March 8, 1932. K. P. DURHAM 1,848,999

REVERSIBLE PAPER CLIP

Filed Aug. 27, 1930 2 Sheets-Sheet 1

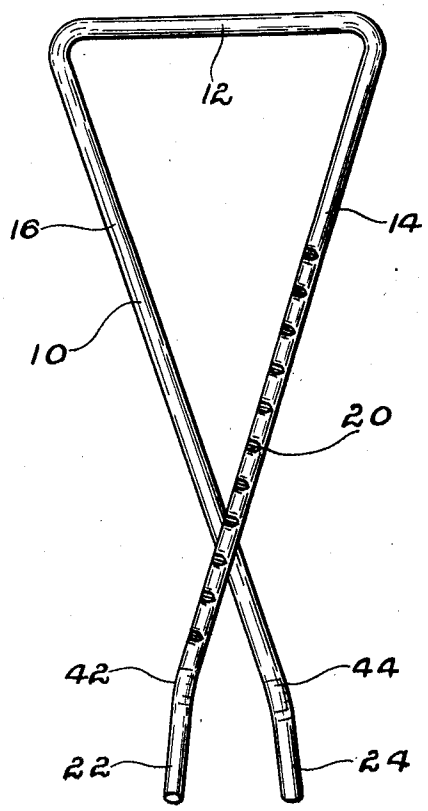

Fig. 1

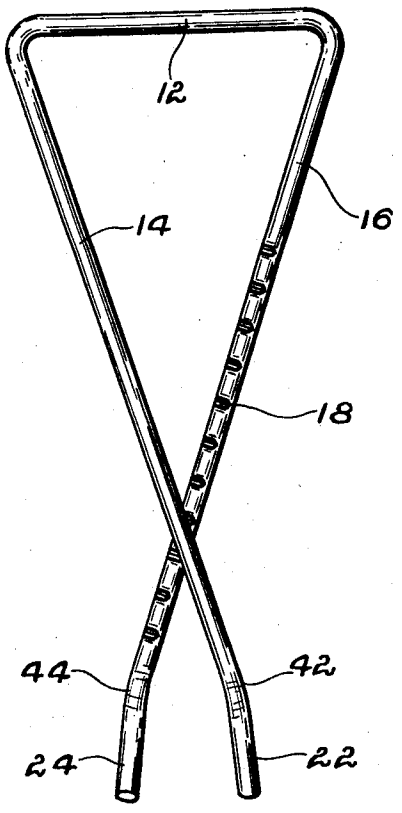

Fig. 2

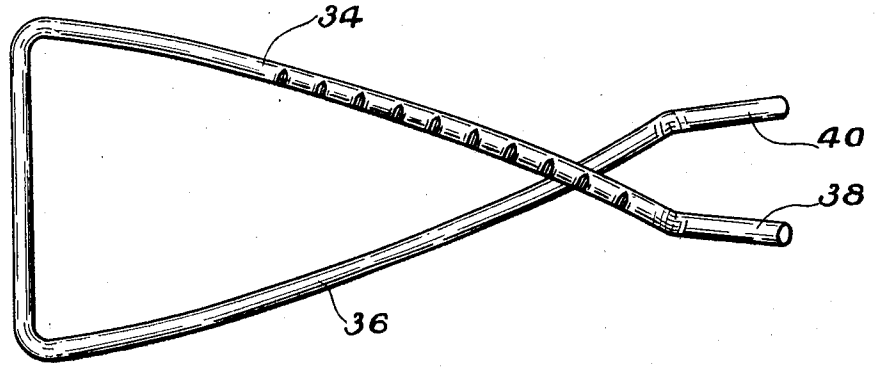

Fig. 3

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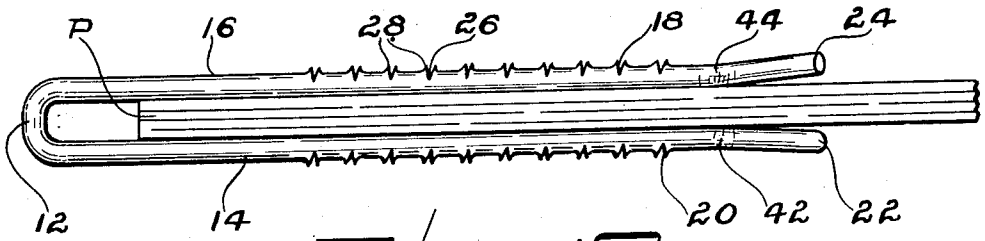

Fig. 3

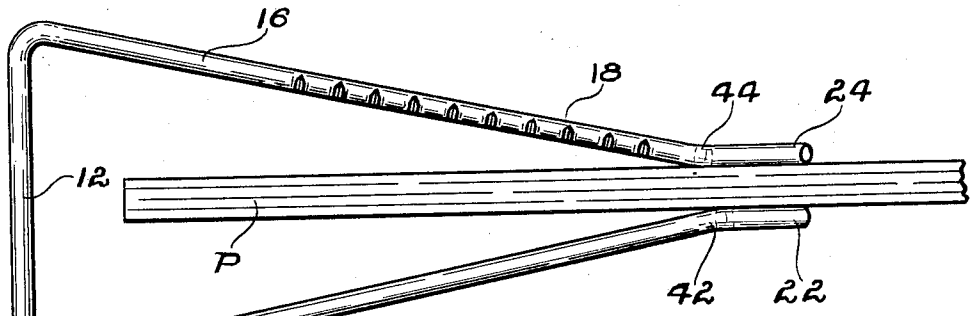

Fig. 4

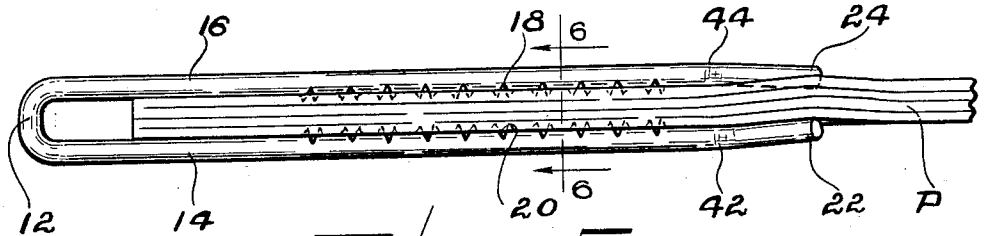

Fig. 5

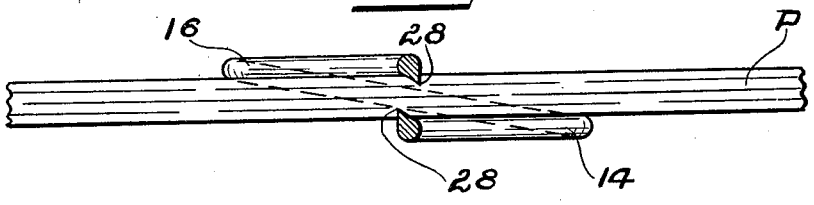

Fig. 6

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UNITED STATES PATENT OFFICE

KENNETH P. DURHAM, OF SEATTLE, WASHINGTON

REVERSIBLE PAPER CLIP

Application filed August 27, 1930. Serial No. 478,054.

My present invention relates to the art of paper clips, and more particularly to that type of clip which is intended to secure a plurality of sheets together by being reversed after it has been put in place so as to bring the sharply pointed projections into contact with the papers. This present application is drawn to certain improvements over my U. S. Patent #1,755,915 issued April 22, 1930. It was found that when paper clips were produced as shown in my former application that it was necessary to round off the extreme ends, much as a hairpin is rounded off, in order to prevent the ends from scratching the papers secured together as the clip reversed upon the papers. To round off these ends proved to be a very expensive operation and further one of the primary objects of the clip itself was lost, namely, that of having the clip end so tight to the paper upon which it was locked that other papers could not be caught inadvertently under the clip. My present application overcomes these objections and can be produced very economically.

In order to show clearly the exact points of novelty in this present case I have shown a number of views on an exaggerated scale.

Having thus described my invention in brief the objects I obtain with my device are, namely:

First, the production of an article of manufacture which accomplishes the above purposes and still admits of very economical construction.

Second, a clip whose ends are so formed that the principal point of rest or point of greatest pressure is somewhat back of the extreme end when the clip is reversed.

Third, a clip which is characterized by having its ends so formed that when in the reversed position the extreme ends are pressed tightly into the paper upon which it is placed.

Fourth, a clip so constructed that its ends need not be refinished after they have been sheared off the long wire from which they are made.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Figure 1 is a face view of my clip as it would be placed upon papers it is desired to bind together.

Figure 2 is a face view of the same clip in its reversed position, such as it would assume when in the gripping position.

Figure 3 is an elevation showing my paper clip as it is applied to a number of papers and before it is reversed to the gripping position.

Figure 4 is an elevation showing the appearance of my clip while being reversed upon a number of papers.

Figure 5 is an elevation showing my clip reversed and in its gripping or locked position.

Figure 6 is a cross-sectional view taken along the line 6—6 of Figure 5, showing only the clip in section.

Figure 7 is an alternate form of my clip.

Referring to the drawings throughout which like reference character indicate like parts, numeral 10 designates my clip as a whole. This I prefer to form somewhat different from my former application. I have found that it is a little more convenient to have a straight end member 12 instead of the curved portion as formerly used by me, and to have the two side members or legs 14 and 16 substantially straight so as to form in effect a triangle. As in my former case I employ sharp pointed projections 18 and 20. The exact position of these projections is best illustrated in Figures 3 and 5 where it will be clear, I believe, that the projections are so arranged as to be on the outside of the clip away from the papers when the clip is put in place and on the inside engaging the papers when reversed on the same. This feature, however, is old as it is shown in my former application referred to.

The feature of novelty in the present application resides, first, in having the projections stop somewhat before the end of the clip is reached as will be seen from a study of the various figures, and then to form the extreme ends or tips 22 and 24 of side members or legs 14 and 16 respectively substantially straight, with a small curved section, 42 and 44 respectively between the end portions and the straight side members. The

exact formation of these ends is believed to be clearly shown in the enlarged views of the drawings. It will be observed that normally when the clip is put in place the ends or tips 22 and 24 will be slightly raised from the papers. This makes for an easy placing of the clip. When the clip is being reversed as shown in Figure 4 the straight end portions 22 and 24 will lie substantially parallel with the papers and when fully reversed there will be a slight tendency for the ends to press tightly to the papers. This is desirable because the point of greatest pressure is at the point where the two legs of my clip cross.

The exact manner in which the ends of the clip are bent is of vital importance in the proper functioning of this paper clip. As shown in Figures 1, 2 and 3, the ends of the clip cross each other and at a point beyond the point of crossing, they are bent as at 42 and 44 in the general plane of the clip. This means that the extreme ends of the clip at 22 and 24 will be bent toward each other whether they are in the applying position or whether the clip is reversed in the clamping position, which conditions are shown in Figures 1 and 2 respectively. The exact amount of the bend, which is thus provided in the plane of the clip should be arranged by trial. A thickness of paper as P should be taken of a thickness that the clip will normally be called upon to bind, and when the clip is placed in the reversing position as indicated in Figure 4 the end portions of the clip should lie flat against the paper, or if it is necessary to make allowance for unusual variations in the thickness of the sheet P the bend should be such that the maximum pressure will be exerted at 42 and 44 so that the clip will not ride on the extreme ends 22 and 24. This condition takes care of the reversal of the clip so that the paper will not be marred.

There is still a second condition which the bend in the end of the clip must take care of. This is the feature of having the extreme ends of the clip 22 and 24 pressed tightly into the paper when the clip is in its binding position to the end that other papers cannot be inadvertently caught under the ends of the clip. To provide the proper bending for the ends to accomplish this purpose, let it be assumed that the clip is being placed upon a plurality of sheets such as shown in Figure 3. In this position the binding projections are outwardly disposed and the extreme ends of the clips which, as has been previously described are bent toward each other, are now given a second bend so that the extreme end will be raised from the paper as indicated in Figure 3. In order to distinguish this bend it is referred to as a bend in a plane at right angle to the plane of the clip, the plane of the clip referring to the plane which would normally pass through the side member 14, 16 and the end member 12. With a bend such as described when the reversal of the clip has been accomplished and the position is that now represented in Figure 5, the extreme ends of the clip will be pressed tightly into the paper and will usually slightly deform the paper at this point. This is believed to be clearly shown in Figure 5.

Figures 3 and 5 are slightly exaggerated to more clearly bring out this feature.

It should be borne in mind that while I have spoken of my clip as having outwardly extending projections, that the most practical way I have found to create these is to nich with a tool similar to a knurling tool, the side members 14 and 16. As the tool makes the small cut 26 a certain amount of metal is squeezed upwardly to form the outstanding projections 28. I wish it to be understood that any of the commonly accepted forms of roughening paper clips which are in common use to establish a friction surface might be used to secure the additional friction which I have found so desirable in a clip of this form. In Figure 7 I have shown a modified form of my clip in which the side members 34 and 36 are slightly curved. The curving causes all the teeth to be raised from the paper on reversal, when reversal is started or completed, and particularly when a large number of papers are clipped together; oftentimes the flat sides will not have enough spring to draw the teeth across the paper; the curved form excels under this condition. The ends 38 and 40 should be formed straight as indicated in the other views. This curving I have found gives a little greater spring tension and would be desirable in the very large clips so often referred to as "clamp" clips to distinguish them from the smaller sizes.

The flat end members 12 have been substituted for the rounded ends of my former clip as I have found the flat ends will lie closer to the edge of the papers P as they are bound together, and in this way present a neater appearance although I can seen no difference in their actual operation. They do form two points or corners which are very convenient to grasp when it is desired to reverse the clip.

Method of operation

My clips are normally supplied to the trade in the position shown in Figure 1. When it is desired to bind together a number of papers the clip should be grasped by the thumb and forefinger at 12 and slipped over the papers which should be introduced between the ends 22 and 24. When the clip is in a position substantially as shown in Figure 3 it should be revolved a little over ninety degrees, from which position it will snap by itself into its reversed or locking position. The sequence

of operations is shown in Figures 3, 4 and 5. When it is desired to remove the clip a reversal of this operation will present the smooth surfaces of members 14 and 16 and the clip will slide off with very little effort.

It will be observed that as the reversal of the clip is started from the position shown in Figure 3, the main point of rest will be at the short bends 42 and 44. This tends to keep the pressure off the extreme ends 22 and 24 and permits the reversal of the clip without any danger of scraping or damaging the papers to which it is applied.

The foregoing description and the accompanying drawings clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claims.

What I claim is:

1. A wire clip for securing sheet materials by being reversed in position thereon comprising a bend, two legs which cross, outwardly extending projections on one side of each leg so positioned as to form a toothed jaw when in the binding position and smooth end portions on each of said legs which are bent toward each other in the plane of the clip and further bent toward each other, when in the binding position, in a plane at right angles to the plane of the clip.

2. A wire clip for sheet material comprising a return bend having two leg portions which cross and outwardly extending projections on one side of said legs so located that in one position the projection point inwardly toward each other and when reversed point outwardly and away from each other, and smooth end portions on each of said legs which are bent toward each other in the plane of the clip and further bent toward each other, when in the binding position, in a plane at right angles to the plane of the clip.

3. A wire clip for sheet material comprising a return bend having two leg portions which cross and a roughened surface on one side of said legs so located that in one position the projections point inwardly toward each other and when reversed point outwardly and away from each other, and unroughened end portions on each of said legs which are bent toward each other in the plane of the clip.

4. A wire clip for securing sheet materials together by being reversed in position thereon comprising a single wire bent back on itself so the two ends cross and outwardly extending projections so positioned on one side of each end that they will engage the sheet material in the gripping position and will present a smooth jaw when reversed to the applying or removing position, and smooth tip portions on each of said ends which are bent toward each other in the plane of the clip.

5. A wire clip for securing sheet materials together by being reversed in position thereon comprising a single wire bent back on itself so the two ends cross and a roughened surface so positioned on one side of each and that they will engage the sheet material in the gripping position and will present a smooth jaw when reversed to the applying or removing position, and unroughened tip portions on each of said ends which are bent toward each other in the plane of the clip.

6. A wire clip for sheet material comprising a return bend having two leg portions which cross and outwardly extending projections on one side of said legs so located that in one position the projections point inwardly toward each other and when reversed point outwardly and away from each other, and smooth end portions on each of said legs which are bent toward each other in the plane of the clip and further bent toward each other, when in the binding position, in a plane at right angles to the plane of the clip.

7. A wire clip for securing sheet material together by being reversed in position thereon comprising a straight end member; two side members (which cross; a roughened surface on one side of each side member) so positioned as to form a toothed jaw when in the binding position; and end portions on each of said side members which are bent toward each other in the plane of the clip.

8. A wire clip for securing sheet material together by being reversed in position thereon comprising a straight end member; two side members which cross; a roughened surface on one side of each side member, so positioned as to form a toothed jaw when in the binding position; and end portions on each of said side members which are bent toward each other sufficiently so they will be substantially parallel when the clip is in the center of its reversal.

9. A wire clip for binding sheet material together by being reversed in position thereon which consists of an end member; two side members, which cross, joined to the end member; a roughened surface on each side member, so disposed that the two roughened surfaces form a gripping jaw when in the locked position and present smooth surfaces in the reversed position; inwardly directel bends on each side member on the opposite side of the point of crossing from the end member terminating in straight tip portions which are further bent toward each other, when in the binding position, in a plane at right angles to the plane of the clip.

10. A wire clip for binding sheet material together by being reversed in position thereon which consists of a straight end member; two curved side members which cross, joined to the end member, a roughened surface on

each side member, so disposed that the two roughened surfaces form a gripping jaw when in the locked position and present smooth surfaces in the reversed position; inwardly directed bends on each side member on the opposite side of the point of crossing from the end member; tip portions on each side member so disposed as to be substantially parallel at the mid point of the reversing operation.

11. A wire clip for binding sheet material together by being reversed in position thereon which consists of a straight end member; two curved side members which cross, joined to the end member, a roughened surface on each side member, so disposed that the two roughened surfaces form a gripping jaw when in the locked position and present smooth surfaces in the reversed position; inwardly directed bends, in the plane of the clip, on each side member on the opposite side of the point of crossing from the end member.

In witness whereof, I have hereunto subscribed my name this 5th day of August, A. D., 1930.

KENNETH P. DURHAM.