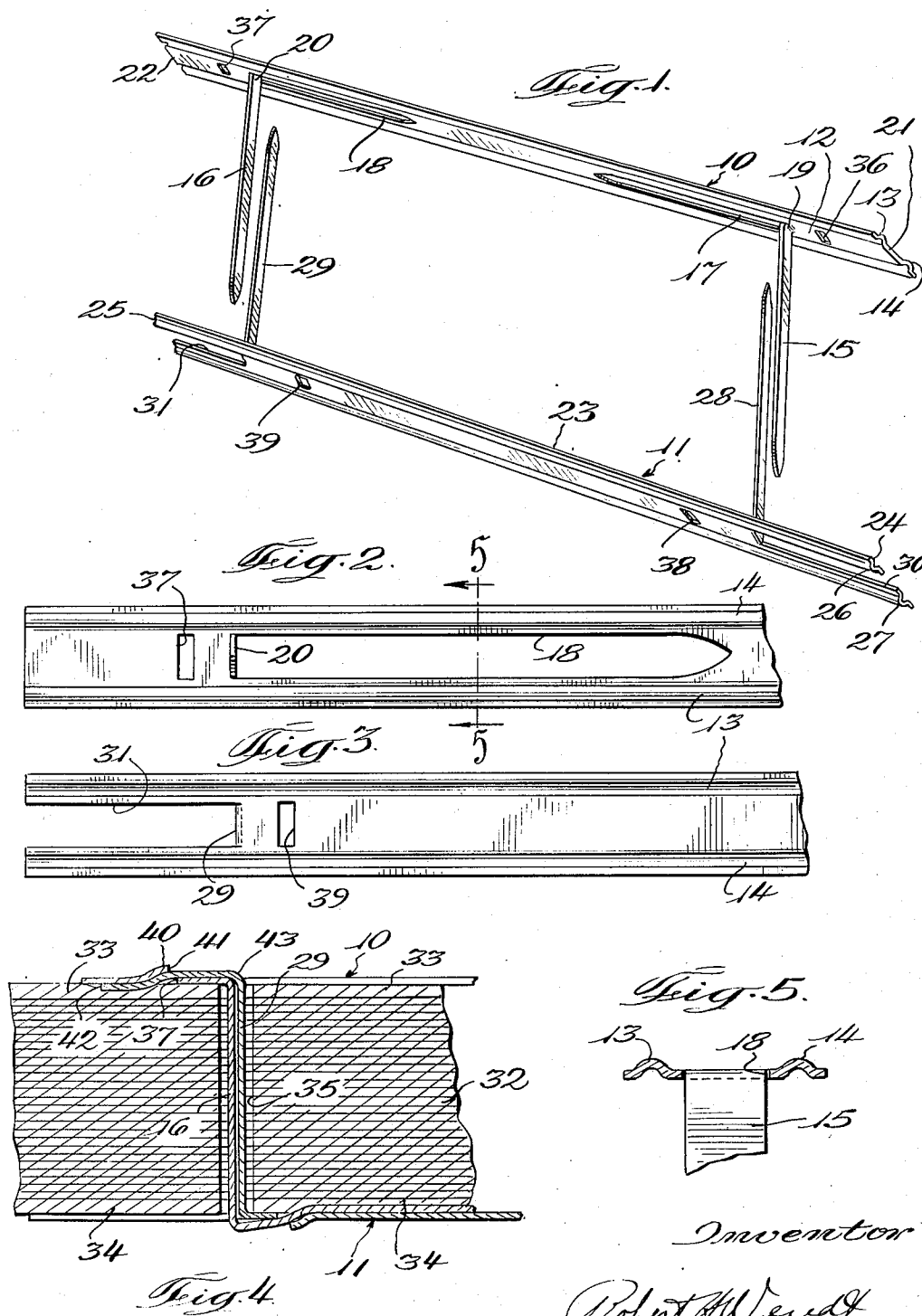
Jan. 2, 1951

R. H. WENDT
PAPER FASTENER

2,536,792

Filed Dec. 11, 1948

3 Sheets-Sheet 1



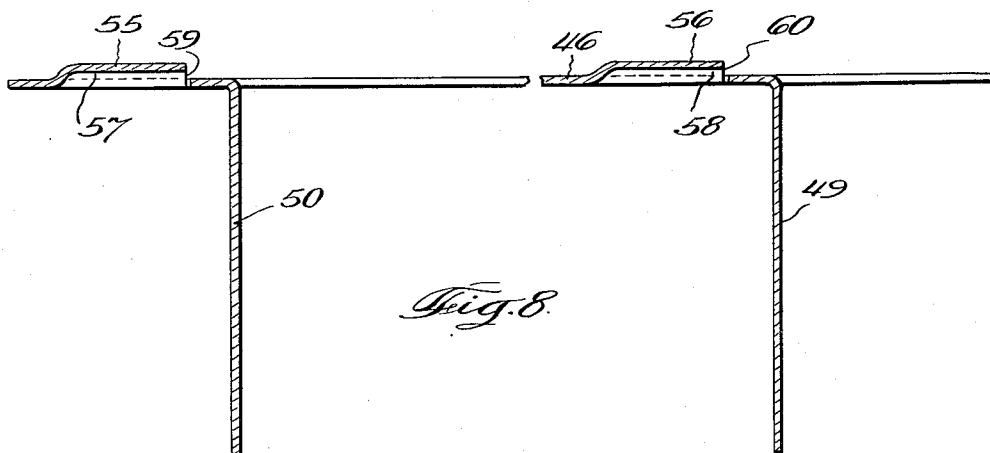
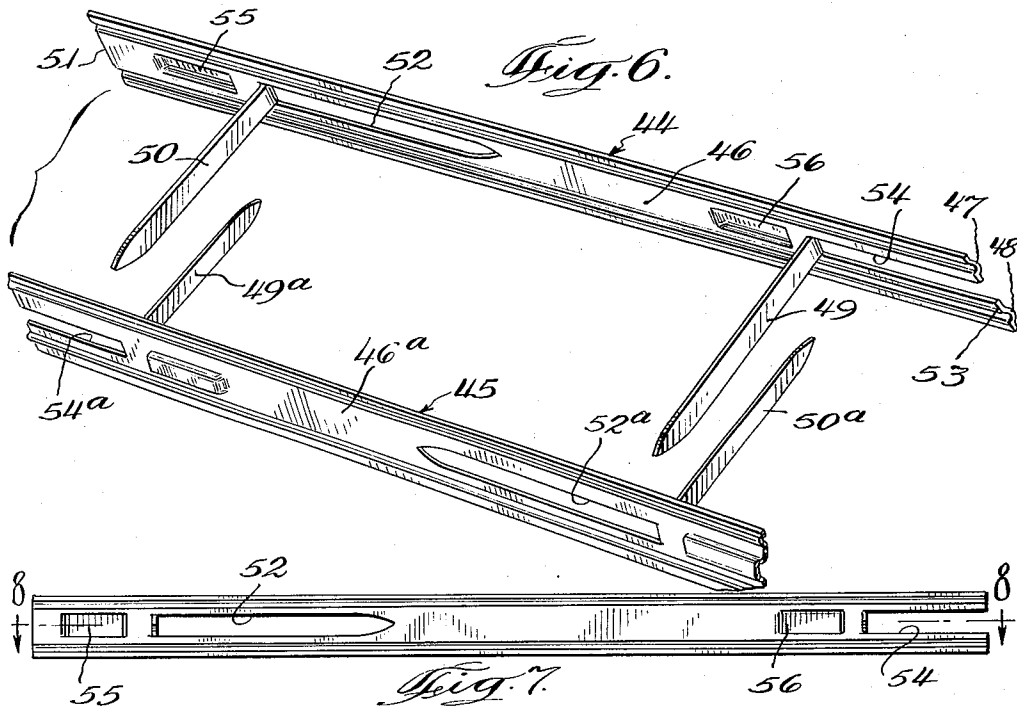
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3 Sheets-Sheet 2



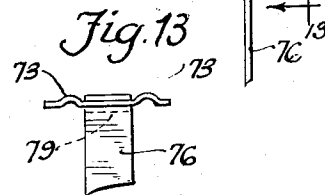
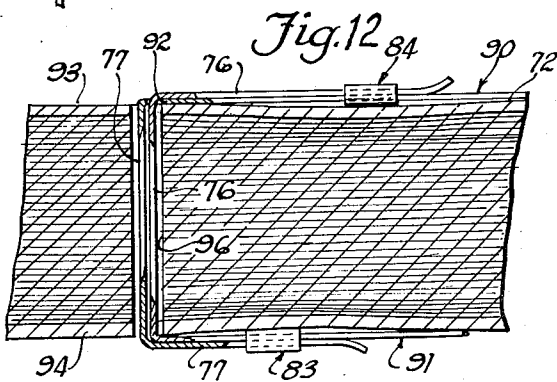
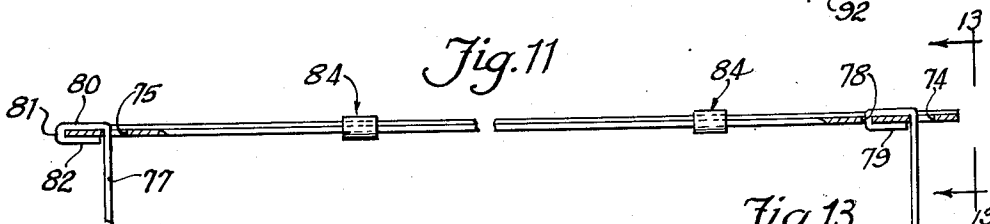
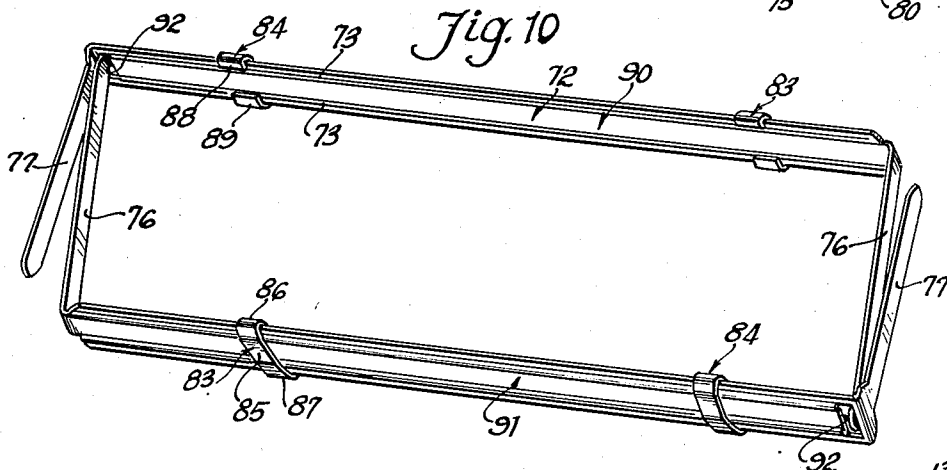
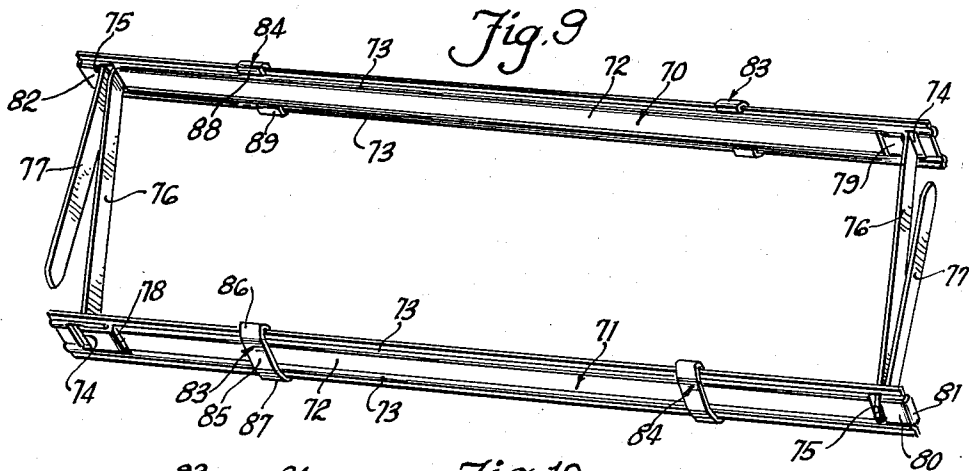
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Filed Dec. 11, 1948

3 Sheets-Sheet 3



INVENTOR.

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2,536,792

PAPER FASTENER

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Application December 11, 1948, Serial No. 64,740

1 Claim. (Cl. 24—153)

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The present invention relates to paper fasteners and holders, and is particularly concerned with the provision of an improved type of paper fastener for securing together a stack of sheets of paper, such as letters or other documents, with or without covers and by means of which the stack may be separated at any point for insertion of a sheet or sheets or removal of sheets and again reassembled in one stack with a minimum amount of effort.

One of the difficulties with the binders of the prior art of this type lies in the fact that whenever it is necessary to remove one paper from the interior or the lower part of a stack of papers in such a binder, one must lift off all the papers which are above it, and even though one tries to hold the apertures in alignment, this becomes practically impossible, since there is nothing to hold the papers except the fingers of the operator, and it is especially difficult when the operator is going to remove one document from the remaining assembly.

Another disadvantage of the devices of the prior art lies in the fact that there is considerable waste in the manufacture of those devices.

Another disadvantage of the devices of the prior art is that the fastening devices require the manufacture of two separate units, one of which supports the prongs and the other of which supports the sliders which secure the prongs in a bent-over condition.

One of the objects of the present invention is the provision of an improved binder and fastening device which is so arranged that the binder may be taken apart at any point for removal of one or more documents, the fastening devices still holding the sheets in alignment so that it is a simple matter to take them apart, lay them down, remove such documents as are desired, and put them together again.

As distinguished from the devices of the prior art, in which it is frequently necessary to rearrange documents, sheet by sheet, after they have been removed, the present binder can be put together again at any point by merely reinserting the prongs which are guided by complementary prongs carried by the other section.

Another object of the invention is the provision of an improved fastener for binders of the class described which requires the manufacture of only one unit, two of which are employed in any binder, so that it is not necessary to have dies for two separate articles, nor is it necessary to keep in stock two different kinds of units.

Another object of the invention is the provi-

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sion of an improved fastener which requires less metal than the devices of the prior art by virtue of the fact that its prongs are punched out of the body of the fastener and thus it is unnecessary to assemble separate prongs with a body, and it is unnecessary to have prongs which extend longitudinally from one end of the body, which involves a waste of material on both sides of each prong.

Another object of the invention is the provision of an improved fastener structure which utilizes a minimum amount of material, and which may be constructed of various types of material, which may be used over and over again, and which is adapted to lock the papers tightly in the covers, and to minimize the possibility of the papers being torn by the prongs.

Another object of the invention is the provision of an improved fastener and binder assembly, which is simple, capable of economical manufacture, easy to manipulate, economical of material, sturdy, and adapted to be used for a long period of time without noticeable wear.

A further object of the invention is the provision of an improved binder of the class described, in which it is unnecessary to provide sliders on the body of the binder for securing the tongues of metal which pass through the stack of sheets, thereby simplifying the structure and reducing the cost of the fasteners.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the drawings of which there are three sheets accompanying this specification,

Fig. 1 is a view in perspective showing my fasteners in the position which they assume when they are in the course of being inserted into a stack of sheets from the opposite sides thereof.

Fig. 2 is a fragmentary plan view showing the left end of the upper fastener of Figure 1;

Fig. 3 is a fragmentary bottom plan view of the left end of the fastener, which is shown at the left end of the lower fastener of Figure 1;

Fig. 4 is fragmentary vertical sectional view taken on the plane passing through the axis of the fasteners, such as are shown at the left end of Figure 1; but shown with a stack of file papers;

Fig. 5 is a fragmentary sectional view taken on the plane of the line 5—5 of Figure 2;

Fig. 6 is a view in perspective of a modified form of fastener which I employ both above

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and below the stack of sheets, thereby accomplishing the same result with one form of fastener;

Fig. 7 is a bottom plan view of the fastener of Figure 6;

Fig. 8 is a sectional view taken on the plane passing through the axis of the fastener of Figure 6;

Fig. 9 is a view in perspective of another modification, showing the fasteners in the position which they assume as they are being placed together on the sheets;

Fig. 10 is a similar view of another modification;

Fig. 11 is a longitudinal sectional view of the upper fastener in Figure 9, showing its mode of construction;

Fig. 12 is a fragmentary sectional view, showing the fastener of Figure 10 applied to a stack of sheets and two covers; and

Fig. 13 is a fragmentary elevational view taken on the plane of the line 13—13 of Figure 11, looking in the direction of the arrows.

Referring to Figure 1, the fastener assembly as illustrated consists of two types of fasteners 10 and 11, each of which may be made of bendable sheet metal such as tin-covered iron.

In some embodiments of the invention the fasteners may be made of fiber, such as press board or initially plastic sheets of material, such as ethyl cellulose, cellulose acetate or methyl methacrylate.

The fastener 10 consists of a flat rectangular body 12 in the form of an elongated strip, and the body has sufficient area to engage the sheets of paper in the stack and to hold the sheets against tearing from the fastener. The body 12 is preferably formed with a pair of longitudinally extending pressed re-enforcing ribs 13, 14, leaving a flat central portion between the ribs.

Body 12 is provided with a pair of prongs 15, 16, which are preferably punched out of the body 12, leaving apertures 17, 18, and leaving the prongs 15 and 16 integrally attached to the body at the bases 19, 20, where the prongs 15 and 16 are bent down in Figure 1 at right angles to the body 12.

The prongs 15, 16 have their bases 19 and 20 preferably located inwardly of the ends 21, 22 of the body so that the ends of the fastener 10 extend beyond the holes in which the prongs 15, 16 are to be inserted.

In the fastener 10 the two prongs 15 and 16 initially extend toward each other, and the holes 17 and 18 are located inwardly of the prongs 15 and 16 for a reason further to be described. The fastener 11 is similar in structure in that it comprises a rectangular sheet of bendable material, the body of which is indicated at 23 and the ends at 24 and 25.

The body 23 is again provided with the two longitudinally extending pressed re-enforcing ribs 26, 27, and a pair of prongs 28, 29 are punched out of the body at the end portions thereof, leaving rectangular slots 30, 31 extending into both ends of the body 23. The reason for punching the prongs 28 and 29 out of the end portions of the fastener 11, while then punching the prongs 15 and 16 out of the middle portions of the fastener 10, is so that the holes in the fastener 10 will be located to receive the prongs of the fastener 11. Also the slots 30, 31 in the fastener 11 will be located to receive the prongs 15 and 16 of the fastener 10.

The method of assembly with sheets and covers is illustrated in Figure 4, in which 32 illustrates a cross section of a stack of sheets assembled with

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two covers 33, 34, and a pair of fasteners 10 and 11. The stack of sheets 32 and the covers 33, 34 are all provided with a pair of apertures spaced sufficiently to register with the prongs of the two fasteners.

The sheets may then be placed with one cover 34 upon the lower fastener 11, the prong 29 passing through one of the apertures 35 in the stack, and the prong 28 passing through another aperture in the stack (not shown).

Since the arrangement is the same at both ends of the fastener, it is unnecessary to describe the arrangement of the prongs at both ends. The upper end of the prong 29 will then project through the aperture 18, while the upper end of prong 28 will project through aperture 17 when the fastener 10 and its cover 23 is placed on the stack of sheets.

The prongs 15 and 16 may then pass down through the same apertures which are used for the prongs 28 and 29 respectively, and in Figure 4 the prong 16 is shown in the same aperture 35 with the prong 29.

The prongs 15 and 16 will then pass through the slots 30 and 31, and at this stage in the assembly the sheets and covers are on the prongs of the fasteners, but the prongs have not been secured in any way. Where the fasteners are made of bendable material that tends to retain any bend that is placed in it, such as brass or tin-covered iron, it may only be necessary to bend the prongs over, in which case the ends of the prongs 15 and 16 would be bent inwardly over the body of the fastener 11 at the bottom. The prongs 28 and 29 would preferably be bent outwardly over the body of the fastener 10 at the top.

I prefer to provide the fasteners with auxiliary arrangements for positively securing the bent ends of the prongs as follows:

A suitable hole 36, 37, rectangular in shape and wide enough to receive the prongs 28, 29, is provided in the body 12 of the fastener 10 adjacent each of the prongs 15 and 16, but outwardly in the body with respect to each prong.

In a similar way suitable holes 38, 39 are located in the body 23 of the fastener 11, inwardly of the prongs 28 and 29. In order to facilitate the insertion of the ends of the prongs into these holes each hole is preferably formed with an outwardly extending offset flange 40, the body being pressed with a short tapering rib in such manner that the edge 41 of the flange causes the hole to face toward the direction from which the point of the prong is coming for insertion in the hole.

The holes being close to the bases of the prongs, this enables the user to insert the ends of the prong from the opposite fastener into these holes even though there is only a short amount of the prong protruding from the stack of sheets.

The method of insertion of the prongs into the holes 36—39 is as follows:

After the sheets and fasteners have been assembled and the prongs are projecting from the stack of sheets, each prong is taken in the thumb and forefinger and curved about the forefinger downwardly until its point can be inserted in one of the holes, such as the prong 29 is inserted in the hole 37 in Figure 4.

Due to the flange 40 being offset upwardly on the fastener 10 in Figure 4, the edge 41 of this flange presents the opening 37 toward the point of the prong and it is relatively easy to insert the point of the prong with the prong in the curved condition.

Thereafter the curved end portion of the prong

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is pushed downward into the flat condition, shown in Figure 4, whereupon the end 42 of the prong is guided between the body of the fastener 10 and the cover 33 into a flat condition, as shown in Figure 4. This secures the ends of each prong by passing it through an aperture in the fastener body and by bending the end portion of the prong over at right angles, as, for example, at the bend 43, Figure 4, when the end portion of the prong is flattened out. Thus it is unnecessary to provide any sliders on the bodies of the fasteners for positively securing the ends of the prongs.

When the ends of the prongs are to be released a knife or other tool, such as a letter opener, may be inserted between the end portion of the prong and the fastener and the prong is pried upward until it is drawn back out of the hole 37 in Figure 4. It is then possible to separate the stack of sheets 32 at any point, with the lower part of the stack held on the fastener 11 and the upper part of the stack held on the fastener 10.

Any additional sheets may be inserted where ever desired and the two parts of the stack can again be reassembled by shoving the prongs 16, 29 through the hole 35 and the prongs 15, 28 through the other hole. It is no longer necessary to lift all the sheets off of a fastener or to replace them one by one when a new sheet is to be put in the middle of a stack of sheets. The present fasteners keep the sheets in perfect order so that they can be separated anywhere and reassembled without difficulty.

Referring now to Figures 6, 7 and 8, these are views of a modification in which only one type of fastener need be employed. In this modification the single type of fastener 44 has its left end formed similar to the upper fastener 10, and its right end formed similar to the lower fastener 11. This enables the user to turn the same fastener upsidetown for the bottom fastener and the user will find that the holes and slots are in the proper position to receive the prongs of the opposite fastener.

For example, 45 indicates a fragment of another similar fastener used for the bottom of the stack, and since these fasteners are both alike it is only necessary to describe one. The fastener 44 has a flat body 46 provided with a pair of longitudinally extending re-enforcing ribs 47, 48. Body 46 has two prongs 49 and 50. The prong 50 is located adjacent to but spaced from the left end 51 of the body 46, but it is punched out of the middle part of the body forming an elongated hole 52, which is toward the right of the prong 50.

The prong 49 is located adjacent to but spaced from the other end 53 of the body 46, and prong 49 is punched out of the right end portion, leaving a slot 54 toward the right of the prong 49. The fastener 45 is exactly identical in construction but oppositely applied and, therefore, it has a prong 50a which is toward the right of the aperture 52a. The body 45a has another prong 49a which is toward the right of the slot 54a from which it was punched.

In assembling these two similar fasteners with a stack of sheets the prongs 49a and 50a should be located on the same side of the prongs 50 and 49, respectively, as shown in Figure 6. Thus the prong 49a will pass through the aperture 52 and the prong 50a will pass through the slot 54.

When the prong 50 is inserted into the same hole in the stack of sheets as the prong 49a, prong 50 will pass through the slot 54a. Prong 49 will be passed through the same aperture in the stack

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of sheets as the prong 50a, and prong 49 will pass through the aperture 52a.

It will thus be observed that only a single die need be provided for making the device of Figure 6, thereby reducing the cost of the fastener. As stated with regard to Figure 1, where the material is a bendable metal adapted to retain its bend, it may only be necessary after assembling the fastener with a stack of sheets to bend over the projecting ends of the prongs 49, 50, 49a and 50a.

I prefer, however, to provide a positive means for securing the bent-over ends of the prongs. For this purpose the body 46 is preferably provided with a pressed elongated rib 55, toward the left of prong 50, and with another pressed elongated rib 56 toward the left of prong 49. Each of these ribs is formed with an inner depression 57, 58 of sufficient size to house a prong 50 or 49.

Each of the ribs is formed with a slit at its right end, Figure 8, these slits forming openings 59, 60, facing toward the ends of the prongs which they are intended to receive and adapted to house the ends of the prongs.

It is preferable to use covers on the stacks of sheets so that the fiber covers located under the grooves 57, 58, Figure 8, will guide the ends of the prongs 49a and 50a after they have been passed through the apertures 59 and 60.

The mode of securement of the ends of the prongs is substantially the same as described in Figure 1, except that in Figures 6 to 8 an elongated groove is also provided to receive the ends of the prongs.

It will thus be observed that I have invented a plurality of improved types of paper fasteners, all of which have the characteristic that prongs pass through the stack of sheets from opposite sides of the sheets in the same hole and, therefore, the stack of sheets can be separated at any point for insertion of a new sheet or for removal of one or more sheets.

When the change desired has been made in the middle of the stack by removing or adding sheets, then it is a simple matter to reassemble the stack by simultaneously passing prongs through the stack from both sides while the prongs are still supporting portions of the stacks of sheets.

A great deal of labor may be saved by utilizing the present fastener instead of the fasteners which have prongs only on one side or cover. Where there are prongs only on one side it is frequently found that sheets must be replaced one by one whenever they have been taken off the prongs.

The reinsertion of the prongs is made easier with the present invention because each prong slides against another prong, thus guiding the prongs through the stack of sheets more easily than is the case where the sheets are loose and the holes are empty.

Referring to Figure 1, in some embodiments of the invention, the end portions of the body 23 outside of prongs 28, 29, on either side of slots 30, 31, may be omitted, body 23 terminating at prongs 28, 29, since these end portions merely make the fasteners symmetrical.

Referring to Figures 9 and 10, these are modifications which illustrate the fact that it is not necessary for the body of the fastener to extend beyond the apertures in the sheets, except as this may be desirable to attach separate prongs to the body. Thus Figure 10 illustrates a modification in which the supporting plate or body 90 of the

fastener does not extend beyond the apertures in the sheets, being provided with integral prongs 76, 77, located substantially at the ends of the body plates 90.

Each of these fasteners 90, 91, of Figure 10, is identical with the other, but they are reversed in position so that the prong 76 of the upper fastener 90 is at the right end and the prong 76 of the lower fastener is at the left end. Thus only one type of fastener need be made or kept in stock for this device.

In this device the fasteners 90 and 91 have their body plates 72 provided with the same longitudinally extending reinforcing ribs 73. At each end of the body 72 there are the integral prongs 76, 77, and one of these prongs is preferably made longer than the other. The reason for this is that it is unhandy to try to insert the end of two prongs initially into apertures at the same time. If one prong is longer than the other, it may be inserted or started in the apertures in the sheets first, and while being so started then the shorter prong may be brought into the apertures in the sheets while the longer prong merely holds its position. Thereafter both prongs may be driven home by pushing the bodies of the fasteners 90, 91 together.

In this embodiment of the invention it is only necessary to provide the pronged members 90, 91 with one aperture or elongated transverse slot 92 at one end adjacent one of the prongs. Slot 92 has been located adjacent prong 77, and thus the device may be assembled with the prong 76 of each fastener passing through the aperture 92 of the other fastener. The prong 77 needs no aperture because it passes outside of the prong 76, and beyond the end of the body 72.

While it is possible to secure the fasteners by merely bending over the ends of the prongs, it is preferable to provide a pair of sliders 83, 84 upon each body 72. Each of these sliders comprises a strip of sheet metal having a flat body 85 that passes across the outside of the fastener body 72.

At each end there is a backward bend 86, 87 which embraces the edge of the body 72, and underneath the fastener there are two retaining flanges 88, 89. Thus the prongs may be held down against the body 72 by the sliders 83, 84.

Referring to Figure 9, this is a modification in which the body 72 and the prongs 76, 77 are made of separate pieces of metal. In this case the body of fastener 71 may have a pair of slots at the left end 74, 78, and the separate prong 76 may pass down through the slot 74 and over and up in the slots 78, where the prong is clinched to the body of the fastener 71.

The aperture 74 is also employed for passing the prong 77 when the device is assembled. At the other end or right end of fastener 71, prong 77 passes downward through aperture 75, then is bent toward the right and bent back on itself at 81 to be clamped on the fastener 71. Here again the slot 75 is employed to pass the prong 76 when the device is assembled.

In this device it will be seen that the body of each fastener extends only slightly beyond the apertures in the sheets of paper, and this extra length of the body is provided only for the pur-

pose of securing separate prongs to the bodies of the fasteners.

The use of separate prongs saves material because the prongs may be punched out of stock of less width than the body without any waste.

Figure 12 shows the fastener of Figure 10 clamped on a stack of sheets between the covers 93, 94. It illustrates why only one aperture 92 is required in the two-pronged fastener when the prongs are integral with the body.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

A fastener for binding double apertured paper sheets in a stack separable between any two sheets into two bound units, comprising an elongated sheet metal body for engaging the face of the stack, said body having a pair of longitudinally extending reinforcing ribs, the said body having a pair of prongs punched out of the body and bent upwardly at substantially right angles to form apertures in the body, and located to be each inserted in the complementary aperture of a substantially identical body toward the prong side of said aperture, said body utilizing one of the openings at one end formed by punching a prong to receive a complementary prong of an identical body, and said body being provided with an open space at its other end beyond its second prong to pass the other prong of an identical body, the said body being provided with an outwardly pressed rib formation between said reinforcing ribs adjacent the base of each prong, and said latter rib formations each forming a groove on the side of the body with the open end away from the adjacent aperture to be complementary to the ends of the prongs of an identical body, and each groove terminating in an aperture which faces toward the adjacent prong in each instance and is readily available for the insertion of the end of a prong of an identical body, when said latter prongs are bent over and forced down into a right angular position to secure the fasteners together on the stack of sheets.

ROBERT H. WENDT.

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